

WORLD OF RELAYS

General Catalogue 2015/16







Comat Releco Group at a glance

The Comat Releco Group is a leading global supplier of high-quality components, systems and services in Industrial Automation, Electrical Installations and Railway and Transport Applications.

Our core competencies are Industrial, Time and Monitoring Relays. The product portfolio enjoys an outstanding world-wide reputation. Since 1996 our Quality Management System is certified according to ISO 9001.

Two strong brands www.comat.ch und www.releco.com

Comat and Releco are two well-established brands that have for decades enjoyed an outstanding reputation in their complementary segments of the market for Industrial, Time and Monitoring Relays.

Releco concentrates on high quality Industrial Relays and sets a focus on a high variety of features and functionalities to cover also specific customer requirements with customized solutions in low quantities.

Comat offers complete system solutions, including also software and services in the areas of Time and Monitoring Relays, SMS Relays, Miniature Contactors, Controllers as well as Power Electronics.

Customer focus and cutting-edge technology

The Group invests continuously in research and development, ensuring a sustained high rate of innovation. Due to our own qualified research and development teams, as well as the diversified production plants in Switzerland, Spain, India and China, the Group offers a complete range of standard as well as customized Industrial Automation, Electrical Installations and Railway and Transport Applications solutions.

Headquartered in Switzerland - Worldwide presence

Due to our distributor network the Group is present in all world markets. We maintain our own sales subsidiaries in Germany, France and Brazil. Since 2003 the Group is owned by the management.

WORLD OF RELAYS

C	CO	ma	at
	REI	_EC	.
WORLD	OF	RELA	Y S

New	in this catalogue		Page
Rela	ys		Page 1
1.1	Interface Relays	C10, C12, CRINT	2!
1.2	Miniature Industrial Relays	C7, R7, C9	39
1.3	Industrial Relays	C2, C20, C3, C30, R3, C4, C5	53
1.4	Long Life Relays	C21, C22, C31, C32	8
1.5	Solid State Relays	CSS, CRINT-C1x5, CRINT-C1x8	9.
1.6	High Inrush Relays	CHI14, C7-W10, CIM14, RIC	103
1.7	Motor Control Relays	CMC1, CMC15, CMC16, KDM3	11
1.8	Contactors	RIC, RAC, RBC	11
1.9	Solid State Contactors	CC, CR, CCR, CPC	129
Time	e Relays		Page 15 ⁻
2.0	Overview Time Functions		152
2.1	DIN Time Relays Monofunction	CMD	15
2.2	DIN Time Relays Multifunction	CIM, CM, CRV, CSV, CPF	16
2.3	Plug-in Time Relays	CS1, CS2, CS3	17
2.4	Time Cubes	CT2, CT3	18
2.5	Time Modules	CT30, CT32, CT33, CT36	18
Mon	itoring Relays		Page 19
3.1	Multifunction Monitoring	MRM	19
3.2	Voltage Monitoring	MRU	20
3.3	Current Monitoring	MRI, EOCR, EUCR	20
3.4	3-Phase Monitoring	SSU33L, SSU34, SSU36	209
3.5	Isolation Monitoring	ESU	21
3.6	Monitoring Modules	CT512, CT515, CT516, CT524	21
Sock			Page 22
	Sockets for Interface Relays IRC	S10, S12	
	Sockets for Miniature Relays QRC	S7, S9	
	Sockets for Industrial Relays MRC	S2, S3, S4, S5, S20, S30	
	System Sockets	C12B0	
	Relay		Page 25 ⁻
5.0	SMS Relay	CMS	
Soft	startors		Page 263
5011s 6.1	starters Starting Torque Limiter	CTC	Page 20
6.2	Compressor Softstarter	CCL33	
	Softstarter 2 Phases Switched	CCM3	
6.3			

CCMB3

Softstarter With Dynamic Breaking

6.5

Index



Time Relays

Relays		
Туре	Page	Туре
C2-A20		C10
C2-A28	55	C10
C2-A29	55	C10
C2-G20		C10
C2-T21		C10
C2-T22		C10
C20-A20		C10
C3-A30		C10
C3-A38		<u>C12</u>
C3-A39		<u>C12</u>
C3-E24		<u>C12</u>
C3-E28		<u>C12</u>
C3-G30		C21
C3-M10		C22
C3-N34		<u>C31</u>
C3-N38		C32
C3-R20		CC
C3-R28		<u>CC</u>
<u>C3-R29</u>		<u>CC</u>
<u>C3-S14</u>		<u>CC</u>
<u>C3-S18</u>		<u>CC</u>
<u>C3-T31</u>		<u>CC</u>
<u>C3-T32</u>		<u>CC3</u>
C3-X10		<u>CC(</u>
C30-A30		<u>CC</u>
C30-M10		CCI
C30-T30		CPO
C30-X10		CPO
C4-A40		CPC
C4-A48		CR
C4-R30	75	CR
C4-R38		<u>CR</u>
C4-R39	75	CR
C4-X20	74	CR
C5-A20	76	CR
C5-A30		CHI
C5-G30		CM
C5-M10		CM
C5-M20		CM
C5-R20	82	CRI
C5-X10	79	CRI
C7-A10	40	CRI
C7-A20	41	CRI
C7-A28	41	CSS
C7-A29	41	CSS
C7-G20	43	CSS
C7-H23		CSS
C7-T21	40	KDI
C7-T22	42	R3-
C7-T22	42	R3-
C7-W10	46	
C7-X10	44	<u>R3-</u>
<u>C9-A41</u>	49	<u>R7-</u>
C9-A42	49	<u>R7-</u>
C9-E21	50	<u>R7-</u>
C9-E22	50	R7-
C9-R21		<u>R7-</u>
C10-A10	26	DAC

Relays			
Туре	Page	Туре	Page
C2-A20	55	C10-A15	26
C2-A28	55	C10-A18	26
C2-A29	55	C10-G10	27
C2-G20	57	C10-G15	27
C2-T21	56	C10-GT12	29
C2-T22	56	<u>C10-GT13</u>	29
C20-A20		C10-T11	28
C3-A30	59	<u>C10-T13</u>	28
C3-A38	59	<u>C12-A21</u>	30
C3-A39	59	C12-A22	30
C3-E24	66	C12-G21	31
C3-E28	66	C12-G22	31
C3-G30		<u>C21</u>	86
C3-M10			87
C3-N34	67	<u>C22</u>	88
		<u>C31</u>	
<u>C3-N38</u>	67 64	<u>C32</u>	121
C3-R20		<u>CC1H215</u>	131
<u>C3-R28</u>	64	<u>CC1H230</u>	132
C3-R29	64	<u>CC1H250</u>	133
<u>C3-S14</u>	65	<u>CC1H415</u>	134
<u>C3-S18</u>	65	<u>CC1H450</u>	135
C3-T31	60	CC2H230	136
C3-T32	60	CC3H410	137
C3-X10	63	CC3H420	138
C30-A30	69	CC3H610	139
C30-M10	71	CCR3H410	146
C30-T30	70	CPC1230	147
C30-X10	72	CPC1430	148
C4-A40	73	CPC1450	149
C4-A48	73	CR11H210	140
C4-R30	75	CR11H430	141
C4-R38	75	CR11H480	142
C4-R39	75	CR11H4125	143
C4-X20	74	CR22H430	144
C5-A20	76	CR33H420	145
C5-A30	77	CHI14	109
C5-G30	78	CMC1	112
C5-M10	80	CMC15	113
C5-M20		CMC16	114
C5-R20	82	CRINT-C1x1	33
C5-X10	79	CRINT-C1x2	34
C7-A10	40	CRINT-C1x5	35
C7-A20	41	CRINT-C1x8	36
C7-A28	41	CSS-I	92
C7-A29	41	<u>CSS-N</u>	94
C7-G20	43	CSS-P	95
C7-H23	45	CSS-Z	93
C7-T21	40	KDM3-24	115
C7-T22		R3-N30	68
C7-W10	42	R3-N34	68
C7-X10	40	R3-N38	68
C9-A41	49	R7-A20	47
C9-A42	49	R7-A24	47
<u>C9-E21</u>	50	R7-A28	47
C9-E22	50	R7-T21 R7-T22	48 48
C9-R21	51		

	1
Туре	Page
RAC-25	124
RBC-AUX	127
RBC-20	125
RBC-32	126
RIC-AUX	122
RIC20	118
RIC25	119
RIC40	120
RIC63	121

Туре	Page
CIM1	
CIM2	
CIM3	
CIM12	
CIM13	165
CIM14	166
CIM22	168
CIM23	169
CIM32	
CIM33	
СМ3	173
CMD11/UC12V	
CMD11/UC24V	157
CMD11/AC115V	158
CMD11/AC230V	159
CPF11	176
CRV4	174
CS1	
CS2	
CS3	
CSV4	
CT2	
CT3	
CT30	189
CT30.3-A30	190
CT30.3-T31	
CT30.3-T32	
CT30.5-A30	
CT30.5-M10	
CT30.31	
CT30.32	
CT32	189
CT32.3-A30	190
CT32.3-T31	190
CT32.3-T32	190
CT32.5-A30	192
CT32.5-M10	192
CT32.31	
CT32.32	191
СТ33	
CT33.3-A30	190
CT33.3-T31	
CT33.3-T32	190
CT33.5-A30	
CT33.5-M10	
CT33.31	
CT33.32	191
СТ36	189
CT36.3-A30	190
CT36.3-T31	
CT36.3-T32	190
CT36.5-A30	
CT36.5-M10	
CT36.31	
CT36.32	191

Index



Monitoring Relay	
Туре	Page
CT512	218
CT512.3-A30	220
CT512.3-T31	220
CT512.3-T32	220
CT512.5-A30	222
CT512.5-M10	222
CT512.31	221
CT512.32	221
CT515	218
CT515.3-A30	220
CT515.3-T31	220
CT515.3-T32	220
CT515.5-A30	222
CT515.5-M10	222
CT515.31	221
CT515.32	221
CT516	218
CT516.3-A30	220
CT516.3-T31	220
CT516.3-T32	220
CT516.5-A30	222
CT516.5-M10	222
CT516.31	221
CT516.32	221
CT524	219
CT524.3-A30	220
CT524.3-T31	220
CT524.3-T32	220
CT524.5-A30	222
CT524.5-M10	222
CT524.31	221
CT524.32	221
EOCR	208
ESU-D2	214
EUCR	208
MRI11	206
MRI32	207
MRM11	198
MRM32	
MRU11	202
MRU32	203
SSU33L	210
SSU34	211
SSU36	212

Sockets	4
Туре	Page
C12B0	234
S10	246
S10-P	247
S12	248
S12-P	249
S2-B	226
S20-B	227
S2-L	228
S2-P, S2-PO	228
S3-B	229
S30-B	230
S3-L	233
S3-P, S3-PO	233
S3-MP	231
<u>S</u> 3-S	232
S4-J	235
S4-L	236
S4-P, S4-PO	236
S5-L	239
S5-M	238
S5-P, S5-PO	239
S5-S	237
S7-16	242
S7-C	240
S7-I/O	241
S7-L	243
S7-P, S7-PO	243
S9-L	245
S9-M	244
S9-P, S9-PO	245

SMS Relay	5
Туре	Page
App SMSrelay	259
CMS-10ACDF	257
CMS-10ADF	257
CMS-10F	257
DR-15-24	258
DR-30-24	258
KS-110	259
PS1	259
RF01-U	258
RF01-U-D	258
RTBSB-001	258
WF50 ext-U	258

<u>ZPT-10-H...</u>

258

Softstarters	6
Туре	Page
CCL33H415US	267
CCL33H425US	268
CCL33H435US	269
CCM3H403USi	270
CCM3H415	271
CCM3H425	272
CCM3H415DS	273
CCM33H425US	274
CCM33H450US	275
CCM33H530USi	276
CCM33H550USi	277
CCMB3H425	278
CTC3415	265
CTC3425	266



Notes

																 			-	
																			-	
-				 				 											+	
										 									\rightarrow	
																			\neg	
	-					 		 											\rightarrow	
	-			 				 											\rightarrow	
				 		 	 	 		 	 	 		 	 	 			-	
																			\neg	
	-																		\rightarrow	
																			\rightarrow	
																			\neg	
				<u> </u>				 											\rightarrow	
				 				 										-	\rightarrow	
										 									\square	
																			\neg	
	-			 				 											\rightarrow	
		-																	+	
																			+	



New in this catalogue



- CRINT
- CHI14
- CMD11
- Installation Contactors
- Solid State Contactors
- Softstarters



CRINT – Interface Relay

- Relay module up to 6 A 250 V, different contact materials
- Solid state modules for most loads DC and AC up to 2 A
- Coil UC = AC/DC, no protection circuit required
- LED status display
- Screw terminals or cage clamp terminals
- Jumper link
- Super small mounting: 6,2 mm



CHI14 – Power relay for high inrush currents

- For inrush currents up to 800 A: Switching of loads such as electronic control gears or switching power supplies for the latest generation of energy-saving lamps and LED
- Designed for fitting in electric switchboards due to the high nominal current of 16 A and the housing with 45 mm norm front
- · Reduction of the inrush current and less wear thanks to switching while zero-crossing
- · Suitable to use in living area: extremely low noise during operation



CMD11 – Mono Function Timing Relay

- 17 mm case system
- Relay contact 8 A
- On delay or off delay timing function
- 5 time ranges from 50 ms to 60 min
- Service function ON/OFF
- LED input and output status display





RAC, RBC – Installation Contactors

- · Long lifetime due to double-break contacts
- · Switching of different voltages with adjacent contacts
- Easily expandable by expansion module
- Hum-free operation
- · Sample applications: light installations, heaters, motors, pumps, air conditioning, etc.
- With ON-OFF-AUTO-function
- With stepping function^{*}
- With expansion module AUX



* RBC only

Solid State Contactors

- · For frequent switching without contact bounce
- · No wear and tear and silent operation thanks to semiconductor technology
- · Non-hazardous switching of inductive loads
- · Reduction of switch-on current thanks to zero voltage switching
- Clear LED status display
- Integrated overload protection
- DIN rack or screw assembly
- · Space-saving: standard module width from 22.5 to 90 mm
- · Integrated cooling element with optional thermal protector



Softstarters

- · Reduces wear in the entire drive train through soft start-up
- · Optimal starting torque through intelligent current control during start-up
- · Protects the engine through integrated, adjustable motor protection with I2t-monitoring
- · Minimises wiring effort and component costs: integrated bypass and motor protection
- · Safe to use: comprehensive self-monitoring





Notes

				 		 	 	 	 				 	 					 -	
								 							 				-	
																			-	
																	-		-+	
																			\neg	
																			 -+	
-								 			 				 					
-							 	 	 										 -	
						 	 	 	 		 	 	 	 	 			 	 _	
								 							 				-	
																	-		-+	
																			 -+	
				 				 							 				-	
		-																	 -+	
L				 																



Select the right relay for the right application

*	Reduction of contact erosion when switching DC loads	p.10
K	Contacts for high inrush current	p.10
0.	Safe separation of power circuits	p.11
Ð	Reliable switching of low power signals	p.11
十	Efficient switching of high voltages high currents	p.12
- å-	Switching with a pulse	p.12
ŵ	Max. life time and highest number of switching cycles	p.13
*	Blinking relays	p.13
±ste	Impulse shaping (Extending short pulses)	p.14
Ø	Energy saving with the same switching capacity	p.14
\$	Protection against aggressive environment	p.15
	Relays according to Railway standard	p.16
	(increased shock and vibration resistance)	





Reduction of contact erosion when switching DC loads

Increased contact gaps, double make contacts, and arc blow-out magnets to reduce contact erosion (burn offs).

Compared with standard contacts, the reliability can be remarkably increased when using customized contacts for switching DC loads with breakaway sparks.

Increased contact caps, double make contacts and blow out magnets are causing a longer distance for the electric arc. Electric arcs are extinguished quickly and increase significant the lifetime of the contacts.

Suitable relays for this application

Series	Туре	Base	Contacts	Gap	Extras	DC-1 rating	I
MRC	C2-G2x	:8:	፟ //	1.7 mm		1.2 A	110 V DC
	C3-G3x		<u> </u>	1.7 mm		1.2 A	110 V DC
	C3-M1x		<u>∠</u>	2x 1.7 mm ≥ 3 mm	Double make contacts; Blow out magnet	10 A	220 V DC
	C3-X1x		┟╌┤	2x 1.7 mm ≥ 3 mm	Double make contacts	7 A	110 V DC
	C4-X2x		┟╌┼╌┼╼	2x 1.7 mm ≥ 3 mm	Double make contacts	7 A	110 V DC
	C5-G3x		<u>ነ</u>	1.7 mm		1.2 A	110 V DC
	C5-X1x	=	┟╌┤╼	1.7 mm ≥ 3 mm	Double make contact	7 A	110 V DC
	C5-M1x		┟┈┧	2x 1.7 mm ≥ 3 mm	Double make contacts; Blow out Mmagnet	10 A	220 V DC
	C5-M2x		┟ _┉ ╄	2x 1.7 mm	Blow out magnet	7 A	110 V DC
QRC	C7-G2x	Ħ	┟┼╤	1.5 mm		0.8 A	110 V DC
	C7-X1x	Ħ	′⊱;∕₽	2x 1.5 mm	Double make contacts	6 A	110 V DC
IRC	C10-G1x	Ē	γ¢	1.0 mm		10 A	30 V DC
	C12-G2x	Ħ	<u> /</u> /	1.0 mm		5 A	30 V DC
DIN	CMC1	DIN 14 mm	2x		Adjustable start and breaking ramps	10 A	24 V DC



Contacts for high inrush current

Tungsten contacts have a higher melting point that help resist high power peaks and protect main contacts

High power peaks during switch-on of electrical loads, for example when switching power supplies and ballasts can lead to welding of the contacts. Early make tungsten contacts resist high inrush currents and avoid contact welding.

Series	Туре	Base	Contacts	Extras	AC-1 rating	
QRC	C7-W1x	Ħ	∦ ¢	Tungsten early make contact; Inrush current 2.5 ms 500 A	10 A	250 V AC
DIN	CHI14	DIN 17.5 mm	₩ \$	W / AgSnO ₂ contact for high inrush currents up to 800 A	16 A	250 V AC
	CIM14	DIN 17.5 mm	∦ ⇔	W / AgSnO ₂ contact for high inrush currents up to 800 A	16 A	250 V AC
	RIC	DIN	ליםיל ליבויל		2063 A	400 V AC
	RAC	DIN	ליםיל ליבויל		2025 A	400 V AC
	RBC	DIN	<u> </u>		2032 A	400 V AC



0.

Safe separation of power circuits

Relays with increased contact distance of at least 3 mm allow safe separations in power circuits of high voltage currents and increase the protection degree from potentially lethal currents.

Serie	Туре	Base	Contacts	Gap	Extras	AC-1 rating	I
MRC	IRC C3-M1x Image: C3-M1x Lange: C3-M1x Lange: C3-M1x 2x 1.7 mm ≥ 3 mm		Double make contacts; Blow out magnet	10 A	250 V AC		
C3-X1x		Double make contacts	10 A	250 V AC			
	C4-X2x ↓ · · · · · · · · · · · · · · · · · · 		2x 1.7 mm ≥ 3 mm	Double make contacts	10 A	250 V AC	
	C5-X1x	Ħ	׳-י∕-	≥ 3 mm	Double make contacts	16 A	400 V AC
	C5-M1x	Ħ	┟ <u>┉</u> ┤ф	≥ 3 mm	Double make contacts; Blow out magnet	16 A	400 V AC
QRC	C7-X1x	Ħ	┟╌┾╼	2x 1.5 mm ≥ 3 mm	Double make contacts	10 A	250 V AC

Suitable relays for this application



Reliable switching of low power signals

Twin contacts increase reliable switching by factors of 10 to 100 times. 10 µ hard gold plated contacts help to avoid contact oxidation. Together this allows reliable switching of very low level signals through the contacts.

Low level voltages in analogue circuits and signal voltages <10V/5 mA are not easily able to overcome contact resistances. Twin contacts increase contact reliability and gold contacts avoid contact oxidations and are especially suitable to switch low power signal loads.

Serie	Туре	Base	Contacts	Extras	Min. rating	
MRC	C2-T22x	:8:	' # '- # '-¢	Twin contacts, 10 μ gold plated	1 mA	5 V DC
	C3-T32x		'#'# ₽	Twin contacts, 10 μ gold plated	1 mA	5 V DC
QRC	C7-T22x	Ħ	' # '-#'-¢	Twin contacts, 10 μ gold plated	1 mA	5 V DC
	C7-H23	Ħ	┢╡	1 power & 1 signal contact 2 μ gold plated	5 mA	5 V DC
	C9-A42x	=	╠╬╬╬	Contacts, 10μ gold plated	5 mA	5 V DC
IRC	C10-T13x	=	'#'-¢	Twin contacts, 3 μ gold plated	1 mA	5 V DC
	C10-GT13x	E	┢	Twin contacts, 3 μ gold plated	1 mA	5 V DC
	C12-A22x	Ħ	╠╝╌	Contacts, 3 µ gold plated	5 mA	5 V DC
	CSS-N	Ξ	X	NPN Solide state	1 mA	48 V DC
	CSS-P	Ξ	Y	PNP Solide state	1 mA	48 V DC





Efficient switching of high voltages high currents

Heavy duty relays are designed to switch high currents. Due to their relatively small dimensions and lower cost, these relays are more economical then contactors. Therefore control panels can be optimized for high power switching.

Heavy duty relays save space in the panel and cost less than contactors. They can be used for switching higher currents, for example electrical heaters up to 16 A at 400 V AC.

Suitable relays for this application

Series	Туре	Base	Contacts	Gap	AC-1 rating	I
MRC	C5-A2x	=	┟╡┾╡╌╪		16 A	400 V AC
	C5-A3x	==	┝┙┾┙┝┙		16 A	400 V AC
	C5-G3x	=	<u> </u>	1.7 mm	16 A	400 V AC
	C5-X1x	=	とさ	> 3 mm	16 A	400 V AC
QRC	C7-A1x	Ħ	'⁄≓-¢		16 A	250 V AC
RIC	RIC20	DIN 17.5 mm	ליביץ ליביץ ליביץ		20 A	400 V AC
	RIC25	DIN 35 mm	<i>\\</i> \$		25 A	400 V DC
	RIC40	DIN 54.5 mm	<i>\\</i> \$		40 A	400 V AC
	RIC63	DIN 54.5 mm	<u> </u>		63 A	400 V AC
RAC	RAC20	DIN 17.5 mm	לי לי לי לי לי		20 A	400 V AC
	RAC25	DIN 34 mm	<i>\\</i> \$\$		25 A	400 V AC
RBC	RBC20	DIN 18 mm	'/Φ'/ '/Φ ' /		20 A	400 V AC
	RBC32	DIN 35 mm	<u> </u>		32 A	400 V AC

Å

Switching with a pulse

Change the ON/OFF status of a latching relay (remanence relay) with a single pulse. The switching status remains stable also in the case of power failure.

The switching status of a latching relay is changed with a single input pulse although permanent connection is also possible. The contacts remain in position even after the "on" coil is de-energized. This guarantees that the relay status remains in position until such time that a control signal is applied to the "off" coil. A stepping relay provides an alternative for pulse switching and latching.

Latching relays help to save power dissipation, what is especially important when a hot environment is expected or when a high number of relays are mounted close with each other in a control cabinet.

Series	Туре	Base	Contacts	Extras	Max. contact rating	
MRC	C3-R2x		'/' /-/ → Rem.	Remanence (Latching) relay	10 A	250 V AC
	C4-R3x		'/≓'/≓'/≓-c⊐ Rem.	Remanence (Latching) relay	10 A	250 V AC
	C5-R2x	=	'/≓ '/⁴ -⇔ Rem.	Remanence (Latching) relay	10 A	400 V AC
QRC	C9-R2x	=	'/≓ '/ → Rem.	Remanence (Latching) relay	5 A	120 V AC
DIN	RBC20	DIN 18 mm	<u> /</u> ፡፡-/	Bistable installation contactor	20 A	400 V AC
DIN	RBC32	DIN 35 mm	<u> </u>	Bistable installation contactor	32 A	400 V AC





Max. life time and highest number of switching cycles

Long Life relays are relays of robust mechanical structure with 5 times longer life cycles compared to standard relays. Unlimited switching cycles are reached with solid state relays.

The Long Life Relays with a more robust design provide a 5 times longer service life. Standard relays are designed for 10 to 20 million mechanical switching cycles. For periodical switching frequencies in the second or minute range, the standard relays reach their life cycle within a few months. The long life relays are specially designed for frequent switching applications.

Serie	Туре	Base	Contacts/Outputs	Extras	Max. co	ntact rating
MRC C20	C21	:8:	╠╡╎┩╌╘╕	> 10 ⁸ mechanical operations	10 A	250 V AC
C30	C22	:8:	'# ' # '-₽	> 10 ⁸ mechanical operations, twin contacts	5 A	250 V AC
	C31		╠╬╬	> 10 ⁸ mechanical operations	10 A	250 V AC
	C31	()	╵ #╵ #╵ / #-¢	> 10 ⁸ mechanical operations, twin contacts	5 A	250 V AC
CSS	CSS-I	Ē	*	Solide state AC (unlimited ops.)	3 A	250 V AC
	css-z		*	Solide state AC (unlimited ops.)	3 A	250 V AC
	CSS-N	=	X	Solide state DC (unlimited ops.) NPN	6 A	48 V DC
	CSS-P		X	Solide state DC (unlimited ops.) PNP	6 A	48 V DC
CRINT	CRINT-C1x5	DIN 6.2 mm	X	Solide state DC (unlimited ops.)	2 A	24 V DC
	CRINT-C1x8	DIN 6.2 mm	*	Solide state AC (unlimited ops.)	1 A	240 V AC
DIN	CMC1	DIN 14 mm	2x	Adjustable start and breaking ramps	16 A	24 V DC
	CMC15/16	DIN 14 mm	2x	Adjustable start and breaking ramps and speed	10 A	24 V DC

Suitable relays for this application



Blinking relays

Blinking relays with integrated solid state outputs have a virtually unlimited life time independent from the switching cycles. Specially appropriate for blinking functions in intervals of seconds or minutes.

Blinking in second or minute intervals with permanent repetitions wear standard mechanical relays in a short time. A standard relay will reach the limit of its designed life time within weeks or months. Special blinking relays with integrated semi conductor contacts provide the alternative for such applications.

Series	Туре	Base	Contacts/Outputs	Extras	Max. conta	ct rating
CIM	CIM1	DIN 17.5 mm	' ⊭ -⇔	Time range adjusttable 0.6 s - 60 h	16 A	250 V AC
	CIM2	DIN 17.5 mm	╠╡	Time range adjusttable 0.6 s - 60 h	16 A	250 V AC
	CIM12	DIN 17.5 mm	*	Time range adjusttable 0.6 s - 60 h	2 A	250 V AC
	CIM22	DIN 17.5 mm	*	Time range adjusttable 0.6 s - 60 h	2 A	250 V AC
	CIM13	DIN 17.5 mm	¥	Time range adjusttable 0.6 s - 60 h	5 A	30 V DC
	CIM23	DIN 17.5 mm	X	Time range adjusttable 0.6 s - 60 h	5 A	30 V DC
	CIM14	DIN 17.5 mm	∦ ∕中	Time range adjusttable 0.6 s - 60 h	16 A	250 V AC



±It]-

Impulse shaping (Extending short pulses)

Pulse shaper of the series CPF extend or shorten input pulses for accurate further processing by PLC's.

PLC's or other control circuits are often not able to process fast and short pulses. The pulses are conditioned with CPF pulse formers for further processing by PLC's. Fast revolution speeds and distance measurements as well as "Namur" sensor signals are conditioned with the CPF type relays for further processing.

Suitable relays for this application

Series	Туре	Base	Contacts	Trigger and Outputs times	Max. conta	ct rating
DIN	CPF11	DIN 17.5 mm	F	Input 1 - 5 ms; Output 5 - 60 ms	2 A	32 V DC
	CIM1x	DIN 17.5 mm	╠╝	Input min. 20 ms; Output 50 ms - 60 h	16 A	250 V AC
	CIM2x	DIN 17.5 mm	╠╡	Input min. 20 ms; Output 50 ms - 60 h	16 A	250 V AC
	CIM3x	DIN 17.5 mm	'/ '中	Input min. 20 ms; Output 50 ms - 60 h	16 A	250 V AC
	СМЗ	DIN 17.5 mm	╠╬	Input min. 35 ms; Output 50 ms - 60 h	5 A	250 V AC
	CRV4	DIN 13 mm	╠╡	Input min. 35 ms; Output 50 ms - 60 h	6 A	250 V AC
	CSV4	DIN 13 mm	F	Input min. 20 ms; Output 8 ms - 10 h	1.5 A	24 V DC
CS	CS2	0	'/ -中	Input min. 50 ms; Output 50 ms - 60 h	8 A	250 V AC
	CS3	0	╠┦-ф	Input min. 50 ms; Output 50 ms - 60 h	6 A	250 V AC



Energy saving with the same switching capacity

Relays with sensitive coils have considerably less power consumption than standard relays. This allows up to 90% energy saving with practically identical switching capcity

Relays with sensitive coils have improved and more effective magnetic circuits than coils of standard relays. The result is a considerably reduced coil current compared to a standard relay but with an almost identical switching capacity per contact. This means lower power consumption and therefore more economical operating and less heat. Under some circumstances, the user can provide a smaller power supply and save costs.

Series	Туре	Base	Contacts	Sensitive coil	AC-1 contact rating	
MRC	C3-S1x		┢┝	Nominal power 250 mW	6 A	250 V AC
	C3-E2x	٢	┟┼┼	Nominal power 500 mW	6 A	250 V AC
	C3-N3x	٢	┟┼┼┼	Nominal power 800 mW	6 A	250 V AC
QRC	C9-E2x		┢┝	Nominal power 800 mW	5 A	250 V AC





Protection against aggressive environment

A 10 µ hard gold plating of the contacts is an effective way to protect the contacts against oxidation caused by aggressive gases.

Aggressive gases may develop in sewage plants, chemical plants, or in the steel production. Conducting failures may occur on relays with standard silver nickel contacts because of contact surface oxidation. 10 µ hard gold plated contacts are especially suitable in such environments and improve the contact reliability.

Series	Туре	Base	Contacts	Extras	AC-1 conta	ct rating
MRC	C2-A28	:8:	┟┼┼	Contacts 10 µ gold plated	10 A	250 V AC
	C2-T22	:8:	'# '#'-¢	Twin contacts, 10 μ gold plated	6 A	250 V AC
	C3-A38		┟┼┼┼┶	Contacts 10 µ gold plated	10 A	250 V AC
	C3-T32	<u></u>	╵#╵# ╵# [_] ₽	Twin contacts, 10 µ gold plated	6 A	250 V AC
	C3-S18	<u></u>	'/ 中	Contacts 10 µ gold plated	6 A	250 V AC
	C4-A48	<u></u>	╠╬╬	Contacts 10 µ gold plated	10 A	250 V AC
QRC	C7-A28	H	┢	Contacts 10 µ gold plated	10 A	250 V AC
	C7-T22	Ħ	'#' #-¢	Twin contacts, 10 µ gold plated	6 A	250 V AC
	C9-A48		╠╬╬	Contacts 10 µ gold plated	5 A	250 V AC
IRC	C10-A18		╠╡	Contacts 3 µ gold plated	10 A	250 V AC
	C10-GT13		₩ ₽	Twin contacts, 3 µ gold plated	6 A	250 V AC
	C10-T13	Ē	'#'-¢	Twin contacts, 3 µ gold plated	6 A	250 V AC
	C12-A22	H	╠╬	Contacts 3 µ gold plated	5 A	250 V AC
	C12-G22	H	<u></u> //	Twin contacts, 3 µ gold plated	5 A	250 V AC





Relays according to Railway standard (increased shock and vibration resistance)

Relays as per Railway standard EN50155/EN60077/EN61373 are more suitable for applications with shock and vibration and have a higher degree of surge protection. Many of these railway relays also comply to additional fire protection standards, have lower inflammability and develop less toxic smoke and gases in case of fire.

Relays specially developed to comply with railway standards are designed for higher vibration, shock and surge values and allow higher tolerance in the voltage supply. Some of these relays additionally comply to special fire protection standards in regard to inflammability and the development of toxic smoke and gases in fire accidents.

Although specially designed for railway applications these relays are also suitable for other industrial applications where increased product safety is required.

Series	Туре	Base	Contacts	Railway standard	Max. cont	act rating
MRC	R3-N3x		┝┙┝┙┝	EN 60077-1-2/99, EN 61373/99	6 A	250 V AC
Long Life	C31	()	┝┙┾┙┝┙	EN 50155, Fire protection NF F16-101/102	10 A	250 V AC
	C32		╵#╵# ╵ # ╶ 	EN 50155, Fire protection NF F16-101/102	6 A	250 V AC
QRC	R7-A2x	Ħ	┟┥┝┥	EN 60077-1-2/99, EN 61373/99	10 A	250 V AC
	R7-T2x	Ħ	'#'-#'-⇔	EN 60077-1-2/99, EN 61373/99	6 A	250 V AC
СІМ	CIM1R	DIN 17.5 mm	'/ -中	EN 50155, Fire protection NF F16-101/102	16 A	250 V AC
	CIM12R	DIN 17.5 mm	4	EN 50155, Fire protection NF F16-101/102	2 A	250 V AC
	CIM13R	DIN 17.5 mm	Σ	EN 50155, Fire protection NF F16-101/102	5 A	30 V DC
	CIM2R	DIN 17.5 mm	'/ -中	EN 50155, Fire protection NF F16-101/102	16 A	250 V AC
	CIM22R	DIN 17.5 mm	4	EN 50155, Fire protection NF F16-101/102	2 A	250 V AC
	CIM23R	DIN 17.5 mm	X	EN 50155, Fire protection NF F16-101/102	5 A	30 V DC
	CIM3R	DIN 17.5 mm	┟╡╌	EN 50155, Fire protection NF F16-101/102	16 A	250 V AC
	CIM32R	DIN 17.5 mm	4	EN 50155, Fire protection NF F16-101/102	2 A	250 V AC
	CIM33R	DIN 17.5 mm	X	EN 50155, Fire protection NF F16-101/102	5 A	30 V DC
RIC	RIC20	DIN 17.5 mm	<u> </u>	EN 50155	20 A	400 V AC
	RIC25	DIN 35 mm	<i>\\</i> \$\$	EN 50155	25 A	400 V AC
	RIC-AUX	DIN 8 mm	┢╫┿╺┝╫┿	EN 50155	6 A	400 V AC



1.0 Relays





Notes

							 	 				 	 	 	 			 	 _	
-	-	 		 				 									-		 -	
	-						 													
	-	 		 				 											 	
							_	 			_	 	 	 	 			 	-	
		 	 	 		 	 	 	 			 	 	 	 	 		 	 _	
							_				_									
			 					 				 	 	 				 	 -	
	-							 											 -	
	-							 											 	
	-	 		 				 						 					 \rightarrow	
	-			 			 	 											 	
1		 			 	 				 						 			 	

Industrial relays MRC, QRC, IRC

С

n(n)

General information

Product range

Releco offers a wide range of relay types and versions and associated sockets and accessories

Standard (general-purpose) relay, **MRC** series

35 x 35 mm round plug-in relay, 8- or 11-terminals multipole connector according to IEC 67 with 2 or 3 contacts up to 10 A and different contact types and contact materials.

Standard relay 35 x 35 mm with flat blade connectors with up to 4 contacts and up to 16 A with 3 contacts.

Miniature industrial relay, QRC series

22.5 mm series with up to 4 contacts and up to 10 A with 1 or 2 contacts.

Interface relay, IRC series

Overall width 13 mm with up to 2 electromechanical contacts, or fully electronic switches.

Special relays, remanence relays

While "normal" relays are monostable, i.e. they return to the idle state when the excitation is switched off, remanence relays are bistable, i.e. the current switching state is retained irrespective of the excitation. Relays of this type are available in different versions.

Electronic relay, CSS

In the IRC series different electronic DC or AC relays up to 6 A are available. For AC relays a distinction is made between synchronously (zero crossing) and asynchronously switching versions. For switching transformer loads we recommended using asynchronously switching semiconductor switches. For incandescent lamp loads etc. synchronously switching switches are ideal for avoiding high switch-on currents.

Accessories

Suitable sockets are available for the different relay series for DIN rail mounting or panel mounting. In addition, retaining clips are available for the relays, some of which are included in the scope of supply. Suitable bridges for cost-saving wiring in series are also available.

* Special requirements

- H = Orange button. No lockable function
- N = Black button. No function
- P = Printing board pins
- E = Lap transparent cover
- Z = Close transparent cover
- T = Close transparent cover (lamp)
- M = Close transparent cover (lamp + button)

If other requeriments, please consult.



RF-nnnn

Basic identification principle (type designation code electromechanical relays)

- T X y z(*)z /....V

T		Ref. nnnn Relays with a reference number are versions with special (e.g. customised) features. These features may relate to special test criteria, tolerances or other properties. Availability of such relays may be limited to certain customers or applications.
		Nominal coil voltage specification AC V AC 50/60 Hz, voltage 6 - 250 (400) V AC V 60 Hz AC 60 Hz, 120, 240 V DC V DC, voltage 5 - 220 V UC V AC/DC
		 X = Electric position indicating device with LED Describes the options D = Integrated freewheeling diode F = Integrated freewheeling diode and series diode e.g. for common alarm circuits R = RC connection for the coil B = Bridge rectifier Definition of contact material This code may differ depending on type. Examples: 0 in the standard range stands for AgNi 1–9 see contact material for each type Number of contacts Relay type A = Standard (general-purpose) contact E = Sensitive drive with 500 mW coil power G = Refers to a NO contact H = Single-point contact + twin contact load to signal current circuit for switching state feed back. Mixed contact configuration M = Relay with highly effective neodimium blow magnet for fast quenching of the arc. This relay is particularly suitable for high DC loads. N = Sensitive drive with 250 mW exciter input T = Twin contact for signal and control circuit
		 X = Relay high power, double make contact. Basic type refers to the product line Numbers between 2 and 12 and 20, 30 are used. Normal industrial relay code
		AC VAC 50/60 Hz, voltage 6 - 250 (400) VAC V 60 HzAC 60 Hz, 120, 240 VDC VDC, voltage 5 - 220 VUC VAC/DCX = Electric position indicating device with LEDDescribes the optionsD = Integrated freewheeling diodeF = Integrated freewheeling diode and series diode e.g. for common alarm circuitsR = RC connection for the coilB = Bridge rectifierDefinition of contact materialThis code may differ depending on type.Examples:0 in the standard range stands for AgNi 1-9 see contact material for each typeNumber of contactsRelay typeA = Standard (general-purpose) contactE = Sensitive drive with 500 mW coil powerG = Refers to a NO contactH = Single-point contact + twin contact load to signal current circuit for switching state feed back. Mixed contact configurationM = Relay with highly effective neodimium blow magnet for fast quenching of the arc. This relay is particularly suitable for high DC loads.N = Sensitive drive with 250 mW exciter inputT = Twin contact for signal and control circuitW = With tungsten contact for maximum switch-on currentsX = Relay high power, double make contact.Basic type refers to the product line Numbers between 2 and 12 and 20, 30 are used.

Coil accessories

General information

MRC – QRC

Protection against transients

When the coil is disconnected from an electromagnet, peaks of inverse voltage appear at the terminals which can reach very high values. These pulses can be transmitted down the line associated with the coil and could possibly affect other components.

In the case of a realy being operated by such devices as transistors, triacs, etc; it may be necessary to protect against transients.

Transients carried in the line

High voltage surges can be carried in the supply line to the relay coil. These may appear in the form of peaks or bursts and are generated by the connection and disconnection of electric motors, transformers, capacitors etc. Normally a relay is unaffected by these pulses, but if a diode is connected in association with the coil, it must be capable of withstanding an inverse voltage higher than those of the incoming peaks.

Protection circuits

A protection circuit must efficiently cope with pulses generated by the coil as well as incoming line surges (surges $U_{1,2/50\mu s}$) Releco relays are available with integrated protection circuits or with modules plugged into sockets S3-MP or S3-MS. X LED indication with rectifier. For DC and AC relays up to 250 V Surges of 1000 V up to 24 V Surges of 2000 V from 25 to 60 V Surges of 4000 V from 61 to 250 V Note: LED connected, in series with the coil @ 220 VDC in QRC types.

D Free-wheeling diode.

DX Free-wheeling diode + LED Dampens transients caused by the relay coil on de-energisation. Surges of 2000 V up to 60 VDC Surges of 4000 V from 61 to 250 VDC (*)

FPolarity + free wheeling diode.FXPolarity + free wheeling diode + LEDA diode in series with the coil protects the relay
from reverse connection.Surges of 1000 V up to 60 VDCSurges of 4000 V from 61 to 250 VDC (*)

BBridge rectifier incorporatedBXBridge rectifier + LED indicationAllows the relay to operate in both AC or DCwithout any polarity inconvience. Available onlyin voltages up to 60 V.Surges of 1000 V

R Resistor and capacitor. Suppressor for AC coils. Surges of 2000 V. Available only in **MRC** types.

(*) Surges of 2000 V in **QRC** types.



IRC

LED and protection circuit connected to coil.

- X LED with no polarity, (standard) Coils ≤ 12 V CC y CA LED rectifier bridge in parallel
- FX LED with polarity A1+ (option) Every DC coil voltage Polarity and Free-wheeling diodes
- BX
 LED with no polarity, (option)

 Only 24 V and 48 V ADC coils

 Rectifier bridge for AC/DC relays

 R
 LED not available (option)
- RC protection against pulses on AC

Protection against pulses

When a relay coil is disconnected, reverse voltage peaks may arise and reach very high values. Said peaks can transmit to the coil associated line and other relays or semiconductors can be affected.

If triac, transistor, etc. controls a relay, appropiate steps must be taken to avoid or decrease peaks down to a non risky level.

Both Polarity and Free-wheeling diodes (**FX**), must protect coils, to avoid malfunctions provided DC relays in battery are installed.

Making or breaking engines, transformers or contactors in an industrial environmental, may generate high voltage pulses, either isolated or burst, through the main line.

The voltage level of those pulse may be high enough to affect the isolation of the coil.





Increase release time approx. 4 times



Increases release time approx. 4 times



Increases release time approx. 3 times

R





Industrial relays MRC, QRC, IRC

General information

COMA RELECC

Contacts

There are different contact types. The main distinction is between single contacts and twin contacts. While single contacts are more suitable for higher loads, twin contacts are significantly more reliable at small loads, i.e. < 24 V, < 100 mA.

Contact Material

There is no all-purpose contact! AgNi is used as standard material for a wide range of applications. AgNi contacts with hard gold plating (up to 10 μ m) are offered for applications in aggressive atmosphere. Relays with gold contacts are approved for relatively high currents (e.g. 6 A, 250 V), but in practice values of 200 mA, 30 V should not be exceeded for operation with intact gold plating.

Relays with a tungsten pre-contact are available for very high switch-on currents (up to 500 A, 2.5 ms). For some applications AgNi contacts with gold flashing (0.2 µm) are available. The purpose is corrosion protection during storage. There is no other purpose. Tin oxide is specially appropriated for load with high-inrush current.

Minimum load

The minimum load value is a recommended value under normal conditions such as regular switching, no special ambient conditions, etc. Under these conditions reliable switching behaviour can be expected.

Contact resistance

Initial values of resistance of contact can vary with the use, load and others conditions. Typical values when the relay is new is about 50 m Ω .

Contact spacing

Normally all contacts have an air gap between $0,5 \dots 1.5$ mm when they are open. They are referred to as μ contacts. According to the Low-Voltage Directive and the associated standards these contacts are not suitable for safe disconnection.

For switching of DC loads large contact clearances are beneficial for quenching the arc. See special relays: series connections with a gap of 3 mm.

Switching capacity

The contact switching capacity is the product of switching voltage and switching current. For AC the permitted switching capacity is generally high enough to handle the max. continuous AC1 current over the whole voltage range. For DC the load limit curve must never be exceeded, because this would lead to a remaining switch-off arc and immediate destruction of the relay. The order of magnitude of the DC switching capacity is a few 100 W (DC 1).

Drive (coil)

The drive of a relay refers to the coil plus connections.

The coil has special characteristics, depending on the rated voltage and the type of current.

Coil design

The coil consists of a plastic former (resistant up to about 130 $^{\circ}$ C) and doubly insulated highpurity copper wire, temperature class F. The winding must withstand threshold voltages (EN 61000-4-5) of more than 2000 V. This is ensured through forced separation of the start and end of the winding.

Coil resistance and other properties

Each coil has an ohmic coil resistance that can be verified with an ohmmeter. The specified coil resistance applies to a temperature of 20 °C. The tolerance is \pm 10 %.

For AC operation the coil current will not match the ohmic value, because self-inductance plays a dominant role. At 230 V this may reach more than 90 H. When a relay is switched off, self-inductance results in a selfinduced voltage that may affect the switching source (destruction of transistors, EMC problems).

Drive voltages

A distinction is made between the standardised voltages according to EN 60947 as guaranteed values, and typical values that can be expected with a high degree of probability.

Pick-up voltage, Release voltage

The pick-up voltage is the voltage at which the relay engages safely. For DC the typical trip voltage is approx. 65 % of Unom, for AC approx. 75 %. The release voltage, on the other hand, is approx. 25 % or 60 % respectively.

For DC these voltages are strongly temperature-dependent, according to the temperature coefficient of Cu. This is not the case for AC, where the inductive resistance is the controlling factor, which is practically constant over a wide temperature range.

With AC, in a certain undervoltage range the relay may hum, and the armature may flutter. This voltage range must be avoided.

Operating voltage range

Unless specified otherwise, the following characteristic curve applies for the operating voltage range. The upper limit of the coil voltage is determined by self-heating and the ambient temperature. Self-heating through contacts under high load must not be underestimated. It may be higher than the power dissipation in the drive. During intermittent operation significantly higher overvoltages temporary may occur for short periods. If in doubt please consult our specialists.



General design

RELECO relays are made from high-quality, carefully selected materials.

They comply with the latest environmental regulations such as RohS. Their meticulous design makes them particularly suitable for industrial applications and installation engineering.

They are particularly service-friendly through robust terminals, mechanical position indicating device a standard, manual operation, dynamic, permanent characteristics.

Colour coding for manual operation as a function of the coil voltage is another useful feature. Further options such as different coil connections, freewheeling diode, LED display, bridge rectifier for AC/DC drives etc., and short-term availability of special versions for practically any drive voltage up to DC 220 V / AC 400 V leave nothing to be desired. Apart from a few special versions, the standard RELECO industrial relays feature manual operation (push/pull) and a mechanical position indicating device.

For safety reasons, manual operation may be replaced with a black button, if required.

Coil connections

Different coil connections can be integrated in the relay as an option.

For DC a cost-effective freewheeling diode is available. Please note that the stated release times are generally specified without the coil connection.

While an additional LED status indicator has practically no effect, a freewheeling diode (D) will lead to an increase in release time by a factor 2 to 5, or 10 ms to 30 ms. For AC VDRs or RC elements may be used. In this case resonance effects may have to be considered. VDRs and common RC elements may increase release times by less than 5 ms.

Industrial relays MRC, QRC, IRC

General information

Standards, conformities

While CE marking of relays/sockets is controversial, since relays are sometimes regarded as components to which the marking requirement does not apply, all RELECO relays feature the CE mark to indicate that CE standards may also be applied to the relays, e.g. 2 kV surge resistance according to EN 61000-4-5.

A significant and not generally available characteristic is that the coils and in particular the connections are able to withstand the voltage spikes that may occur in practice. In addition, the relays feature various technical approvals depending on the respective relay code, and they comply with further standards and guidelines. The main technical approvals include cURus, CSA, and CCC.

The associated information is provided in the respective data sheets.

Switching classes

EN 60947 defines different switching classes that specify the suitability of contacts for different load types.

Examples:

AC1 = Ohmic AC load AC5b = AC incandescent lamp loads AC15 = Power contactors, solenoid valves, solenoids DC1 = Ohmic DC load DC6 = DC incandescent lamps DC13 = DC contactors, solenoids

UL508 contains different technical approval criteria such as general purpose, control application etc. Switching classes are defined based on the electrical switching capacity, e.g. B600 etc.

Main technical approvals and standards

Country	Technical approval
China	Authority: CQC Specification GB14048.5-2001
Canada	Authority: CSA Specification C 22,2; UL 508
Russia	Authority: KORPORATSIA STANDART Specification GOST R 50030.5.1
USA	Authority: UL Specification C 22,2; UL 508
United Kingdom	Authority: GB Lloyd's Register of Shipping

Utilisation categories according to EN 60947-4-1/-5-1

Pollution category

Cat. 1

Dry, non-conductive contamination without further effect

Cat. 2

Occasional conductive contamination, short duration due to moisture condensation

Cat. 3

Dry, non-conductive and conductive contamination with moisture condensation

Cat. 4

Contamination with persistent conductivity through conductive dust, rain

Protection class IP according to DIN 40050 and other standards. Industrial relays and their sockets can be classified as follows: Socket IP20: Contact safety Relay IP40/IP50: not watertight, but protected against ingress of coarse contaminants.

WORLD OF RELAYS

Further information and tips

The main operational criteria for relays such as number of cycles, switching frequency, ambient conditions, reliability requirements, load type, switch-on current, load switch-off energy must be clarified in order to ensure reliable operation and long service life.

Example

If the number of cycles is expected to exceed several 100,000 operations per year (e.g. clock generators, fast running machines), an electronic solution is no doubt more appropriate, although we also offer solutions for this type of application. In AC applications crosstalk caused by long control leads is often problem and can result in constant humming of the relay or even inadvertent triggering due to interference. Here, too, we offer solutions.

Various, apparently harmless loads may lead to very high switch-on currents or switch-off energy values, resulting in an unacceptable reduction in service life.

Particularly tricky are DC loads, particularly if they are inductive.

Circuits with relays and their connections often require a level of developer skill that is frequently no longer offered during standard

education and training.

Your supplier will be very happy to provide expert advice

Characteristics of various loads:

Heating circuits

No higher switch-on currents, no higher switch-off loads.

Incandescent lamps, halogen lamps

Switch-on currents during a few ms in the range 10 ... 18 x rated. Switch-off at rated load.

Low-energy lamps

Very high, but very short switch-on currents due to built-in decoupling capacitors.

Contacts have a tendency to fuse.

Transformers, AC contactors

Switching on during zero-transition may lead to switch-on currents of 8 \dots 15 x rated. High inductive switch-off energy is possible. The load must be connected, not least due to EMC problems.



Full Features System



- ВΧ Bridge rectifier, LED
- Polarity protection, freewheeling diode, LED FX

Five colours for an easier identification of coil voltage



If you don't want to have the lockable function, you can use the orange "orange - push button". SO - OP for MRC - C and S9 - OP for QRC (5 pieces bag)



Orange - push button

A black blanking plug is available if vou don't want a test button. S= - NP for MR - C and S9 - NP for QRC (5 pieces bag)



Comprehensive technical label



Part number Coil details Aditional circuit diagram for coil Electric diagram showing all additions to the coil Wiring diagram with sequential and DIN numbers Maximum switching capacity according to EN 60947 (IEC 947) Approvals

Country	Approval			Country	Approval		
Canada	ctus	Authority: Specification:	CSA C 22,2: UL 508	United Kingdom	Llowis Register	Authority:	Loyd's Register of Shipping
China	(C)	Authority: Specification:	CQC GB14048.5-2001	USA	, 71 us	Authority: Specification:	UL C 22,2; UL 508
Russia	G -	Authority: Specification:	KORPORATSIA STANDART GOST R 50030.5.1				



Notes

				 					 				 				-	_						
							 		 				 				_							
								_											_					
				 			 		 		 	 	 				_							
				 			 		 				 				-	_					_	
																	_	_						
															Τ	Τ	T					T	T	
		-																		-				
		 		 			 		 	 	 	 	 				_							
-																	-	_					_	
							 						 				_							
				 			 						 		_		_							
				 				_	 										_					
-									 					\vdash			-	-					-	
									 					\vdash				_						
						T						Ī											T	
-	-								 					\vdash	-		-							
									 					\vdash				_						
															T		T					T		
-																								
																		_						



1.1 Interface Relays – IRC & CRINT



Application	Types	Pins	Contacts	AC ratings	DC ratings	Socket
IRC – C10 Series						
Interface standard relay	C10-A1x		'⁄≓-¢-	10 A / 250 V	10 A / 30 V	S10
DC load switching	C10-G1x	1	· 中	10 A / 250 V	10 A / 30 V	S10
Low switching load	C10-T1xx	1	┢	6 A / 250 V	6 A / 30 V	S10
Low switching load	C10-GTxx	1	'n⇔	6 A / 250 V	6 A / 30 V	S10
IRC – C12 Series						
Interface relay	C12-A2x	Ħ	'₽'+7-₽	5 A / 250 V	5 A / 30 V	S12
Interface DC relay	C12-G2x	Ħ	、 	5 A / 250 V	5 A / 30 V	S12
CRINT Series						
High power contact AgSnO ₂	CRINT-C1x1		'₽'-中	6 A / 250 V	6 A / 30 V	
Low power contact AgSnO ₂ + 3μ Au	CRINT-C1x2		'≁-⇔	6 A / 250 V	6 A / 30 V	
DC solid state switch	CRINT-C1x5		Σ		2 A / 24 V	
AC solid state switch	CRINT-C1x8			1 A / 240 V		

C10-A1x

Maximum contact load

Recommended minimum contact load

Standard

Optional

Optional

Switch-on current max. (20 ms)

Switching voltage max. AC load (Fig 1)

Type

Contacts

Rated current

Coil resistance

Pick-up voltage

Release voltage

Nominal power

Coil table

Insulation

Contact open

Specifications

Insulation resistance at 500 V

Ambient temperature operation/storage

DC voltage endurance at rated load

Polarity and free wheeling diode

VAC/DC bridge rectifier 24 V, 48 V

"..." Enter the voltage for full type designation

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C10-A10/AC ... V

Switching frequency at rated load

Insulation, IEC 61810-1

Pick-up time/bounce time

Release time/bounce time

Mechanical life ops

Protection class

Standard types

RC suppresor

VDC 12, 24, 48, 110

Weight

LED

I FD

Contact/coil

Material

DC load

Coil

5-pin, Interface relays, 1-pole, plug-in, faston

Code 0

Code 8

Code 5

C10-A1x/ V

10 A/250 V AC-1

13 A/250 V AC-1 🔊

10 mA/10 V Code 0,5

30 A (120 A for code 5)

see table; tolerance $\pm 10 \%$

VDC

12

24

48

110

Ω

224

742

3.500

19.900 5,5

C10-A15/AC ... V

C10-A15X/AC V

C10-A15R/AC ... V

C10-A15/DC ... V

C10-A15X/DC ... V

C10-A15FX/DC ... V

C10-A15BX/UC ... V

mA

53

32

13,7

1,1 VA (AC)/0,7 W (DC)

Ω

290

1200

7.300

28.800

mA

45

23

9,5

4.7

-40 (no ice)....70 °C /-40 ... 80 °C

C10-A18/AC V

C10-A18X/AC...V

C10-A18R/AC...V

C10-A18/DC ... V

C10-A18X/DC....V

C10-A18FX/DC...V

10 A/30 V

5 mA/5 V

AgNi+ 3 µ Au

Ag Sn O2

AgNi

10 A

250 V

2,5 kVA

see fig. 2

 \leq 0,8 x U_N

 \geq 0,1 x U_N

VAC

24

48

115

230

1000 V

≥1 GΩ

4 kV/3

5 kV

Volt rms. 1 min

 $10 \text{ ms/} \le 1 \text{ ms}$

AC: 10 Mill./DC: 20 Mill.

≥100000 switching cycles

 $5 \text{ ms}/ \le 3 \text{ ms}$

< 1200/h

IP40

21 g

C10-A10X/AC V

C10-A10R/AC V

C10-A10/DC V

C10-A10X/DC V

C10-A10FX/DC ... V

Standard relay, 1 change-over contact Contact Ag Sn O2 to high inrush

DC-1

Code 8

0,5 A/110 V DC-1

0,2 A/220 V DC-1





Connection diagram

Fig. 1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



Accessories Socket:

S10, S10-M, S10-P

C10-A10BX/UC...V C10-A18BX/UC...V



26 | 15/16

C10-G1x

4-pin, Interface relays, 1-pole, normally open plug-in, faston

Туре	C10-G1X/ V Standard relay 1 open contact for high E Contact Ag Sn O2 to high		
Maximum contact load Recommended minimum contact load	10 A/250 V AC-1 10 A/30 V DC-1 10 mA/10 V Code 0,5	0,8 A/110 V DC-1 0,4 A/220 V DC-1	
	5 mA/5 V Code 8		
Contacts			4
Material Standard Code 0 Optional Code 8	AgNi AgNi +3 μ Au		Connection diagram
Optional Code 5	Ag SnO2		Gap: 1 4
Rated current	10 A		1 mm
Switch-on current max. (20 ms)	30 A (120 A for code 5)		<u>}</u> ☆
Switching voltage max.	250 V		
AC load (Fig 1)	2,5 kVA		2 5
DC load	see Fig. 2		Fig. 1. AQueltana and wanted
Coil			Fig. 1 AC voltage endurance
Coil resistance	see table; tolerance ± 10) %	
Pick-up voltage	≤ 0,8 x U _N		AC-1
Release voltage	≥ 0,1 x U _N		
Nominal power	1,1 VA (AC)/0,7 W (DC)		
Coil table	VAC Ω mA	VDC Ω mA	
	VAC Ω mA 24 290 45	VDC Ω mA 12 224 53	
	48 1200 23	24 742 32	switching
	115 7.300 9,5	48 3.500 13,7	
	230 28.800 4,7	110 19.900 5,5	0,1 VA 500 1000 1500 2000
Insulation	Volt rms, 1 min		
Contact open	2000 V		Fig. 2 DC load limit curve
Contact/coil	5 kV		
Insulation resistance at 500 V	≥1 GΩ		
Insulation, IEC 61810-1	4 kV/3		L/R 40 ms
	4 10/0		
Specifications			
Ambient temperature operation/storage	-40 (no ice)70 °C /-40	80 °C	i i i i i i i i i i i i i i i i i i i
Pick-up time/bounce time	10 ms/≤ 1 ms		Amps.
Release time/bounce time	8 ms		
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.		0,1
DC voltage endurance at rated load	≥100000 switching cycles	S	Volt 75 125 175 225
Switching frequency at rated load	≤ 1200/h		
Protection class	IP40		Dimensions [mm]
Weight	21 g		
Standard types			
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	C10-G10/AC V	C10-G15/AC V	
LED	C10-G10X/AC V	C10-G15X/AC V	<u>Ω</u>
RC suppresor	C10-G10R/ACV	C10-G15R/ACV	
VDC 12, 24, 48, 110	C10-G10/DC V	C10-G15/DC V	
LED	C10-G10X/DC V	C10-G15X/DC V	
Polarity and free wheeling diode	C10-G10FX/DC V	C10-G15FX/DC V	
AC/DC bridge rectifier 24 V, 48 V	C10-G10BX/DC V	C10-G15BX/UC V	
"" Enter the voltage for full type designation			AI 🐨 💽 🤆 🕷
			kon-M-R

Accessories Socket:

S10, S10-M, S10-P





IEC 61810; EN 60947

C10-T1x

5-pin, Interface relays, 1-pole, twin contact, plug-in faston

Гуре	C10-T1x/ V		D
	Standard relay for low po	wer application	
Maximum contact load		0,5 A/110 V DC-1 0,2 A/220 V DC-1	The second
Recommended minimum contact load	5 mA/5 V Code 1 1 mA/5 V Code 3		
Contacts Material Standard Code 1 Optional Code 3 Rated current Switch-on current max. (20 ms) Switching voltage max AC load (Fig 1) DC load	AgNi + 0,2 μ Au AgNi + 3 μ Au 6 A 15 A 250 V 1,5 kVA see fig. 2		Connection diagram Gap: 3 1 4 0,5 mm 12 14 A1 12 14 A1 11 A2
Coil Coil resistance Pick-up voltage Release voltage Jominal power	see table; tolerance ± 10 $\leq 0.8 \times U_N$ $\geq 0.1 \times U_N$ 1,1 VA (AC)/0,7 W (DC)) %	2 5 Fig. 1 AC voltage endurance
Coil table	VACΩmA2429045481200231157.3009,523028.8004,7	VDCΩmA12224532474232483.50013,711019.9005,5	switching cycles x10 ⁶
nsulation Contact open Contact/coil nsulation resistance at 500 V nsulation, IEC 61810-1	Volt rms, 1 min 1000 V 5 kV ≥1 GΩ 4 kV/3		0,1 0,1
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class Weight	-40 (no ice)70 °C /-40 , 10 ms/≤ 1 ms 5 ms/≤ 3 ms AC: 10 Mill./DC: 20 Mill. ≥100000 switching cycle 1200/h IP40 21 g		10 10 10 10 10 10 10 10 10 10
Standard types /AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED RC suppresor	C10-T11/AC V C10-T11X/AC V C10-T11R/ACV	C10-T13/AC V C10-T13X/AC V C10-T13R/ACV	Dimensions [mm]
/DC12, 24, 48, 110 LED Polarity and free wheeling diode	C10-T11/DC V C10-T11X/DC V C10-T11FX/DC V	C10-T13/DC V C10-T13X/DC V C10-T13FX/DC V	
AC/DC bridge rectifier 24 V, 48 V	C10-T11BX/UC V	C10-T13BX/UC V	FASTON .187
" Enter the voltage for full type designation			Technical approvals, conformities
Accessories			() 🔁 🕥 ". (B (B (B.

IEC 61810; EN 60947







C10-GT1x

4-pin, Interface relays, 1-pole, twin open contact, plug-in faston





Connection diagram

 Gap:
 1
 4

 1 mm
 A1 A1

 A2 A2 A2

 2 5

Fig. 1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



4-pin, interface r	e
Туре	

Maximum contact load	6 A/250 V	AC-1	0,8 A/110 V DC-1
	6 A/30 V	DC-1	0,4 A/220 V DC-1
Recommended minimum contact load	5 mA/5 V	Code 3	

C10-GT1x/ ... V

1 open contact

Standard relay for low power application

Contacts			
Material	Standard	Code 3	AgNi +3µ Au
Rated curren	t		6 A
Switch-on cu	rrent max. (20 ms)		15 A
Switching vol	tage max		250 V
AC load (Fig	1)		1,5 kVA
DC load			see Fig. 2

Coil

Coil table

Coil resistance Pick-up voltage Release voltage Nominal power see table; tolerance \pm 10 % \leq 0,8 x U_N \geq 0,1 x U_N 1,1 VA (AC)/0,7 W (DC)

-40 (no ice)...70 °C /-40 ... 80 °C

Ω	mA	VDC	Ω	mA
290	45	12	224	53
1200	23	24	742	32
7.300	9,5	48	3.500	13,7
28.800	4,7	110	19.900	5,5
	290 1200 7.300		2904512120023247.3009,548	2904512224120023247427.3009,5483.500

Insulation	Volt rms, 1 min
Contact open	2000 V
Contact/coil	5 kV
Insulation resistance at 500 V	≥1 GΩ
Insulation, IEC 61810-1	4 kV/3

Specifications

Standard types

RC suppresor

VDC 12, 24, 48, 110

LED

LED

Ambient temperature operation/storage
Pick-up time/bounce time
Release time/bounce time
Mechanical life ops
DC voltage endurance at rated load
Switching frequency at rated load
Protection class
Weight

VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240)

C10-GT13/AC ... V C10-GT13X/AC ... V C10-GT13R/AC ... V

10 ms/≤ 1 ms 5 ms/≤ 3 ms

≤ 1200/h

IP40

21 g

AC: 10 Mill./DC: 20 Mill. ≥100000 switching cycles

C10-GT13/DC ... V C10-GT13X/DC ... V C10-GT13FX/DC ... V

C10-GT13BX/UC ... V

"..." Enter the voltage for full type designation

Polarity and free wheeling diode

AC/DC bridge rectifier 24 V, 48 V

Accessories

Socket:

S10, S10-M, S10-P



IEC 61810; EN 60947

C12-A2x

8-pin, Interface relays, 2-pole, plug-in faston



Socket:

S12, S12-P









C12-G2x

6-pin, Interface relays, 2-pole, plug-in faston





Relays 1.1 1

diagram



voltage endurance



ad limit curve



s [mm]



approvals, conformities

R 🐨 🐨 🕻 🖬 IEC 61810; EN 60947

Туре			C12-G2 Standar 2 open		S				
Maximum con Recommende	tact load d minimum contac	t load	5 A/250 5 A/30 10 mA/ 5 mA/5	V D /10 V C	C-1 C-1 ode 1 ode 2	0,8 A/1 0,4 A/2		DC-1 DC-1	
Contacts Material	Standard	Code 1	AgNi +	0,2 μ Αι	J				
	Optional	Code 2	AgNi +	3μAu					Connection
Rated current Switch-on curre Switching voltag AC load (Flg 1) DC load	ent max. (20 ms) ge max.		5 A 15 A 250 V 1,2 kVA see Fig.						Gap: 1 mm
Coil									
Coil resistance			see tab	le; tolera	ance ±	10 %			Fig. 1 AC
Pick-up voltage			≥ 0,8 x	U _N					
Release voltage)		≥ 0,1 x	U _N					10
Nominal power			1,1 VA ((AC)/0,7	W (DC))			ů l
Coil table			VAC	Ω	mA	VDC	Ω	mA	
			24 48 115 230	290 1200 7.300 28.800	45 23 9,5 4,7	12 24 48 110	224 742 3.500 19.900		switching cycles x10 ⁶
Insulation			Volt rms	s, 1 min					VA
Contact open			2000 V						
Contact/contac	t		3000 V						Fig. 2 DC lo
Contact/coil			5 kV						
Insulation resist			≥1 GΩ						10
Insulation, IEC 6	61810-1		4 kV/3						
Specifications	;								
	rature operation/stor	age		'	0 °C /-4	40 80 °	C		1
Pick-up time/bo			10 ms/s						<i>(i)</i>
Release time/bo			5 ms/≤						Amps.
Mechanical life	•		AC: 10						<
-	urance at rated load		≥10000		ning cyc	les			0,1
Protection class	ency at rated load		≤ 1200/ IP40	'n					Vol 50
Weight	>		1F40 21 g						Dimension
Standard type	s Hz: 24, 48, 115, (12	0) 230 (240)	C12-0	21/AC	V	C12-	G22/A		
LED		0,, 200, (240)		21/AC				AC V	*
RC suppresor				621R/A				AC V	35.4
VDC 12, 24, 48	, 110		C12-0	21/DC	V	C12-	G22/D	c v	
LED				21X/DC				DC V	
Polarity and free	ee wheeling diode		C12-0	21FX/D	V X	C12-	G22FX	/DC V	=
AC/DC bridge	rectifier 24 V, 48 V		C12-0	621BX/l	JC V	C12-	G22BX	(/UC V	FAS
-	·								Technical a
"" Enter the ve	oltage for full type de	signation							

Accessories

Socket:





CRINT RELAY CODIFICATION AND ACCESSORIES

CRINT INTERFACE RELAY CONSISTS OF TWO COMPONENTS.

RELAY

SOCKET

CODIFICATION FOR COMPLETE RELAY MODULE RELAY AND SOCKET 6,2 MM

1		2	3	4	5	6		7	8
CRINT	-	С	1	1	1	R	/	UC	24V

1. Product family

4. Connection type 1 = Screw terminal

2 = Cage clamp terminal

C = Combined version (Socket and Relay)

1 = One change-over contact

CRINT 2. Type

3. Contact

5. Output

- 1 2
- = AgSnO₂ = AgSnO₂ + 3μ Au = NO / Solid-state DC 5 8
 - NO / Solid-state AC =

6. Options

- = Standard version
- R = Railway version

7. Supply voltage

UC = AC/DCDC = Only for C1x5 and C1x8

8. Nominal voltage

12V, 24V, 48V, 60V, 110-125V, 220-240V

RELAY CODIFICATION

CRINT	-	R	11	DC	12V
1		2	3	4	5

4. Supply voltage

5. Nominal voltage

12V, 24V, 48V, 60V*

DC

1. Product family CRINT

2. Type

R = Relay

3. Contact

- $11 = AgSnO_2$
- $12 = AgSnO_2^2 + 3\mu Au$ 15 = NO / Solid-state DC
- 18 = NO / Solid-state AC

*60V Relay used for all sockets with a nominal voltage higher or equal 60V

Dimensions [mm]





CRINT 1x1 series

Interface module with mechanical CO output contact DIN Rail mounting according to DIN 43 880

Types: CRINT-C111, CRINT-C121 / ...V

For PLC's and process control. High power contact AgSnO₂. With screw terminals (CRINT-S11) or cage clamp terminals (CRINT-S12). Recommended max. load 250 V 6 A resistive.

Max. contact load		6 A, 250 V AC-1	6 A, 30 V DC-1
Contact			
Туре		1 CO	
Material		AgSnO ₂	
Switching current TH		6 A 250 V AC	
Recommended minimal load		100 mA / 12 V	
Switching power DC-1 30 V		180 W	
Switching power AC-1 230 V		1500 VA	
Switching power AC-15 230 V		300 VA	
Peak inrush current		15 A/2.5 ms	
Coil			
Operation voltage AC 50/60 Hz / DC		0.8 1.25 UN	
Nominal power DC/AC		408 / 900 mW	
Insulation			
Test voltage I / O		6 kVrms 1 minute	
Pollution degree		3	
Over voltage category		UI	
Open contact		1000 Vrms dielectric	strenath 1 min
Standard		EN61810-5	
General Specifications	0	-40 +70 °C / -40	185 °C
Ambient temperature: operation / storage	U		+00 0
Typical response time @ V _n		7 ms	
Typical release time @ V _n		15 ms 10 x 10 ⁶ / 3 x 10 ⁴	
Switching cycles: mech./elec.			
Cond. cross section screw terminal		2.5 mm ²	
Cond. cross section spring cage		0.75 2.5 mm ²	
Ingress protection		IP 20	
Mounting position		any Debromide DAG	
Housing material		Polyamide PA6	
Order information			_
Screw terminal: CRINT-C111/UC	CV	UC12V	
		UC24V	
		UC48V	
Cage clamp terminal: CRINT-C121/U	cv	UC60V	
		UC110-125V	
"" enter the voltage for full type designa	tion	UC220-240V	
Accessories			
Jumper link (5 pcs):	blue:	CRINT-BR20-BU/	/5
	red:	CRINT-BR20-RD/	/5
	black:	CRINT-BR20-BK	/5
Label plate (64 pcs):		CRINT-LAB/64	
Spacer (5 pcs):		CRINT-SEP/5	
Replacement relays:		DO10V	-
CRINT-R11/DCV		DC12V	
"" enter the voltage for full type designa	tion	DC24V	
		DC48V DC60V*	
*COV/ Delouwood for all as alwate with		DCOUV	
*60V Relay used for all sockets with a nominal voltage higher or equal 60V			
· - ·			





Connection diagram



Relay - NO / Solid-state DC - NO / Solid-state AC Relays 1.1

1

Relay - AgSnO2 - AgSnO2 + 3µ Au

Socket -Screw terminal -Cage clamp terminal

Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions p.72

Technical approvals, conformities

ROHS



EAC

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

CRINT 1x2 series

Interface module with mechanical CO output contact

DIN Rail mounting according to DIN 43 880

Types: CRINT-C112, CRINT-C122 / ...V

Specially for PLC, process controls with DC currents. Contact $AgSnO_2 + 3\mu Au$. For low power application. With screw terminals (CRINT-S11) or cage clamp terminals (CRINT-S12). No external freewheeling circuit required.

Material Switching current TH Recommended minimal load Switching power DC-1 30 V Switching power AC-1 230 V Switching power AC-15 230 V Peak inrush current Coil Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	1 CO AgSnO ₂ + 3μ Au 6 A 250 V AC 10 mA / 6 V 180 W 1500 VA 300 VA 15 A/2.5 ms 0.8 1.25 U _N 408 / 900 mW	
Switching current _{TH} Recommended minimal load Switching power DC-1 30 V Switching power AC-1 230 V Switching power AC-15 230 V Peak inrush current Coil Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree	AgSnO ₂ + 3µ Au 6 A 250 V AC 10 mA / 6 V 180 W 1500 VA 300 VA 15 A/2.5 ms 0.8 1.25 U _N 408 / 900 mW	
Switching current TH Recommended minimal load Switching power DC-1 30 V Switching power AC-1 230 V Switching power AC-15 230 V Peak inrush current Coil Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	6 A 250 V AC 10 mA / 6 V 180 W 1500 VA 300 VA 15 A/2.5 ms 0.8 1.25 UN 408 / 900 mW	
Recommended minimal load Switching power DC-1 30 V Switching power AC-1 230 V Switching power AC-15 230 V Peak inrush current Coil Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	10 mA / 6 V 180 W 1500 VA 300 VA 15 A/2.5 ms 0.8 1.25 UN 408 / 900 mW	
Recommended minimal load Switching power DC-1 30 V Switching power AC-1 230 V Switching power AC-15 230 V Peak inrush current Coil Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	180 W 1500 VA 300 VA 15 A/2.5 ms 0.8 1.25 U _N 408 / 900 mW	
Switching power AC-1 230 V Switching power AC-15 230 V Peak inrush current Coil Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	1500 VA 300 VA 15 A/2.5 ms 0.8 1.25 U _N 408 / 900 mW	
Switching power AC-15 230 V Peak inrush current Coil Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	300 VA 15 A/2.5 ms 0.8 1.25 U _N 408 / 900 mW	
Switching power AC-15 230 V Peak inrush current Coil Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	15 A/2.5 ms 0.8 1.25 U _N 408 / 900 mW	
Peak inrush current Coil Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	0.8 1.25 U _N 408 / 900 mW	
Operation voltage AC 50/60 Hz / DC Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	408 / 900 mW	
Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	408 / 900 mW	
Nominal power DC/AC Insulation Test voltage I / O Pollution degree Over voltage category	408 / 900 mW	
Test voltage I / O Pollution degree Over voltage category	6 kVrms 1 minute	
Pollution degree Over voltage category	6 kVrms 1 minute	
Pollution degree Over voltage category		
Over voltage category	3	
	1000 Vrms dielectric strength 1 n	nin
Standard	EN61810-5	
General Specifications		
Ambient temperature: operation / storage	-40 +70 °C / -40 +85 °C	
Typical response time $@V_n$	7 ms	
Typical release time @ V_n	15 ms	
Switching cycles: mech./elec.	$10 \times 10^6 / 3 \times 10^4$	
Cond. cross section screw terminal	$2.5 \mathrm{mm}^2$	
Cond. cross section spring cage	$0.75 \dots 2.5 \text{ mm}^2$	
Ingress protection	IP 20	
Mounting position	any	
Housing material	Polyamide PA6	
Order information		
Screw terminal: CRINT-C112/UCV	UC12V	
	UC24V	
	UC48V	
Cage clamp terminal: CRINT-C122/UCV	UC60V	
	UC110-125V	
" \ldots " enter the voltage for full type designation	UC220-240V	
Accessories		
Jumper link (5 pcs): blue: red: black	CRINT-BR20-BU/5 CRINT-BR20-RD/5 CRINT-BR20-BK/5	
Label plate (64 pcs): Spacer (5 pcs):	CRINT-LAB/64 CRINT-SEP/5	
Replacement relays:	DC12V	
CRINT-R12/DCV	DC24V	
" \ldots " enter the voltage for full type designation	DC48V DC60V*	
*60V Relay used for all sockets with a nominal voltage higher or equal 60V		





Connection diagram



Relay - NO / Solid-state DC - NO / Solid-state AC

Relay - AgSnO2 - AgSnO2 + 3μ Au

Socket -Screw terminal -Cage clamp terminal

Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Technical approvals, conformities

ROHS





US
CRINT 1x5 series

Solid state interface module with mechanical NO output contact

DIN Rail mounting according to DIN 43 880

Types: CRINT-C115, CRINT-C125 / ...V

For fast and high frequent switching. With screw terminals (CRINT-S11) or cage clamp terminals (CRINT-S12).

Max. contact load	2 A, 24 V DC-1							
Contact								
Туре	1 NO (Solid state DC)							
Material	MOSFET							
Switching current _{TH}	2 A 24 V DC							
Recommended minimal load	20 mA / 5 V							
Peak inrush current	48 A/10 ms							
Coil								
Operation voltage AC 50/60 Hz / DC	0.8 1.25 U _N							
Nominal power DC/AC	160 / — mW							
Insulation								
Test voltage I / O	2.5 kVrms 1 minute							
Pollution degree	3							
Over voltage category	III							
Open contact	1000 Vrms dielectric strength 1 min							
Standard	EN61810-5							
General Specifications								
Ambient temperature: operation / storage	-30 +70 °C / -40 +85 °C							
Typical response time @ V _n	1 ms							
Typical release time @ V_n	1 ms							
Cond. cross section screw terminal	2.5 mm ²							
Cond. cross section spring cage	$0.75 \dots 2.5 \text{ mm}^2$							
ngress protection	IP 20							
Mounting position	any							
Housing material	Polyamide PA6							
Order information								
Screw terminal: CRINT-C115/UCV	UC12V							
	UC24V							
	UC48V							
Caga alama tarminale CDINT C105/UC V								
Cage clamp terminal: CRINT-C125/UCV								
	UC110-125V							
, " enter the voltage for full type designation	UC220-240V							
Accessories								
Jumper link (5 pcs): blue:	CRINT-BR20-BU/5							
red:	CRINT-BR20-RD/5							
black:	CRINT-BR20-BK/5							
_abel plate (64 pcs):	CRINT-LAB/64							
Spacer (5 pcs):	CRINT-SEP/5							
Replacement relays:	D0101/							
CRINT-R15/DCV	DC12V							
," enter the voltage for full type designation	DC24V							
	DC48V DC60V*							
'60V Relay used for all sockets with a nominal voltage higher or equal 60V								





onnection diagram



Relay - NO / Solid-state DC - NO / Solid-state AC

Relays 1.1

1

Relay - AgSnO2 - AgSnO2 + 3µ Au

Socket -Screw terminal -Cage clamp terminal

utput derating curve



imensions p.72

Technical approvals, conformities







CRINT 1x8 series

Solid state interface module with mechanical NO output contact

DIN Rail mounting according to DIN 43 880

Types: CRINT-C118, CRINT-C128 / ...V

For PLC's and process control.

AC output interface zero synchronous switching NO for resistive or similar load. (No transformator rec.) With screw terminals (CRINT-S11) or cage clamp terminals (CRINT-S12).

Max. contact load		1 A, 240 V AC-1								
Contact										
Туре		1 NO (Solid state AC)								
Material		TRIAC								
Switching current TH		1 A 240 V AC								
Recommended minimal load		22 mA / 12 V								
Peak inrush current		80 A/10 ms								
Coil										
Operation voltage AC 50/60 Hz / [C	0.8 1.25 U _N								
Nominal power DC/AC		150 / — mW								
Insulation										
Test voltage I / O		2.5 kVrms 1 minute								
Pollution degree		3								
Over voltage category		III								
Open contact		1000 Vrms dielectric st	rength 1 min							
Standard		EN61810-5								
General Specifications										
Ambient temperature: operation	/ storage	-30 +70 °C / -40	+85 °C							
Typical response time @ V _n		1 ms								
Typical release time @ V _n		1 ms								
Cond. cross section screw termin	al	2.5 mm ²								
Cond. cross section spring cage		0.75 2.5 mm ²								
Ingress protection		IP 20								
Mounting position		any								
Housing material		Polyamide PA6								
Order information										
Screw terminal: CRINT-C	C118/UCV	UC12V								
		UC24V								
		UC48V								
Cage clamp terminal: CRINT-C	C128/UCV	UC60V								
		UC110-125V								
" \ldots " enter the voltage for full type	designation	UC220-240V								
Accessories										
Jumper link (5 pcs):	blue:	CRINT-BR20-BU/5								
	red:	CRINT-BR20-RD/5								
	black:	CRINT-BR20-BK/5								
Label plate (64 pcs):		CRINT-LAB/64								
Spacer (5 pcs):		CRINT-SEP/5								
Replacement relays:		DC12V								
CRINT-R18/DCV		DC24V								
" \ldots " enter the voltage for full type	designation	DC60V*								
*60V Relay used for all sockets w	ith									

*60V Relay used for all sockets with a nominal voltage higher or equal 60V





Connection diagram



Relay - NO / Solid-state DC - NO / Solid-state AC

Relay - AgSnO2 - AgSnO2 + 3µ Au

Socket -Screw terminal -Cage clamp terminal

Output derating curve



Dimensions p.72

Technical approvals, conformities



UL

US



No	otes	S			 	1	 	 		1	 	 		 	 	 	 	 				
																					_	
																		 				_
																						_
														 								_
																					\uparrow	
																					_	
																					-+	
								 	 			 	 	 				 				_
																					\square	
																					-	
																				_	\dashv	
																					+	
<u> </u>																					+	
																					+	
																					+	
																					\uparrow	
																					\uparrow	
																					-+	

1



Notes

				 		 	 	 	 				 						 -	
															 				-	
																			-	
																	-		-+	
																			\neg	
																			 -+	
-							 	 			 				 					
							_													
-						 	 	 	 				 						 -	
						 	 	 	 		 	 	 	 	 			 	 _	
								 							 				-	
																	-		-+	
																			 -+	
				 				 							 				-	
		-																	 -+	
L				 																



1.2 Miniature Industrial Relays – QRC



Application	Types	Pins	Contacts	AC ratings	DC ratings	Socket
C7 Series						
Miniature power relay	C7-A1x	Ħ	'⁄-₽-	16 A / 250 V	0.5 A / 110 V	S7
General purpose	C7-A2x	Ħ	╠╠	10 A / 250 V	0.5 A / 110 V	S7
Low switching load	C7-T2x	Ħ	'#'-# -⇔	6 A / 250 V	6 A / 30 V	S7
DC load switching	C7-G2x	Ħ	<u></u> //	10 A / 250 V	0.8 A / 110 V	S7
DC load switching double make	C7-X1x	Ē	>3mm <mark>'∠-'</mark> /-Ċ	10 A / 250 V	6 A / 110 V	S7
1 power and 1 signal contact	C7-H23	Ħ	┢╡┿	10 A / 250 V	6 A / 30 V	S7
Power relay for high inrush current	C7-W1x	Ħ	∦ ⇔	10 A / 250 V 500 A / 2.5 ms inrush		S7
Railway application	R7-A2x	Ħ	╠╬	10 A / 250 V	10 A / 30 V	S7
Railway application	R7-T2x	Ħ	'# ' # -⇔	6 A / 250 V	6 A / 30 V	S7
C9 Series						
Miniature relay	C9-A4x		┢╆╆┾	5 A / 250 V	5 A / 30 V	S9
Sensitive Coil 500mW 800mW	C9-E2x		╠╬	5 A / 250 V	5 mA / 30 V	S9
Latching relay	C9-R2x		┢┤	5 A / 120 V	5 A / 30 V	S9

QRC series

C7-A1x

Туре

5-pin, miniature relay, 1-pole, faston

C7-A1x/ ... V

	Standard relation of the standard relation of	-			
Maximum contact load	16 A/250 V 16 A/30 V	AC-1 DC-1	0,5 A/110 V 0,2 A/220 V		
Contacts Material Standard Code 0 Rated current	AgNi 16 A				and and
Switch-on current max. (20 ms)	40 A			Conn	ection diagram
Switching voltage max.	250 V				
AC load (Fig 1)	4 kVA				
DC load	see Fig. 2				
Relay compatible with socket S7-16					
Coil					5 8
Coil resistance	see table; to	lerance ±	10 %	F ¹	
Pick-up voltage	\leq 0,8 x U _N			Fig. 1	AC voltage endurance
Release voltage	$\geq 0,1 \times U_N$			10	
Nominal power	1,2 VA (AC)/	1,3 W (DC)		<i>₽</i>	AC-1
Coil table	VAC Ω	2 mA	VDC Ω	nA ő 🕂	Cos \$ 0,4
	24 17	4 50	12 111	08 ¹ × 80	
	48 68		24 432	55 🛛 🖞 🗖	
	115 4K	,	48 1K7	28 5	
	230 18	<6 5,2	110 9K2	12	
				A 08 55 28 12 22 28	
Insulation	Volt rms, 1 n	nin		0,1	
Contact open	1000 V			kVA	0,66 1,33 2 2,6 3,3 4
Contact/coil	2,5 kV				
Insulation resistance at 500 V	≥1 GΩ			Fig. 2	PDC load limit curve
Insulation, IEC 61810-1	2,5 kV/3			16 k	
Specifications				10	
Ambient temperature operation/storage	-40 (no ice)	60 °C /-4	0 80 °C		DC-1
Pick-up time/bounce time	16 ms/≤ 3 m	าร			L/R 40 ms
Release time/bounce time	8 ms/≤ 1 ms	8			
Mechanical life ops	AC: 10 Mill./	DC: 20 Mill			
DC voltage endurance at rated load	≥100000 sw	itching cyc	les	Amps.	
Switching frequency at rated load	≤ 1200/h			Am	
Protection class	IP40			0,1	
Weight	43 g			Volt	50 100 150 200
Standard types				Dime	ensions [mm]
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	C7-A10/A	C V			
LED	C7-A10X//	AC V			
VDC 12, 24, 48, 110	C7-A10/D	c v			
LED	C7-A10X/I				
Free wheeling diode	C7-A10DX	/DC V			
Polarity and free wheeling diode	C7-A10FX	/DC V			
AC/DC bridge rectifier 24 V, 48 V, 60 V	C7-A10BX	/UC V			
"" Enter the voltage for full type designation					<u>_+ 4.75</u>
Accessories				Tech	nical approvals, conformities
Socket:	S7-16			(((())))	₢₽ ር € 💒
					Lind S
				IEC 61	810; EN 60947
				120 01	,



QRC series

C7-A2x

Type

8-pin, miniature relay, 2-poles, faston



Relays 1.2



Connection diagram



Fig. 1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



Recommended	minimum	contact load
<u> </u>		

Maximum contact load

Contacts		
Material	Standard	Code
	Optional	Code
	Optional	Code
Rated current		
Switch-on currer	nt max. (20 ms)	
Switching voltag	e max.	
AC load (Fig 1)		
DC load		

Coil

Coil resistance Pick-up voltage Release voltage Nominal power

Coil table

VAC	Ω	mA	VDC	Ω	mA	
24	174	50	12	148	85	
48	686	25	24	594	43	
115	4K3	10,4	48	2K3	21	
230	18K6	5,2	110	11K4	10	
<u>.</u>						
Volt rm	s, 1 min					

C7-A2x/ ... V

Standard relay 2 change-over contact

10 A/250 V

10 A/30 V

5 mA/5 V

AgNi + 10 µ Au

AgNi + 0,2 μ Au

AgNi

10 A

30 A 250 V

2,5 kVA

see Fig. 2

 \leq 0,8 x U_N

 $\geq 0,1 \text{ x U}_N$

1000 V

2,5 kV

2,5 kV

≥1 GΩ

2,5 kV/3

0

8

9

AC-1

DC-1

Code 8

10 mA/10 V Code 0, 9

see table; tolerance $\pm 10 \%$

1,2 VA (AC)/1 W (DC)

0,5 A/110 V

0,2 A/220 V

DC-1

DC-1

Insulation Contact open Contact/contact Contact/coil Insulation resistance at 500 V Insulation, IEC 61810-1

Specifications

Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class Weight

-40 (no ice)....60 °C /-40 ... 80 °C 16 ms/≤ 3 ms 8 ms/≤ 1 ms AC: 10 Mill./DC: 20 Mill. ≥100000 switching cycles ≤ 1200/h IP40 43 g

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED	C7-A20/AC V C7-A20X/AC V	C7-A28/AC V C7-A28X/AC V	
VDC 12, 24, 48, 110	C7-A20/DC V	C7-A28/DC V	C7-A29/DC V
LED	C7-A20X/DC V	C7-A28X/DC V	C7-A29X/DC V
Free wheeling diode	C7-A20DX/DC V	C7-A28DX/DCV	C7-A29DX/DC .V
Polarity and free wheeling diode	C7-A20FX/DC V	C7-A28FX/DC V	C7-A29FX/DCV
AC/DC bridge rectifier 24 V, 48 V, 60 V	C7-A20BX/UC V	C7-A28BX/UC V	C7-A29BX/UC V

"..." Enter the voltage for full type designation

Accessories Socket:

S7-C, S7-I/O, S7-L, S7-P, S7-P0



C7-T2x

8-pin, miniature relay, 2-poles, twin contact, faston



S7-C, S7-I/O, S7-L, S7-P, S7-P0











Technical approvals, conformities

때 💽 (E 💥 IEC 61810; EN 60947

C7-G2x

6-pin, miniature power relay, 2-poles, faston

Туре	C7-G2x/ V Power relay, DC appl 2 open contacts, gap				100		
Maximum contact load	10 A/250 V AC-1 10 A/30 V DC-1	0,8 A/110 V 0,4 A/220 V					
Contacts Material Standard Code 0 Rated current Switch-on current max. (20 ms)	AgNi 10 A 30 A				B	1	
Switching voltage max	250 V			Conne	ction diag	gram	
AC load (Fig 1) DC load	2,5 kVA see fig. 2			Gap: 1,5 mm	١	3 4 7	
Coil Coil resistance Pick-up voltage Release voltage	see table; tolerance $\leq 0.8 \times U_N$ $\geq 0.1 \times U_N$	± 10 %					
Nominal power	1,5 VA (AC)/1,5 W (D	C)		Fig. 1	AC volta	ige endurance	
Coil table	VAC Ω mA 24 153 62 48 611 31 115 3K6 13 230 14K6 6,5	12 99 1 24 388 0 48 1K5 3	nA 21 61 32 14	switching cycles x106 0		AC-1 Cos \$ 0,4	
Insulation	Volt rms, 1 min			ching			
Contact open	2000 V			swit			
Contact/contact	2,5 kV			0,1			
Contact/coil	2,5 kV			kVA 0,	5 1	1,5 2	2,5
Insulation resistance at 500 V Insulation, IEC 61810-1	≥1 GΩ 2,5 kV/3			Fig. 2 [DC load li	mit curve	
Specifications							
Ambient temperature operation/storage	-40 (no ice)60 °C /	∕-40 80 °C				DC-1	
Pick-up time/bounce time	20 ms/≤ 3 ms					L/R 40 m	s
Release time/bounce time	10 ms/≤ 1 ms						
Mechanical life ops	AC: 10 Mill./DC: 20 N						
DC voltage endurance at rated load	≥100000 switching c	ycles		bs.			
Switching frequency at rated load	≤ 1200/h			Amp			
Protection class Weight	IP40 43 g			0,1			
							200
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	C7-G20/AC V			Dimen	sions [mr	m]	
LED	C7-G20X/AC V			F]
VDC 12, 24, 48, 110	C7-G20/DC V					3 4	
LED	C7-G20X/DC V				7.5		1
Free wheeling diode	C7-G20DX/DC \				91 CC		
Polarity and free wheeling diode	C7-G20FX/DC \	/]
AC/DC bridge rectifier 24 V, 48 V, 60 V	C7-G20BX/UC \	/		Ĺ		<u> </u>	I
"" Enter the voltage for full type designation					-+ - - ^{+./}	<u>~</u>	
Accessories				Techni	ical appro	ovals, conformities	5
Socket:	S7-C, S7-I/O, S7-L,	S7-P, S7-P0					
						yd's CE 🕁	



QRC series

C7-X1x

4-pin, miniature power relay, 1-pole, double make contact, faston

Туре	C7-X1x/ N Power relay, 1 pole, NO, c	DC applica				
Maximum contact load	10 A/250 V 10 A/30 V	AC-1 DC-1	6 A/1 1 A/2		DC-1 DC-1	
ContactsMaterialStandardCode 0Rated currentSwitch-on current max. (20 ms)Switching voltage max.AC loadDC load	AgNi 10 A 30 A 250 V 2,5 kVA see Fig. 2					Connection diagram Gap: 3 4 7 3 mm (1,5 + 1,5) \downarrow \downarrow \downarrow \uparrow
Coil Coil resistance Pick-up voltage Release voltage Nominal power	see table; tol $\leq 0.8 \times U_N$ $\geq 0.1 \times U_N$ 1.5 VA (AC)/-					Fig. 1 AC voltage endurance
Coil table	VAC Ω 24 15 48 61 115 3K 230 14k	3 62 1 31 6 13	24 48	Ω 111 432 1K7 9K2	mA 108 55 27 12	00 x sol 0,4 →
Insulation Contact open Contact/coil Insulation resistance at 500 V	Volt rms, 1 m 2,5 kV 2,5 kV ≥1 GΩ	hin				0,1 KVA 0,5 1 1,5 2 2
Insulation, IEC 61810-1	2,5 kV/3					Fig. 2 DC load limit curve
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class Weight	-40 (no ice) 20 ms/≤ 3 m 10 ms/≤ 1 m AC: 10 Mill./I ≥100000 swi ≤ 1200/h IP40 43 g	s s DC: 20 Mill				10 10 10 10 10 10 10 10 10 10
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	C7-X10/A0					Dimensions [mm]
LED VDC 12, 24, 48, 110 LED Free wheeling diode Polarity and free wheeling diode AC/DC bridge rectifier 24 V, 48 V, 60 V	C7-X10X/A C7-X10/D0 C7-X10X/E C7-X10DX C7-X10FX/ C7-X10FX/	C V DC V /DC V /DC V				
"" Enter the voltage for full type designation						
Accessories						Technical approvals, conformities

Socket:

44 | 15/16

S7-C, S7-I/O, S7-L, S7-P, S7-P0

CE Lloyd's CE IEC 61810; EN 60947







QRC series

C7-H23

Type

8-pin, miniature relay, 2-pole, faston

C7-H23/ ... V

Special relays 1 x CO power contact 1 x CO twin contact

10 A / 250 V AC-1

10 A / 30 V DC-1

AgNi 10 A 30 A 2,5 kV 2,5 VA see fig. 2

AgNi + 0,2 µ Au

see table; tolerance $\pm 10 \%$

1,2 VA (AC) /1 W (DC)

VAC $\Omega \pm 10\%$ mA

174

686

4K3

18K6

50

25

10.4

5.2

40 (no ice)....60 °C /-40 ... 80 °C AC: 10 Mill./DC: 20 Mill.

6 A

15 A

250 V

 \leq 0,8 x U_N

 \geq 0,1 x U_N

24

48

115

230

1000 V

2.5 kV

2,5 kV

IP40

43 g

C7-H23/AC V

C7-H23/DC V

C7-H23X/DC V

C7-H23DX/DC V

C7-H23FX/DC ... V

C7-H23BX/UC V

C7-H23X/AC V

2,5 kV/3

Volt rms, 1 min

10 mA/10 V (Power contacts) 5 mA/5V (twin contacts)

6 A / 250 V

6 A / 30 V

VDC $\Omega \pm 10\%$ mA

148

594

2K3

11K4

81

40

21

10

12

24

48

110

AC-1

DC-1





Relays 1.2

Connection diagram

13	24	7
12 14	22 24	A1(+)
' <u>+</u> '	-#_'	
è.	ų	لطب
11	21	A2
5	6	8

*Fig. 1 AC voltage endurance



*Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

Contacts

Power contact
Standard material
Rated current
Switch-on current max. (20 ms)
Switching voltage max.
AC load (Fig 1)
DC load
*Power contact only

Recommended minimum contact load

Maximum contact load

Twin contact

Coil

Coil resistance Pick-up voltage Release voltage Nominal power

Coil table

Insulation Contact open Contact/contact Contact/coil Insulation, IEC 61810-1:

Specifications

Ambient temperature operation/storage Mechanical life ops Protection class Weight

Standard types

VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED

VDC 12,24, 48, 110 LED Free wheeling diode Polarity and free wheeling diode

UC 24 V, 48 V, 60 V

"..." Enter the voltage for full type designation

Accessories Socket:

S7-C, S7-I/O, S7-L, S7-P, S7-P0

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

C7-W1x

4-pin, miniature relay, 1-pole, tungsten contact, faston

Туре:	C7-W1x/ V								
	Power relay for high inrush current								
	1 pole norma	ally open							
Maximum contact load:	10 A/250 V	AC-1	6 A/2	50 V AC-5a/k					
Recommended minimum contact load:	10 mA/10 V								
Contacts									
Material Standard Code 0	AgNi/W								
Rated current	10 A								
Switch-on current max. (2,5 ms)	500 A								
Switching voltage max.	250 V								
AC load (Fig 1)	2,5 kVA								
DC load	see fig. 2								
Coil									
Coil resistance	see table; tol	erance ±	10 %						
Pick-up voltage	≤ 0,8 x U _N								
Release voltage	≥ 0,1 x U _N								
Nominal power	1,5 VA (AC)/-	1,5 W (DC)							
Coil table	VAC Ω	mA	VDC	Ω mA					
	24 15	3 62	12	99 121					
	48 61	1 31	24	388 61					
	115 3K	6 13	48	1K5 32					
	230 14	(5 6,5	110	8K 14					
Insulation	Volt rms, 1 m	nin							
Contact open	1000 V								
Contact/coil	2,5 kV								
Insulation resistance at 500 V	≥1 GΩ								
Insulation, IEC 61810-1	2,5 kV								
Specifications									
Ambient temperature operation/storage	-40 (no ice)	60 °C /-4	0 80 °C	2					
Pick-up time/bounce time	20 ms/≤ 3 m	S							
Release time/bounce time	10 ms/≤ 1 m	S							
Mechanical life ops	AC: 10 Mill./I	DC: 20 Mill							
DC voltage endurance at rated load	≥100000 swi	itching cyc	les						
Switching frequency at rated load	≤ 1200/h								
Protection class	IP40								
Weight	43 g								
• • • •									
Standard types									
	C7-W10/A	C V							
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	C7-W10/A C7-W10X/								
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED		AC V							
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED VDC 12, 24, 48, 110	C7-W10X/	AC V C V							
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED VDC 12, 24, 48, 110 LED	C7-W10X/	AC V C V DC V							
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED VDC 12, 24, 48, 110 LED Free wheeling diode	C7-W10X/ C7-W10/D C7-W10X/	AC V C V DC V (/DC V							
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED VDC 12, 24, 48, 110 LED Free wheeling diode Polarity and free wheeling diode	C7-W10X/ C7-W10/D C7-W10X/ C7-W10X/	AC V C V DC V K/DC V //DC V							
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED VDC 12, 24, 48, 110 LED Free wheeling diode Polarity and free wheeling diode AC/DC bridge rectifier 24 V, 48 V, 60 V	C7-W10X/ C7-W10/D C7-W10X/ C7-W10D C7-W10FX	AC V C V DC V K/DC V //DC V							





Connection diagram



AC voltage endurance ig. 1



ig. 2 AC voltage endurance



Dimensions [mm]



21

Technical approvals, conformities

PG Lloyd's ()

CE

IEC 61810; EN 60947

Accessories

Socket: Optional accessories (blanking plug): S7-C, S7-I/O, S7-L, S7-P, S7-P0 S9-NP, S9-OP

R7-A2x

8-pin, miniature standard relay, 2-pole, plug-in Relay approval: EN 60077-1-2/99 - EN 61373/99 for Railway application

Туре	F	R7-A2x/DC V Railway application Sensitive, 2 change-over contacts	
Maximum contact load: Recommended minimum co	ontact load 1	10 A/250 V AC-1 10A/30V DC-1 10 mA/10 V Code 0, 4 5 mA/5 V Code 8	
Contacts Material Standard Optional Optional Rated current Switch-on current max. (20 ms Switching voltage max. AC load DC load	Code 4 A Code 8 A 1) 3 2 s	AgNi AgNi + 0,2μ Au AgNi + 10μ Au 10 A 30 A 250 V see fig. 1 see fig. 2	Connection diagram 1 3 2 4 7 12 14 22 24 11 21 A2 12 14 A2 12 14 A2 14 A3 14 A3
Coil Coil resistance Release voltage Pick-up voltage Nominal power	C ≥	see table; tolerance ± 10 % 0,7 U _N 1,25 U _N 2 0,1 x U _N 1,07 W	$- 5 6 8$ Fig. 1 AC voltage endurance 10 $AC-1$ $\cos \phi 0.4$
Coil table		Voltage Ω ± 10% mA 24 535 45 48 2004 24 72 4750 15 110 11337 10	switching cycles x10°
Insulation Pollution grade Pulse (1,2 /50µs) Dielectric stra	F	/olt rms, 1 min PD3	0.1 VA 250 1000 1500 2000 Fig. 2 DC load limit curve
Contact/coil Between different poles Between contact and the same	4	IKV / 2200V IKV / 2200V I 550 / 850V	10 DC-1 DC-1 L/R 40ms
Specifications Ambient temperature operation Number of mechanical operatio Thermic class Vibration : category / class Vibration Shock	ons > E 1 5	25 (no ice)70 °C /-40 80 °C >20millions 3 (130° C) I / B Body mounted 5-150Hz (3 axes) 5g (3 axes)	0.1 Volt 25 100 175 2
Operation (UN) / release time Weight Weight avg. Relay + Socket (S Protection class	1 3 7-M) 7	i0 ms/ 15 ms 35 g 75g P40	Dimensions [mm]
Standard types VDC 24, 48, 72, 110	R7-A20/DC V	R7-A24/DC V R7-A28/DC V	
LED	R7-A20X/DC V	R7-A24X/DC V R7-A28X/DC V	
Free wheeling diode LED + free wheeling diode	R7-A20D/DC V	R7-A24D/DC V R7-A28D/DC V R7-A24DX/DC V R7-A28DX/DC V	
"" Enter the voltage for full typ		N-A24DA/DGV	Technical approvals, conformities
			– ((í 🐨
Accessories			

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

R7-T2x

8-pin, miniature industrial relay, 2-pole, change-over contact, faston Relay approval: EN 60077-1-2/99 - EN 61373/99 for Railway application

Туре			R7-T2x/DC V Railway application Sensitive, 2 change-over contact								
Maximum con Recommende	ntact load ed minimum con	tact load	6 A/250 V 5 mA/5 V 1 mA/5 V	AC-1 Code 1 Code 2		/30 V DC-1					
Contacts											
Material	Standard	Code 1	AgNi + 0,2µ								
Datada	Optional	Code 2	AgNi + 10μ	Au							
Rated current	rant max (20 ma)		6 A 15 A								
Switching volta	rent max. (20 ms)		250 V								
AC load	ige max.		see fig. 1								
DC load			see fig. 2								
Coil											
Coil resistance			see table; to		10 %						
Operation rang	je		0,7 U _N 1,	25 U _N							
Contact open			≥ 0,1 x U _N								
Nominal power	r		1,07 W								
Coil table			Voltage	eΩ±	: 10% 535	mA 45					
			48		2004	43 24					
			72		4750	15					
			110		11337	10					
Insulation			Volt rms, 1 r	nin							
Pollution grade			PD3								
Contact/coil	us) Dielectric streng	gnt (Tiviinute/v		,							
Between differe	ent noles		4KV / 2200\ 4KV / 2200\								
	act and the same p	oole	1550 / 850V								
Specification	s										
Ambient tempe	erature operation/s	storage	-25 (no ice).		40 80 °C	2					
	chanical operation	S	≥ 20 millions	3							
Thermic class			B (130° C)								
Vibration : cate	egory / class		1/B Body								
Vibration			5-150Hz (3	3 axes)							
Shock	(rologoe time		5g (3 axes)	20							
Operation (UN) Weight	/ release time		10 ms/ 15 n 35 g	12							
0	elay + Socket (S7-	N/I)	35 g 75g								
Protection clas		IVI)	IP40								
Standard type	es										
VDC 24, 48, 7			R7-T21/D0	; v	R7-T22/	DC V					
LED			R7-T21X/D		R7-T22)	(/DC V					
Free wheeling	a diode		R7-T21D/D			D/DC V					
LED + free wi			R7-T21DX/DC V R7-T22DX/DC V								
"" Enter the v	voltage for full type	designation									
Accessories											





nnection diagram 1 3 2 4 7 12 14 | 22 24 11 21 A2 5 6 8

. 1 AC voltage endurance



2 DC load limit curve



nensions [mm]



Technical approvals, conformities

(())

IEC 60077; EN 60077-1-2/99; EN 61373/99

Socket:

S7-C, S7-I/O, S7-L, S7-P, S7-P0

C9-A4x

14-pin, miniature re

C9-A4x			RELE
14-pin, miniature relay, 4-pole, plu	ug-in, faston		WORLD OF RE
Туре	C9-A4x/ V Standard relays 4 change-over contacts	3	
Maximum contact load Recommended minimum contact load	5 A/250 V AC-1 10 mA/10 V Code 1 5 mA/5 V Code 2	5 A/30 V DC-1	
Contacts			Law and Mal
Material Standard Code 1 Optional Code 2	AgNi + 0,2 μ Au AgNi + 10 μ Au		- 6949-0-0
Rated current	5 A		Connection diagram
Switch-on current max. (20 ms) Switching voltage max (same polarity) AC load (Fig 1) DC load	15 A 250 V 1,250 kVA see Fig. 2		$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
Coil			11 21 31 41 A2 9 10 11 12 14
Coil resistance Pick-up voltage	see table; tolerance $\pm 1 \le 0.8 \times U_N$	10 %	Fig. 1 AC voltage endurance
Release voltage	\geq 0,1 x U _N		10
Nominal power	1,2 VA (AC)/1 W (DC)		
Coil table	VACΩmA241745048686251154K310,423018K65,2	VDC Ω mA 12 148 81 24 594 40 48 2K3 21 110 11K4 11	Nitching cycles x10 ⁶
Insulation Contact open Contact/contact Contact/coil Insulation resistance at 500 V Insulation, IEC 61810-1	Volt rms, 1 min 1000 V 2 kV 2,5 kV ≥1 GΩ 2,5 kV/3		5 0,1 VA 0 400 800 Fig. 2 DC load limit curve
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class Weight	-40 (no ice)60 °C /-4 10 ms/≤ 3 ms 6 ms/≤ 1 ms AC: 10 Mill./DC: 20 Mill ≥100000 switching cyc ≤ 1200/h IP40 43 g		0,1 Volts 25 Dimensions [mm]
Standard types VAC 50 Hz/60 Hz: 24, 48, 115, 230 (240) LED	C9-A41/AC V C9-A41X/AC V	C9-A42/AC V C9-A42X/AC V	
VDC 12, 24, 48, 110 LED Free wheeling diode Polarity and free wheeling diode	C9-A41/DC V C9-A41X/DC V C9-A41DX/DC V C9-A41FX/DC V	C9-A42/DC V C9-A42X/DC V C9-A42DX/DC V C9-A42FX/DC V	
AC/DC bridge rectifier 24 V, 48 V, 60 V	C9-A41BX/UC V	C9-A42BX/UC V	<u>2.6</u> FASTON .102

"..." Enter the voltage for full type designation

Accessories

Socket: Optional accessories (blanking plug): S9-M, S9-L, S9-P, S9-P0 S9-NP, S9-OP





15	26	37	48	13
12 14	22 24	32 34	42 44	A1(+)
4	4	4	4	
F	+	+	+	-12
Ŷ	Ŷ	Ŷ	Ŷ	
11	21	31	41	A2







Technical approvals, conformities



QRC series

C9-E2x

8-pin, miniature relay, 2-pole, plug-in, faston



50 | 15/16



C9-R2x

9-pin, miniature remanence relay, 2-pole, plug-in, faston

Туре	C9-R2x/ V Magnetic latching relay 2 change-over contacts									
Maximum contact load Recommended minimum contact load	5 A/120V AC-1 5 A/30 V DC- 10 mA/10 V									
Contacts										
Material Standard Code 1	AgNi + 0,2 μ Au									
Rated current	5 A									
Switch-on current max. (20 ms)	15 A									
Switching voltage max.	120V									
AC load	600 VA									
DC load	see Fig. 2									
Coil										
Coil resistance	see table; tolerance $\pm 10\%$									
ON pulse power	1,2 VA/W									
OFF pulse power	0,3 VA/W									
1 winding for AC, 2 winding for DC										
	Coil table									
Internal Diagram:	Coll table									
Internal Diagram: A1→→→→ A3 A1→→→	VAC mA ON mA OFF VDC mA ON mA OF									
-	VAC mA ON mA OFF VDC mA ON mA OF 24 50 8 12 100 25									
	VAC mA ON mA OFF VDC mA ON mA OF 24 50 8 12 100 25 48 25 4 24 50 12									
$A1 \rightarrow \qquad A3 \qquad A1 \rightarrow \qquad A3 \qquad A1 \rightarrow \qquad A3 \rightarrow \qquad A3 \rightarrow \qquad A3 \rightarrow \qquad A3 \rightarrow \qquad A2 \qquad $	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6									
	VAC mA ON mA OFF VDC mA ON mA OF 24 50 8 12 100 25 48 25 4 24 50 12									
$A1 \rightarrow f \rightarrow $	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6									
$A1 \rightarrow f \rightarrow $	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
$A_{1}^{A_{1}} \rightarrow A_{2}^{A_{2}} \qquad A_{2}^{A_{2}$	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
$A_1 \rightarrow \downarrow $	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
A1 A_1 A_2 D_C A3 A_2	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
A1 A_1 A_2 D_C A3 A_2	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
A1 A1 A2 DC A3 A2 A2 A2 A2 A2 A2 A2 A2 A2 A2	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
A1 A1 A2 DC A3 A2 A2 A2 A2 A2 A2 A2 A2 A2 A2	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
A1 A1 A2 DC A3 A2 A2 A2 A2 A2 A2 A2 A2 A2 A2	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
A1 A1 A2 DC A3 A2 A2 A2 A2 A2 A2 A2 A2 A2 A2	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
A1 A1 A2 DC A3 A2 A2 A2 A2 A2 A2 A2 A2 A2 A2	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									
A1 A1 A2 DC A3 A2 A2 A2 A2 A2 A2 A2 A2 A2 A2	VAC mA ON mA OFF VDC mA ON mA OFF 24 50 8 12 100 25 48 25 4 24 50 12 115 10 2 48 25 6 230 5 1 60 20 5									

Protection class Weight

Standard types AC 50 Hz/60 Hz: 24, 48, 115, (120), 230

DC 12, 24, 48, 60



43 g

C9-R21/DC ... V

"..." Enter the voltage for full type designation

Accessories

Socket: Optional accessories (blanking plug): S9-M, S9-L, S9-P, S9-P0 S9-NP, S9-OP

ORLD OF REL А S



nnection diagram



. 1 AC voltage endurance



. 2 DC load limit curve



Dimensions [mm]





Technical approvals, conformities





Notes

																 			-	
																			-	
-				 				 											+	-
										 									\rightarrow	
																			\neg	
	-					 		 											\rightarrow	
	-			 				 											+	
				 		 	 	 		 	 	 		 	 	 			-	
																			\neg	
	-																		\rightarrow	
																			\rightarrow	
																			\neg	
				<u> </u>				 											\rightarrow	
				 				 										-	\rightarrow	
										 									\square	
																			\neg	
	-			 <u> </u>				 											\rightarrow	
		-																	+	
																			+	



1.3 Industrial Relays – MRC





Application	Types	Pins	Contacts	AC ratings	DC ratings	Socket
C2 Series						
General purpose	C2-A2x	:8:	╠╝╌╋	10 A / 250 V	0.5 A / 110 V	S2
Low switching load	C2-T2x	:8:	'#' #'-⇔	6 A / 250 V	6 A / 30 V	S2
DC load switching	C2-G2x	:8:	1.7mm / 	10 A / 250 V	1.2 A / 110 V	S2
C3 Series						
General purpose	СЗ-АЗх	(jj):	┢╌┾┶┤	10 A / 250 V	0.5 A / 110 V	S3
Low switching load	C3-T3x		╆ ╋	6 A / 250 V	6 A / 30 V	S3
DC load switching	C3-G3x	(i):	1.7mm ╎┤┤┤ ф	10 A / 250 V	1.2 A / 110 V	S3
DC load switching with magnetic blow out	C3-M1x	(i):	>3mm 2 Ma.!	10 A / 250 V	10 A / 220 V	S3
DC load switching double make	C3-X1x	(jj):	>3mm 2-7-	10 A / 250V	7 A / 110 V	S3
Latching relay	C3-R2x	(jj):	/ → → Rem.	10 A /250 V	0.5 A / 110 V	S3
Sensitive Coil 250mW 300mW	C3-S1x	(jj):	┟╴	6 A / 250 V	6 A / 30 V	S3
Sensitive Coil 500mW 800mW	C3-E2x	(jj):	┢┦╆	6 A / 250	6 A / 30 V	S3
Sensitive Coil 500mW 800mW	C3-N3x	(jj):	╠┤┤┤╌	6 A / 250	6 A / 30 V	S3
Railway application	R3-N3x	\oplus	╠╞╪	6 A / 250	6 A / 30 V	S3
C4 Series						
General purpose	C4-A4x		┢╆┿	10 A / 250 V	0.5 A / 110 V	S4
DC load switching double make	C4-X2x	2×	ĸ≫3mm <mark>┟┼┼</mark> ┾┿	10 A / 250 V	7 A / 110 V	S4
Latching relay	C4-R3x		' ← ← ← Rem.	10 A / 250 V	0.5 A / 110 V	S4
C5 Series						
Power relay	C5-A2x		┢┦┾	16 A / 400 V	0.5 A / 110 V	S5
Power relay	C5-A3x		┢╌┾┾╡	16 A / 400 V	0.5 A / 110 V	S5
DC load switching	C5-G3x		1.7mm ϟϟϟ Φ	16 A / 400 V	1.2 A / 110 V	S5
DC load switching double make	C5-X1x		>3mm //-	16 A / 400 V	7 A / 110 V	S5
DC load switching with magnetic blow out	C5-M1x		>3mm 2 Ma. 7	16 A / 400 V	10 A / 220 V	S5
DC load switching with magnetic blow out	C5-M2x		>3mm / ^{Ma.}/ - □	16 A / 250 V	7 A / 110 V	S5
Latching relay	C5-R2x		/ → → Rem.	10 A / 400 V	10 A / 30 V	S5

MRC Serie

C2-A2x

8-pin standard relay, 2-pole, plug-in according to IEC 67-I-5a

Туре			C2-A2x/ V Standard relay, 2 change-over	contacts			TET .
Maximum co	ntact load ed minimum cor	ntaat laad		C-1 0,2 A/2			
Recommende	ea minimum cor	ntact load	10 mA/10 V C 5 mA/5 V C	ode 0, 9 ode 8			No.
Contacts Material	Standard	Code 0					1000 P
Malenai	Optional Optional	Code 0 Code 8 Code 9	AgNi AgNi + 10 μ Au AgNi + 0,2 μ Aι			Connection dia	-
Max. switching	•	Code a	10 A			4 3 12 14	5 6 2 22 24 A1(+)
	ish current (20 ms	s.)	30 A				
Max. switching	g voltage		250 V			ې 11	21 A2
Max. AC load	(Fig 1 1)		2,5 kVA			1	8 7
Max. DC load			See Fig 2				
Coils						Fig. 1 AC volt	age endurance
Coil resistance)		see table; tolera	ance ± 10 %		10	
Pull-in voltage			$\leq 0.8 \times U_N$				AC-1
Pull-in voltage Nominal powe	r		≥ 0,1 x U _N 2,2 VA (AC)/1,3			ů N	AC-1 cos φ 0,4
nominal powe	1		2,2 VA (AC)/1,3	0 VV (DC)		switching oycles x10°	
Table			VAC Ω 24 67	mA VDC 92 24	Ω mA 443 54		
			48 296	46 48	1K8 27	ch in	
			115 1K7	19 110	9K2 12	swit	
			230 7K1	9,5 220	36K1 6	0,1	1,5 2
Insulation			Volt rms, 1 min				,
Open contact			1000 V			Fig. 2 DC load	limit curve
Between adjac			2,5 kV			10	
Between conta	stance at 500 V		2,5 kV ≥1 GΩ				DC-1
Insulation, IEC			2,5 kV/3				L/R 40 ms
Specification	s						
•	erature operation/	/storage	-40 (no ice)6	60 °C /-40 80	°C		
Pick-up time +			16 ms/≤ 3 ms			Amps.	
Release time +			8 ms/≤ 1 ms				
Mechanical life	e ops durance at rated l	load	AC: 10 Mill./DC	: 20 Mill. switching cycles		0,1 +	100 150 200
-	uency at nominal		≤1200/ops/h	switch in ig cycles			100 100 200
Protection deg		10000	IP40			Dimensions [m	nm]
Weight			90 g				→
Standard type	es						
	Hz: 24, 48, 115 (120), 230 (240)	C2-A20/AC V	C2-A28/AC V	C2-A29AC V		
LED			C2-A20X/AC V	C2-A28X/AC V	C2-A29X/AC V		
RC Suppresor			C2-A20R/AC V	C2-A28R/AC V	C2-A29R/AC V		
VDC 24, 48, 110	0, 220		C2-A20/DC V	C2-A28/DC V	C2-A29/DC V		
LED			C2-A20X/DC V	C2-A28X/DC V	C2-A29X/DC V		<u> </u>
Free wheeling of Polarity and free	diode e wheeling diode		C2-A20DX/DC V C2-A20FX/DC V	C2-A28DX/DC V C2-A28FX/DC V			
-	-					Technical appr	rovals, conformities
AC/DC bridge r	rectifier 24 V, 48 V,	60 V	C2-A20BX/UC V	C2-A28BX/UC V	C2-A29BX/UC V	A	Lloyd's m
"" Enter the v	voltage for full type	e designation					
Accessories						IEC 61810; EN 60	0947 CE 派
<u> </u>					•		

Optional accessories (blanking plug):

S2-B, S2-S, S2-L, S2-P, S2-P0 SO-NP, SO-OP

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.







Relays 1.3

1

2,5

C2-T2x

8-pin standard relay, 2-pole, twin contact, plug-in according to IEC 67-I-5a

Туре	C2-T2x/ V Standard relay for low lev 2 Change-over contacts		
Maximum contact load Recommended minimum contact load	6 A/250 V AC-1 5 mA/5 V Code 1 1 mA/5 V Code 2	6 A/30 V DC-1	
Contacts Material Standard Code 1 Optional Code 2	AgNi + 0,2 μ Au AgNi + 10 μ Au		P. L.G.
Rated current Switch-on current max. (20 ms) Switching voltage max. AC load (Fig 1) DC load	6 A 15 A 250 V 1,2 kVA see Fig. 2		Connection diagram
Coil Coil resistance Pick-up voltage Release voltage Nominal power	see table; tolerance ± 1 $\leq 0.8 \times U_N$ $\geq 0.1 \times U_N$ 2,2 VA (AC)/1,3 W (DC)	0 %	1 8 7 Fig. 1 AC voltage endurance
Coil table	VACΩmA24679248296461151K7192307K19,5	VDCΩmA2444354481K8271109K21222036K16	switching cycles x106
Insulation Contact open Contact/contact Contact/coil Insulation resistance at 500 V Insulation, IEC 61810-1	Volt rms, 1 min 1000 V 2,5 kV 2,5 kV ≥1 GΩ 2,5 kV/3		Image: Wideling of the second seco
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class Weight	-40 (no ice)60 °C /-40 16 ms/≤ 3 ms 8 ms/≤ 1 ms AC: 10 Mill./DC: 20 Mill. ≥100000 switching cycle ≤ 1200/ops/h IP40 90 g		0,1 Volt 50 100 150 200
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED RC Suppresor	C2-T21/AC V C2-T21X/AC V C2-T21R/AC V	C2-T22/AC V C2-T22X/AC V C2-T22R/AC V	Dimensions [mm]
VDC 24, 48, 110, 220 LED Free wheeling diode Polarity and free wheeling diode	C2-T21/DC V C2-T21X/DC V C2-T21DX/DC V C2-T21FX/DC V	C2-T22/DC V C2-T22X/DC V C2-T22DX/DC V C2-T22FX/DC V	
AC/DC bridge rectifier 24 V, 48 V, 60 V "" Enter the voltage for full type designation	C2-T21BX/UC V	C2-T22BX/UC V	Technical approvals, conformities
Accessories Socket:	S2-B, S2-S, S2-L, S2-F	00.00	í 🕼 💽 🕻 🕻



Optional accessories (blanking plug):

S2-B, S2-S, S2-L, S2-P, S2-P0 SO-NP, SO-OP





C2-G2x

8-pin standard relay, 2-pole, plug-in according to IEC 67-I-5a

Туре	C2-G2x/ Standard rel 2 open cont	ays, DC ap	plication				
Maximum contact load	10 A/250 V 10 A/30 V	AC-1 DC-1	,	/110 V /220 V	DC-1 DC-1		
Contacts							and a
Material Standard Code 0	AgNi						P
Rated current	10 A						
Switch-on current max. (20 ms)	30 A					_	
Switching voltage max.	250 V					Conne	ection diag
AC load (Fig 1)	2,5 kVA					Con	
DC load	see Fig. 2					Gap: 1,7 mm	
Coil						-	
Coil resistance	see table; to	loranco +	10 %				
Pick-up voltage	≤ 0,8 x U _N		10 /0				
Release voltage	$\ge 0,0 \times 0_N$ $\ge 0,1 \times U_N$						
Nominal power	2,4 VA (AC)/	1.6 W (DC)				Fig. 1	AC voltag
	2, 1 1 1 (10)	.,e (2 0)					
Coil table	VAC Ω	2 mA	VDC	Ω	mA		
	24 6	5 100	24	360	66		
	48 28			1K4	34		\leftarrow
	115 1k			7K6	15	×10	
	230 6K	(8 10	220 3	30K3	7,5		
						switching cycles x106	
Insulation	Volt rms, 1 n	nın				hing	
Contact open	2000 V					vitc	
Contact/contact	2,5 kV					+	
Contact/coil	2,5 kV					kVA C 0,1),5 1
Insulation resistance at 500 V	≥1 GΩ						
Insulation, EN 61810-1	2,5 kV/3					Fig. 2	DC load
Specifications						10	++++
Ambient temperature operation/storage	-40 (no ice).	60 °C /-4	0 80 °C				
Pick-up time/bounce time	20 ms/≤ 3 m	าร					\square
Release time/bounce time	8 ms/≤ 1 ms	3					+N
Mechanical life ops	AC: 10 Mill./	DC: 20 Mill	l.			1	
DC voltage endurance at rated load	≥100000 sw	vitching cyc	les			<i>i</i>	
Switching frequency at rated load	≤ 1200/ops/	'n				Amps.	
Protection class	IP40					₹	+ + +
Weight	90 g					0,1	
							50 10
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	C2-G20/A	c v				Dimer	nsions [mm
LED	C2-G20X/					2	
RC Suppresor	C2-G20R/						
VDC 24, 48, 110, 220	C2-G20/D	C V					
LED	C2-G20X/	DC V					58.5
Free wheeling diode	C2-G20D>	(/DC V				2	
Polarity and free wheeling diode	C2-G20FX	/DC V					<u>0</u>
AC/DC bridge rectifier 24 V, 48 V, 60 V	C2-G20B)	⟨/UC V					
"" Enter the voltage for full type designation							
						lechn	ical approv
Accessories							
Accessories Socket:	S2-B, S2-S,	, S2-L, S2-	P, S2-P0				6 ((





gram



ge endurance



l limit curve



n]





vals, conformities

ROHS IEC 61810; EN 60947

C20-A20

8-pin standard relay, 2-pole, plug-in according to IEC 60067

Туре	C20-A20/ V Standard relays 2 change-over contacts	
Maximum contact load	10 A/250 V AC-1 0,5 A/110 V DC-1 10 A/30 V DC-1	
Recommended minimum contact load	10 mA/10 V	
Contacts		
Material	AgNi	
Rated current	10 A	
Switch-on-current max. (20 ms.)	30 A	Connection diagram
Max. switching voltage	250 V	
Max. AC load (Fig 1)	2,5 kVA	4 3 5 6 2 12 14 22 24 A1(+)
Max. DC load	See Fig 2	
Coils		- 11 21 A2
Coil resistance	see table; tolerance $\pm 10\%$	1 8 7
Pick-up voltage	$\leq 0.8 \times U_N$	
Release voltage	\geq 0,0 x U _N \geq 0,1 x U _N	Fig. 1 AC voltage endurance
-		
Nominal power	2,2 VA (AC)/1,3 W (DC)	10
Table	VAC Ω mA VDC Ω mA	AC-1
	24 67 92 12 115 104	ο φ 0,4
	115 1K7 19 24 480 50	
	230 7K1 9,5 48 1K8 26	cos \u0.4
	110 9K 12	
		tch -
Insulation	Volt rms, 1 min	S
Contact open	1000 V	0,1
Contact/contact	2,5 kV	kVA 0,5 1 1,5 2 2,
Contact/coil	2,5 kV	
Insulation resistance at 500 V	≥1 GΩ	Fig. 2 DC load limit curve
Insulation, IEC 61810-1	2,5 kV/3	
Specifications		
Ambient temperature operation/storage	-4070 °C DC (55 °C AC) /-40 80 °C	DC-1 L/R 40 ms
	8 ms/3 ms	
Pick-up time bounce time typ.		
Release time bounce time typ.	18 ms/1 ms	
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.	g
DC voltage endurance at rated load	≥100000 ops. switching cycles	Amps.
Operating frequency at nominal load	≤1200/ops/h	
Protection degree	IP40	0,1
Weight	79 g	Volt 50 100 150 200
Standard types		Dimensions [mm]
VAC 50 Hz: 24, 115, 230	C20-A20/AC V	
VAC 60 Hz: 120	C20-A20/AC V 60 Hz	
LED	C20-A20X/AC V	
VDC 12, 24, 36, 48, 110	C20-A20/DC V	
LED	C20-A20X/DCV	
Free wheeling diode	C20-A20DX/DC V	
Polarity and free wheeling diode	C20-A20FX/DC V	
AC/DC bridge rectifier 24 V	C20-A20BX/UC V	
"" Enter the voltage for full type designation		Technical approvals, conformities
Accessories		-
Socket:	S20-B	
Blanking plug:	PB30-BK	
Button without lockable function:	PB30-OB	IEC 61810; EN 60947

Button without lockable function:

PB30-BK PB30-OR S30-CM











58 | 15/16

Retaining clip, plastic:

C3-A3x

11-pin standard relays, 3-pole, plug-in, according to IEC 67-I-18a

Type C3-A3x/ V Standard relays, 3 change-over conta			ontac	ts			
Maximum contact load Recommended minimum contact load		10 A/250 10 A/30 10 mA/10 V 5 mA/5 V	AC-1 DC-1 Code 0, Code 8	0,5 A/110 0,2 A/220 9		DC-1 DC-1	
ntacts							
terial	Standard Optional	Code 0 Code 8	AgNi AgNi + 10 μ /				
ed current	Optional	Code 9	AgNi + 0,2 μ 10 Α	Au			
	nt max. (20 ms)		30 A				
itching voltag			250 V				
load (Fig 1)			2,5 kVA				
load			see Fig. 2				
il							
l resistance			see table; tol	erance ±	10 %		
k-up voltage			≤ 0,8 x U _N				
ease voltage minal power			≥ 0,1 x U _N 2,2 VA (AC)/1	3 W (DC)			
·							
il table			VAC Ω 24 67	mA 92	VDC	443	mA 54
			48 296			1K8	27
			115 1K			9K2	12
			230 7K	1 9,5	220 3	36K1	6
ulation			Volt rms, 1 m	in			
ntact open			1000 V				
ntact/contact			2,5 kV				
ntact/coil	nce at 500 V		2,5 kV ≥1 GΩ				
ulation, IEC 6			2,5 kV/3				
ecifications							
	ature operation/s	torage	-40 (no ice)	.60 °C /-4	0 80 °C		
k-up time/bo	unce time	-	16 ms/≤ 3 m				
ease time/bo			8 ms/≤ 1 ms				
chanical life o	•	ad	AC: 10 Mill./E				
-	rance at rated lo ncy at rated load		≥ 100000 sw ≤ 1200/ops/ł	• •	JIES		
tection class		<i>x</i>	IP40	1			
ight			90 g				
Indard types							
	24, 48, 115 (120)	, 230 (240)	C3-A30/AC V	C3-A38/	AC V	C3-A3	9/AC V
)			C3-A30X/AC V				9X/AC V
Suppresor			C3-A30R/AC\	C3-A38	R/ACV (C3-A3	9R/ACV
C 24, 48, 110,	220		C3-A30/DC V	C3-A38/	'DC V	C3-A3	9/DC V
)			C3-A30X/DC V				9X/DC V
e wheeling di arity and free	ode wheeling diode		C3-A30DX/DC C3-A30FX/DC)DX/DC V 9FX/DC \
-	-						
	tifier 24 V, 48 V, 6	60 V	C3-A30BX/UC	V C3-A38	3X/UC V	C3-A39	9BX/UC \
DC bridge re							
-	-	60 V					





Connection diagram

43 57 89 2 12 14 L 22 24 32 34 A1(+) 4 1 ¢ 21 A2 11 31 6 10 11 1

Fig. 1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]





Technical approvals, conformities

SNus (Bus Lloyd's **(C) (C) (C) (C)** IEC 61810; EN 60947

Accessories

Socket: Optional accessories (blanking plug):

S3-B, S3-S, S3-L, S3-P, S3-P0 SO-NP, SO-OP

C3-T3x

11-pin standard relay, 3-pole, twin contact, plug-in according to IEC 67-I-18a



Туре	C3-T3x/ V Standard relays for low 3 change-over twin con		
Maximum contact load Recommended minimum contact load	6 A/250 V AC-1 5 mA/5 V Code 1 1 mA/5 V Code 2	6 A/30 V DC-1	
Contacts			Lange and the second
Material Standard Code 1 Optional Code 2 Rated current	AgNi + 0,2 μ Au AgNi + 10 μ Au 6 A		Connection diagram
Switch-on current max. (20 ms) Switching voltage max. AC load (Fig 1)	15 A 250 V 1,2 kVA		4 3 5 7 8 9 2 12 14 22 24 32 34 A1(+)
DC load	see Fig. 2		
Coil Coil resistance Pick-up voltage	see table; tolerance $\pm \frac{1}{2} \le 0.8 \times U_N$	10 %	161110Fig. 1AC voltage endurance
Release voltage Nominal power	\geq 0,1 x U _N 2,2 VA (AC)/1,3 W (DC)		
Coil table	VACΩmA24679248296461151K7192307K19,5	VDC Ω mA 24 443 54 48 1K8 27 110 9K2 12 220 36K1 6	witching cycles x10 ⁶
Insulation Contact open	Volt rms, 1 min 1000 V		0,1 VA 0 250 500 750 1000 1250
Contact/contact Contact/coil	2,5 kV 2,5 kV		Fig. 2 DC load limit curve
Insulation resistance at 500 V Insulation, EN 61810-1	≥1 GΩ 2,5 kV/3		
Specifications Ambient temperature operation/storage Pick-up time/bounce time	-40 (no ice)60 °C /-4 16 ms/≤ 3 ms	0 80 °C	
Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class	8 ms/≤ 1 ms AC: 10 Mill./DC: 20 Mill ≥100000 switching cycl ≤ 1200/ops/h IP40		0,1 Volt 50 100 150 200
Weight	90 g		Dimensions [mm]
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED	C3-T31/AC V C3-T31X/AC V	C3-T32/AC V C3-T32X/AC V	
RC Suppresor	C3-T31R/AC V	C3-T32R/AC V	
VDC 24, 48, 110, 220 LED Free wheeling diode Polarity and free wheeling diode	C3-T31/DC V C3-T31X/DC V C3-T31DX/DC V C3-T31FX/DC V	C3-T32/DC V C3-T32X/DC V C3-T32DX/DC V C3-T32FX/DC V	
AC/DC bridge rectifier 24 V, 48 V, 60 V	C3-T31BX/UC V	C3-T32BX/UC V	
"" Enter the voltage for full type designation			Technical approvals, conformities
Accessories	00 D 00 0 00 1 00 7		
Socket:	S3-B, S3-S, S3-L, S3-F	, S3-P0	IEC 61810; EN 60947

Optional accessories (blanking plug):

S3-B, S3-S, S3-L, S3-P, S3-P0 SO-NP, SO-OP

C3-G3x

11-pin standard relay, 3-pole, open contact, according to IEC 67-I-18a

Туре	C3-G3x/ V Standard relays, DC app 3 open contacts	olication	
Maximum contact load	10 A 250 V AC-1 10 A 30 V DC-1	1,2 A/110 V DC-1 0,4 A/220 V DC-1	
Contacts			
Material Standard Code 0	AgNi		
Rated current	10 A		
Switch-on current max. (20 ms) Switching voltage max.	30 A 250 V		Connecti
AC load (Fig 1)	2,5 kVA		Connecti
DC load	see Fig. 2		Gap: 1,7 mm
Coil			
Coil resistance	see table; tolerance ± 1	0 %	
Pick-up voltage	\leq 0,8 x U _N		
Release voltage	$\geq 0,1 \times U_N$		
Nominal power	2,4 VA (AC)/1,6 W (DC)		Fig. 1 A
Coil table	VAC Ω mA	VDC Ω mA	10
	24 65 100	24 360 66	
	48 286 50 115 1K7 21	48 1K4 34 110 7K6 15	× se
	230 6K8 10	220 30K3 7,5	³ Cle
	200 010 10	220 0010 1,0	switching cycles x106
Insulation	Volt rms, 1 min		chir
Contact open	2000 V		swit
Contact/contact	2,5 kV		0,1
Contact/coil	2,5 kV		kVA 0,5
Insulation resistance at 500 V	≥1 GΩ		
Insulation, IEC 61810-1	2,5 kV/3		Fig. 2 DC
Specifications			10
Ambient temperature operation/storage	-40 (no ice)60 °C /-4	0° 08 0° 08	
Pick-up time/bounce time	20 ms/≤ 3 ms		
Release time/bounce time	8 ms/≤ 1 ms		
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.		
DC voltage endurance at rated load	≥100000 switching cycl ≤ 1200/ops/ h	es	Amps.
Switching frequency at rated load Protection class	S 1200/0ps/11 IP40		Am
Weight	90 g		
	50 g		0,1
Standard types			Dimensio
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED	C3-G30/AC V C3-G30X/AC V		Binchist
RC Suppresor	C3-G30R/AC V		
VDC 24, 48, 110, 220	C3-G30/DC V		
LED	C3-G30X/DC V		
Free wheeling diode	C3-G30DX/DC V		MR-C
Polarity and free wheeling diode	C3-G30FX/DC V		
AC/DC bridge rectifier 24 V, 48 V, 60 V	C3-G30BX/UC V		
"" Enter the voltage for full type designation			Technica
Accessories			
Socket:	S3-B, S3-S, S3-L, S3-P	, S3-P0	
Optional accessories (blanking plug):	SO-NP, SO-OP		





on diagram



C voltage endurance



load limit curve



ns [mm]





approvals, conformities

🗄 CE 💥

C3-M1x

11-pin power relay, 1-pole, magnetic blow out, according to IEC 67-I-18a

Туре	C3-M1x/ V Power relays, DC, application 1 pole, magnetic blow out	
Maximum contact load	10 A 250 V AC-1 10 A 220 3,6 A 110 V L/R 40ms 2 A 220 V	
Contacts Material Standard Code 0 Rated current Switch-on current max. (20 ms)	AgNi 10 A 30 A	
Switching voltage max.	250 V 2,5 kVA	Connection diagram
AC load (Fig 1) DC load	see Fig. 2	Gap: 3 magnet (+) 9 2
Coil Coil resistance Pick-up voltage Release voltage	see table; tolerance $\pm 10 \%$ $\leq 0.8 \times U_N$ $\geq 0.1 \times U_N$	(1,7 + 1,7)
Nominal power	2,4 VA (AC) / 1,3 W (DC)	Fig. 1 AC voltage endurance
Coil table	24 65 100 24 44 48 286 50 48 14	2 mA 43 54 47 27 42 12 K1 6
Insulation Contact open Contact/contact Contact/coil Insulation resistance at 500 V Insulation, IEC 61810-1:	Volt rms, 1 min 2500 V 2,5 kV 2,5 kV ≥1 GΩ 2,5 KV / 3	K1 6 0,1 K/4 0.5 1 1.5 2
Specifications Ambient temperature operation/storage Nominal coil power Pick-up time/bounce time Release time/bounce time Isolation: EN 60947, pollution rate 3, Gr C Dielectric strength, Contact/Coil	-40 (no ice)60 °C /-40 80 °C 2,4 VA (AC), 1,3 W (DC) 20 ms/≤ 3 ms 10 ms/≤ 1 ms 250 V 2,5 KV	Fig. 2 DC voltage endurance
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED RC Suppresor	C3-M10/AC V C3-M10X/AC V C3-M10R/AC V	0,1 0,1 2 4 6 8 10 Am Dimensions [mm]
VDC 24, 48, 110, 220 LED Free wheeling diode Polarity and free wheeling diode	C3-M10/DC V C3-M10X/DC V C3-M10DX/DC V C3-M10FX/DC V	
AC/DC bridge rectifier 24 V, 48 V, 60 V	C3-M10BX/UC V	
Accessories Socket:	S3-B, S3-S, S3-L, S3-P, S3-P0	Technical approvals, conformities
Optional accessories (blanking plug):	SO-NP, SO-OP	





2 A1(+) カ

Å2 10

2.5

10 Amps.

۵ 💽 د د 🔬

C3-X1x

11-pin power relay, 1-pole, double make, according to IEC 67-I-18a





C3-R2x

11-pin remanence relays, 2-pole, according to IEC 67-I-18a

Туре	C3-R2x/ V Remanence plug-in relays, 2 change-over contacts	
Maximum contact load Recommended minimum contact load	10 A/250 V AC-1 0,5 A/110 V DC-1 10 A/30 V DC-1 0,2 A/220 V DC-1 10 mA/10 V Code 0, 9	
	5 mA/5 V Code 8	C. I CALLEL
Contacts	A . NP	U
Material Standard Code 0 Optional Code 8 Optional Code 9	AgNi AgNi + 10 μ Au AgNi + 0 2 μ Au	Connection diagram
Rated current Switch-on current max. (20 ms)	AgNi + 0,2 μ Au 10 A 30 A	4 3 8 9 2 6 A1 A3 └┰ ╵ └┰ ╵ ON (+) └─ / OFF (+)
Switching voltage max. AC load (Fig 1) DC load	250 V 2,5 kVA see Fig. 2	,,
Coil Coil resistance	see table; tolerance $\pm 10 \%$	Fig. 1 AC voltage endurance
ON pulse power OFF pulse power Pull-in ON/OFF	$\begin{array}{l} 1,5 \text{ VA/W} \\ 0,5 \text{ VA/W} \\ \leq 0,8 \text{ x } \text{U}_{\text{N}} \end{array}$	
Internal Diagram:	Coil table	
$\begin{array}{c} A1 \rightarrow & A3 & A1 \rightarrow \\ A2 & A3 & A1 \rightarrow \\ A2 & A2 & A2 \\ DC & AC \end{array}$	VAC mA ONmA OFFVDCmA ONmA OFF247512121254148386246321115162,548311023081,3110144,5	AC-1 Cos ϕ 0,4 Cos ϕ 0,5 Cos ϕ 0,4 Cos ϕ 0,4 Cos ϕ 0,5 Cos ϕ 0,4 Cos ϕ 0,4 Cos ϕ 0,5 Cos ϕ 0,5 C
Insulation	Volt rms, 1 min	Fig. 2 DC load limit curve
Contact open Contact/contact Contact/coil Insulation resistance at 500 V Insulation, IEC 61810-1	1000 V 2,5 kV 2,5 kV ≥1 GΩ 2,5 kV/3	10 DC-1 DC-1 L/R 40 ms
Specifications Ambient temperature operation/storage Minimum pulse length for ON/OFF Mechanical life ops DC voltage endurance at rated load	-40 (no ice)60 °C /-40 80 °C 50 ms 10 Mill. ≥100000 switching cycles	0,1 Volt 50 100 150 200
Switching frequency at rated load Protection class Weight	≤ 1200/ops/h IP40 95 g	Dimensions [mm]
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	C3-R20/AC V C3-R28/AC V C3-R29/AC V	86 86 86 86 86 86 86 86 86 86 86 86 86 8
VDC 12, 24, 48, 110	C3-R20/DC V C3-R28/DC V C3-R29/DC V	
"" Enter the voltage for full type designation		
Accessories		
Socket: Optional accessories (blanking plug):	S3-B, S3-S, S3-L, S3-P, S3-P0 SO-NP, SO-OP	Technical approvals, conformities









🎯 💽 RJ., (E 💥 IEC 61810; EN 60947

64 | 15/16

C3-S1x

11-pin standard relays, sensitive, 1-pole, according to IEC 67-I-18a

Туре	C3-S1x/ DC V Sensitive relays, 250 mW, 1 change-over contacts	
Operating range Maximum contact load Recommended minimum contact load	0,8 2,5 x Un 6 A/250 V AC-1 6 A/30 V DC-1 10 mA/10 V Code 4 5 mA/5 V Code 8	
Contacts Material Standard, Code 4 Optional, Code 8	AgNi + 0,2 μ Au AgNi + 10 μ Au	
Rated current Switch-on current max. (20 ms) Switching voltage max. AC load (Fig 1) DC load	6 A 15 A 250 V 1,5 kVA see Fig. 2	Connection diagram 5 7 2 A1(+) ↓ ↓
Coil Coil resistance Pick-up voltage Release voltage Nominal power	see table; tolerance ± 10 % ≤ 0,8 x U _N ≥ 0,1 x U _N 250 mW	Fig. 1 AC voltage endurance
Coil table	VDCΩmA6140431253622242164114886515,5	switching cycles x10 ⁶
Insulation Contact open Contact/contact	Volt rms, 1 min 1000 V 2,5 kV	- + + + + + + + + + + + + + + + + + + +
Contact/coil Insulation resistance at 500 V Insulation, IEC 61810-1	2,5 kV ≥1 GΩ 2,5 kV/3	Fig. 2 DC load limit curve 10
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class Weight	-40 (no ice)60 °C /-40 80 °C 18 ms/≤ 3 ms 10 ms/≤ 1 ms DC: 20 Mill. ≥100000 switching cycles ≤ 1200/ops/h IP40 73 g	0,1 Volt 50 100 150 200
Standard types		– Dimensions [mm]
VDC 12, 24, 48 Free wheeling diode Polarity and free wheeling diode	C3-S14/DC V C3-S14D/DC V C3-S14D/DC V C3-S14F/DC V C3-S18F/DC V	
Connection of diodes to the coil will increa LED available upon request.	se the release time.	
"" Enter the voltage for full type designation Accessories Socket: Optional accessories (blanking plug):	S3-B, S3-S, S3-L, S3-P, S3-P0	Technical approvals, conformities
Optional accessories (blanking plug):	SO-NP, SO-OP	ሙ 💽 CE 💥



This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

C3-E2x

11-pin standard relays, sensitive, 2-pole, according to IEC 67-I-18a

	Sensitive relays, 500 mW, 2 change-over contacts	
Operating range Maximum contact load Recommended minimum contact load	0,8 1,7 x Un 6 A/250 V AC-1 6 A/30 V DC-1 10 mA/10 V Code 4 5 mA/5 V Code 8	
Contacts Material Standard, Code 4 Optional, Code 8	AgNi + 0,2 μ Au	
Optional, Code 8 Rated current	AgNi + 10 μ Au 6 A	Connection disgram
Switch-on current max. (20 ms)	15 A	Connection diagram
Switching voltage max.	250 V	43892
AC load (Fig 1)	1,5 kVA	4 3 8 9 2 A1(+)
DC load	see Fig. 2	ل <u>+</u> <u>+</u>
Coil		. ⁹ ⁹ ¹ 1 11 10
Coil resistance	see table; tolerance \pm 10 %	1 11 10
Pick-up voltage	\leq 0,8 x U _N	Fig. 1 AC voltage endurance
Release voltage	\geq 0,1 x U _N	
Nominal power	500 mW	
Coil table	VDC Ω mA	e AC-1
	24 1K1 21	AC-1
	48 4K6 10	
	60 7K2 8,3	
	110 24K2 4,5	
Insulation	Volt rms, 1 min	
Contact open	1000 V	
Contact/contact	2,5 kV	kVA 0,5 1
Contact/coil	2,5 kV	Fig. 2 DC load limit curve
Insulation resistance at 500 V	≥1 GΩ	rig. 2 Do Ioau minit Curve
Insulation, IEC 61810-1	2,5 kV/3	10
Specifications		DC-1
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C	
Pick-up time/bounce time	18 ms/≤ 3 ms	
Release time/bounce time	10 ms/≤ 1 ms	
Mechanical life ops	DC: 20 Mill.	
DC voltage endurance at rated load	≥100000 switching cycles	Amps.
Switching frequency at rated load	≤ 1200/ops/h	
Protection class	IP40	0,1
Weight	90 g	Volt 50 100 150 2
Standard types		Dimensions [mm]
VDC 24, 48, 60, 110	C3-E24/DC V C3-E28/DC V	
Free wheeling diode	C3-E24/DC V C3-E28/DC V	
Polarity and free wheeling diode	C3-E24D/DC V C3-E24F/DC V C3-E28F/DC V	
Connection of diodes to the coil will increas LED available upon request. "" Enter the voltage for full type designation		
Accessories		
		Technical approvals, conformitie
Socket		••• •
Socket: Optional accessories (blanking plug):	S3-B, S3-S, S3-L, S3-P, S3-P0 SO-NP, SO-OP	,



G



AC-1

200

1,5

C3-N3x

11-pin standard relays, sensitive, 3-pole, according to IEC 67-I-18a

Туре	C3-N3x/DC V Sensitive relays, 800 mw 3 change-over contacts	
Operating range Maximum contact load Recommended minimum contact load	0,8 1,4 x Un 6 A/250 V AC-1 6 A/30 V DC-1 10 mA/10 V Code 4 5 mA/ 5 V Code 8	
Contacts Material Standard Code 4 Optional Code 8	AgNi + 0,2 μ Au AgNi + 10 μ Au	Connection diagram
Rated current Switch-on current max. (20 ms) Switching voltage max. AC load (Fig 1) DC load	6 A 15 A 250 V 1,5 kVA see Fig. 2	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Coil Coil resistance Pick-up voltage	see table; tolerance $\pm 10 \%$ $\leq 0.8 \times U_N$ $\geq 0.1 \times U_N$	Fig. 1 AC voltage endurance
Release voltage Nominal power	2 0, 1 x 0 _N 800 mW	
Coil table	VDC Ω mA 24 720 33 48 2K8 17 60 4K5 13 110 15K 7	switching cycles x106
Insulation Contact open	Volt rms, 1 min 1000 V	0,1 - 0,1 - 0,5 1 1,5
Contact/contact Contact/coil Insulation resistance at 500 V	2,5 kV 2,5 kV ≥1 GΩ	Fig. 2 DC load limit curve
Insulation, IEC 61810-5	2,5 kV/3	
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class	-40 (no ice)60 °C /-40 80 °C 18 ms/≤ 3 ms 10 ms/≤ 1 ms DC: 20 Mill. ≥100000 switching cycles ≤ 1200/ops/h IP40	0,1 Volt 50 100 150 200
Weight	90 g	Dimensions [mm]
Standard types VDC 24, 48, 60, 110 Free wheeling diode Polarity and free wheeling diode	C3-N34/DC V C3-N34D/DC V C3-N34D/DC V C3-N34F/DC V C3-N38F/DC V	
Connection of diodes to the coil will increa LED available upon request.	se the release time.	
"" Enter the voltage for full type designation		
Accessories Socket: Optional accessories (blanking plug):	S3-B, S3-S, S3-L, S3-P, S3-P0 SO-NP, SO-OP	Technical approvals, conformities



R3-N3xD

11-pin, special relay, 3-pole, according to IEC 67-I-18a Relay approval: EN 60077-1-2/99 - EN 61373/99 for Railway application

2 11			••	
Туре	R3-NxD/ V Relays for Rail 3 change-over special wide ra	way application contacts		
Maximum contact load	6 A 250 V	AC-1 6/	A 30 V DC-1	
Recommended minimum contact load		Code 0, 4 Code 8		
Contacts				
Material Standard Code 0 Optional Code 4 Optional Code 8	AgNi AgNi + 0,2µ A AgNi + 10µ Au			Connection diagram
Rated current Switch-on current max. (20 ms) Switching voltage max. Max. AC load	6 A 15 A 250 V	1		4 3 5 7 8 9 12 14 22 24 32 34 14 14 14 14 14 14 14 14 14 14 14 14 11 21 31
DC load	see Fig. 1 see Fig. 2			1 6 11
				Fig. 1 AC voltage endu
Coil Coil resistance Operation range Nominal power	see table; tole 0,7 U _N 1,25 1,1 W			
Coil table	VDC	Ω	mA	
	24 48 72 110	525 2133 4844 12900	46 22 15 9	switching cycles x10 ⁶
Insulation Pollution grade With pulse (1,2 / 50 µs)/Dielectric strenght (1Mir Contact/coil Contact/contact Between contact and the same pole	PD3 nute/V rms) 4 kV / 2220 V 4 kV / 2220 V 1550 V / 850 V	V		VA 250 500 750 Fig. 2 DC load limit curv
Specifications				1
Ambient temperature operation/storage Number of mechanical operations Thermic class Vibration : category / class	-25 (no ice) ≥ 10 millions B (130 °C) 1 / B Body m	70 °C /-40 80 ° ounted	С	isdue of the second sec
	5 - 150 Hz (3 a			Volt 25 100
Shock Pick-up time/bounce time Release time/bounce time (D version)	5 g (3 axes) 18 ms/≤ 3 ms 35 ms/≤ 1 ms			Dimensions [mm]
Weight Weight avg. Relay + Socket (S3-B) Protection class	95 g 150 g IP 40			S S S S S S S S S S S S S S S S S S S
 Standard types				
DC 24, 48, 72, 110 Free wheeling diode LED	R3-N30X/DC V	R3-N34D/DC V R3-N34X/DC V	R3-N38X/DC V	
LED + free wheeling diode	K3-N3UDX/DC \	/ R3-N34DX/DC V	nj-Njoux/DC V*	Technical approvals, co
"" Enter the voltage for full type designation				
Accessories Socket:	63-B 63-6 6	3-1 S3-D S3-D0		C E 💥 💽
Outrel.	53-B, 53-5, 5	3-L, S3-P, S3-P0		IEC 60077/EN60077-1-2/99

SO-NP, SO-OP

WORLD ΟF RELAYS





urance



ve





onformities

IEC 60077/EN60077-1-2/99; EN61373/99

Optional accessories (blanking plug):

C30-A30

11-pin standard relays, 3-pole, plug-in, according to IEC 60067

Туре	C30-A30/ V Standard relays 3 change-over contacts	
Maximum contact load	10 A/250 V AC-1 0,5 A/110 V DC-1 10 A/30 V DC-1 0,2 A/220 V DC-1	
Recommended minimum contact load	10 mA/10 V	
Contacts		
Material	AgNi	
Rated current	10 A	
Switch-on current max. (20 ms)	30 A	Connection diagram
Switching voltage max.	250 V	4357892
AC load (Fig 1)	2,5 kVA	12 14 22 24 32 34 A1(+)
DC load	see Fig. 2	└ <u>╄</u> ╵╴ <u>└</u> ┱╵╴ <u>└</u> ┱╵
		- ò ò ò 'Ţ-' 11 21 31 A2
Coil	aaa tablat talaranaa + 10.0/	1 6 11 10
Coil resistance	see table; tolerance $\pm 10\%$	
Pick-up voltage	$\leq 0.8 \times U_N$	Fig. 1 AC voltage endurance
Release voltage Nominal power	≥ 0,1 x U _N 2,2 VA (AC)/1,3 W (DC)	ing in Ao voltage en dui ance
	2,2 VA (AU/ 1,3 VV (DU)	10
Coil table	VAC Ω mA VDC Ω mA	AC-1
	24 67 92 12 115 104	
	115 1K7 19 24 480 50	sol cos 0,4
	230 7K1 9,5 48 1K8 26	
	110 9K 12	
		- ių
Insulation	Volt rms, 1 min	switcher and set of the set of th
Contact open	1000 V	0,1
Contact/contact	2,5 kV	kVA 0,5 1 1,5 2
Contact/coil	2,5 kV	
Insulation resistance at 500 V	≥1 GΩ	Fig. 2 DC load limit curve
Insulation, IEC 61810-1	2,5 kV/3	10
Specifications		
Ambient temperature operation/storage	-4070 °C DC (55 °C AC)/-40 80 °C	DC-1
Pick-up time/bounce time typ.	8 ms/ 3 ms	L/R 40 ms
Release time/bounce time typ.	18 ms/1 ms	
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.	
DC voltage endurance at rated load	≥ 100000 switching cycles	vi Nationalista
Switching frequency at rated load	≤ 1200/ops/h	Amps.
Protection class	IP40	
Weight	82 g	
		Volt 50 100 150 200
Standard types		Dimensions [mm]
VAC 50 Hz: 24, 115, 230	C30-A30/AC V	
VAC 60 Hz: 120	C30-A30/AC V 60 Hz	
LED	C30-A30X/AC V	
VDC 12, 24, 36, 48, 110	C30-A30/DC V	
LED	C30-A30X/DC V	
Free wheeling diode	C30-A30DX/DC V	35
Polarity and free wheeling diode	C30-A30FX/DC V	
AC/DC bridge rectifier 24 V	C30-A30BX/UC V	
"" Enter the voltage for full type designation		Technical approvals, conformities
Accessories		
Socket:	S30-B	,\$1 us ,∰us (€ ₩s
Blanking plug:	PB30-BK	BOOM PROFIL
Button without lockable function:	PB30-OR	IEC 61810; EN 60947
Betaining clip, plastic:	S30-CM	

2,5

200

Retaining clip, plastic:

S30-CM

C30-T30

11-pin standard relay, 3-pole, twin contact, plug-in according to IEC 60067

Туре	C30-T30/ V		
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Standard relays for low level		
	3 change-over twin contacts		
Maximum contact load	6 A/250 V AC-1 6 A/30 V DC		
Recommended minimum contact load	5 mA/5 V		
Contacts			
Material	AgNi		
Rated current	6 A		
Switch-on current max. (20 ms)	15 A		
Switching voltage max.	250 V		
AC load (Fig 1)	1,2 kVA		
DC load	see Fig. 2		
Coil			
Coil resistance	see table; tolerance \pm 10 %		
Pick-up voltage	\leq 0,8 x U _N		
Release voltage	\geq 0,1 x U _N		
Nominal power	2,2 VA (AC)/1,3 W (DC)		
Coil table	VAC Ω mA VDC Ω mA		
	24 67 92 12 115 104		
	115 1K7 19 24 480 50		
	230 7K1 9,5 48 1K8 26 110 9K 12		
	110 9K 12		
Insulation	Volt rms, 1 min		
Contact open	1000 V		
Contact/contact	2,5 kV		
Contact/coil	2,5 kV		
Insulation resistance at 500 V	≥1 GΩ		
Insulation, EN 61810-1	2,5 kV/3		
Specifications			
Ambient temperature operation/storage	-4070 °C DC (55 °C AC)/-40 80 °C		
Pick-up time/bounce time typ.	8 ms/ 3 ms		
Release time/bounce time typ.	18 ms/1 ms		
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.		
DC voltage endurance at rated load	≥100000 switching cycles		
Switching frequency at rated load	≤ 1200/ops/h		
Protection class	IP40		
Weight	82 g		
Standard types			
VAC 50 Hz: 24, 115, 230	C30-T30/AC V		
VAC 60 Hz: 120	C30-T30/AC V 60 Hz		
LED	C30-T30X/AC V		
VDC 12, 24, 36, 48, 110	C30-T30/DC V		
LED	C30-T30X/DC V		
Free wheeling diode	C30-T30DX/DC V		
Polarity and free wheeling diode	C30-T30FX/DC V		
AC/DC bridge rectifier 24 V	C30-T30BX/UC V		
"" Enter the voltage for full type designation			
Accessories			
Socket:	S30-B		





Connection diagram



ig. 1 AC voltage endurance



ig. 2 DC load limit curve



Dimensions [mm]





Technical approvals, conformities

.**Я**us .∰us .€€ 💥

IEC 61810; EN 60947

VAC 60 Hz: 120 LED
VDC 12, 24, 36, 48, 110 LED Free wheeling diode Polarity and free wheeling diode
AC/DC bridge rectifier 24 V
"" Enter the voltage for full type designation
Accessories
Socket:
Blanking plug:

Blanking plug: Button without lockable function: Retaining clip, plastic:

PB30-BK PB30-OR S30-CM
C30-M10

11-pin power relay, 1-pole, magnetic blow out, according to IEC 60067

Туре	C30-M10/ V						
	Power relays for DC applications						
	1 pole, magn	etic blow of	out				
Maximum contact load	10 A/250 V AC-1 10 A/220 V DC-1						
Contacts							
Vlaterial	AgNi						
Rated current	10 A						
Switch-on current max. (20 ms)	30 A						
Switching voltage max.	250 V						
AC load (Fig 1)	2,5 kVA						
DC load	see Fig. 2						
Coil							
Coil resistance	see table; tole	erance ±	10 %				
Pick-up voltage	\leq 0,8 x U _N						
Release voltage	\geq 0,1 x U _N						
Nominal power	2,4 VA (AC) /	1,3 W (D	C)				
Coil table	VAC Ω	mA	VDC	Ω	mA		
	24 65	100	24	480	50		
	48 286		48	1K8	26		
	115 1K7		110	9K	12		
	230 6K8	3 10	220	29K	7,5		
nsulation	Volt rms, 1 m	in					
Contact open	2500 V						
Contact/contact	2,5 kV						
Contact/coil	2,5 kV						
nsulation resistance at 500 V	≥1 GΩ						
nsulation, IEC 61810-1:	2,5 KV / 3						
Specifications							
Ambient temperature operation/storage	-4070 °C D	OC (55 °C /	AC)/-40	80 °(С		
Pick-up time/bounce time typ.	8 ms/ 3 ms						
Release time/bounce time typ.	18 ms/ 1 ms						
DC voltage endurance at rated load	≥ 100000 sw	itching cyo	cles				
Switching frequency at rated load	≤ 1200/ops/h	1					
Protection class	IP40						
Veight	82 g						
Standard types			_				
VAC 50 Hz: 24, 115, 230	C30-M10/A	C V					
VAC 60 Hz: 120	C30-M10/A	C V 60	Hz				
ED	C30-M10X/	AC V					
/DC 12, 24, 36, 48, 110, 220	C30-M10/D	oc v					
LED	C30-M10X/	'DC V					
Free wheeling diode	C30-M10D	X/DC V	,				
Polarity and free wheeling diode	C30-M10F	(/DC V					
AC/DC bridge rectifier 24 V	C30-M10B	x/UC v	,				
"" Enter the voltage for full type designation							
Accessories							
Socket:	S30-B						
Blanking plug:	PB30-BK						





Connection diagram



Fig. 1 AC voltage endurance



Fig. 2 DC voltage endurance



Dimensions [mm]





Technical approvals, conformities

C C X SN.s

Relays 1.3

PB30-OR

S30-CM

Button without lockable function:

Retaining clip, plastic:

C30-X10

11-pin power relay, 1-pole, double make, according to IEC 60067

Type C30-X10/ V Power relays for DC applications 1 pole, NO, double make							
Maximum contact load	10 A/250 V 10 A/30 V	AC-1 DC-1	7 A/110 V 1,2 A/220 V	DC-1 DC-1			
Contacts						10	The last
Material	AgNi						-
Rated current	10 A						
Switch-on current max. (20 ms)	30 A						
Switching voltage max.	250 V				Connec	tion diagra	m
AC load (Fig 1)	2,5 kVA					U	
DC load	see Fig. 2				Gap: > 3 mm	3	9
Coil					(1,6 + 1,6)	\	t
Coil resistance	see table; to	loranco i 1	0 %			è	
Pick-up voltage	≤ 0,8 x U _N	IEI AIICE II	0 /0				
Release voltage	≤ 0,8 x 0 _N ≥ 0,1 x U _N						
Nominal power	≥ 0,1 x 0 _N 2,4 VA (AC)/				Fig. 1	AC voltage	endurar
	2,4 VA (AO)/	1,0 W (DO)			1.9.1	Ao Tonago	chadran
Coil table	VAC Ω	2 mA	VDC Ω	mA	10		
	24 6		24 480	50			
	115 1k		48 1K8	26	ê 🗡		
	230 6K	(8 10	110 9K	12	ŝ		
			220 29K	7,5	<u>§</u>		
Insulation	Voltrma 1 n	oin			switching cycles x10 ⁶		
	Volt rms, 1 n 2500 V	nin			chir		
Contact open					wit		
Contact/contact	2,5 kV				0,1		
Contact/coil Insulation resistance at 500 V	2,5 kV ≥1 GΩ				kVA 0,5	1	1,5
Insulation, IEC 61810-1	2,5 kV/3				-	<u></u> .	
	2,010/0				Fig. 2 D	C load limit	curve
Specifications					10		
Ambient temperature operation/storage	-4070 °C [DC (55 °C A	C)/-40 80 °C)			
Pick-up time/bounce time typ.	18 ms/ 3 ms	5					
Release time/bounce time typ.	8 ms/1 ms						
Mechanical life ops	AC: 10 Mill./				1		
DC voltage endurance at rated load	≥100000 sw		es				
Switching frequency at rated load	≤ 1200/ops/	'n			bs.		
Protection class	IP40				Amps.		
Weight	83 g				0,1		
Standard types					Volt 25	75	125
VAC 50 Hz: 24, 115, 230	C30-X10/A	C V			Dimens	ions [mm]	
VAC 60 Hz: 120	C30-X10/A		7		Binena		
LED	C30-X10X/						Τr
VDC 24, 48, 110, 220	C30-X10/D						35
LED	C30-X10X/					52	
Free wheeling diode	C30-X10D						<u>+</u> [
Polarity and free wheeling diode	C30-X10F>	(/DC V				_	-
AC/DC bridge rectifier 24 V	C30-X10B	K∕UC V					
"" Enter the voltage for full type designation						μU	
Accessories					recnnic	al approva	is, confo
Socket:	S30-B				<u> </u>		æ
Blanking plug:	PB30-BK				- CE 🖁	🚛 🔍 us	, Elus
Button without lockable function:	PB30-OR				NO.		







C voltage endurance



load limit curve



ons [mm]





l approvals, conformities

IEC 61810; EN 60947

Retaining clip, plastic:

Button without lockable function:

C4-A4x

14-pin, standard relay, 4-pole, plug-in, faston

Туре		C4-A4x/ V Standard relays, 4 chan	ge-over contacts	
Maximum co	ntact load	10 A/250 V AC-1 10 A/30 V DC-1	0,5 A/110 V DC-1 0,2 A/220 V DC-1	CIT
Recommende	ed minimum contact load	10 mA/10 V Code 0, 5 mA/5 V Code 8		
Contacts				DD
Material	Standard Code 0 Optional Code 8	AgNi AgNi + 10 μ Au		000000000
	Optional Code 9	AgNi + 0,2 μ Au		Connection diagram
Rated current	(00,)	10 A		1 2 4 5 7 8 10 11 13
Switching volta	rent max. (20 ms) age max	30 A 250 V		12 14 22 24 32 34 42 44 A1(
AC load (Fig 1)	-	2,5 kVA		
DC load		see Fig. 2		
Coil				3 6 9 12 14
Coil resistance		see table; tolerance ± 1	0 %	Fig. 1 AC voltage endurance
Pick-up voltage Release voltage		≤ 0,8 x U _N ≥ 0,1 x U _N		10
Nominal powe		2,4 VA (AC)/1,4 W (DC)		AC-1
Coil table		VAC Ω mA	VDC Ω mA	switching cos ¢ 0. Cos ¢ 0. Cos ¢ 0.
		24 65 100	24 414 58	
		48 286 50	48 1K6 30	
		115 1K7 21 230 6K8 10	110 8K1 13 220 35K7 6,2	witchi
Insulation		Volt rms, 1 min	·	0,1
Contact open		1000 V		kVA 0,5 1 1,5 2
Contact/conta	ct	2,5 kV		Fig. 2 DC load limit curve
Contact/coil		2,5 kV		
	tance at 500 V	≥1 GΩ		
Insulation, IEC	61810-1	2,5 kV/3		DC-1
Specification	s erature operation/storage	-40 (no ice)60 °C /-40	2 80 °C	
Pick-up time/b		$20 \text{ ms/} \le 3 \text{ ms}$	000 0	
Release time/b		8 ms/≤ 1 ms		Amps.
Mechanical life	•	AC: 10 Mill./DC: 20 Mill.		A A A A A A A A A A A A A A A A A A A
-	durance at rated load	≥100000 switching cycle	es	0,1
Protection clas	uency at rated load	≤ 1200/ops/h IP40		Volt 50 100 150
Weight		90 g		Dimensions [mm]
Standard type	es			
VAC 50 Hz/60) Hz: 24, 48, 115, (120), 230, (240)		C4-A48/AC V	
LED	-	C4-A40X/AC V	C4-A48X/AC V	
RC suppreso	r	C4-A40R/AC V	C4-A48R/AC V	
VDC 24, 48, 1	10, 220	C4-A40/DC V	C4-A48/DC V	
LED Free wheeling	n diode	C4-A40X/DC V C4-A40DX/DC V	C4-A48X/DC V C4-A48DX/DC V	╙┱╤╨╅╤╨┱╤╜╴┝
	ree wheeling diode	C4-A40DX/DC V	C4-A48DX/DC V C4-A48FX/DC V	0000 3 FASTON .110
AC/DC bridge	e rectifier 24 V, 48 V, 60 V	C4-A40BX/UC V	C4-A48BX/UC V	Technical approvals, conformitie
"" Enter the v	voltage for full type designation			
Accessories				Lloyd's CE
Cashet				IEC 61810: EN 60947



10 11 13 42 44 4 A1(+) 41 12 14

ndurance



urve





IEC 61810; EN 60947

Optional accessories (blanking plug):

Socket:

S4-J, S4-L, S4-P, S4-P0 SO-NP, SO-OP

C4-X2x

14-pin, power relay, double-make, faston

Туре	C4-X2x/ V Power relays, DC application 2-pole, NO, double make				
Maximum contact load	10 A/250 V AC-1 7 A/110 V DC-1 10 A/30 V DC-1 1,2 A/220 V DC-1				
Contacts Material Standard Code 0 Rated current Switch-on current max. (20 ms) Switching voltage max AC load (Fig 1) DC load Coil Coil resistance Pick-up voltage	AgNi 10 A 30 A 250 V 2,5 kVA see Fig. 2 see table; tolerance $\pm 10 \%$ $\leq 0.8 \times U_N$				
Release voltage Nominal power	$\geq 0.1 \times U_N$ 2,4 VA (AC)/1,3 W (DC)				
Coil table	VAC Ω mA VDC Ω mA 24 65 100 24 443 54 48 286 50 48 1K8 27 115 1K7 21 110 9K2 12 230 6k8 10 220 36K1 6				
Insulation	Volt rms, 1 min				
Contact open Contact/contact	2500 V 2,5 kV				
Contact/contact	2,5 KV 2,5 KV				
Insulation resistance at 500 V	≥,5 kV ≥1 GΩ				
Insulation, IEC 61810-1	2,5 kV/3				
Specifications					
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C				
Pick-up time/bounce time Release time/bounce time	20 ms/≤ 3 ms 8 ms/≤ 1 ms				
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.				
DC voltage endurance at rated load	≥100000 switching cycles				
Switching frequency at rated load	\leq 1200/ops/h				
Protection class	IP40				
Weight	90 g				
Standard types					
VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240)	C4-X20/AC V C4-X20X/AC V				
LED RC Suppresor	C4-X20R/AC V C4-X20R/AC V				
VDC 24, 48, 110, 220	C4-X20/DC V				
LED Free wheeling diode	C4-X20X/DC V C4-X20DX/DC V				

Free wheeling diode Polarity and free wheeling diode

C4-X20FX/DC ... V AC/DC bridge rectifier 24 V, 48 V, 60 V C4-X20BX/UC V

"..." Enter the voltage for full type designation

Accessories

Socket: Optional accessories (blanking plug): S4-S, S4-L, S4-P, S4-P0 SO-NP, SO-OP





onnection diagram): 2 5 8 11 13 mm A1(+) + 1,7) \Box Å2 14

j. 1 AC voltage endurance



g. 2 DC load limit curve



mensions [mm]





Technical approvals, conformities

፼፼ (€∭ IEC 61810; EN 60947

(

C4-R3x

14-pin, remanence relay, 3-pole, faston

Туре	C4-R3x/ V Magnetic rem 3 change-ove	anence r				
Maximum contact load Recommended minimum contact load	10 A/250 V 10 A/10 V 10 mA/10 V	AC-1 DC-1 Code 0	0,5 A/110 V 0,2 A/220 V 9			
	5 mA/5 V	Code 8				
Contacts					000000000	
Material Standard Code 0 Optional Code 8 Optional Code 9	AgNi AgNi + 10 μ Α AgNi + 0,2 μ .				Connection diagram	
Rated current	10 A				1 2 4 5 7 8 13 12 12 14 22 24 32 34 A1 A3	
Switch-on current max. (20 ms)	30 A				ч ц ц ч 22 24 32 34 лт Аз ц ц ц ц п оп (+),↓,ОFF	- (+)
Switching voltage max.	250 V				ÊÊE	
AC load	2,5 kVA				11 21 31 A2 (-)	
DC load	see Fig. 2				3 6 9 14	
Coil					Fig. 1 AC voltage endurance	
Coil resistance	see table; tole	erance +	10 %		10	
ON pulse power	1,5 VA/W		10 /0			
OFF pulse power	0,5 VA/W				AC-1	
	1 Winding for		indings for DC		[∞] Cos φ 0,4 1	
Pull-in ON/OFF	$\leq 0.8 \times U_N$	A0, 2 W		,	COS © 0,4	
Internal Diagram:	Coil table					
	VAC mA ON		VDC mA C		ig	
	24 75	12	12 125		Kitter	
	48 38	6	24 63		0,1	
A2 A2	115 16	2,5	48 31	10	kVA 0,5 1 1,5 2	2,
A2 A2 DC AC	230 8	1,3	110 14	-	Fig. 2 DC load limit curve	
Insulation	Volt rms, 1 m	n				
Contact open	1000 V				DC-1	
Contact/contact	2,5 kV				L/R 40 ms	
Contact/coil	2,5 kV					
Insulation resistance at 500 V	≥1 GΩ					
Insulation, IEC 61810-1	2,5 kV/3					
Specifications					Amps.	
Ambient temperature operation/storage	-40 (no ice)	.60 °C /-4	40 80 °C			
Minimum pulse length for ON/OFF	50 ms				0,1 Volt 50 100 150 200	
Mechanical life ops	AC: 10 Mill./E	C: 20 Mi	ll. switchina cv	/cles	Volt 50 100 150 200)
DC voltage endurance at rated load	≥100000 swit					
Switching frequency at rated load	≤ 1200/h				Dimensions [mm]	
Protection class	IP40					
Weight	95 g					
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)			0/40 11 01	DDD		
VDC 12, 24, 48, 110	C4-R30/AC C4-R30/DC			R39/AC V R39/DC V		
"" Enter the voltage for full type designation						
Accessories					CI .	
Socket:	S4-J, S4-L, S	64-P. S4-	P0		Technical approvals, conformities	
Optional accessories (blanking plug):	SO-NP, SO-0		-		@ @ CE 🖌	



IEC 61810; EN 60947

Туре

C5-A2x 8-pin, power relay, 2-pole, plug-in, faston



S



Connection diagram







Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



IEC 61810; EN 60947

туре	C3-A2X/ V				
	Power relays, 2 change-over contacts				
Maximum contact load	16 A/400 V AC-1 0,5 A/110 V D 16 A/30 V DC-1 0,2 A/220 V D				
Contacts					
Material Standard Code 0	AgNi				
Rated current	16 A				
Switch-on current max. (20 ms)	40 A				
Switching voltage max.	400 V				
AC load (Fig 1)	4 kVA				
DC load	see Fig. 2				
Coil					
Coil resistance	see table; tolerance \pm 10 %				
Pick-up voltage	\leq 0,8 x U _N				
Release voltage	≥ 0,1 x U _N				
Nominal power	2,4 VA (AC)/1,4 W (DC)				
Coil table	VAC Ω mA VDC Ω mA				
	24 65 100 24 414 58				
	48 286 50 48 1K6 30 115 1K7 21 110 8K1 13				
	230 6K8 10 220 35K6 6				
	400 18K8 6				
Insulation	Volt rms, 1 min				
Contact open	1000 V				
Contact/contact	4 kV				
Contact/coil	4 kV				
Insulation resistance at 500 V	≥3 GΩ				
Insulation, IEC 61810-1	4 kV/3				
Specifications					
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C				
Pick-up time/bounce time	20 ms/≤ 3 ms				
Release time/bounce time	10 ms/≤ 1 ms				
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.				
DC voltage endurance at rated load	≥100000 switching cycles				
Switching frequency at rated load	≤ 1200/ops/h				
Protection class	IP40				
Weight	90 g				
Standard types					
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	C5-A20/AC V				
LED	C5-A20X/AC V				
RC suppresor (max 250 V)	C5-A20R/AC V				
VDC 24, 48, 110, 220	C5-A20/DC V				
LED	C5-A20X/DC V				
End a sector de la construction de la const	C5-A20DX/DC V				
Free wheeling diode Polarity and free wheeling diode	C5-A20FX/DC V				

C5-A2x/ ... V

AC/DC bridge rectifier 24 V, 48 V, 60 V

"..." Enter the voltage for full type designation

Accessories

Socket: Optional accessories (blanking plug): S5-S, S5-L, S5-P, S5-P0, S5-M SO-NP, SO-OP

C5-A20BX/UC ... V

C5-A3x

11-pin, power relay, 3-pole, plug-in, faston

Туре	C5-A3x/ \ Power relays		-over contacts			P		
Maximum contact load	16 A/400 V 16 A/30 V	AC-1 DC-1	0,5 A/110 V 0,2 A/220 V			1		T
Contacts Material Standard Code 0 Rated current	AgNi 16 A					A AND	ali	AL
Switch-on current max. (20 ms) Switching voltage max. AC load (Fig 1)	40 A 400 V 4 kVA				Conne	ection di	agran	n
DC load	see Fig. 2							
Coil Coil resistance Pick-up voltage Release voltage Nominal power	see table; tol $\leq 0.8 \times U_N$ $\geq 0.1 \times U_N$ 2,4 VA (AC)/1		10 %				2 5 22 24 1 21 8	3 6 32 34
Coil table	VAC Ω 24 65 48 28 115 1K 230 6K 400 18K	5 100 6 50 7 21 8 10	24 414 48 1K6 110 8K1	mA 58 30 13 6,2	Fig. 1	AC volt	tage e	
Insulation Contact open Contact/contact Contact/coil Insulation resistance at 500 V Insulation, IEC 61810-1	Volt rms, 1 m 1000 V 4 kV 4 kV ≥3 GΩ 4 kV/3	nin			sotx salt cycles and c	0,66 1, DC load	33 limit	2 2 curve
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class Weight	-40 (no ice) 20 ms/≤ 3 m 10 ms/≤ 1 m AC: 10 Mill./[≥100000 swi ≤ 1200/h IP40 95 g	s s DC: 20 Mill			16 10 1 .sdwy			
Standard types VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240) LED RC suppresor (max 250 V)	C5-A30/A0 C5-A30X/A C5-A30R/A	NC V				50 nsions [n	100 nm]	150
VDC 24, 48, 110, 220 LED Free wheeling diode Polarity and free wheeling diode	C5-A30/D0 C5-A30X/E C5-A30DX C5-A30FX/	C V DC V /DC V					96 5	
AC/DC bridge rectifier 24 V, 48 V, 60 V	C5-A30BX	/UC V				FASTON .1		5.5
"" Enter the voltage for full type designation Accessories					Techr	ical app	rovals	^{8.9}
Socket: Optional accessories (blanking plug):	85-8, 85-L, SO-NP, SO-		P0, S5-M			c 🕀 us	((() *	e c



14	25	36	Α
12 14	22 24	32 34	A1 (+)
Ť	<u>Ţ</u>]	
ү 11	ү 21	31 31	A2
7	8	9	в

ance







formities



EN 60947; IEC 61810

C5-G3x

8-pin, power relay, 3-pole, open contact plug-in, faston

Туре	C5-G3x/ V Power relays, DC application. 3 open contacts	
Maximum contact load	16 A/400 V AC-1 1,2 A/110 V DC-1 16 A/30 V DC-1 0,4 A/220 V DC-1	
Contacts		
Material Standard Code 0	AgNi	
Rated current	16 A	
Switch-on current max. (20 ms)	40 A	
Switching voltage max.	400 V	Co
AC load (Fig 1)	4 kVA	Gap
DC load	see Fig. 2	1,7
Coil		
Coil resistance	see table; tolerance $\pm 10\%$	
Pick-up voltage	$\leq 0.8 \times U_N$	
Release voltage	$\geq 0.1 \times U_N$	
Nominal power	2,4 VA (AC)/1,6 W (DC)	Fig
Coil table	VAC Ω mA VDC Ω mA	10 -
	24 65 100 12 90 133	
	48 286 50 24 373 66	90
	115 1K7 21 48 1K4 34	s x1
	230 6K8 10 110 7K6 15	0 00
	400 18K8 6 220 30K3 7,5	ng cy
Insulation	Volt rms, 1 min	switching cycles x106
Contact open	2000 V	
Contact/contact	4 kV	0,1 -
Contact/coil	4 kV	kVA
Insulation resistance at 500 V	≥3GΩ	Fig
Insulation, IEC 61810-1	4 kV/3	
Specifications		16 10
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C	
Pick-up time/bounce time	20 ms/≤ 3 ms	
Release time/bounce time	10 ms/≤ 1 ms	
Mechanical life ops	AC: 10 Mill./DC: 20 Mill.	1 -
DC voltage endurance at rated load	≥100000 switching cycles	ps.
Switching frequency at rated load	≤ 1200/h	Amps.
Protection class	IP40	
Weight	95 g	0,1 [•] Volt
Standard types		Di
VAC 50 Hz/60 Hz: 24, 48, 115, (120), 230, (240)	C5-G30/AC V	
LED	C5-G30X/AC V	Ē
RC suppresor (max 250 V)	C5-G30R/AC V	
VDC 12, 24, 48, 110, 220	C5-G30/DC V	
LED	C5-G30X/DC V	
Free wheeling diode	C5-G30DX/DC V	ि पन्न
Polarity and free wheeling diode	C5-G30FX/DC V	-ਗਿ
AC/DC bridge rectifier 24 V, 48 V, 60 V	C5-G30BX/UC V	
"" Enter the voltage for full type designation		Те
•		
Accessories Socket:	\$5-\$ \$5-1 \$5-P \$5-P0 \$5-M	(0)





Connection diagram



Fig. 1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

@₽•(€₩

EN 60947; IEC 61810

Socket: Optional accessories (blanking plug): S5-S, S5-L, S5-P, S5-P0, S5-M SO-NP, SO-OP

C5-X1x

4-pin, power relay, 1-pole, double make, faston

Туре	C5-X1x/ V Power relays, DC applic 1 pole, NO, double mak		
Maximum contact load	16 A/400 V AC-1 16 A/30 V DC-1	7 A/110 V DC- 1,2 A/220V DC-	
Contacts Material Standard Code 0 Rated current Switch-on current max. (20 ms) Switching voltage max. AC load (Fig 1) DC load	AgNi 16 A 40 A 400 V 4 kVA see Fig. 2		Connection diagram Gap: > 3 mm 4 6 A
Coil Coil resistance Pick-up voltage Release voltage	see table; tolerance ± 1 $\leq 0.8 \times U_N$ $\geq 0.1 \times U_N$		Fig. 1 AC voltage endurance
Nominal power	2,4 VA (AC)/1,3 W (DC))	1	
Coil table	VAC Ω mA 24 65 100 48 286 50 115 1K7 21 230 6K8 10 400 18K8 6	VDC Ω mA 12 110 108 24 443 54 48 1K7 27 110 9K2 12 220 34K5 6,2	AC-1 Cos \$ 0,4 Cos \$ 0,4
Insulation	Volt rms, 1 min		vitchin
Contact open	4 kV		[₿] 0,1
Contact/contact Contact/coil	4 kV 4 kV		kVA 0,66 1,33 2 2,6 3,3 4
Insulation resistance at 500 V Insulation, IEC 61810-1	2 3 GΩ 4 kV/3		Fig. 2 DC load limit curve
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance at rated load Switching frequency at rated load Protection class Weight	-40 (no ice)60 °C /-4 20 ms/≤ 3 ms 10 ms/≤ 1 ms AC: 10 Mill./DC: 20 Mill. ≥100000 switching cycl ≤ 1200/h IP40 90 g		16 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Standard types			Dimensions [mm]
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED RC suppresor (max 250 V)	C5-X10/AC V C5-X10X/AC V C5-X10R/AC V		
VDC 12, 24, 48, 110, 220 LED Free wheeling diode Polarity and free wheeling diode	C5-X10/DC V C5-X10X/DC V C5-X10DX/DC V C5-X10FX/DC V		B B B B B B B B B B B B B B
AC/DC bridge rectifier 24 V, 48 V, 60 V	C5-X10BX/UC V		$\begin{array}{c} \begin{array}{c} \begin{array}{c} & & & \\ & & \\ - & \\$
"" Enter the voltage for full type designation			Technical approvals, conformities
Accessories Socket: Optional accessories (blanking plug):	S5-S, S5-L, S5-P, S5-F SO-NP, SO-OP	P0, S5-M	FNus (((())) (C) (C) (C) (C) (E) (C) (C

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

Relays 1.3

1

C5-M1x

4-pin, power relay, 1-pole double make, magnetic blow out, faston

Туре	C5-M1x/ V Power relays, DC application 1 pole, NO, magnetic blow out	
Maximum contact load	16 A/400 V AC-1 10 A/220 V DC-1 3,6 A/110 V DC-13 2 A/220 V DC-13	
Contacts Material Standard Code 0 Rated current	AgNi 16 A	ų
Switch-on current max. (20 ms) Switching voltage max. AC load (Fig 1)	40 A 400 V 4 kVA	Connectio
DC load Coil	see Fig. 2	> 3 mm (1,7 + 1,7)
Coil resistance Pick-up voltage Release voltage Nominal power	see table; tolerance $\pm 10 \%$ $\leq 0.8 \times U_N$ $\geq 0.1 \times U_N$ 2.4 VA (AC)/1.3 W (DC)	Fig. 1 AC
Coil table	VACΩmAVDCΩmA246510012110108482865024443541151K721481K7272306K8101109K21240018K8622034K56,2	Operations x10 ⁶ 01
Insulation Contact open Contact/contact Contact/coil Insulation resistance at 500 V Insulation, IEC 61810-1	Volt rms, 1 min 4000 V 4 kV 4 kV ≥3 GΩ 4 kV/3	0,1 kVA 0,66 Fig. 2 DC
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC voltage endurance Switching frequency at rated load Protection class Weight	-40 (no ice)60 °C /-40 80 °C 20 ms/≤ 3 ms 10 ms/≤ 1 ms AC: 10 Mill./DC: 20 Mill. see fig. 2 ≤ 1200/h IP40 90 g	off xtions xtion
Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED RC suppresor (max 250 V)	C5-M10/AC V C5-M10X/AC V C5-M10R/AC V	Dimension
VDC 12, 24, 48, 110, 220 LED Free wheeling diode Polarity and free wheeling diode	C5-M10/DC V C5-M10X/DC V C5-M10DX/DC V C5-M10FX/DC V	
AC/DC bridge rectifier 24 V, 48 V, 60 V	C5-M10BX/UC V	Technical
Accessories Socket:	S5-S, S5-L, S5-P, S5-P0, S5-M	
Optional accessories (blanking plug):		

SO-NP, SO-OP





n diagram



voltage endurance



voltage endurance



ns [mm]





approvals, conformities



IEC 61810; EN 60947

80 | 15/16

Optional accessories (blanking plug):

C5-M2x

6-pin, power relay, 2-pole normally open, magnetic blow out, faston

Туре	C5-M2x/ V Power relays, DC appli double pole, NO, magr		
Maximum contact load	16 A / 250 V AC-1	7 A / 110 V DC-1 3 A / 220 V DC-1	
ContactsMaterialStandardCode 0Rated currentSwitch-on current max. (20 ms)Switching voltage max.	AgNi 16 A 40 A 250 V		Connection diagram
AC load (Fig 1)	4 kVA		
DC load	see Fig. 2		Gap: 4 _{Magnet} 6 A 1,7 mm A1(+)
Coil resistance Pick-up voltage Release voltage	see table; tolerance $\pm 20,8 \times U_N$ $\ge 0,1 \times U_N$	10 %	7 (+) 9 (+) B
Nominal power	2,4 VA (AC) / 1,6 W (D	C)	Fig. 1 AC voltage endurance
Coil table	VAC Ω mA 24 65 100 48 286 50 115 1K7 21 230 6K8 10.4	VDC Ω mA 12 90 133 24 373 66 48 1K4 33 110 7K6 15	
Insulation Contact open Contact/contact Contact/coil Insulation resistance at 500 V Insulation, EN 60947/IEC 61810-1:	Volt rms, 1 min 2 kV 4 kV 3 kV ≥ 3 GΩ 4 KV/3		Opt September 201 September 201 September 201 <
Specifications Ambient temperature operation/storage Pick-up time/bounce time Release time/bounce time Mechanical life ops DC Rated load Switching frequency at rated load Protection class Weight	-40 (no ice)60 °C /-4 20 ms/≤ 3 ms 10 ms/≤ 1 ms AC: 10 Mill./DC: 20 Mil ≥ 75.000 switching cyc ≤ 1200/h IP40 90 g	I. switching cycles	1 1 1 1 1 1 1 1 1 1 1 1 1 1
Standard types			_Volt 50 100 150 200
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED RC suppresor (max 250 V)	C5-M20/AC V C5-M20X/AC V C5-M20R/AC V		Dimensions [mm]
VDC 12, 24, 48, 110, 220 LED Free wheeling diode Polarity and free wheeling diode	C5-M20/DC V C5-M20X/DC V C5-M20DX/DC V C5-M20FX/DC V		
AC/DC bridge rectifier 24 V, 48 V, 60 V	C5-M20BX/UC V		
"" Enter the voltage for full type designation			4.75 FASTON .187
Accessories			Technical approvals, conformities
Socket: Optional accessories (blanking plug):	S5-S, S5-L, S5-P, S5- SO-NP, SO-OP	P0, S5-M	@ 💽 (🤇 🕍

Relays 1.3

1

J

RELECO

WORLD OF RELAYS

C5-R2x

9-pin, remanence relay, 2-pole, faston

0,2 $A/250 V DC-1$ 0,5 $A/110 V DC$ -ContactsMaterialStandardCode 0AgNiTated current10 AWitch-ino current max. (20 ms)30 ASwitching voltage max.400 VAC load (Fig 1)4 kVAScolisee Fig. 2Colisee Fig. 2Coli resistancesee table; tolerance $\pm 10 \%$ Dif poissone1,5 VAWOptimer0,5 X/UNColi tableVirtual of the fig 1Virtual of AC, 2 winding for DCVirtual of the fig 2Coli tableVirtual of the fig 2Virtual of the fig 2Virtua	Туре	C5-R2x/ V Magnetic latching – Rer 2 change-over contact,		
Material Standard Code 0 AgNi Tated current 10 A Solutiching voltage max. (20 ms) 30 A 400 V 400 V 40	Maximum contact load			
Rated current10 ÅSwitch-on current max. (20 ms)30 ÅSwitching voltage max.400 VAC load (Fig 1)4 kVÅDC loadsee Fig. 2Coilsee Fig. 2Coil resistancesee table; tolerance ± 10 %DN pulse power1,5 VAWUninding for AC, 2 winding for DC $0,5$ VAWPull-in ON/OFF $< 0,8 \times U_N$ Coil tableVac ma ON ma OFFVDC mA ON ma OFFPull-in ON/OFF $< 0,8 \times U_N$ Coil tableVac ma ON ma OFFVDC ma ON ma OFFPull-in ON/OFF $< 0,8 \times U_N$ Coil tableVac ma ON ma OFFVDC ma ON ma OFFPull-in ON/OFF $< 0,8 \times U_N$ Coil tableVac ma ON ma OFFVDC ma ON ma OFFVolt rms, 1 minCoil tableVac ma ON ma OFFVolt rms, 1 minCoil tableVac ma ON ma OFFVolt rms, 1 minContact/contactAll (no ice)60 °C /-40 80 °CSon msAcc-40 (no ice)60 °C /-40 80 °CSon msVac for Hz PosAcc-40 (no ice)60 °C /-40 80 °CSon msColspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colspan="2"Colspan="2"Colsp	Contacts			
Switch-on current max. (20 ms) Switch-on current max. (20 ms) Switch-on current max. (20 ms) Switch-ing voltage max. A G load (Fig 1) Coll Coll Coll Coll Coll Coll resistance Sol res Sol resistance Sol resistance Sol resist	Material Standard Code 0	-		
Switching voltage max. 400 V 4 Cload (Fig 1) 4 KVA 3 col resistance 201	Rated current			
AC load (Fig 1) AC load $(Fig 1)$ AC load $(Fig $				
DC loadsee Fig. 2Coilsee table; tolerance $\pm 10\%$ Coil resistancesee table; tolerance $\pm 10\%$ DN pulse power1,5 VA/WDF pulse power0,5 VA/WUnin ON/OFF $\langle 0,8 \times U_N \rangle$ Internal Diagram:Coil tableImage: Contact ContactVOC mA ON mA OFFImage: Contact/contactVot rms, 1 minImage: Contact/contact1000 VContact/contact4 kVContact/contact4 kVContact/contact4 kVContact/coil4 kVSpecifications-40 (no ice)60 °C /-40 80 °CMinimum pulse ON/OFF50 msMolent temperature operation/storage-40 (no ice)60 °C /-40 80 °CStrandard typesAc: 10 Mill/DC: 20 Mill.Protection class1200/hProtection classIP40Yeight95 gStandard typesC5-R20/AC VC5-R20/AC				
Delinesistancesee table; tolerance $\pm 10 \%$ 2N pulse power1,5 VA/WOFF pulse power0,5 VA/W1 winding for AC, 2 winding for DC $< 0,8 \times U_N$ Pull-in ON/OFFCoil tableImmediate transformed and the transformed and transform	DC load			
DN pulse power1,5 VA/WDFF pulse power0,5 VA/W1 winding for AC, 2 winding for DCPull-in ON/OFF $< 0,8 \times U_{ht}$ nternal Diagram:Coil table $1 \longrightarrow L_{AC}^{AC}$ $\frac{A1}{A} \longrightarrow L_{AC}^{AC}$ $2 \longrightarrow L_{AC}^{AC}$ $\frac{A1}{A} \longrightarrow L_{AC}^{AC}$ $2 \longrightarrow L_{AC}^{AC}$ $\frac{A1}{A} \longrightarrow L_{AC}^{AC}$ $2 \longrightarrow L_{AC}^{AC}$ $\frac{A1}{A} \longrightarrow L_{AC}^{AC}$	Coil			
DFF pulse power 0,5 VAW 1 winding for AC, 2 winding for DC Pull-in ON/OFF $< 0,8 \times U_N$ Thernal Diagram: The product of the product of t	Coil resistance		0 %	
t winding for AC, 2 winding for DC Pull-in ON/OFF $< 0,8 \times U_N$ nternal Diagram: $A \rightarrow AC$ $A \rightarrow CC$ $A \rightarrow CC$	ON pulse power			
Pull-in ON/OFF $< 0.8 \times U_N$ Internal Diagram:Coil tableImage: Decision of the second stress of the second s	OFF pulse power	0,5 VA/W		
VAC mA ON mA OFF VOC mA ON mA OF VOC mA ON mA OF VOC mA ON mA OF 24 75 12 48 38 6 24 75 12 48 38 6 24 63 21 230 8 1.3 110 14 4.5 VAC mA ON mA OFF 24 75 12 48 38 6 24 15 12 48 38 6 24 24 63 21 110 14 4.5 Number of the systemNumber of the systemVOC mA ON mA OFF 24 75 12 48 38 6 24 75 12 48 31 100 VAC mA ON mA OFF 24 75 12 48 31 100 Voc mA ON mA OFF 24 75 12 110 Voc mA ON mA OFF 24 75 12 110 Voc ma ON mA OFF 24 75 12 110 Voc ma ON mA OFF 24 115 100 14 Voc ma ON mA OFF 24 115 Voc ma ON mA OFF 24 $10000 VVolt rms, 1 min1000 VVolt rms, 1 min1000 VSpecificationsAC: 10 Mill./DC: 20 Mill.OC Voltage endurance at rated load41200/hVolt region1200/hVoltage endurance at rated load41200/hVoltage enduranc$	1 winding for AC, 2 winding for DC Pull-in ON/OFF	< 0,8 x U _N		
* $\stackrel{+}{4}$ $\stackrel{+}{3}$ $\stackrel{+}{3}$ $\stackrel{+}{10}$ $\stackrel{+}{2}$ $\stackrel{+}{4}$ $\stackrel{+}{3}$ $\stackrel{+}{3}$ $\stackrel{+}{10}$ $\stackrel{+}{2}$ $\stackrel{+}{4}$ $\stackrel{+}{3}$ $\stackrel{+}{3}$ $\stackrel{+}{10}$ $\stackrel{+}{14}$ $\stackrel{+}{4}$ $\stackrel{+}{3}$	Internal Diagram:	Coil table		
nsulation Volt rms, 1 min Contact open 1000 V Contact/contact 4 kV Contact/coil 4 kV Insulation resistance at 500 V ≥3 G Ω nsulation, EN 60947/IEC 61810-1 4 kV/3 Specifications -40 (no ice)60 °C /-40 80 °C Ambient temperature operation/storage -40 (no ice)60 °C /-40 80 °C Vinimum pulse ON/OFF 50 ms Mechanical life ops AC: 10 Mill./DC: 20 Mill. DC voltage endurance at rated load ≥100000 switching cycles Switching frequency at rated load ≤ 1200/h Protection class IP40 Weight 95 g Standard types /AC 50 Hz: 24, 48, 115 (120), 230 (240) C5-R20/AC V /DC : 12, 24, 48, 110, C5-R20/DC V /LC : 12, 24, 48, 110, C5-R20/DC V /L" Enter the voltage for full type designation X Accessories S5-S, S5-L, S5-P0, S5-M		24751248386115162,5	12 125 41 24 63 21 48 31 10	,
Contact/contact 4 kV Contact/coil 4 kV Insulation resistance at 500 V ≥3 GΩ nsulation, EN 60947/IEC 61810-1 4 kV/3 Specifications -40 (no ice)60 °C /-40 80 °C Ambient temperature operation/storage -40 (no ice)60 °C /-40 80 °C Vinimum pulse ON/OFF 50 ms Mechanical life ops AC: 10 Mill./DC: 20 Mill. OC voltage endurance at rated load ≥100000 switching cycles Switching frequency at rated load ≤ 1200/h Protection class IP40 Weight 95 g Standard types C5-R20/AC V /DC : 12, 24, 48, 115 (120), 230 (240) C5-R20/DC V /DC : 12, 24, 48, 110, C5-R20/DC V *" Enter the voltage for full type designation S5-S, S5-L, S5-P, S5-P0, S5-M	Insulation	Volt rms, 1 min	1	
Contact/coil 4 kV nsulation resistance at 500 V ≥3 G Ω nsulation, EN 60947/IEC 61810-1 4 kV/3 Specifications -40 (no ice)60 °C /-40 80 °C Ambient temperature operation/storage -40 (no ice)60 °C /-40 80 °C Vinimum pulse ON/OFF 50 ms Mechanical life ops AC: 10 Mill./DC: 20 Mill. OC voltage endurance at rated load ≥100000 switching cycles Switching frequency at rated load ≤ 1200/h Protection class IP40 Weight 95 g Standard types C5-R20/AC V VDC : 12, 24, 48, 115 (120), 230 (240) C5-R20/DC V '" Enter the voltage for full type designation S5-S, S5-L, S5-P, S5-P0, S5-M	Contact open	1000 V		
Insulation resistance at 500 V ≥3 G Ω Insulation, EN 60947/IEC 61810-1 4 kV/3 Specifications -40 (no ice)60 °C /-40 80 °C Ambient temperature operation/storage -40 (no ice)60 °C /-40 80 °C Vinimum pulse ON/OFF 50 ms Mechanical life ops AC: 10 Mill./DC: 20 Mill. OC voltage endurance at rated load ≥100000 switching cycles Switching frequency at rated load ≤ 1200/h Protection class IP40 Weight 95 g Standard types C5-R20/AC V VDC : 12, 24, 48, 115 (120), 230 (240) C5-R20/DC V '" Enter the voltage for full type designation S5-S, S5-L, S5-P, S5-P0, S5-M	Contact/contact	4 kV		
nsulation, EN 60947/IEC 61810-1 4 kV/3 Specifications -40 (no ice)60 °C /-40 80 °C Ambient temperature operation/storage -40 (no ice)60 °C /-40 80 °C Minimum pulse ON/OFF 50 ms Mechanical life ops AC: 10 Mill./DC: 20 Mill. DC voltage endurance at rated load ≥100000 switching cycles Switching frequency at rated load ≤ 1200/h Protection class IP40 Weight 95 g Standard types C5-R20/AC V //AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/DC V //DC : 12, 24, 48, 110, C5-R20/DC V *" Enter the voltage for full type designation S5-S, S5-L, S5-P, S5-P0, S5-M	Contact/coil			
Ambient temperature operation/storage -40 (no ice)60 °C /-40 80 °C Minimum pulse ON/OFF 50 ms Mechanical life ops AC: 10 Mill./DC: 20 Mill. DC voltage endurance at rated load ≥100000 switching cycles Switching frequency at rated load ≤ 1200/h Protection class IP40 Weight 95 g Standard types C5-R20/AC V /AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/DC V /DC : 12, 24, 48, 110, C5-R20/DC V *" Enter the voltage for full type designation S5-S, S5-L, S5-P, S5-P0, S5-M	Insulation resistance at 500 V Insulation, EN 60947/IEC 61810-1			
Minimum pulse ON/OFF 50 ms Mechanical life ops AC: 10 Mill./DC: 20 Mill. DC voltage endurance at rated load ≥100000 switching cycles Switching frequency at rated load ≤1200/h Protection class IP40 Weight 95 g Standard types C5-R20/AC V /AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/DC V /DC : 12, 24, 48, 110, C5-R20/DC V '" Enter the voltage for full type designation S5-S, S5-L, S5-P, S5-P0, S5-M	Specifications			
Mechanical life ops AC: 10 Mill./DC: 20 Mill. DC voltage endurance at rated load ≥100000 switching cycles Switching frequency at rated load ≤ 1200/h Protection class IP40 Weight 95 g Standard types C5-R20/AC V /AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/AC V /DC : 12, 24, 48, 110, C5-R20/DC V '" Enter the voltage for full type designation S5-S, S5-L, S5-P, S5-P0, S5-M	Ambient temperature operation/storage	-40 (no ice)60 °C /-4	0 80 °C	
DC voltage endurance at rated load ≥100000 switching cycles Switching frequency at rated load ≤ 1200/h Protection class IP40 Weight 95 g Standard types C5-R20/AC V /AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/DC V /DC : 12, 24, 48, 110, C5-R20/DC V '" Enter the voltage for full type designation S5-S, S5-L, S5-P, S5-P0, S5-M	Minimum pulse ON/OFF			
Switching frequency at rated load ≤ 1200/h Protection class IP40 Weight 95 g Standard types C5-R20/AC V /AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/AC V /DC : 12, 24, 48, 110, C5-R20/DC V '" Enter the voltage for full type designation Xaccessories Socket: S5-S, S5-L, S5-P, S5-P0, S5-M	Mechanical life ops			
Protection class IP40 Weight 95 g Standard types C5-R20/AC V /AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/AC V /DC : 12, 24, 48, 110, C5-R20/DC V '" Enter the voltage for full type designation Accessories Socket: S5-S, S5-L, S5-P, S5-P0, S5-M	-		es	
Weight 95 g Standard types /AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/AC V /DC : 12, 24, 48, 110, C5-R20/DC V '" Enter the voltage for full type designation Xaccessories Socket: Socket: S5-S, S5-L, S5-P, S5-P0, S5-M				
Standard types /AC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/AC V /DC : 12, 24, 48, 110, C5-R20/DC V '" Enter the voltage for full type designation Accessories Socket: S5-S, S5-L, S5-P, S5-P0, S5-M				
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) C5-R20/AC V VDC : 12, 24, 48, 110, C5-R20/DC V " Enter the voltage for full type designation Accessories Socket: S5-S, S5-L, S5-P, S5-P0, S5-M		~~ 9		
Accessories Socket: S5-S, S5-L, S5-P, S5-P0, S5-M	Standard types VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240)	C5-R20/AC V		
Accessories Socket: S5-S, S5-L, S5-P, S5-P0, S5-M	VDC : 12, 24, 48, 110,	C5-R20/DC V		
Socket: S5-S, S5-L, S5-P, S5-P0, S5-M	"" Enter the voltage for full type designation			
	Accessories			
Optional accessories (blanking plug): SO-NP, SO-OP	Socket:		P0, S5-M	
	Optional accessories (blanking plug):	SO-NP, SO-OP		





Connection diagram



Fig. 1 AC voltage endurance



Fig. 2 DC load limit curves



Dimensions [mm]





Technical approvals, conformities

82 | 15/16



No	tes	5	1	1	1	1	1	1				1	1										

1



Notes

				 		 	 	 	 				 						 -	
								 							 				-	
																			-	
																	-		-+	
																			\neg	
																			 -+	
-							 	 			 				 					
-							 	 	 				 						 -	
						 	 	 	 		 	 	 	 	 			 	 _	
								 							 				-	
																	-		-+	
																			 -+	
				 				 							 				-	
		-																	 -+	
L				 																



1.4 Long Life Relays (Railway)

Long Life Series



Application	Types	Pins	Contacts	Contact ratings	Socket
C20 Series Long Life standard	C21	:8:	┢┾╧	10 A / 250 V	S2
Long Life, reliable switching of lower loads	C22	:8:	'#' -₽	5 A / 250 V	S2
C30 Series		_			
Long Life, Railway	C31	:ii:	┢┾┾╤	10 A / 250 V	S3
Long Life, reliable switching of lower loads, Railwa	ay C32	:::::	╆ ╋	5 A / 250 V	S3

Long life series C21 with single contacts

Туре

8 pin plug-in relay, 2-pole, according to IEC 67-I-5a

C21/...V

Long Life Relay 2 change over contacts Types with LED status indicator Types with free wheeling diode

Manual actuator and mech. status indicator



	-	
-		

Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



Maximum contact load	10 A / 250 V AC-1,
Recommended minimum contact load	10 A / 30 V DC-1 50 mA / 10 V
Contacts	
Туре	single contact micro disconnection
Material	AgCuNi
Rated operational current	10 A
Max. inrush current (20 ms)	40 A
Rated switching voltage AC-1	250 V
Max. AC load	2500 VA AC-1
Max. DC load 30 V / 230 V DC-1 (Fig. 2)	300 W / 90 W
Coils (Values are valid at 20 °C)	
Pick-up voltage	$\leq 0.8 \text{ x V}_{N}$

 $\leq 0.8 \; x \; V_N$ $> 0.15 \ x \ V_N \ / > 0.05 \ x \ V_N$ 2.5 VA / 1.2 W

V _N AC	Ω	mA	V _N DC	Ω	mA
24	52	104	12	115	104
48	240	55	24	480	50
115	1350	23	48	1850	26
230	5600	11.5	110	9000	12
			220	29000	7.6

Types with LED indicator take additional 5 ... 10 mA @ < 80 V

Insulation	
Test voltage open contact	1.5 kVrms, 1 minute
Test voltage between adjacent poles	1.5 kVrms, 1 minute
Test voltage between contacts and coil	2 kVrms, 1 minute

General Specifications

Release voltage AC / DC

Nominal power AC / DC

Coil Table

Ambient temperature operation, storage
Pickup time AC / DC
Release time AC / DC
Bounce time NO contact AC / DC
Mechanical life
Operating frequency at nominal load
Ingress Protection degree
Weight

Standard types

AC 50 Hz / 60 Hz: 24, 48, 115, 230 LED DC: 12, 24, 48, 110, 220 Free wheeling diode LED + Free wheeling diode



-40 ... +70 °C $3 \dots 10 \text{ ms} / \le 12 \text{ ms}$

 $\geq 10^8$ operations

IP 40

80 g

 \leq 360 operations / h

 $2 \dots 15 \text{ ms} / \le 3.5 \text{ ms}$

3 ... 6 ms / approx. 3.5 ms

"..." enter the voltage for full type designation

Accessories Socket:

EC-8, S2-B, S2-S, S2-L, S2-P, S2-PO

86 15/16

C22 with double contacts

8 pin plug-in relay, 2-pole, according to IEC 67-I-5a



Connection diagram

Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



Recommended minimum contact load

Maximum contact load

Contacts

Туре

Туре
Material
Rated operational current
Max. inrush current (20 ms)
Rated switching voltage AC-1
Max. AC load
Max. DC load 30V / 230V DC-1 (Fig. 2)

Coils (Values are valid at 20 °C) Pick-up voltage Release voltage AC / DC

Nominal power AC / DC

$\leq 0.8 \ x \ V_N \\ > 0.15 \ x \ V_N \ / > 0.05 \ x \ V_N \\ 2.5 \ VA \ / \ 1.2 \ W$

C22/...V

Long Life Relay

6 A / 250 V AC-1

6 A / 30 V DC-1

10 mA / 5 V

AgCuNi 6 A

15 A 250 V 1500 VA AC-1 200 W / 90 W

2 change over double contacts Types with LED status indicator Types with free wheeling diode

Manual actuator and mech. status indicator

double contact micro disconnection

V _N AC	Ω	mA	V _N DC	Ω	mA
24	52	104	12	115	104
48	240	55	24	480	50
115	1350	23	48	1850	26
230	5600	11.5	110	9000	12
			220	29000	7.6

Types with LED indicator take additional 5 ... 10 mA @ < 80 V

Insulation

Coil Table

Test voltage open contact
Test voltage between adjacent poles
Test voltage between contacts and coil

General Specifications

Ambient temperature operation, storage Pickup time AC / DC Release time AC / DC Bounce time NO contact AC / DC Mechanical life Operating frequency at nominal load Ingress Protection degree Weight

1.5 kVrms, 1 minute 1.5 kVrms, 1minute 2 kVrms, 1minute

-40 +70 °C
3 10 ms / ≤ 12 ms
2 15 ms / ≤ 3.5 ms
3 6 ms / approx. 3.5 ms
≥ 10 ⁸ operations
\leq 360 operations / h
IP 40
80 g

Standard types AC 50 Hz / 60 Hz: 24, 48, 115, 230 LED DC: 12, 24, 48, 110, 220 Free wheeling diode LED + Free wheeling diode

C22/AC...V C22L/AC...V C22/DC...V C22D/DC...V C22DL/DC...V

"..." enter the voltage for full type designation

Accessories Socket:

EC-8, S2-B, S2-S, S2-L, S2-P, S2-PO

C31 with single contacts

11 pin plug-in relay, 3-pole, according to IEC 67-I-18a

C31/...V

3 change over contacts Types with LED status indicator Types with free wheeling diode

10 A / 250 V AC-1







Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



Recommended minimum contact load	10 A / 30 V DC-1 50 mA / 10 V
Contacts	
Туре	single contact micro disconnection
Material	AgCuNi
Rated operational current	10 A
Max. inrush current (20 ms)	40 A
Rated switching voltage	250 V
Max. AC load	2500 VA AC-1
Max. DC load 30V / 230V DC-1 (Fig. 2)	300W / 90 W

Coils (Values are valid at 20 °C) Pick-up voltage Release voltage AC / DC Nominal power AC / DC

Maximum contact load

Coil Table

Туре

 $> 0.15 \text{ x V}_{N} / > 0.05 \text{ x V}_{N}$ 2.5 VA / 1.2 W

 $\leq 0.8 \; x \; V_N$

V _N AC	Ω	mA	V _N DC	Ω	mA
24	52	104	12	115	104
48	240	55	24	480	50
115	1350	23	48	1850	26
230	5600	11.5	110	9000	12
			220	29000	7.6

Long Life Relay, according to EN 50 155 Railway

Manual actuator and mech. status indicator

Types with LED indicator take additional 5 ... 10 mA @ < 80 V

Insulation	
Test voltage open contact	1.5 kVrms, 1 minute
Test voltage between adjacent poles	1.5 kVrms, 1minute
Test voltage between contacts and coil	2 kVrms,1minute

General Specifications

Ambient temperature operation, storage
Pickup time AC / DC
Release time AC / DC
Bounce time NO contact AC / DC
Mechanical life
Operating frequency at nominal load
Ingress Protection degree
Weight

Standard types AC 50 Hz / 60 Hz: 24, 48, 115, 230 (240) LED DC: 12, 24, 48, 110, 220 Free wheeling diode LED + Free wheeling diode Railway EN 50155; NF F 16-101/102



 $2\ \dots\ 15\ ms\ /\le 3.5\ ms$

3 ... 6 ms / approx. 3.5 ms

-40 ... +70 °C $3 \dots 10 \text{ ms} / \le 12 \text{ ms}$

 $\geq 10^8$ operations

IP 40

80 g

 \leq 360 operations / h

"..." enter the voltage for full type designation

Accessories Socket:

EC-11, EC11A, S3-B, S3-S, S3-L, S3-P, S3-PO

C32 with double contacts

Туре

11 pin plug-in relay, 3-pole, according to IEC 67-I-18a

C32/...V

Long Life Relay, according to EN 50 155 Railway

3 change over double contacts Types with LED status indicator Types with free wheeling diode



LD

Relays 1.4



Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities





Manual actuator and mech. status indicator Maximum contact load 6 A / 250 V AC-1 6 A / 30 V DC-1 Recommended minimum contact load 10 mA / 5 V Contacts double contact micro disconnection Type 6 A Rated operational current Max. inrush current (20 ms) 15 A 250 V Rated switching voltage AC-1 1500 VA AC-1 Max. AC load Max. DC load 30V / 230V DC-1 (Fig. 2) 200 W / 90 W Coils (Values are valid at 20 °C) Pick-up voltage $\leq 0.8 \; x \; V_N$ Release voltage AC / DC $> 0.15 \ x \ V_N$ / $> 0.05 \ x \ V_N$ Nominal power AC / DC 2.5 VA / 1.2 W **Coil Table** V_N AC Ω mΑ V_N DC Ω mA 104 24 52 104 12 115 48 240 55 24 480 50 115 1350 23 48 1850 26 230 5600 11.5 110 9000 12 220 29000 7.6 Types with LED indicator take additional 5 ... 10 mA @ < 80 V Insulation Test voltage open contact 1.5 kVrms, 1 minute Test voltage between adjacent poles 1.5 kVrms, 1 minute Test voltage between contacts and coil 2 kVrms, 1 minute **General Specifications** -40 ... +70 °C Ambient temperature operation, storage Pickup time AC / DC $3 \dots 10 \text{ ms} / \le 12 \text{ ms}$ Release time AC / DC $2 \dots 15 \text{ ms} / \le 3.5 \text{ ms}$ Bounce time NO contact AC / DC 3 ... 6 ms / approx. 3.5 ms Mechanical life $\geq 10^8$ operations ≤ 360 operations / h Operating frequency at nominal load Ingress Protection degree IP 40 Weight 80 g Standard types C32/AC...V AC 50 Hz / 60 Hz: 24, 48, 115, 230 (240) LED C32L/AC...V DC: 12, 24, 48, 110, 220 C32/DC...V Free wheeling diode C32D/DC...V LED + Free wheeling diode C32DL/DC...V Railway EN 50155; NF F 16-101/102

"..." enter the voltage for full type designation

Accessories Socket:

EC-11, EC11A, S3-B, S3-S, S3-L, S3-P, S3-PO

C32D/R DC...V



Notes

				 		 	 	 	 				 						 -	
								 							 				-	
																			-	
																	-		-+	
																			\neg	
																			 -+	
-							 	 			 				 					
-						 	 	 	 				 						 -	
						 	 	 	 		 	 	 	 	 			 	 _	
								 							 				-	
																	-		-+	
																			 -+	
				 				 							 				-	
		-																	 -+	
L				 																



1.5 Solid State Relays



Application	Types	Pins	Contacts	AC ratings	DC ratings	Socket
CSS Series						
AC Solid state relay, Instantaneous switching	CSS-I		++	3 A / 250 V		S10
AC Solid state relay synch. to zero crossing	CSS-Z		추	3 A / 250 V		S10
NPN Solid state relay	CSS-N		Σ		6 A / 48 V	S10
PNP Solid state relay	CSS-P		Þ		6 A / 48 V	S10
CRINT Series						
DC solid state switch	CRINT-C1x5		Σ		2 A / 24 V	
AC solid state switch	CRINT-C1x8		추	1 A / 240 V		

IRC series

CSS-I

Туре

Output

Operating range Minimum contact load

Control circuit

Output circuit

Inrush current

l²t value

Residual current

Specifications

Pick-up time

Release time

Weight

Ambient temperature operation/storage

Input voltage range Input current

Max. output current

Min. output current

Output voltage range

4-pin, Interface solid state relay, 1-pole, plug-in faston

CSS-I

35 mA

10 mA

3 A

35 mA

1 mA

210 A²s

0.06 ms

0.06 ms

28 g

5 ... 48 VDC

Instantaneous

24...250 VAC

150 A/10 ms

-40 ... 70 °C /-40 ... 85 °C

Solid state relay

Instantaneous

1 N/O contact

3 A, 24 ... 250 VAC, 50/60 Hz

For switching resistive and inductive AC loads





CSS-I

Fig. 1 CSS-I diagram



Tab. 2 AC derating curve

Dimensions [mm]

Applications

It is specially suitable to switch inductive loads up to 3A/250 VAC.

For switching loads with a high inrush or overcurrent as transformers, motors or fluorescents, the maximum output current will limit to 2 A.



Socket:

CSS-I12X/DC5-48V

S10, S10-M, S10-P



30 40 Temperature [°C] 50 60

Technical approvals, conformities

CE

Current [A]



92 | 15/16

CSS-Z

4-pin, Interface solid state relay, 1-pole, plug-in faston

Туре	CSS-Z Solid state relay For switching resistive lamps and AC loads Synchronized to zero crossing	J.
Output	1 N/O contact	-
Operating range	3 A, 24 250 VAC, 50/60 Hz	
Minimum contact load	35 mA	5X
Control parameters		D-AI
Input voltage range	5 48 VDC	- 50 CS
Input current	10 mA	000
Output	Synchronized zero	
Max. output current	3 A	
Min. output current	35 mA	
Output voltage range	24 250 VAC	
Inrush current	150 A/10 ms	
Residual current	1 mA	
l ² t value	210 A ² s	Fig. 1 CSS-Z diagram
Specifications		_
Ambient temperature operation/storage	-4070 °C /-40 85 °C	+(-)A10
Pick-up time	10 ms	
Release time	10 ms	P Y L P I P
Weight	28 g	-(+)A20

Applications

Switches ohmic AC loads up to 3 A/250 VAC in the zero-point of the tension and avoids any overcurrent peak in the connection.

Suitable for switching resistors, incandescent lamps, signalling equipment, etc. Not suitable for inductive loads



Standard types

VDC 5-48

Accessories

Socket:

CSS-Z12X/DC5-48V

S10, S10-M, S10-P



Technical approvals, conformities

CE







Tab. 2 AC derating curve



IRC series

CSS-N

4-pin, Interface solid state relay, 1-pole, plug-in faston

Туре	CSS-N							
	NPN solid state relay							
	Terminal commun 2 negative (S10 socket)							
Output	1 N/O contact							
Operating range	6 A, 5 48 VDC							
Minimum contact load	1 mA							
Control parameters								
Input voltage range	5 48 VDC							
Input current	4 mA							
Output								
Туре	NPN							
Max. output current	6 A							
Output voltage range	5 48 VDC							
Switch-on current max.	40 A / 10 ms							
Max. voltage drop	≤ 0,14 VDC							
Residual current	0,1 mA							
Specifications								
Ambient temperature operation/storage	-40 70 °C/-40 85 °C							
Test voltage between input/output	4 kV rms/1 min.							
Turn-on delay	0,06 ms							
Release delay	0,06 ms							
Weight	28 g							





Fig. 1 CSS-N diagram



Tab. 2 DC derating curve

Current [A]

0

Dimensions [mm]

Negative common



For switching heating elements, electro valves, motors, PLC input/output signals, solenoids, incandescent and fluorescent lamps, etc. (up to 48 VDC).

Inductive loads must be shunted with an antiparallel diode.



Standard types

VDC	5-48
100	3-40

Accessories

Socket:

CSS-N13X/DC5-48V

S10, S10-M, S10-P



30 40 Temperature [°C]

50 60 70

Technical approvals, conformities

CE

CSS-P

4-pin, Interface solid state relay, 1-pole, plug-in faston

Туре	CSS-P
	PNP solid state relay
	Terminal commun 2 positive (S10 socket)
Output	1 N/O contact
Operating range	6 A, 5 48 VDC
Minimum contact load	1 mA
Control parameters	
Input voltage range	5 48 VDC
Input current	4 mA
Output	
Туре	PNP
Max. output current	6 A
Output voltage range	5 48 VDC
Max. switch-on current	40 A / 10 ms
Max. voltage drop	0,14 VDC
Residual current	0,1 mA
Specifications	
Ambient temperature operation/storage	-4070 °C /-40 85 °C
Turn-on delay	0,06 ms
Release delay	0,06 ms
Weight	28 g



For switching heating elements, electro valves, motors, PLC input/output signals, solenoids, incandescent and fluorescent lamps, etc. (up to 48 VDC).

Inductive loads must be shunted with an antiparallel diode.



Standard types

VDC 5-48

Accessories

es

Socket:

CSS-P13X/DC5-48V

S10, S10-M, S10-P





Technical approvals, conformities

CE

RELECC



Fig. 1 CSS-P diagram

Tab. 2 DC derating curve



Positive common



CRINT 1x5 series

Solid state interface module with mechanical NO output contact

DIN Rail mounting according to DIN 43 880

Types: CRINT-C115, CRINT-C125 / ...V

For PLC's and process control. DC solid state switch, type NO. For fast and high frequent switching. With screw terminals (CRINT-S11) or cage clamp terminals (CRINT-S12).

Contact Type Material Switching current _{TH}	1 NO (Solid state DC)				
Material Switching current _{TH}	1 NO (Solid state DC)				
Switching current TH	(
	MOSFET				
Description of the second seco	2 A 24 V DC				
Recommended minimal load	20 mA / 5 V				
Peak inrush current	48 A/10 ms				
Coil					
Operation voltage AC 50/60 Hz / DC	0.8 1.25 U _N				
Nominal power DC/AC	160 / — mW				
Insulation					
Test voltage I / O	2.5 kVrms 1 minute				
Pollution degree	3				
Over voltage category	III				
Open contact	1000 Vrms dielectric strength 1 min				
Standard	EN61810-5				
General Specifications					
Ambient temperature: operation / storage	-30 +70 °C / -40 +85 °C				
Typical response time @ V _n	1 ms				
Typical release time @ V _n	1 ms				
Cond. cross section screw terminal	2.5 mm ²				
Cond. cross section spring cage	0.75 2.5 mm ²				
Ingress protection	IP 20				
Mounting position	any				
Housing material	Polyamide PA6				
Order information					
Screw terminal: CRINT-C115/UCV	UC12V				
	UC24V				
	UC48V				
Cage clamp terminal: CRINT-C125/UCV	UC60V				
	UC110-125V				
"" enter the voltage for full type designation	UC220-240V				
Accessories					
Jumper link (5 pcs): blue:					
red:	CRINT-BR20-RD/5				
black	CRINT-BR20-BK/5				
Label plate (64 pcs):	CRINT-LAB/64				
Spacer (5 pcs):	CRINT-SEP/5				
Replacement relays:	DC12V				
CRINT-R15/DCV	DC24V				
"" enter the voltage for full type designation	DC48V				
	DC60V*				





Connection diagram



Relay - NO / Solid-state DC - NO / Solid-state AC

Relay - AgSnO2 - AgSnO2 + 3μ Au

Socket -Screw terminal -Cage clamp terminal

Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities







96 | 15/16

a nominal voltage higher or equal 60V

CRINT 1x8 series

Solid state interface module with mechanical NO output contact

DIN Rail mounting according to DIN 43 880

Types: CRINT-C118, CRINT-C128 / ...V

For PLC's and process control.

AC output interface zero synchronous switching NO for resistive or similar load. (No transformator rec.) With screw terminals (CRINT-S11) or cage clamp terminals (CRINT-S12).

Max. contact load		1 A, 240 V AC-1	
Contact			
Туре		1 NO (Solid state AC)	
Material		TRIAC	
Switching current _{TH}		1 A 240 V AC	
Recommended minimal load		22 mA / 12 V	
Peak inrush current		80 A/10 ms	
Coil			
Operation voltage AC 50/60 Hz / DC		0.8 1.25 U _N	
Nominal power DC/AC		150 / — mW	
Insulation			
Test voltage I / O		2.5 kVrms 1 minute	
Pollution degree		3	
Over voltage category			
Open contact		1000 Vrms dielectric st	rength 1 min
Standard		EN61810-5	J
General Specifications			
Ambient temperature: operation / storage	е	-30 +70 °C / -40	+85 °C
Typical response time @ V _n		1 ms	-
Typical release time @ V_n		1 ms	
Cond. cross section screw terminal		2.5 mm ²	
Cond. cross section spring cage		0.75 2.5 mm ²	
Ingress protection		IP 20	
Mounting position			
Housing material		any Polyamide PA6	
Order information			
Screw terminal: CRINT-C118/UCV		UC12V	
		UC24V	
		UC48V	
Cage clamp terminal: CRINT-C128/UC	v	UC60V	
		UC110-125V	
" …" enter the voltage for full type designa	tion	UC220-240V	
Accessories			
Jumper link (5 pcs):	blue:	CRINT-BR20-BU/5	
,	red:	CRINT-BR20-RD/5	
	black:	CRINT-BR20-BK/5	
Label plate (64 pcs):		CRINT-LAB/64	
Spacer (5 pcs):		CRINT-SEP/5	
Replacement relays:		DC12V	
CRINT-R18/DCV	1	DC24V	
We also the state of the state	TION	DOCOV/*	
"" enter the voltage for full type designa		DC60V*	
"," enter the voltage for full type designa "60V Relay used for all sockets with		DC60V [*]	





Connection diagram



Relay - NO / Solid-state DC - NO / Solid-state AC Relays 1.5

1

Relay
- AgSnO2
- AgSnO2 + 3µ Au

Socket -Screw terminal -Cage clamp terminal

Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]

5.3



Technical approvals, conformities

51)us (E

EHC

IRC – Interface-Applications

In combination with I/O sockets and the plug-in jumpers, the IRC relay series permits low-cost, clearly arranged and reliable realisation of interface circuits for the input and output ends of PLC and control systems.

S10-M and S12 sockets with one and two contacts, with inputs in series and identical arrangement of the contacts.

Identical order of coil and contacts on both sockets.

Coil terminal at level 1: (A2, A2, A1)

Power terminals at level 1: (12, 11, 14)

Power terminals at level 2: (22, 21, 24) General







All plug-in jumpers are insulated. The plug-in jumpers at the drive end (coil) can be split manually to the required length, thus enabling the creation of any required interface groups.

The jumpers are available in the colours grey, blue and red. .

Options:

Colours used by RELECO in the relays' test buttons:

- Blue for DC circuits
- Red for AC circuits



V40 and V10 plug-in jumpers for the power end



IRC – Interface Applications

Total interconnection, bridge bars for coil and power lines



V40, V10

Power bridge bars for sockets S10-M and S12

V40 bridges join four similar points in four aside adjacent sockets. They can join up either among themselves or to V10 units, to bridge an unlimited number of sockets S10-M and S12 in any combination.

V10 bridges are units to connect a single socket to the next one, so you bridge less or more than 4 sockets.

Made of copper with a current capacity of 40 A.

B20

Coil bridge bars for sockets S10-M and S12

B20 bridges points A2, internally connected, of every aside adjacent socket S10-M or S12.

Each element connects point 6 of the first socket to point 5 of the next one, always leaving free the point 5 of the first socket and the point 6 of the last one, to connect the common polarity cable.







Jumper connection on S1O-M and S12 sockets

The S10-M and S12 sockets and the new connection jumpers B20, V10 and V40 enable easy and fast wiring of rows of relays. The jumpers can be used in a mixed configuration of S10-M and S12 sockets.

Different jumper colours allow clear identification. This results in fewer errors, lower assembly costs and easier inspection and maintenance work. Available in grey (standard), red (AC) and blue (DC), in conformity with the colour coding used by RELECO for test buttons for relay identification.

Attention needs to be paid only to the total current. At higher currents and also for safety reasons, a current supply at the start and end of a jumpered connection is recommended.

V40 plug-in jumpers for the power end

Contacts can be linked to the power ends with the aid of these jumpers. Normally, these are the changeover contacts, terminal 11 or 21. The jumpers can also be used to jumper NC or NO plug-in terminals. V40 jumpers link four identical contacts of four neighbouring sockets. They can either be linked to one another or to V10 jumpers to jumper a number of sockets in any combination. V10 plug-in jumpers for the power end

V10 jumpers can be used to link individual sockets to one another in groups. A combination of V40 and V10 jumpers is possible, depending on the number of sockets.



B20 plug-in jumpers for the control endThe sockets S10-M and S12 are accessible via the plug-in terminals 5 and 6 for A2 (internal connection). Each element links terminal 6 of the first socket to 5 of the next socket, and 5 of the first socket and 6 of the last socket are always left free to connect the cable. The jumper B20 consists of four coherent parts, which can be separated, however.

IRC series/CSS Semiconductor relays as an interface to PLC and control systems



Input

Application

The CSS semiconductor switches have a useful life that is practically unlimited in terms of switching cycles. They operate without bounce and permit a high switching frequency

Drive

All versions feature an electrically isolated input for 5 to 32 V DC. The inputs are characterised by a minimum delay with a simultaneously high interference immunity.

DC semiconductor switches

There are two versions with identical performance data.

The CSS-DCN version has the common negative terminal 2, and the load is connected to terminal 1. The CSS-DCP has the common positive terminal at terminal 2. The load is connected to terminal 1. This corresponds to an NPN or PNP switch.

AC switches

The CSS-AZ version switches synchronously, i.e. it switches during the passage through zero. The CSS-AC version switches asynchronously, i.e. the semiconductor switch switches through, independently of the phase, at the moment of detected triggering.

DC applications with mixed components

DC applications with mixed components



	Pl	LC input term	ninals	L
5 50 VDC	Input 1	Input 2	Input 3	
+		4 12 11 14 ⊗ ⊗ ⊗ ⊗ 1 3 2 1		
	CSS- DCP S10-M	C10-T13X	CSS- DCP S10-M	
		$\begin{array}{cccccc} 4 & 5 & 6 & 4 \\ \otimes & \otimes & \otimes & \otimes \\ 1 & A2 & A2 & A1 \\ \end{array}$	$\otimes \otimes \otimes$	
24 VDC	PNP-Senso	r Switch	PNP-SEI	NSOR

AC applications with mixed components





Notes

		 		 		 	 			 			 	 	 _							
				 		 		 		 					 _							
		 		 		 	 			 			 	 	 _	_						
		 		 		 		 		 				 	_							
															 	-				\rightarrow		
						 				 					 _							
																				\neg		
					-										 -	-				+	+	
						 				 					 _	_						
																				\neg		
				 		 	 			 			 	 	 _							
		 								 					 _							
				 		 	 	 		 			 	 	 _							
		 		 		 	 			 			 	 	 _							
								 							 _	-				\rightarrow		
				 			 							 	 _	-	-					
	 							 							 					\rightarrow		-
				 		 				 					 _	_				$ \rightarrow$		
															 					-		
										 						-						
																				\neg		
								 		 					 _	-				-+		
																1				\rightarrow	-	
	 							 		 					 _						-+	
		T	T		T						T	T							T	T	T	
-					\rightarrow			 							-	-				-	-	
				 		 		 		 					 _	-						



1.6 High Inrush Relays



Application	Types	Contacts	AC ratings	Socket
Power relay for high inrush current	C7-W1x	// 中	10 A / 250 V	S7
Hum-free installation contactor	RIC20	ליםיל ליםיל ליםיל	20 A / 400 V	DIN
Universal time relay for high inrush currents	CIM14	₩ ₽	16 A / 250 V	DIN
Power relay for high inrush currents	CHI14	₩ ₽	16 A / 250 V	DIN

OFTEN UNDERESTIMATED: HIGH INRUSH CURRENTS IN LIGHTING TECHNOLOGY



Lighting technology has been changing for some years now. Traditional light bulbs are rapidly being replaced with energy-efficient light sources such as fluorescent lamps and LEDs. All of these lamps have one thing in common: they require electronic control gear (ECG). The contacts on conventional relays wear out very quickly if used for triggering these devices.

Pre-devices such as relays and contactors are placed under an increased strain when switching ECGs and energy-saving lamps with integrated ECGs. This has to be taken into consideration when planning a new system. Even when refitting the lighting technology in an existing system, the new features have to be accounted for by adapting switching components to suit the new consumers. Be aware, however, that this issue affects more than just light sources. The structure of modern switching power supplies in many devices means that this problem is also found in other areas of electronics and installation. Modern devices require a low operating current but a very high inrush current, which has to be taken into account when designing switching devices.

ECG inrush processes

ECGs and switching power supplies allow for the inrush current to peak at the exact point the device is switched on. High inrush currents are created by the capacitors used in ECGs after the rectifier for smoothing out the current and as an energy store. If a capacitor is entirely discharged, a charging current, similar to an electrical short, may occur during the first micro-seconds of the inrush process.

Our example of an ECG for 2×24 W T5 fluorescent lamps shows that peak currents of more than 22 A – measured during the phase maximum – and a half-life of $305 \,\mu$ s may easily occur. During normal operation, this ECG absorbs a current of merely 220 mA. The inrush current is therefore 100 times higher than the nominal current in this example. The data sheets of renowned ECG manufacturers show, however, that inrush currents as high as 60 A may occur – with a lamp output of just 100 W. In daily life, complete lighting groups are most commonly switched on together, thus cumulating the effect of the high inrush current even further.

Great demand placed on relay performance

Common relay types use silver alloys such as silver-nickel (AgNi) for their contacts. They are not designed for inrush currents that are much higher than the nominal current. The thermic loads could weld the contacts shut after just a few switching-cycles. The result: the consumer can no longer be switched off.

An arc is created at the point the contact blades of a relay near each other during the switching process. The contact bounce found in mechanical contacts increases this arc even further. This effect is primarily influenced by the level and half-life of the inrush current. The temperatures created during the process can easily exceed the melting point of the contact alloy, thus leading to the contact blades being welded together.

The information provided in the data sheets of relay and consumer manufacturers is a first point of reference when calculating the correct specifications of a relay. They often disclose the inrush currents and peak times.

Disproportionately high inrush currents create an exceptionally high risk of welding, which is the reason why the contact material must be able to meet increased demands.

WORLD OF RELAYS

Relays for high inrush currents up to 800 A

Comat developed the high power relay CHI14 especially for inrush currents up to 800A.

The CHI14 has a tungsten (W/AgSnO₂) pre-contact with a higher melting point than ordinary silver alloys. This facilitates the switching of currents up to 800A for 200 μ s and 165 A for 20 ms. The switching during zero flow is another special feature of this high-tech product.

This significantly reduces the inrush current. The 2×24 W T5 ECG is an impressive example: Fig. 1 shows a inrush current without zero flow switching of 22 A. Thanks to the zero flow switching at almost 3.5 A, the inrush current is 85 % lower in Fig. 2.

With a 16A nominal current and a DIN housing with one module width, the CHI14 is suitable for installation in distributors and upgrading existing installations. It is also ideal for use in living areas as its switching process is almost entirely noiseless.

The multi-function time relay CIM14 of similar build features an additional 10 time functions such as stepping switches and automatic light switches in hallways.

The RIC series contactors have large-surface contacts that disconnect twice. Thanks to $AgSnO_2$ contacts, the RIC 40 and RIC63 types can switch currents up to 150 A for 100 ms. The RAC versions with on-off function and the RBC stepping switches are also interesting options for installation.

The movable relay C7-W10 is ideal for industrial applications. The tungsten (W/ $AgSnO_2$) pre-contact makes it possible to handle inrush currents up to 500 A for 2.5 ms.



C7-W1x

4-pin, miniature relay, 1-pole, tungsten contact, faston

Туре:	C7-W1x/ V Power relay for 1 pole normally	-	ush currer	nt	
Maximum contact load: Recommended minimum contact load:	10 A/250 V A 10 mA/10 V	C	6 A/	250 V	AC5a/b
Contacts					
Material Standard Code 0	AgNi/W				
Rated current	10 A				
Switch-on current max. (2,5 ms)	500 A				
Switching voltage max.	250 V				
AC load (Fig 1)	2,5 kVA				
DC load	see fig. 2				
Coil					
Coil resistance	see table; toler	ance ± 1	10 %		
Pick-up voltage	\leq 0,8 x U _N				
Release voltage	\geq 0,1 x U _N				
Nominal power	1,5 VA (AC)/1,5	5 W (DC)			
Coil table	VAC Ω	mA	VDC	Ω	mA
	24 153	62	12	99	121
	48 611	31	24	388	61
	115 3K6	13	48	1K5	32
	230 14K5	6,5	110	8K	14
Insulation	Volt rms, 1 min				
Contact open	1000 V				
Contact/coil	2,5 kV				
Insulation resistance at 500 V	≥1 GΩ				
Insulation, IEC 61810-1	2,5 kV				
Specifications					
Ambient temperature operation/storage	-40 (no ice)6	60 °C /-4	0 80 °C	2	
Pick-up time/bounce time	20 ms/≤ 3 ms				
Release time/bounce time	10 ms/≤ 1 ms				
Mechanical life ops	AC: 10 Mill./DC	: 20 Mill			
DC voltage endurance at rated load	≥100000 switc				
Switching frequency at rated load	≤ 1200/h	0,7			
Protection class	IP40				
Weight	43 g				
Standard types					
VAC 50 Hz/60 Hz: 24, 48, 115 (120), 230 (240) LED	C7-W10/AC C7-W10X/AC				
VDC 12, 24, 48, 110	C7-W10/DC				
LED	C7-W10X/D0				
Free wheeling diode	C7-W10DX/	V סכ			
Polarity and free wheeling diode	C7-W10FX/D	0C V			
AC/DC bridge rectifier 24 V, 48 V, 60 V	C7-W10BX/U	JC V			
"" Enter the voltage for full type designation					
Accessories					



Socket:

Optional accessories (blanking plug):

S7-M, S7-I/O, S7-L, S7-P, S7-P0 S9-NP, S9-OP





Connection diagram



Fig. 1 AC voltage endurance



Fig. 2 AC voltage endurance



Dimensions [mm]



CEM

Technical approvals, conformities

IEC 61810; EN 60947

PG Lloyd's

()
Type: RIC20-xxx/ ...V

RIC20

20 A, AC/DC control voltage, silent operation DIN rail mounting according to DIN 43 880

Hum-free installation contactor, 2 contacts, 2 NO, 1 NO-1 NC, 2 NC types available



WORLD OF RELAYS



Connection diagram

1 A1 3 2 A2 4 2 xN0 RIC20-200

1xN0 + 1xNC RIC20-110

Coil circuit



R2

2 x NC

RIC20-020

Fig. 1 DC load limit curve DC1



Dimensions [mm]



Technical approvals, conformities

EC/EN 60947-4-1, VDE 0660 IEC/EN 60947-5-1 IEC/EN 61095, VDE 0637

Rated operational power
Recommended minimum contact load
Contacts

Min. clearance of open contact

General Specifications

Material Rated operational current Max. inrush current (100ms) Max. switching voltage Max. AC load AC-1, AC-7a AC-3 Max. DC load 24 V / 220 V DC-1 (Fig. 1)

AgNi
20 A
50 A
400 V
4 kW / 230 V
1.3 kW /230 V (NO contact only)
480 W / 130 W

10 mA / 24 V

4 kW / 230 V AC-1, 0.5 A / 220 V DC-1

Control input V _n =	UC 24 V	UC 36 V	UC 230 V
Operating voltage range [V]	20.4 26.4	30.6 39.6	195 253
Typ. pic up voltage [V]	17	25	160
Typ. release voltage [V]	7	11	70
Power consumption [W]	≤ 2.5	≤ 2.5	≤ 2.5
Inductive turn-off voltage	None	None	None
Surge immunity EN 6100-4-5	2 kV	2 kV	2 kV
Insulation			
Rated insulation voltage	230 V		
Rated impulse withstand voltage	4 kV		

3.6 mm

Ambient temperature											
storage	-30 80 °C										
operation, Spacer after 2 contactors side by side	-5 55 °C										
operation, Spacer after 3 contactors side by side	-5 40 °C										
Pick-up time	15 45 ms										
Release time	20 50 ms										
Mechanical life	$\geq 3 \times 10^6$ operations										
AC voltage endurance at rated load AC-3, AC-7b	\geq 3 x 10 ⁵ operations										
DC voltage endurance at rated load DC-1	10 ⁵ operations										
Operating frequency at rated load DC-1	≤ 300 operations / h										
Operating frequency at rated load AC-1	≤ 600 operations / h										
Conductor cross section coil /contacts	Stranded wire 2.5 mm ² / 6 mm ²										
Max. Screw torque coil /contacts	0.6 Nm / 1.2 Nm										
Ingress protection degree	IP 20										
Weight	140 g										

Standard types UC (AC / DC) 50 / 60 Hz, 24, 36, 230

"" enter the voltage for full type designation
--

2NO	RIC20-200/UCV
1NO + 1NC	RIC20-110/UCV
2NC	RIC20-020/UCV

Samples of lamp loads	Number of lamps
Spacer:	RIC-DIST
Accessories Sealing cover:	RIC-SEAL 20

Incandescent lamps 230 V / 100 W	20
Fluorescent lamps not corrected 230 V / 36 W	17
Fluorescent lamps electronic ballast units 36 W	15

Find more information about RIC, RAC, RBC series on pages 117 – 127.

Mounting information

If multiple contactors are mounted side by side, spacers (RIC DIST) have to be inserted for the purpose of heat dissipation. **Example:** Ambient temperature up to 40°C: 1 spacer after 3 RIC // 40...55°C: 1 spacer after 2 RIC.

CIM14

Time relay with NO contact for high inrush currents up to 800 A 8 time functions + stepping function, ON-OFF switch, 50 ms ... 60 h, DIN Rail mounting according to DIN 43 880

Type: CIM14/UC24-240V

Sophisticated multifunction time relay, 1 NO power contact for high inrush currents up to 800 A with zero crossing switching (50/60 Hz), 8 time functions, stepping function and service function ON/OFF, time ranges: 50 ms ... 60 h, multifunction LED state indicator, suitable for any time-control application and also staircase lighting, Light-switch neon lamp current absorption on input B1, Manual switching function for maintenance, emergency, etc., 16.6 Hz power supply applications. Railway version available.

Maximum contact load Recommended minimum contact load

16 A / 250 V AC-1 384 W DC-1 100 mA / 12 V

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch

LED function table:



LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

0.6, 6, 60 s / 6, 60 min / 6, 60 h

± 0.1 % or DC: 2 ms / AC: 10 ms

 $t_{min}:$ -5 % ... +0 % / $t_{max}:$ -0 % ... +5 %

t_{min} ... t_{max}, 0.5 ... 6

 $\leq 45 \text{ ms}$

 \leq 30 ms

> 20 ms

20 ms (AC / DC)

Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering (50 / 60 Hz)

Contacts

Material Rated operational current at 40 °C / 60 °C Max. inrush current

Max. switching voltage AC-1 Max. AC load AC-1 (Fig.1) Max. DC load DC-1 24 V

Power supply- and control input

Nominal voltage (A1, B1) Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Mechanical life of contact Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types UC (AC/DC) 15...60 Hz W / AgSnO₂ 16 A / 13 A 165 A / 20 ms 800 A / 200 µs 250 V 4 kVA 384 W

UC 24-240 V (UC = AC / DC) 16.8 ... 250 V

1.2 VA / 0.43 W 16 ... 60 Hz ≤ 0.5 mA ≤ 10 mA 15 / 17 V

1 kVrms 1 minute 2.5 kVrms 1 minute

-40 ... 85 °C / -40 ...60 °C 5 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.4 Nm Lexan / 70 g

CIM14/UC24-240V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



CHI14

Power relay for high inrush currents up to 800 A DIN Rail mounting according to DIN 43 880

Type: CHI14/UC24-240V

The CHI14 is a power relay for all applications effecting high inrush currents up to 800 A such as electronic control gears of energy saving lamps, power supplies of the latest LED lights and switching supplies of industrial components. These loads show an inrush current up to 250 times of their nominal current.

The CHI14 is equipped with a low noise operating NO contact with a nominal current up to 16 A and complies with the applicable DIN standards 43880 with installation dimension of 17.5 mm (1 module width).

Maximum contact load	16 A / 250 V AC-1 384 W DC-1
Recommended minimum contact load	100 mA / 12 V

W / AgSnO₂

16 A / 13 A

250 V

4 kVA

384 W

165 A / 20 ms

800 A / 200 µs

Contacts

Material Rated operational current at 40 °C / 60 °C Max. inrush current

Max. switching voltage AC-1 Max. AC load AC-1 (Fig.1) Max. DC load DC-1 24 V /

Power supply- and control input

Nominal voltage (A1, B1) Operating voltage range Power consumption Frequency range

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Mechanical life of contact Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types UC (AC/DC) 15...60 Hz

UC 24-240 V (UC = AC / DC)

16.8 ... 250 V 1.2 VA / 0.43 W 16 ... 60 Hz

1 kVrms 1 minute 2.5 kVrms 1 minute

-40 ... 85 °C / -40 ...60 °C 5 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.4 Nm Lexan / 70 g

CHI14/UC24-240V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 50155, EN 60730 🔊 🔊 🕻 🧉



Notes

				 		 	 	 	 										 -	
								 							 				-	
																			-	
																	-		-+	
																			\neg	
																			 -+	
-							 	 			 				 					
-							 	 	 										 -	
						 	 	 	 		 	 	 	 	 			 	 _	
								 							 				-	
																	-		-+	
																			 -+	
				 				 							 				-	
		-																	 -+	
L				 																



1.7 Motor Control Relays



Application	Types	Output	DC ratings	Mounting
DC Motor controller	CMC1	2x MOSFET	16 A (20 A) / 24 V	DIN
	CMC15	2x MOSFET H bridge	10 A (20 A) / 24 V	DIN
	CMC16	2x MOSFET H bridge	10 A (20 A) / 24 V	DIN
DC Motor control relay	KDM3-24	1x PNP & 1x NPN	3 A / 32 V	S7-C

CMC1

DC Motor controller with adjustable start and breaking ramps for DC motors up to 384W

Type: CMC1/DC12-24V

The CMC is a control device for DC motors and permits operation in both rotating directions, i. e. the rotating direction can be reversed with the input signal. Alternatively, two motors can be operated in the same direction.

The CMC1 allows also to control lamps or electromagnets. The start and breaking ramps of the connected loads can be adjusted by two potentiometers in the time range 0 - 4 seconds.

Maximum load	16 A / 24 V	
Outputs	Drive	
Туре	MOSFET	
Nominal switching current	16 A	
Inrush current	20 A (short-term)	
Nominal voltage	24 V	
Switching power	384 W	
Control input V _n =	12-24 V	
Nominal operating voltage range (DC)	12 – 24 V	
Admissible voltage range (DC)	8 – 28 V	
Current consumption	DC	
12 V	3 mA	
24 V	6 mA	
Power supply		
Nominal operating voltage (DC)	12 – 24 V	
Operating voltage (DC)	8 – 28 V	
Max. current consumption without load	10 mA	
Max. power consumption	DC	
12 V	120 mW	
24 V	240 mW	
General Specifications		
Ambient temperature storage/operation	-40 – +85°C / -25 – +60°C	
Connection terminals	Screw terminal 2.5 mm ²	
DC voltage endurance at rated load	> 100 000 h (at 25 °C)	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	Aluminium	
Weight	80 g	

CMC1/DC12-24V

Standard types

DC 12-24

C COMAT



Connection diagram



Function diagramm



Dimensions [mm]



Technical approvals, conformities



CMC15

DC Motor controller with adjustable start and breaking ramps and speed control by 0 ... 10 V signal for DC motors up to 240W

Type: CMC15/DC12-24V

The CMC15 is a control device for DC motors and permits operation in both rotating directions, i. e. the rotating direction can be reversed with the input signal. Alternatively two motors can be operated in the same rotating direction. The motor speed is set by a 0 - 10 V signal.

Maximum load	10 A / 24 V	
Outputs	Drive	
Туре	MOSFET H bridge	
Nominal switching current	10 A	
Inrush current	20 A / max. 3 s	
Nominal voltage	24 V	
Switching power	240 W	
Analogue inputs		
Nominal operating voltage range (DC)	0 – 10 V	
Resolution	8 Bit	
Input impedance	55 kΩ	
Power supply		
Nominal operating voltage (DC)	12 – 24 V	
Operating voltage (DC)	8–28 V	
Max. current consumption without load	10 mA	
Max. power consumption	DC	
12 V	120 mW	
24 V	240 mW	
Time response		
Start ramp	0 – 2 s	
Breaking ramp	0-2s	
General Specifications		
Ambient temperature storage/operation	-40 – +85°C / -25 – +60°C	
Connection terminals	Screw terminal 2.5 mm ²	
DC voltage endurance at rated load	> 100 000 h (at 25 °C)	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	Aluminium	
Weight	80 g	
Standard types		
DC 12-24	CMC15/DC12-24V	





Connection diagram



Function diagramm



Dimensions [mm]



Technical approvals, conformities



CMC16

DC Motor controller with adjustable start and breaking ramps and speed control by 4 ... 20 mA signal for DC motors up to 240W

Type: CMC16/DC12-24V

The CMC16 is a control device for DC motors and permits operation in both rotating directions, i. e. the rotating direction can be reversed with the input signal. Alternatively two motors can be operated in the same rotating direction. The motor speed is set by a 4 - 20 mA signal.

Maximum load	10 A / 24 V	
Outputs	Drive	
Туре	MOSFET H bridge	
Nominal switching current	10 A	
Inrush current	20 A / max. 3 s	
Nominal voltage	24 V	
Switching power	240 W	
Analogue inputs		
Nominal operating voltage range (DC)	4 – 20 mA	_
Resolution	8 Bit	
Input impedance	190 Ω	
Power supply		
Nominal operating voltage (DC)	12 – 24 V	
Operating voltage (DC)	8 – 28 V	
Max. current consumption without load	10 mA	
Max. power consumption	DC	
12 V	120 mW	
24 V	240 mW	
Time response		
Start ramp	0 – 2 s	
Breaking ramp	0 – 2 s	
General Specifications		
Ambient temperature storage/operation	-40 – +85°C / -25 – +60°C	
Connection terminals	Screw terminal 2.5 mm ²	
DC voltage endurance at rated load	> 100 000 h (at 25 °C)	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	Aluminium	
Weight	80 g	
Standard types		
DC 12-24	CMC16/DC12-24V	





Connection diagram



Function diagramm



Dimensions [mm]



Technical approvals, conformities



114 | 15/16

KDM 3-24

DC Motor control relay with brake function, DC 24 V 1 high side switch and 1 N-channel brake switch

Type: KDM 3-24/DC12-24V R

Solid state relay for DC-motor control and similar applications 1 high side + 1 N channel transistor switch All overload and short circuit protected Adjustable or disabled brake function by external resistor or jumper LED status indicator Pluggable module

Maximum load

Outputs	Drive	Brake
Type: Power MOS FET	High side	N-channel
Max. switching current	3 A	3 A, 10 sec
Max. continuous current	3 A (5 A) ¹⁾	2 A
Max. inrush current, 1 sec ²⁾	20 A	7
Switching voltage range	10 32 V	10 32 V
Max. Load	100 W	65 W
Thermal overload protection ²⁾	self restoring	self restoring
Over current limiting ²⁾	typ. 35 A	7 14 A
Clamp voltage	typ. 58 V	60 70 V
Max. inductive switch-off energy ²⁾	1 Ws single pulse	0.4 Ws single pulse
ON resistance @ 25 °C	≤ 50 mΩ	≤ 100 mΩ
Leakage current	≤ 10 µA	

3 A / 32 V

DC 12-24 V

9... 28 V

2 / 6.5 mA

protected

25 / 160 mW

-40 ... +85°C / -25 ... +60°C

KDM3-24/DC12-24V R

IP 40 when the device is plugged in

 $\leq 2 V$

1 ms 1 ms

Lexan 27 g

S7-C

 $^{1)}$ Repetitive operation: When the ratio t_{pulse} / t_{cycle} is a low value then the current can be increased up to 5 A @ T_{A} \leq 50 °C.

²⁾ Not for continous repetitive operation

Control input V_N = Operating voltage range Release voltage

Typical input current @ 12 / 24 V Power consumption @ 12 / 24 V Polarity reversal

General Specifications

Ambient temperature storage/operation
ON delay
Release time
Ingress protection degree
Housing material
Weight

Standard types

DC 12-24

Accessories

Socket:

Application example

Four quadrant (forward / reversed) motor control



Operating with brake resistors (on 2–3) is not recommended in this application.





Connection diagram



Function diagramm



Output current vs. duty cycle

Dimensions [mm]



Technical approvals, conformities





Notes

						 	 				 		_			 				
-		 				 	 		 	 	 					 	 		_	
						 					 		_		 					
													-							
						 		 					-+	_				\rightarrow	-	
-							 		 	 						 	 			
-						 	 		 				-		 	 			-	
-		 				 	 		 	 						 	 	 		
						 												\rightarrow		
													-+						-	
								 										\rightarrow	-+	
													-					\neg	-	
		 						 					-+					-+		



1.8 Installation Contactors



- Different versions NO; NC; NC + NO
- AC/DC Coil Hum free
- No EMC (free wheeling circuit included)
- Robust and compact
- Wide Range of application
- Mouting according DIN/EN 43880 on DIN Rail TS 35
- Sealing cover optional

Type: RIC20-xxx/ ...V

Rated operational power

Rated operational current

Max. inrush current (100ms) Max. switching voltage

Recommended minimum contact load

AC-1, AC-7a

AC-3

Max. DC load 24 V / 220 V DC-1 (Fig. 1)

RIC20

Contacts Material

Max. AC load

20 A, AC/DC control voltage, silent operation DIN rail mounting according to DIN 43 880

Hum-free installation contactor, 2 contacts, 2 NO, 1 NO-1 NC, 2 NC types available



UC 230 V

195 ... 253 160 70

2.1

None

2 kV

4 kW / 230 V AC-1, 0.6 A / 220 V DC-1

1.3 kW / 230 V (NO) 0.75 kW / 230 V (NC)

50 mA / 24 V

AgNi

20 A 50 A

230 V

4 kW / 230 V

480 W / 130 W

WORLD OF RELAYS



Connection diagram





1xN0 + 1xNC Ric20-110

Coil circuit

RIC20-200



BIC20-020

Fig. 1 DC load limit curve DC-1



Dimensions [mm]



Technical approvals, conformities

IEC/EN 60947-4-1, VDE 0660 IEC/EN 60947-5-1 IEC/EN 61095, VDE 0637

Control input V _n =	UC 24 V	UC 36 V
Operating voltage range [V]	20.4 26.4	30.6 39.6
Typ. pic up voltage [V]	17	25
Typ. release voltage [V]	7	11
Power consumption [W]	2.1	2.1
Inductive turn-off voltage	None	None
Surge immunity EN 6100-4-5	2 kV	2 kV
Insulation		
Rated insulation voltage	230 V	
Rated impulse withstand voltage	4 kV	
Min. clearance of open contact	3.6 mm	
General Specifications		
Ambient temperature		
storage	-30 80 °C	
operation, Spacer after 2 contactors side by side	-5 55 °C	
operation, Spacer after 3 contactors side by side	-5 40 °C	
Pick-up time	15 45 ms	

Pick-up time Release time Mechanical life AC voltage endurance at rated load AC-3, AC-7b DC voltage endurance at rated load DC-1 Operating frequency at rated load DC-1 Operating frequency at rated load AC-1 Conductor cross section coil /contacts Max. Screw torque coil /contacts Ingress protection degree Weight

Standard types UC (AC / DC) 50 / 60 Hz, 24, 36, 230

 ontor	tho v	altaga	for ful	1 tuno	designation	
 enter	THE M	Juage	ior iur	itype	uesignation	

type designation	2NC	RIC20-020/UC
	RIC-SEAL 20	
	RIC-DIST	

1NO + 1NC

20 ... 50 ms

10⁵ operations

 $\ge 3 \times 10^6$ operations

 $\ge 3 \text{ x } 10^5 \text{ operations}$

 \leq 300 operations / h

 \leq 600 operations / h

0.6 Nm / 1.2 Nm

IP 20

140 g

2NO

Stranded wire 2.5 \mbox{mm}^2 / 6 \mbox{mm}^2

RIC20-200/UCV

RIC20-110/UC ...V

...V

Samples of lamp loads	Number of lamps
Incandescent lamps 230 V / 100 W	20
Fluorescent lamps not corrected 230 V / 36 W	17
Fluorescent lamps electronic ballast units 36 W	10

Mounting information

Accessories Sealing cover:

Spacer:

If multiple contactors are mounted side by side, spacers (RIC DIST) have to be inserted for the purpose of heat dissipation. **Example:** Ambient temperature up to 40°C: 1 spacer after 3 RIC // 40...55°C: 1 spacer after 2 RIC. Type: RIC25-xxx/ ...V

Rated operational power AC-1

RIC25

25 A, AC/DC control voltage, silent operation **DIN Rail mounting according to DIN 43 880**

Hum-free installation contactor, 4 contacts, 4 NO, 4 NC, 2 NO-2 NC types available



Single phase: 5.4 kW/230 V, 0.6 A/220 V DC-1

ORLD OF REL А S



1

Connection diagram

1 3 A1 5 7	1 R1 A1 R3 3	R1 R3 A1 R5 R7
J J L J J	ال بل مل بل با	4_4_4_4
	1 - 1 - 2 - 1 - 1	$\Gamma^{-}\Gamma^{-}\Gamma^{-}\Gamma^{-}\Gamma$
2 4 A2 6 8	2 R2 A2 R4 4	R2 R4 A2 R6 R8
4xN0 RIC25-400	2xN0 + 2xNC RIC25-220	4xNC RIC25-040

Coil circuit



Fig. 1 DC load limit curve DC-1



Dimensions [mm]



Technical approvals, conformities

CE RŏHS IEC/EN 60947-4-1 IEC/EN 60947-5-1 IEC/EN 61095

Recommended minimum contact load

Contacts Material Rated operational current Max. inrush current (100 Max. switching voltage Max. AC load 3 phase Max. DC load 24V/220V

e [V]	UC 24 V 20.4 26.4	UC 36 V 30.6 39.6	UC 230 V 195 253		
AC-1, AC-7a AC-3 IV DC-1 (Fig. 1)	2.2 kW /230 \	9 kW / 230 V, 16 kW / 400 V 2.2 kW /230 V, 4 kW / 400 V 600 W / 130 W			
	400 V				
)0ms)	50 A				

440 V 4 KV

3.6 mm

AgNi

25 A

3 phase 230 V: 9 kW 3 phase 400 V: 16 kW

50 mA / 24 V

Operating voltage range [V]	20.4 26.4	30.6 39.6	195 253
Typ. pic up voltage [V]	17	25	160
Typ. release voltage [V]	7	11	70
Power consumption [W]	2.6	2.6	2.6
Inductive turn-off voltage	None	None	None
Surge immunity EN 6100-4-5	2 kV	2 kV	2 kV

Insulation

Control input V_n =

Rated insulation voltage
Rated impulse withstand voltage
Min. clearance of open contact

General Specifications

Ambient temperature	
storage	-(
operation, Spacer after 2 contactors side by side	-5
operation, Spacer after 3 contactors side by side	-{
Pick-up time	1
Release time	2
Mechanical life	≥
AC voltage endurance at rated load AC-3, AC-7b	≥
DC voltage endurance at rated load DC-1	1
Operating frequency at rated load DC-1	\leq
Operating frequency at rated load AC-1, AC-3	\leq
Conductor cross section coil / contacts terminals	S
Max. Screw torque coil / contacts	0
Ingress protection degree	IF
Weight	2

~ ~

Standard types		
UC (AC / DC) 50 / 60 Hz, 24, 36, 230	4NO	RIC25-400/UCV
	2NO + 2NC	RIC25-220/UCV
"" enter the voltage for full type designation	4NC	RIC25-040/UCV

Accessories Auxillary contact bloc: Sealing cover: Spacer:	RIC-AUX RIC-SEAL 25 RIC-DIST
Samples of lamp loads	Number of lamps
Incandescent lamps 230 V/ 100 W	20

Incandescent lamps 230 V/ 100 W	20
Fluorescent lamps not corrected 230 V/ 36 W	20
Fluorescent lamps electronic ballast units 36 W	14

Mounting information

If multiple contactors are mounted side by side, spacers (RIC DIST) have to be inserted for the purpose of heat dissipation. Example: Ambient temperature up to 40°C: 1 spacer after 3 RIC // 40...55°C: 1 spacer after 2 RIC

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

RIC40

40 A, AC/DC control voltage, silent operation DIN rail mounting according to DIN 43 880

Type: RIC 40-xxx/...V

Hum-free installation contactor, 4 contacts, 4 NO, 2 NO-2 NC, 4 NC types available

Rated operational power AC-1 Recommended minimum contact load	Single phase: 3 phase 230 3 phase 400 50 mA / 24 V	
Contacts		
Material	AgSnO ₂	
Rated operational current	40 A	
Max. inrush current (100ms)	150 A	
Max. switching voltage	400 V	
Max. AC load 3 phase AC-1, AC-7a	16 kW / 230 V	, 26 kW / 400 V
AC-3	3.7 kW / 230 \	/, 11 kW / 400 V
Max. DC load 24V/220V DC-1(Fig. 1)	960 W / 260 V	V
Control input V _N = AC 50 / 60 Hz / DC	UC 24 V	UC 230 V
Operating voltage range [V]	20.4 26.4	195 253
Typ. pic up voltage [V]	17	160
Typ. release voltage [V]	7	70
Power consumption [W]	6	5
Inductive turn-off voltage	None	None
Surge immunity EN 6100-4-5	2 kV	2 kV
Insulation		
Rated insulation voltage	440 V	
Rated impulse withstand voltage	4 kV	
Min. clearance of open contact	3.6 mm	
General Specifications		
Ambient temperature		
storage	-30 80 °C	
operation, Spacer after 2 contactors side by side	-5 55 °C	
operation, Spacer after 3 contactors side by side	-5 40 °C	
Pick-up time	15 20 ms	
Release time	35 45 ms	
Mechanical life	\geq 3 x 10 ⁶ oper	ations
AC voltage endurance at rated load AC-3, AC-7b	≥ 1.5 x 10 ⁵ op	erations
DC voltage endurance at rated load DC-1	10 ⁵ operations	3
Operating frequency at rated load DC-1	\leq 300 operatio	ons / h
Operating frequency at rated load AC-1, AC-3	\leq 600 operatio	ons / h
Conductor cross section coil /contacts terminals	Stranded wire	2.5 mm ² / 16 mm ²
Max. Screw torque coil /contacts	0.6 Nm / 3.5 N	١m
Ingress protection degree	IP 20	
Weight	420 g	
Standard types		
UC (AC / DC) 50 / 60 Hz, 24, 230	4NO 2NO + 2NC	RIC40-400/UCV RIC40-220/UCV
"" enter the voltage for full type designation	4NC	RIC40-220/UCV RIC40-040/UCV
Accessories		
Auxiliary contact bloc:	RIC-AUX	
Sealing cover:	RIC-SEAL 40	0-63
Spacer:	RIC-DIST	
Samples of lamp loads	Number of la	mps
Incandescent lamps 230 V / 100 W	40	
	65	





nnection diagram



oil circuit



g. 1 DC load limit curve DC-1



mensions [mm]



chnical approvals, conformities

E ROHS IEC/EN 60947-4-1 IEC/EN 60947-5-1 IEC/EN 61095

Fluorescent lamps not corrected 230 V / 36 W

Fluorescent lamps electronic ballast units 36 W

Mounting information If multiple contactors are mounted side by side, spacers (RIC DIST) have to be inserted for the purpose of heat dissipation. Example: Ambient temperature up to 40°C: 1 spacer after 3 RIC // 40...55°C: 1 spacer after 2 RIC.

65

RIC63

63 A, AC/DC control voltage, silent operation **DIN Rail mounting according to DIN 43 880**

Type: RIC 63-xxx/...V

Hum-free installation contactor, 4 contacts, 4 NO, 2 NO-2 NC types available

Rated operational pow	er AC-1	Single phase: 13.3 kW/230 V, 1.2 A/220VDC-1 3 phase 230 V: 24 kW 3 phase 400 V: 40 kW
Recommended minim	num contact load	50 mA / 24 V
Contacts		
Material		AgSnO ₂
Rated operational currer	nt	63 A
Max. inrush current (100)ms)	150 A
Max. switching voltage		400 V
Max. AC load 3 phase	AC-1, AC-7a AC-3	24 kW / 230 V, 40 kW / 400 V 5 kW / 230 V, 15 kW / 400 V

1500 W / 260 W

440 V

~ ~

4 kV 3.6 mm

Control input V _N = AC 50 / 60 Hz / DC	UC 24 V	UC 230 V	
Operating voltage range [V]	20.4 26.4	195 253	
Typ. pic up voltage [V]	17	160	
Typ. release voltage [V]	7	70	
Power consumption [W]	≤ 5	≤ 5	
Inductive turn-off voltage	None	None	
Surge immunity EN 6100-4-5	2 kV	2 kV	

Insulation

Rated insulation voltage
Rated impulse withstand voltage
Min. clearance of open contact

Max. DC load 24 V / 220 V DC-1(Fig. 1)

General Specifications

storage
operation, Spacer after 3 contactors side by side-Pick-up time1Release time3Mechanical life2AC voltage endurance at rated loadAC-3, AC-7bDC voltage endurance at rated loadDC-1D operating frequency at rated loadDC-1C2
Pick-up time1Release time3Mechanical life2AC voltage endurance at rated loadAC-3, AC-7bDC voltage endurance at rated loadDC-11Operating frequency at rated loadDC-14
Release time3Mechanical life2AC voltage endurance at rated loadAC-3, AC-7bDC voltage endurance at rated loadDC-11Operating frequency at rated loadDC-14
Mechanical life ≥ AC voltage endurance at rated load AC-3, AC-7b ≥ DC voltage endurance at rated load DC-1 1 Operating frequency at rated load DC-1 ≤
AC voltage endurance at rated loadAC-3, AC-7b≥DC voltage endurance at rated loadDC-11Operating frequency at rated loadDC-1≤
DC voltage endurance at rated load DC-11Operating frequency at rated loadDC-1
Operating frequency at rated load DC-1 <
Operating frequency at rated load AC-1, AC-3 <
Conductor cross section coil /contacts terminals S
Max. Screw torque coil /contacts C
Ingress protection degree
Weight 4

-30 80 °C
-5 55 °C
-5 40 °C
15 20 ms
35 45 ms
$\ge 3 \times 10^6$ operations
$\ge 1.5 \times 10^5$ operations
10 ⁵ operations
\leq 300 operations / h
\leq 600 operations / h
Stranded wire 2.5 mm ² / 16 mm ²
0.6 Nm / 3.5 Nm
IP 20
420 g

UC (AC / DC) 50 / 60 Hz, 24, 230	4NO	RIC63-400/UCV
"" enter the voltage for full type designation	2NO + 2NC	RIC63-220/UCV
Accessories		

Auxiliary contact bloc: Sealing cover: Spacer:	RIC-AUX RIC-SEAL 40-63 RIC-DIST
Samples of lamp loads	Number of lamps
Incandescent lamps 230 V / 100 W	50
Fluorescent lamps not corrected 230 V / 36 W	95
Fluorescent lamps electronic ballast units 36 W	57

Mounting information If multiple contactors are mounted side by side, spacers (RIC DIST) have to be inserted for the purpose of heat dissipation. Example: Ambient temperature up to 40°C: 1 spacer after 3 RIC // 40...55°C: 1 spacer after 2 RIC.



Relays 1.8

1



Connection diagram



Coil circuit

4xN0





Fig. 1 DC load limit curve DC-1



Dimensions [mm]



Technical approvals, conformities

CE Rolls IEC/EN 60947-4-1 IEC/EN 60947-5-1 IEC/EN 61095

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

RIC-AUX

4 A auxiliary contact bloc with 2 double contacts, 3 different combinations of NO / NC contacts

Type: RIC AUXxx

Weight

Standard types

2 double contacts, 2 NO, 1 NC-1 NO, 2 NC types available

Maximum contact load AC-15	4 A / 230 V, 4 A / 400 V	
Recommended minimum contact load	5 mA / 24 V	
Contacts		
Material	AgNi	
Rated operational current AC-15	4 A / 230 V, 4 A / 400 V	
Max. switching voltage with RIC 20	400 V	
Insulation		
Rated insulation voltage	500 V	
Rated impulse withstand voltage	4 kV	
Specifications		
Ambient temperature storage / operation	-30 80 °C / -5 55 °C	
Operating frequency at rated load	\leq 600 operations / h	
Conductor cross section	Stranded wire 2.5 mm ²	
Max. Screw torque	0.6 Nm	
Ingress protection degree	IP 20	

50 g

2NO

2NC

1NO + 1NC

RIC-AUX20

RIC-AUX11

RIC-AUX02



YS



61

62

RIC-AUX11

53

Connection diagram





2xN0 RIC-AUX20

2xNC $1 \times NO + 1 \times NC$ RIC-AUX02

Dimensions [mm]



Technical approvals, conformities

CE Rolls IEC/EN 60947-4-1 IEC/EN 60947-5-1 IEC/EN 61095

122 | 15/16

Type: RAC20-xxx/ ...V

Manual actuating and locking

Rated operational power

RAC20

20 A, AC/DC control voltage, silent operation DIN rail mounting according to DIN 43 880



195 ... 253 160

2 kV

4 kW / 230 V AC-1, 0.6 A / 220 V DC-1

2 kV

WORLD OF REL А



Connection diagram

2xN0 RAC20-200

 $1 \times NO + 1 \times NC$

Coil circuit

RAC20-020

R2 Α2

2xNC

RAC20-110

Δ1



Fig. 1 DC load limit curve DC-1



Dimensions [mm]



Technical approvals, conformities

CE Rolls IEC/EN 60947-4-1, VDE 0660 IEC/EN 60947-5-1 IEC/EN 61095, VDE 0637

Recommended minimum contact load		50 mA / 24 V		
Contacts				
Material		AgNi		
Rated operationa	al current	20 A		
Max. inrush curre	ent (100ms)	50 A		
Max. switching v	oltage	230 V		
Max. AC load	AC-1, AC-7a	4 kW / 230 V		
	AC-3	1.3 kW /230 \	/ (NO) 0.75 kW /	230 V (NC)
Max. DC load 24	V / 220 V DC-1 (Fig. 1)	480 W / 130 \	N	
Control input V	/ _n =	UC 24 V	UC 36 V	UC 230 V
Operating voltage	e range [V]	20.4 26.4	30.6 39.6	195 253
Typ. pic up volta	ge [V]	17	25	160
Typ. release volta	age [V]	7	11	70
Power consumption	tion [W]	2.1	2.1	2.1
Inductive turn-of	f voltage	None	None	None

2 kV

Hum-free installation contactor, 2 contacts, 2 NO, 1 NO-1 NC, 2 NC types available.

Insulation

mouldton	
Rated insulation voltage	230 V
Rated impulse withstand voltage	4 kV
Min. clearance of open contact	3.6 mm

General Specifications Ambient temperature

Surge immunity EN 6100-4-5

Ampient temperature	
storage	-30 80 °C
operation, Spacer after 2 contactors side by side	-5 55 °C
operation, Spacer after 3 contactors side by side	-5 40 °C
Pick-up time	15 45 ms
Release time	20 50 ms
Mechanical life	$\geq 3 \times 10^6$ operations
AC voltage endurance at rated load AC-3, AC-7b	$\geq 3 \times 10^5$ operations
DC voltage endurance at rated load DC-1	10 ⁵ operations
Operating frequency at rated load DC-1	≤ 300 operations / h
Operating frequency at rated load AC-1	≤ 600 operations / h
Conductor cross section coil /contacts	Stranded wire 2.5 mm ² / 6 mm ²
Max. Screw torque coil /contacts	0.6 Nm / 1.2 Nm
Ingress protection degree	IP 20
Weight	140 g

Standard types

UC (AC / DC) 50 / 60 Hz, 24, 36, 230	2NO	RAC20-200/UCV
	1NO + 1NC	RAC20-110/UCV
"" enter the voltage for full type designation	2NC	RAC20-020/UCV

Accessories Sealing cover: Spacer:	RIC-SEAL 20 RIC-DIST	
Samples of lamp loads	Number of lamps	
Incondopoent Jampa 220 V/ / 100 W/	20	

Incandescent lamps 230 V / 100 W	20
Fluorescent lamps not corrected 230 V / 36 W	17
Fluorescent lamps electronic ballast units 36 W	10

Mounting information

If multiple contactors are mounted side by side, spacers (RIC DIST) have to be inserted for the purpose of heat dissipation. Example: Ambient temperature up to 40°C: 1 spacer after 3 RAC // 40...55°C: 1 spacer after 2 RAC.

Type: RAC25-xxx/ ...V

Manual actuating and locking

Rated operational power AC-1

RAC25

25 A, AC/DC control voltage, silent operation DIN Rail mounting according to DIN 43 880

Hum-free installation contactor, 4 contacts, 4 NO, 4 NC, 2 NO-2 NC types available



Single phase: 5.4 kW/230 V, 0.6 A/220 V DC-1

3 phase 230 V: 9 kW 3 phase 400 V: 16 kW 50 mA / 24 V

9 kW / 230 V, 16 kW / 400 V 2.2 kW /230 V, 4 kW / 400 V

600 W / 130 W

LD OF REL



Connection diagram

1 3 A1 5 7	1 R1 A1 R3 3	R1 R3 A1 R5 R7
<u>↓</u> <u>↓</u> <u>↓</u> <u>↓</u> <u>↓</u> <u>↓</u>	┟-┽-┏-┽-╢	<i>4</i> ⁻ <i>4</i> ⁻ − <i>4</i> ⁻ <i>4</i> ⁻ <i>4</i>
	2 B2 A2 B4 4	R2 R4 A2 R6 R8
4xN0 RAC25-400	2xN0 + 2xNC RAC25-220	4xNC RAC25-040

Coil circuit



Fig. 1 DC load limit curve DC-1



Dimensions [mm]



Technical approvals, conformities

CE RÖHS IEC/EN 60947-4-1 IEC/EN 60947-5-1 IEC/EN 61095

Recommended minimum contact load

Contacts

Material		
Rated operational current		
Max. inrush current (100ms)		
Max. switching voltage		
Max. AC load 3 phase	AC-1, AC-7a	
	AC-3	
Max. DC load 24V/220V	DC-1 (Fig. 1)	

Control input V _n =	UC 24 V	UC 36 V	UC 230 V
Operating voltage range [V]	20.4 26.4	30.6 39.6	195 253
Typ. pic up voltage [V]	17	25	160
Typ. release voltage [V]	7	11	70
Power consumption [W]	2.6	2.6	2.6
Inductive turn-off voltage	None	None	None
Surge immunity EN 6100-4-5	2 kV	2 kV	2 kV

440 V

4 KV 3.6 mm

AgNi 25 A 50 A 400 V

Insulation

Rated insulation voltage	
Rated impulse withstand voltage	
Min. clearance of open contact	

General Specifications

Ambient temperature	
storage	-30 80 °C
operation, Spacer after 2 contactors side by side	-5 55 °C
operation, Spacer after 3 contactors side by side	-5 40 °C
Pick-up time	15 45 ms
Release time	20 70 ms
Mechanical life	\geq 3 x 10 ⁶ operations
AC voltage endurance at rated load AC-3, AC-7b	$\geq 5 \times 10^5$ operations
DC voltage endurance at rated load DC-1	10 ⁵ operations
Operating frequency at rated load DC-1	≤ 300 operations / h
Operating frequency at rated load AC-1, AC-3	≤ 600 operations / h
Conductor cross section coil / contacts terminals	Stranded wire 2.5 mm ² / 6 mm ²
Max. Screw torque coil / contacts	0.6 Nm / 1.2 Nm
Ingress protection degree	IP 20
Weight	270 g

Standard types

Accessories

Sealing cover: Spacer:

UC (AC / DC) 50 / 6	0 Hz, 24, 36, 230	

"..." enter the vo

oltage for full type designation	4NC	RAC25-040/UCV
	RIC-SEAL 25 RIC-DIST	
np loads	Number of la	nps

4NO

2NO + 2NC

RAC25-400/UC ...V RAC25-220/UCV

Samples of lamp loads Incandescent lamps 230 V/ 100 W 20 Fluorescent lamps not corrected 230 V/ 36 W 20 Fluorescent lamps electronic ballast units 36 W 14

If multiple contactors are mounted side by side, spacers (RIC DIST) have to be inserted for the purpose of heat dissipation. Example: Ambient temperature up to 40°C: 1 spacer after 3 RAC // 40...55°C: 1 spacer after 2 RAC.

Mounting information

Type: RBC20-xxx/AC230V

Rated operational power

Rated operational current

Max. switching voltage

Control input V_n = Operating voltage range [V]

Typ. pic up voltage [V]

Typ. release voltage [V]

Power consumption [W]

Inductive turn-off voltage

Rated insulation voltage Rated impulse withstand voltage

General Specifications

Ambient temperature

Insulation

storage operation

Pick-up time

Release time

Mechanical life

Surge immunity EN 6100-4-5

Min. clearance of open contact

AC voltage endurance at rated load AC-3, AC-7b

DC voltage endurance at rated load DC-1

Operating frequency at rated load DC-1

Operating frequency at rated load AC-1

Conductor cross section coil /contacts Max. Screw torque coil /contacts

UC (AC / DC) 50 / 60 Hz, 24, 36, 230

"..." enter the voltage for full type designation

Max. inrush current (100ms)

Recommended minimum contact load

AC-1, AC-7a

AC-3

Max. DC load 24 V / 220 V DC-1 (Fig. 1)

Manually switchable

RBC20

Contacts Material

Max. AC load

20 A, AC/DC control voltage, silent operation DIN rail mounting according to DIN 43 880

Bistable installation contactor, 2 contacts, 2 NO, 1 NO-1 NC types available



4 kW / 230 V AC-1, 0.5 A / 220 V DC-1

1.3 kW /230 V (NO contact only)

100 mA / 10 V

AgNi

20 A

50 A

440 V

4 kW / 230 V

AC 230 V

10 ... 440

160

70

None

2 kV

440 V

4 kV

3 mm

-30 ... 80 °C

-25 ... 55 °C

15 ... 45 ms

20 ... 50 ms

10⁶ operations

10⁵ operations 10⁵ operations

 \leq 900 operations / h

≤ 900 operations / h

0.6 Nm / 1.2 Nm

IP 20

132 g

2NO

Stranded wire 4 mm² / 10 mm²

RBC20-200/AC230V

RBC20-110/AC230V

4

480 W / 110 W

LD OE BEL



Connection diagram





Fig. 1 DC load limit curve DC-1



Dimensions [mm]



Accessories

Standard types

Weight

Auxiliary contact bloc:

Ingress protection degree

RBC-AUX

1NO + 1NC

Samples of lamp loads	Number of lamps
Incandescent lamps 230 V / 100 W	20
Fluorescent lamps not corrected 230 V / 36 W	29
Fluorescent lamps electronic ballast units 36 W	38

Technical approvals, conformities

CE Rolls IEC/EN 60947-4-1, VDE 0660 IEC/EN 60947-5-1 IEC/EN 61095, VDE 0637

Mounting information

f multiple contactors are mounted side by side, spacers (RIC DIST) have to be inserted for the purpose of heat dissipation. Example: Ambient temperature up to 40°C: 1 spacer after 3 RBC // 40...55°C: 1 spacer after 2 RBC.



Type: RBC32-xxx/AC230V

Contacts Material

Rated operational power AC-1

Recommended minimum contact load

RBC32 32 A, AC/DC control voltage, silent operation DIN Rail mounting according to DIN 43 880

Hum-free installation contactor, 4 contacts, 4 NO, 2 NO-2 NC types available



Single phase: 5.4 kW/230 V, 0.5 A/220 V DC-1

3 phase 230 V: 9 kW 3 phase 400 V: 16 kW

100 mA / 10 V

AgNi

WORLD OF RELAYS



Connection diagram

$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
4xN0	2xNO +2xNC
BBC32-400	BBC32-220

Fig. 1 DC load limit curve DC-1



Dimensions [mm]



Materia	Ayini	
Rated operational current	32 A	
Max. inrush current (100ms)	50 A	
Max. switching voltage	440 V	
Max. AC load 3 phase AC-1, AC-7a	9 kW / 230 V, 16 kW / 400 V	
AC-3	2.2 kW /230 V, 4 kW / 400 V	
Max. DC load 24V/220V DC-1 (Fig. 1)	600 W / 130 W	
Control input V _n =	AC 230 V	
Operating voltage range [V]	195 253	
Typ. pic up voltage [V]	160	
Typ. release voltage [V]	70	
Power consumption [W]	4	
Inductive turn-off voltage	None	
Surge immunity EN 6100-4-5	2 kV	
Insulation		
Rated insulation voltage	440 V	
Rated impulse withstand voltage	4 KV	
Min. clearance of open contact	3 mm	
General Specifications		
Ambient temperature		
storage	-30 80 °C	
operation	-25 55 °C	
Pick-up time	15 45 ms	
Release time	20 70 ms	
Mechanical life	10 ⁶ operations	
AC voltage endurance at rated load AC-3, AC-7b	10 ⁵ operations	
DC voltage endurance at rated load DC-1	10 ⁵ operations	
Operating frequency at rated load DC-1	\leq 900 operations / h	
Operating frequency at rated load AC-1, AC-3	≤ 900 operations / h	
Conductor cross section coil / contacts terminals	Stranded wire 4 mm ² / 10 mm ²	
Max. Screw torque coil / contacts	0.6 Nm / 1.2 Nm	
Ingress protection degree	IP 20	
Weight	192 g	

Standard types

UC (AC / DC) 50 / 60 Hz, 24, 36, 230

"..." enter the voltage for full type designation

Accessories

Auxillary contact	t bloc:	

Samples of lamp loads	Number of lamps
Incandescent lamps 230 V/ 100 W	35
Fluorescent lamps not corrected 230 V/ 36 W	57
Fluorescent lamps electronic ballast units 36 W	75

Technical approvals, conformities

EC/EN 60947-4-1 IEC/EN 60947-5-1 IEC/EN 61095

Mounting information

If multiple contactors are mounted side by side, spacers (RBC DIST) have to be inserted for the purpose of heat dissipation. **Example:** Ambient temperature up to 40°C: 1 spacer after 3 RIC // 40...55°C: 1 spacer after 2 RBC.

4NO

2NO + 2NC

RBC-AUX..

RBC32-400/AC230V

RBC32-220/AC230V

RBC-AUX

4 A auxiliary contact bloc with 2 double contacts, 2 different combinations of NO / NC contacts



Comat RELECO



Type: RBC AUXxx

2 double contacts, 2 NO, 1 NC-1 NO types available

Maximum contact load AC-15	4 A / 230 V				
Recommended minimum contact load	5 mA / 12 V				
Contacts					
Material	AgNi				
Rated operational current AC-15	4 A / 230 V				
Max. switching voltage	250 V				
Insulation					
Rated insulation voltage	250 V				
Rated impulse withstand voltage	4 kV				
Specifications					
Ambient temperature storage / operation	-30 80 °C / -25 55 °C				
Operating frequency at rated load	≤ 600 operations / h				
Conductor cross section	Stranded wire 4 mm ²				

0.8 Nm IP 20

30 g



Connection diagram



Dimensions [mm]

RBC-AUX20



1xN0 +1xNC RBC-AUX11

Standard types

Weight

Max. Screw torque

Ingress protection degree

2NO RBC-AUX20 1NO + 1NC RBC-AUX11



Technical approvals, conformities

EC/EN 60947-4-1 IEC/EN 60947-5-1 IEC/EN 61095



Notes

 		 	 		 			 		 		 	 			 	 	_
 -			 				 							 			 	
-							 							 			-	
 -			 				 							 			 	
	 						 						_	 			 	
-																		
 -			 				 							 				
 -			 				 							 			 	-
																	-	



1.9 Solid State Contactors



- For frequent switching without contact bounce
- No wear and tear and silent operation thanks to semiconductor technology
- Non-hazardous switching of inductive loads
- Reduction of switch-on current thanks to zero voltage switching
- Clear LED status display
- Integrated overload protection
- DIN rack or screw assembly
- Space-saving: standard module width from 22.5 to 90 mm
- Integrated cooling element with optional thermal protector

Solid State Contactors



Three phase AC motors have proven themselves for the operation of pumps, conveyor belts, compressors and countless other drive technology applications. The direct start or the star-delta starter cause impact on the mechanical components in the drive train. This leads to signs of wear, damage and premature failures. On the other hand, abrupt starts lead to voltage drops which burden the power supply network and affect the surrounding components.

Softstarter by Comat Releco prevents disruptions and ensures a smooth start-up with a reduced starting torque and slow breaking sequences without loading the drive system. Thanks to modern semiconductor power amplifiers and fanless design, you can enjoy absolutely wear-free. The compact construction with integrated cooling element only requires little space in the control cabinet.

Softstarter by Comat Releco is available in four series:

The CCL range has been developed for the operation of heat pumps and compressors. Intelligent current limitation during start-up reduces the drive power by up to 65%. The integrated motor protection allows the adjustment of the nominal power and replaces an additional motor protection switch. Thanks to an integrated bypass relay, there are no additional costs for external bridging.

The CCM range is available with two or three switched phases and is designed for a large number of switching cycles per hour. The bypass is integrated in accordance with the version. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value. The CCMB range also offers a dynamic break function with automatic standstill detection.

The starting torque limiters of the CTC range are activated via an upstream contactor. The start-up torque can be limited to 1 to 85 % of the nominal torque. Typical applications are blowers and smaller machinery.



Solid State Contactor – CC1H215 (one phase)

Type: CC1H215

The CC series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24-230 VAC/VDC.

Output		
Switching element	Thyristor	
Numbers of phases	1	
Nominal voltage (U _{nom})	230 VAC	
Output voltage range	12 – 240 VAC	
Reverse voltage	1000 Vrrm	
Peak reverse voltage	1100 Vrsm	
Min. load	10 mA	
Max. leakage current	1 mA	
Max. inrush current	15 A	
Operation current AC-1/51 @ U _{nom}	15 A	
Operation current AC-3 @ U _{nom}	15 A	
Operation current AC-55b @ U _{nom}	15 A	
Operation current AC-56a @ Unom	15 A	
Response/Release time	20 ms	
Limit load	1800 A ² t	
 Input		
Voltage	24 – 230 VAC/VDC	
Min. voltage	20,4 VAC/VDC	
Max. voltage	253 VAC/VDC	
Release voltage	7,2 VAC/VDC	
Max. current	6 mA	
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Connection terminals	Screw terminal 6 mm ²	
Ingress protection degree	IP 20	
Mounting	DIN rail T <s35< td=""><td></td></s35<>	
Housing material	PPE Noryl SE1 / Aluminium	
Weight	270 g	
Insulation	-	
Insulation voltage	4 kV	
Dielectric strength	660 V	

Standard type

Starting Torque Limiter

CC1H215





Connection diagram



Dimensions [mm]





Technical approvals, conformities

Solid State Contactor – CC1H230 (one phase)

Type: CC1H230

The CC series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24-230 VAC/VDC.

Output		
Switching element	Thyristor	
Numbers of phases	1	
Nominal voltage (U _{nom})	230 VAC	
Output voltage range	12 – 240 VAC	
Reverse voltage	1000 Vrrm	
Peak reverse voltage	1100 Vrsm	
Min. load	10 mA	
Max. leakage current	1 mA	
Max. inrush current	30 A	
Operation current AC-1/51 @ U _{nom}	30 A	
Operation current AC-3 @ U _{nom}	15 A	
Operation current AC-55b @ U _{nom}	20 A	
Operation current AC-56a @ Unom	15 A	
Response/Release time	20 ms	
Limit load	1800 A ² t	
Input		
Voltage	24 – 230 VAC/VDC	
Min. voltage	20,4 VAC/VDC	
Max. voltage	253 VAC/VDC	
Release voltage	7,2 VAC/VDC	
Max. current	6 mA	
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Connection terminals	Screw terminal 10 mm ²	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	PPE Noryl SE1 / Aluminium	
Weight	650 g	
Insulation		
Insulation voltage	4 kV	
Dielectric strength	660 V	

Standard type

Starting Torque Limiter

CC1H230





Connection diagram



Dimensions [mm]





Technical approvals, conformities

Solid State Contactor – CC1H250 (one phase)

Type: CC1H250

The CC series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50A with two and three phases. They come with control voltages of either 5–24 VDC or 24-230 VAC/VDC.

Output	
Switching element	Thyristor
Numbers of phases	1
Nominal voltage (U _{nom})	230 VAC
Output voltage range	12 – 240 VAC
Reverse voltage	1000 Vrrm
Peak reverse voltage	1100 Vrsm
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	50 A
Operation current AC-1/51 @ U _{nom}	50 A
Operation current AC-3 @ U _{nom}	15 A
Operation current AC-55b @ U _{nom}	20 A
Operation current AC-56a @ U _{nom}	15 A
Response/Release time	20 ms
Limit load	1800 A ² t
Input	
Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA
General Specifications	
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm ²
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g
Insulation	
Insulation voltage	4 kV
Dielectric strength	660 V

Standard type

Starting Torque Limiter

CC1H250





Connection diagram



Dimensions [mm]





Technical approvals, conformities



Solid State Contactor – CC1H415 (one phase)

Type: CC1H415

The CC series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24-230 VAC/VDC.

- · · ·		
Output	-	
Switching element	Thyristor	
Numbers of phases	1	
Nominal voltage (U _{nom})	400 VAC	
Output voltage range	24 – 480 VAC	
Reverse voltage	1200 Vrrm	
Peak reverse voltage	1300 Vrsm	
Min. load	10 mA	
Max. leakage current	1 mA	
Max. inrush current	15 A	
Operation current AC-1/51 @ U _{nom}	15 A	
Operation current AC-3 @ U _{nom}	15 A	
Operation current AC-55b @ U _{nom}	15 A	
Operation current AC-56a @ U _{nom}	15 A	
Response/Release time	20 ms	
Limit load	1800 A ² t	
Input		
Voltage	24 – 230 VAC/VDC	
Min. voltage	20,4 VAC/VDC	
Max. voltage	253 VAC/VDC	
Release voltage	7,2 VAC/VDC	
Max. current	6 mA	
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Connection terminals	Screw terminal 6 mm ²	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	PPE Noryl SE1 / Aluminium	
Weight	270 g	
Insulation	-	
Insulation voltage	4 kV	
Dielectric strength	660 V	

Standard type

Starting Torque Limiter

CC1H415





onnection diagram



imensions [mm]





Technical approvals, conformities

Solid State Contactor – CC1H450 (one phase)

Type: CC1H450

The CC series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5-24 VDC or 24-230 VAC/VDC.

Output	
Switching element	Thyristor
Numbers of phases	1
Nominal voltage (U _{nom})	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 Vrrm
Peak reverse voltage	1300 Vrsm
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	50 A
Operation current AC-1/51 @ U _{nom}	50 A
Operation current AC-3 @ U _{nom}	15 A
Operation current AC-55b @ Unom	20 A
Operation current AC-56a @ Unom	15 A
Response/Release time	20 ms
Limit load	1800 A ² t
Input	
Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA
General Specifications	
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm ²
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g
Insulation	
Insulation voltage	4 kV
Dielectric strength	660 V

Standard type

Starting Torque Limiter

CC1H450





Connection diagram



Dimensions [mm]





Technical approvals, conformities



Solid State Contactor – CC2H230 (two phase)

Type: CC2H230

The CC series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24-230 VAC/VDC.

Output	
Switching element	Thyristor
Numbers of phases	2
Nominal voltage (U _{nom})	230 VAC
Output voltage range	12 – 240 VAC
Reverse voltage	1000 Vrrm
Peak reverse voltage	1100 Vrsm
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	30 A
Operation current AC-1/51 @ U _{nom}	30 A
Operation current AC-3 @ U _{nom}	15 A
Operation current AC-55b @ U _{nom}	20 A
Operation current AC-56a @ Unom	15 A
Response/Release time	20 ms
Limit load	1800 A ² t
Input	
Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA
General Specifications	
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm ²
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g
Insulation	
Insulation voltage	4 kV
Dielectric strength	660 V

Standard type

Starting Torque Limiter

CC2H230





Connection diagram



Dimensions [mm]





Technical approvals, conformities

Solid State Contactor – CC3H410 (three phase)

Type: CC3H410

The CC series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

Output	
Switching element	Thyristor
Numbers of phases	3
Nominal voltage (Unom)	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 Vrrm
Peak reverse voltage	1300 Vrsm
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	10 A
Operation current AC-1/51 @ U _{nom}	10 A
Operation current AC-3 @ Unom	10 A
Operation current AC-55b @ U _{nom}	10 A
Operation current AC-56a @ U _{nom}	5 A
Response/Release time	20 ms
Limit load	1800 A ² t
Input	
Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA
General Specifications	
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 6 mm ²
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g
Insulation	
Insulation voltage	4 kV
Dielectric strength	660 V

Standard type

Starting Torque Limiter

CC3H410





Connection diagram



Dimensions [mm]





Technical approvals, conformities

Solid State Contactor – CC3H420 (three phase)

Type: CC3H420

The CC series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50A with two and three phases. They come with control voltages of either 5–24 VDC or 24-230 VAC/VDC.

Output	
Switching element	Thyristor
Numbers of phases	3
Nominal voltage (U _{nom})	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 Vrrm
Peak reverse voltage	1300 Vrsm
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	20 A
Operation current AC-1/51 @ U _{nom}	20 A
Operation current AC-3 @ U _{nom}	10 A
Operation current AC-55b @ U _{nom}	10 A
Operation current AC-56a @ U _{nom}	5 A
Response/Release time	20 ms
Limit load	1800 A ² t
Input	
Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA
General Specifications	
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm ²
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g
Insulation	
Insulation voltage	4 kV
Distant is started at	000.1/

Standard type

Dielectric strength

Starting Torque Limiter

CC3H420

660 V





Connection diagram



Dimensions [mm]





Technical approvals, conformities

Solid State Contactor – CC3H610 (three phase)

Type: CC3H610

The CC series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

Output		
Switching element	Thyristor	
Numbers of phases	3	
Nominal voltage (U _{nom})	400 VAC	
Output voltage range	24 – 480 VAC	
Reverse voltage	1200 Vrrm	
Peak reverse voltage	1300 Vrsm	
Min. load	10 mA	
Max. leakage current	1 mA	
Max. inrush current	10 A	
Operation current AC-1/51 @ U _{nom}	10 A	
Operation current AC-3 @ U _{nom}	10 A	
Operation current AC-55b @ U _{nom}	10 A	
Operation current AC-56a @ Unom	5 A	
Response/Release time	20 ms	
Limit load	6300 A ² t	
Input		
Voltage	24 – 230 VAC/VDC	
Min. voltage	20,4 VAC/VDC	
Max. voltage	253 VAC/VDC	
Release voltage	7,2 VAC/VDC	
Max. current	6 mA	
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Connection terminals	Screw terminal 6 mm ²	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	PPE Noryl SE1 / Aluminium	
Weight	650 g	
Insulation		
Insulation voltage	4 kV	
Dielectric strength	660 V	

Standard type

Starting Torque Limiter

CC3H610





Connection diagram



Dimensions [mm]





Technical approvals, conformities



Solid State Contactor, switching of ohmic – CR11H210 (one phase)

Type: CR11H210

The CR series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

Output Switching element Thyristor Numbers of phases 1 230 VAC Nominal voltage (U_{nom}) Output voltage range 12 - 240 VAC 1000 Vrrm Reverse voltage Peak reverse voltage 1100 Vrsm 10 mA Min. load Max. leakage current 1 mA Max. inrush current 10 A Operation current AC-1/51 @ Unom 10 A Response/Release time 20 ms 180 A²t Limit load Input

mput	
Voltage	
Min. voltage	
Max. voltage	
Release voltage	
Max. current	

General Specifications

Ambient temperature storage/operation			
Connection terminals			
Ingress protection degree			
Mounting			
Housing material			
Weight			
Insulation			
Insulation voltage			
Dielectric strength			

Standard type

Starting Torque Limiter

Screw terminal 6 mm² IP 20 DIN rail TS35 PPE Noryl SE1 / Aluminium 270 g 4 kV 660 V

-20 - 80°C / -5 - 40°C

24 - 230 VAC/VDC

20,4 VAC/VDC 253 VAC/VDC 7,2 VAC/VDC

8 mA

CR11H210





Connection diagram



Dimensions [mm]





Technical approvals, conformities

Solid State Contactor, switching of ohmic – CR11H430 (one phase)

Type: CR11H430

The CR series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24-230 VAC/VDC.

Output		
Switching element	Thyristor	
Numbers of phases	1	
Nominal voltage (Unom)	400 VAC	
Output voltage range	24 – 480 VAC	
Reverse voltage	1200 Vrrm	
Peak reverse voltage	1300 Vrsm	
Min. load	10 mA	
Max. leakage current	1 mA	
Max. inrush current	30 A	
Operation current AC-1/51 @ U _{nom}	30 A	
Response/Release time	20 ms	
Limit load	610 A ² t	
 Input		
Voltage	24 – 230 VAC/VDC	
Min. voltage	20,4 VAC/VDC	Connection diagram
Max. voltage	253 VAC/VDC	
Release voltage	7,2 VAC/VDC	
Max. current	8 mA	1/L1 (+ Ø 0 %
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	y ▲□
Connection terminals	Screw terminal 10 mm ²	
Ingress protection degree	IP 20	2/T1 A
Mounting	DIN rail TS35	2/11 8
Housing material	PPE Noryl SE1 / Aluminium	
Weight	650 g	Dimensions [mm]
Insulation		Dimensions [mm]
Insulation voltage	4 kV	
Dielectric strength	660 V	= <u>30</u>
Standard type		

Starting Torque Limiter

CR11H430







ensions [mm]





Technical approvals, conformities



Solid State Contactor, switching of ohmic – CR11H480 (one phase)

Type: CR11H480

The CR series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5-24 VDC or 24-230 VAC/VDC.

Output Switching element Thyristor Numbers of phases 1 Nominal voltage (U_{nom}) 400 VAC Output voltage range 24 - 480 VAC Reverse voltage 1200 Vrrm Peak reverse voltage 1300 Vrsm 10 mA Min. load Max. leakage current 1 mA Max. inrush current 80 A Operation current AC-1/51 @ Unom 80 A Response/Release time 20 ms 25300 A²t Limit load Input 24 - 230 VAC/VDC Voltage Min. voltage 20,4 VAC/VDC Max. voltage 253 VAC/VDC Release voltage 7,2 VAC/VDC Max. current 8 mA **General Specifications** Ambient temperature storage/operation -20 - 80°C / -5 - 40°C Connection terminals Screw terminal 35 mm² IP 20 Ingress protection degree Mounting DIN rail TS35 PPE Noryl SE1 / Aluminium Housing material Weight 1050 g Insulation Insulation voltage 4 kV

660 V

CR11H480

Standard type

Dielectric strength

Starting Torque Limiter



OF

REL

RLD

Connection diagram



Dimensions [mm]





Technical approvals, conformities


Solid State Contactor, switching of ohmic – CR11H4125 (one phase)

Type: CR11H4125

The CR series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

Output	
Switching element	Thyristor
Numbers of phases	1
Nominal voltage (U _{nom})	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 Vrrm
Peak reverse voltage	1300 Vrsm
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	125 A
Operation current AC-1/51 @ U _{nom}	125 A
Response/Release time	20 ms
Limit load	25300 A ² t
Input	
Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC

General Specifications

Release voltage

Max. current

Ambient temperature storage/operation Connection terminals Ingress protection degree Mounting Housing material Weight Insulation Insulation voltage Dielectric strength

Standard type

Starting Torque Limiter

CR11H4125

7,2 VAC/VDC 8 mA

IP 20

1050 g

4 kV

660 V

DIN rail TS35

-20 - 80°C / -5 - 40°C

Screw terminal 35 mm²

PPE Noryl SE1 / Aluminium

WORLD OF RELAYS



Connection diagram



Dimensions [mm]





Technical approvals, conformities

Solid State Contactor, switching of ohmic – CR22H430 (two phase)

Type: CR22H430

The CR series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

Output

output		
Switching element	Thyristor	
Numbers of phases	2	
Nominal voltage (U _{nom})	400 VAC	
Output voltage range	24 – 480 VAC	
Reverse voltage	1200 Vrrm	
Peak reverse voltage	1300 Vrsm	
Min. load	10 mA	
Max. leakage current	1 mA	
Max. inrush current	30 A	
Operation current AC-1/51 @ U _{nom}	30 A	
Response/Release time	20 ms	
Limit load	25300 A ² t	
Input		
Voltage	24 – 230 VAC/VDC	
Min. voltage	20,4 VAC/VDC	
Max. voltage	253 VAC/VDC	
Release voltage	7,2 VAC/VDC	
Max. current	8 mA	
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Connection terminals	Screw terminal 10 mm ²	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	PPE Noryl SE1 / Aluminium	
Weight	650 g	
Insulation		
Insulation voltage	4 kV	
Dielectric strength	660 V	

Standard type

Starting Torque Limiter

CR22H430





Connection diagram



Dimensions [mm]





Technical approvals, conformities

Solid State Contactor, switching of ohmic – CR33H420 (three phase)

Type: CR33H420

The CR series solid-state contactors are suitable for the contactless and nonwearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

Output

Switching element	Thyristor
Numbers of phases	3
Nominal voltage (U _{nom})	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 Vrrm
Peak reverse voltage	1300 Vrsm
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	20 A
Operation current AC-1/51 @ U _{nom}	20 A
Response/Release time	20 ms
Limit load	610 A ² t
Input	
Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	8 mA
General Specifications	
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
	0 1 1 1 1 0 2

Connection terminals Ingress protection degree Mounting Housing material Weight Insulation Insulation voltage Dielectric strength

Standard type

Starting Torque Limiter

-20 – 80°C / -5 – 40°C Screw terminal 10 mm² IP 20 DIN rail TS35 PPE Noryl SE1 / Aluminium 1050 g 4 kV

660 V

CR33H420





Connection diagram



Dimensions [mm]







Reversing Contactor – CCR3H410 (three phase)

Type: CCR3H410

The CCR is a reversing contactor for asynchronous motors up to 10 A / 400 VAC. It has two separate electric control inputs for right and left motion that are interlocked. It comes with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

Output

Switching element	Thyristor	
Numbers of phases	3	
Nominal voltage (Unom)	400 VAC	
Output voltage range	24 – 480 VAC	199
Reverse voltage	1200 Vrrm	-
Peak reverse voltage	1300 Vrsm	
Min. load	50 mA	
Max. leakage current	5 mA	
Max. inrush current	60 – 70 A	
Operation current AC-1/51 @ U _{nom}	10 A	
Operation current AC-53 @ U _{nom}	10 A	
Response/Release time	20 ms	
Limit load	610 A ² t	
 Input		
Voltage	24 – 230 VAC/VDC	
Min. voltage	20,4 VAC/VDC	
Max. voltage	253 VAC/VDC	Connection diag
Release voltage	7,2 VAC/VDC	
Max. current	6 mA	1/L1 3/L2
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Connection terminals	Screw terminal 6 mm ²	~ ¥
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	Ø Ø 2/T1 4/T2
Housing material	PPE Noryl SE1 / Aluminium	2/11 4/12
Weight	650 g	
Insulation		_
Insulation voltage	4 kV	Dimensions [mm
Dielectric strength	660 V	

Standard type

Starting Torque Limiter

CCR3H410





gram



m]





Technical approvals, conformities

Performance Regulator – CPC1230 (one phase)

Type: CPC1230

The one-phase solid-state performance regulator CPC is suitable for triggering heating elements, lamps and transformers up to 50 A. Performance is controlled through a potentiometer or analogue standard signal. It has a 24 VDC voltage supply.

480 VAC

24 VAC/VDC

12 VAC/VDC

35 VAC/VDC

12 VAC/VDC

10 kOhm

IP 20

650 g

4 kV 660 V

DIN rail TS35

CPC1230

0 – 10 V, 4 – 20 mA

-20 - 80°C / -5 - 40°C Screw terminal 2.5 mm²

PPE Noryl SE1 / Aluminium

Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage (U _{nom})	230 VAC
Output voltage range	380 - 480 \
Reverse voltage	1000 Vrrm
Peak reverse voltage	1100 Vrsm
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	—
Operation current AC-1/51 @ U _{nom}	30 A
Operation current AC-53 @ Unom	non uL
Response/Release time	20 ms
Limit load	1800 A ² t

Input

Voltage Min. voltage Max. voltage Release voltage Control signal Potentiometer

General Specifications

Ambient temperature storage/operation Connection terminals Ingress protection degree Mounting Housing material Weight Insulation Insulation voltage Dielectric strength

Standard type

Starting Torque Limiter

Connection diagram







Dimensions [mm]







Performance Regulator – CPC1430 (one phase)

Type: CPC1430

The one-phase solid-state performance regulator CPC is suitable for triggering heating elements, lamps and transformers up to 50 A. Performance is controlled through a potentiometer or analogue standard signal. It has a 24 VDC voltage supply.

Output

output		
Switching element	Thyristor	
Numbers of phases	1	
Nominal voltage (U _{nom})	400 VAC	
Output voltage range	380 – 480 VAC	
Reverse voltage	1200 Vrrm	
Peak reverse voltage	1300 Vrsm	
Min. load	10 mA	
Max. leakage current	1 mA	
Max. inrush current	_	
Operation current AC-1/51 @ U _{nom}	30 A	
Operation current AC-53 @ U _{nom}	non uL	
Response/Release time	20 ms	
Limit load	1800 A ² t	
Input		
Voltage	24 VAC/VDC	D 1
Min. voltage	12 VAC/VDC	Dimer
Max. voltage	35 VAC/VDC	
Release voltage	12 VAC/VDC	
Control signal	0 – 10 V, 4 – 20 mA	
Potentiometer	10 kOhm	
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Connection terminals	Screw terminal 2,5 mm ²	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	PPE Noryl SE1 / Aluminium	
Weight	650 g	
Insulation		
Insulation voltage	4 kV	
Dielectric strength	660 V	

CPC1430

Standard type

Starting Torque Limiter

Connection diagram







Dimensions [mm]







Performance Regulator – CPC1450 (one phase)

Type: CPC1450

The one-phase solid-state performance regulator CPC is suitable for triggering heating elements, lamps and transformers up to 50 A. Performance is controlled through a potentiometer or analogue standard signal. It has a 24 VDC voltage supply.

24 VAC/VDC

12 VAC/VDC

35 VAC/VDC

12 VAC/VDC

10 kOhm

IP 20

1050 g

CPC1450

4 kV 660 V

DIN rail TS35

0 – 10 V, 4 – 20 mA

 $-20-80^\circ\text{C} \ / \ -5-40^\circ\text{C}$ Screw terminal 2,5 mm²

PPE Noryl SE1 / Aluminium

Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage (U _{nom})	400 VAC
Output voltage range	380 - 480 VAC
Reverse voltage	1200 Vrrm
Peak reverse voltage	1300 Vrsm
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	_
Operation current AC-1/51 @ U _{nom}	50 A
Operation current AC-53 @ Unom	non uL
Response/Release time	20 ms
Limit load	1800 A ² t

Input

Voltage Min. voltage Max. voltage Release voltage Control signal Potentiometer

General Specifications

Ambient temperature storage/operation Connection terminals Ingress protection degree Mounting Housing material Weight **Insulation** Insulation voltage Dielectric strength

Standard type

Starting Torque Limiter

Connection diagram







Dimensions [mm]









Notes

 		 	 		 			 		 		 	 			 	 	_
 -			 				 							 			 	
-			 				 							 			-	
 -			 				 							 			 	
 	 						 						_	 			 	
-																		
 -			 				 							 				
 -			 				 							 			 	-
																	-	



2.0 Time Relays



Time functions



WORLD OF RELAYS



Time Cubes		Fu	nctio	n																			Stop	set	Poti			t max.		
•• ••	Туре	Е	A	F	W	Ν	Q	к	L	М	В	Bı	B2	G	н	Т	Ρ	S	LS	X 1	U	۷	†-S	t-Reset	Ext.	sec	min	h	d	Page
:8: :11:	СТЕ 30	٠																									30			185
	CTA 30		٠																								30			185
	СТК 30				٠			٠																			30			185
	CTW 30				٠																						30			185
	СТВ 30										•																30			185

Modular plug-in Time Relays (CT-System)

		Fun	nctior	 ו																			Stop	set	Poti			t max.		
	Туре	E	A	F	W	Ν	Q	K	L	М	В	Bı	B2	G	Н	Т	Ρ	S	LS	X 1	U	۷	t-St	t-Reset	EX.	sec	min	h	d	Page
	CT30	٠			٠						٠																30			189
11	CT32	٠	٠		٠	٠		٠			٠	٠															60*			189
••••	CT33	٠	٠	\triangle	٠	٠	Δ	٠	٠		٠	٠																60*		189
	CT36															٠	•											60*		189

Plug-in Time Relays

		Fur	nctio	n																			Stop	Reset	Poti			t max.		
	Туре	E	A	F	W	N	Q	К	L	М	В	Bı	B2	G	Н	T	Ρ	S	LS	X 1	U	۷	t-St	t-Re	Ext.	sec	min	h	d	Page
:11	CS1	٠			٠						٠		٠												٠		60*			180
••	CS2	٠	٠		•	٠		٠			•		٠												٠			60*		181
	CS3	٠	٠		٠	٠		٠			٠		٠															60*		182

DIN Time Relays

DIN

	Fu	nctio	n																			e B	set	Poti			t max.		
Туре	Е	A	F	w	Ν	Q	к	L	М	В	Bı	B2	G	Н	I	Ρ	s	LS	Y	U	٧	t-Stop	t-Reset	Ext.	sec	min	h	d	Page
CMD11	•	٠					1																			60			156
CIM1	•	٠		•	٠		٠			•	٠						٠	٠									60*		163
CIM12	•	٠		٠	٠		٠			•	٠						•	٠									60*		164
CIM13	•	٠		٠	٠		٠			•	٠						٠	٠									60*		165
CIM14	•	٠		٠	٠		٠			•	٠						٠	٠									60*		166
CIM2	•	٠						٠	٠			٠	٠	٠													60*		167
CIM22	•	٠						٠	٠			٠	٠	٠													60*		168
CIM23	•	٠						٠	٠			٠	٠	٠													60*		169
CIM3			٠			٠							•	٠	•	٠											60*		170
CIM32			٠			٠							٠	٠	•	٠											60*		171
CIM33			٠			٠							٠	٠	٠	٠											60*		172
CM3	•	٠		٠	٠		٠			•	٠																60*		173
CRV4	•	٠	Δ	•	٠	Δ	٠	٠	٠	•	٠	٠	٠	٠			٠	٠						٠			60*		174
CSV4	•	٠	Δ	•	٠	Δ	٠	٠	٠	•	٠	٠	•	٠			٠	٠						٠			10*		175
CPF11		٠					٠	٠																	0,6				176

* TF-60 Setting of long times

The TF60 time setting methode permits short examination of long delay time settings. Elapsing times of hours can be monitored in the sec. range.

Example for a delay time of 38h:

1. Set range switch to 60sec

2. Set 38sec on the potentiometer (e.g. check 38sec by chronometer)

3. Set range switch to 60h

The delay time now amounts to 38h.

alternatively with instantaneous contact
without auxiliary voltage (relay bistable)

□ without auxiliary voltage (relay monostable)

∆ **t2 = t**1

▲ t2 = 0,5s



Notes

			 					 		 	 	 			 				 _	
																			_	
			 _			 	 	 		 	 	 	 		 		 		 	
			 _							 	 	 			 				 	
			 			 	 		 	 	 	 	 		 		 		 _	
										 	 	 							_	
													1						+	
					_													-	+	
			 _	_				 			 			-	 _				 +	_
			_	_							 								+	-
				_							 								+	
			 								 								 _	
																			_	
			 _					 		 	 	 			 				 -	
	 		 			 		 		 		 _								
			 				 			 	 	 	 		 		 		 _	
													1						\uparrow	
																		-	+	
					_														+	_
			 										 						+	
			 								 		 		 _				 +	_
			 								 				 				+	
			 								 								 +	
													 _						_	
													1							
		-											-					\rightarrow	+	
													-			_			+	_
		\rightarrow		_															+	
			 	_									 -						 +	_



2.1 Monofunction Time Relays



*(Function diagrams: refer to page 152)

CMD11-A/UC12V, CMD11-E/UC12V

Mono Function Timing Relay 2 time functions, 0.5 s ... 60 minutes **DIN Rail mounting according to DIN 43 880**

Type: CMD11-.../UC12V

The CMD is a cost-efficient timing relay supporting timing functions such as on-delay or off-delay and five time ranges from 50 ms to 60 minutes. It comes with an 8 A change-over contact and with four separate supplies (UC12V, UC24V, AC115V und AC230V). The output state is displayed by LED. The relay may be manually operated and blocked by ON/OFF switch.

Maximum contact load Recommended minimum contact load

10 A 250 V AC-1 6 A 25 V DC-1 100 mA / 12 V

0,6 s / 6 s / 60 s / 6 min / 60 min

 $t_{min}:$ -30 % \ldots +0 % / $t_{max}:$ -0 % \ldots +30 %

t_{min} ... t_{max}, 0.5 ... 6

± 0.2 % or 20 ms

100 ms (AC / DC)

Single contact, CO

 $\leq 50 \text{ ms}$

≤ 90 ms

 $\geq 5 \text{ ms}$

AgNi

10 A

15 A

250 V

2500 VA AC-1

150 W / 70 W

12 V AC/DC

CMD11-.../UC12V

9.6 ... 14.4 V AC/DC

Time functions and related connection diagrams (Function diagrams: refer to page 152)



Time data

5 partial time ranges, t_{max} (DIP switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse width on input B1 Reset time B1 (AC/DC) Voltage failure buffering

Contacts

Туре Material Rated operational current Max. inrush current (10ms) Max. switching voltage AC-1 Max. AC load AC-1 (Fig. 1) Max. DC load DC-1 24 V / 220 V (Fig. 2)

Power supply- and control input

Nominal voltage (UC = AC / DC) Operating voltage range Power consumption DC typ. Power consumption AC typ. Frequency range Input current into B1 typ. AC/DC Trigger threshold voltage on B1 typ AC / DC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Life time of contacts 8 A, 250 V AC-1 Conductor cross section Ingress protection degree Max. Screw torque Housing material / Weight

Standard types UC (AC/DC) 40...60 Hz

1 kVrms 1 minute 2 kVrms 1 minute

-40 ... 85 °C / -40 ...60 °C 75 x 10³ Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.5 Nm Polyamide PA-66 (UL94-V0) / 48 g

CMD11-A/UC12V CMD11-E/UC12V

LD



Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

c(UL)us CE EN 60947

48 ... 62 Hz 2.7/4.3 mA 5.2/8.8 V

32 mA

50 mA

CMD11-A/UC24V, CMD11-E/UC24V

Mono Function Timing Relay 2 time functions, 0.5 s ... 60 minutes DIN Rail mounting according to DIN 43 880

Type: CMD11-.../UC12V

The CMD is a cost-efficient timing relay supporting timing functions such as on-delay or off-delay and five time ranges from 50 ms to 60 minutes. It comes with an 8 A change-over contact and with four separate supplies (UC12V, UC24V, AC115V und AC230V). The output state is displayed by LED. The relay may be manually operated and blocked by ON/OFF switch.

Maximum contact load
Recommended minimum contact load

10 A 250 V AC-1 6 A 25 V DC-1 100 mA / 12 V

Time functions and related connection diagrams (Function diagrams: refer to page 152)



Time data

5 partial time ranges, t_{max} (DIP switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse width on input B1 Reset time B1 (AC/DC) Voltage failure buffering

Contacts

Type Material Rated operational current Max. inrush current (10ms) Max. switching voltage AC-1 Max. AC load AC-1 (Fig. 1) Max. DC load DC-1 24 V / 220 V (Fig. 2)

Power supply- and control input

Nominal voltage (UC = AC / DC) Operating voltage range Power consumption DC typ. Power consumption AC typ. Frequency range Input current into B1 typ. AC / DC Trigger threshold voltage on B1 typ AC / DC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Life time of contacts 8 A, 250 V AC-1 Conductor cross section Ingress protection degree Max. Screw torque Housing material / Weight

Standard types UC (AC/DC) 40...60 Hz $\begin{array}{l} 0,6 \; s \; / \; 6 \; s \; / \; 60 \; s \; / \; 6 \; min \; / \; 60 \; min \\ t_{min} \; \ldots \; t_{max}, \; 0.5 \; \ldots \; 6 \\ t_{min} \colon -30 \; \% \; \ldots \; +0 \; \% \; / \; t_{max} \colon -0 \; \% \; \ldots \; +30 \; \% \\ \pm \; 0.2 \; \% \; or \; 20 \; ms \\ \leq \; 50 \; ms \\ 100 \; ms \; (AC \; / \; DC) \\ \leq \; 90 \; ms \\ \geq \; 5 \; ms \end{array}$

Single contact, CO AgNi 10 A 15 A 250 V 2500 VA AC-1 150 W / 70 W

CMD11-.../UC24V

24 V AC/DC 19.2 ... 28.8 V AC/DC 12 mA 21 mA 48 ... 62 Hz 11.6. /9.5 mA 9.5 / 14 V

1 kVrms 1 minute 2 kVrms 1 minute

-40 ... 85 °C / -40 ...60 °C 75 x 10³ Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.5 Nm Polyamide PA-66 (UL94-V0) / 48 g

CMD11-A/UC24V CMD11-E/UC24V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

CMD11-A/AC115V, CMD11-E/AC115V

Mono Function Timing Relay 2 time functions, 0.5 s ... 60 minutes DIN Rail mounting according to DIN 43 880

Type: CMD11-.../UC12V

The CMD is a cost-efficient timing relay supporting timing functions such as on-delay or off-delay and five time ranges from 50 ms to 60 minutes. It comes with an 8 A change-over contact and with four separate supplies (UC12V, UC24V, AC115V und AC230V). The output state is displayed by LED. The relay may be manually operated and blocked by ON/OFF switch.

Maximum contact load Recommended minimum contact load 10 A 250 V AC-1 6 A 25 V DC-1 100 mA / 12 V

Time functions and related connection diagrams (Function diagrams: refer to page 152)



Time data

5 partial time ranges, t_{max} (DIP switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse width on input B1 Reset time B1 (AC/DC) Voltage failure buffering

Contacts

Type Material Rated operational current Max. inrush current (10ms) Max. switching voltage AC-1 Max. AC load AC-1 (Fig. 1) Max. DC load DC-1 24 V / 220 V (Fig. 2)

Power supply- and control input

Nominal voltage Operating voltage range Power consumption AC typ. Frequency range Input current into B1 typ. AC Trigger threshold voltage on B1 typ AC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Life time of contacts 8 A, 250 V AC-1 Conductor cross section Ingress protection degree Max. Screw torque Housing material / Weight

Standard types UC (AC/DC) 40...60 Hz $\begin{array}{l} 0,6 \ s \ / \ 6 \ s \ / \ 6 \ 0 \ s \ / \ 6 \ min \ / \ 6 \ min \ / \ 6 \ min \ 1 \ 6 \ min \ t_{min} \ \ldots \ t_{max}, \ 0.5 \ \ldots \ 6 \ t_{min} \ \cdot \ 30 \ \% \ \ldots \ + 30 \ \% \ t_{max}: \ -0 \ \% \ t_{max}: \$

Single contact, CO AgNi 10 A 15 A 250 V 2500 VA AC-1 150 W / 70 W

CMD11-.../AC115V 115 V AC 92 ... 138 V AC 47 mA 48 ... 62 Hz 1.7 mA 42 V

1 kVrms 1 minute 2 kVrms 1 minute

-40 ... 85 °C / -40 ...60 °C 75 x 10³ Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.5 Nm Polyamide PA-66 (UL94-V0) / 48 g

CMD11-A/AC115V CMD11-E/AC115V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947

CMD11-A/AC230V, CMD11-E/AC230V

Mono Function Timing Relay 2 time functions, 0.5 s ... 60 minutes DIN Rail mounting according to DIN 43 880

Type: CMD11-.../AC230V

The CMD is a cost-efficient timing relay supporting timing functions such as on-delay or off-delay and five time ranges from 50 ms to 60 minutes. It comes with an 8 A change-over contact and with four separate supplies (UC12V, UC24V, AC115V und AC230V). The output state is displayed by LED. The relay may be manually operated and blocked by ON/OFF switch.

Maximum conta	act load	
Recommended	minimum	contact

10 A 250 V AC-1 6 A 25 V DC-1 100 mA / 12 V

Time functions and related connection diagrams (Function diagrams: refer to page 152)

load



Time data

5 partial time ranges, t_{max} (DIP switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse width on input B1 Reset time B1 (AC/DC) Voltage failure buffering

Contacts

Type Material Rated operational current Max. inrush current (10ms) Max. switching voltage AC-1 Max. AC load AC-1 (Fig. 1) Max. DC load DC-1 24 V / 220 V (Fig. 2)

Power supply- and control input

Nominal voltage Operating voltage range Power consumption AC typ. Frequency range Input current into B1 typ. AC Trigger threshold voltage on B1 typ AC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Life time of contacts 8 A, 250 V AC-1 Conductor cross section Ingress protection degree Max. Screw torque Housing material / Weight

Standard types UC (AC/DC) 40...60 Hz $\begin{array}{l} 0,6 \ s \ / \ 6 \ s \ / \ 6 \ min \ / \ 6 \ min \ / \ 6 \ min \) \\ t_{min} \ \ldots \ t_{max}, \ 0.5 \ \ldots \ 6 \\ t_{min}: \ -30 \ \% \ \ldots \ +0 \ \% \ / \ t_{max}: \ -0 \ \% \ \ldots \ +30 \ \% \\ \pm \ 0.2 \ \% \ or \ 20 \ ms \\ \leq \ 50 \ ms \\ 100 \ ms \ (AC \ / \ DC) \\ \leq \ 90 \ ms \\ \geq \ 5 \ ms \end{array}$

Single contact, CO AgNi 10 A 15 A 250 V 2500 VA AC-1 150 W / 70 W

CMD11-.../AC230V

230 V AC 184 ... 255 V AC 60 mA 48 ... 62 Hz 1.9 mA 80 V

1 kVrms 1 minute 2 kVrms 1 minute

-40 ... 85 °C / -40 ...60 °C 75 x 10³ Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.5 Nm Polyamide PA-66 (UL94-V0) / 48 g

CMD11-A/AC230V

CMD11-E/AC230V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947



Notes

		 	 			 	 				 	 	 	 	_				 		
			 			 					 	 		 	_				 		
		 	 			 	 				 	 	 	 	_	_			 		
		 				 			 		 				_				 		
														 		-			\rightarrow		
			 								 	 		 	_				 		
																			\neg		
					-									 	-	-			+	+	
						 								 	_	_			 		
																			\neg		
			 			 	 				 	 	 	 	_				 		
		 												 	_						
			 			 	 				 	 	 	 	_				 		
		 	 			 	 				 	 	 	 	_				 		
														 	_	-			\rightarrow		
							 							 	_	-	-		 		
														 					\rightarrow		-
														 	_	_			 $ \rightarrow$		
														 					-		
						 						 		 	_	-			 		
														 	_	-	-			-+	
					-											1			\rightarrow	-	
											 			 	_					-+	
]]]]
-					\rightarrow											-			-	-	
														 		-			 		
			 			 	 				 	 				-			 		



2.2 Multifunction Time Relays





Application	Types	Functions	Min. time	Max. time	Contact rating	Design
Universal time relay, 8 time functions & stepping function, ON/OFF switch, service function	CIM1	E, B, W, A, K, N, B1, S, LS	50 ms	60 h	16 A / 250 V	17.5 mm
Universal time relay, 8 time functions & stepping function, ON/OFF switch, AC solid state output	CIM12	E, B, W, A, K, N, B1, S, LS	50 ms	60 h	2 A / 250 V	17.5 mm
Universal time relay, 8 time functions & stepping function, ON/OFF switch, DC solid state output	CIM13	E, B, W, A, K, N, B1, S, LS	50 ms	60 h	5 A / 24 V DC	17.5 mm
Universal time relay for high inrush currents 8 time functions & stepping function, ON/OFF switch, service function	CIM14	E, B, W, A, K, N, B1, S, LS	50 ms	60 h	16 A / 250 V	17.5 mm
Universal time relay, 7 time functions, ON/OFF switch, service function	CIM2	E, A, L, M, G, B2, H	50 ms	60 h	16 A / 250 V	17.5 mm
Universal time relay, 7 time functions, ON/OFF switch, service function, AC solid state output	CIM22	E, A, L, M, G, B2, H	50 ms	60 h	2 A / 250 V	17.5 mm
Universal time relay, 7 time functions, ON/OFF switch, service function, DC solid state output	CIM23	E, A, L, M, G, B2, H	50 ms	60 h	5 A / 24 V DC	17.5 mm
Universal time relay, 6 time functions, ON/OFF switch, service function	CIM3	F, Q, G, H, I, P	50 ms	60 h	16 A / 250 V	17.5 mm
Universal time relay, 6 time functions, ON/OFF switch, service function, AC solid state output	CIM32	F, Q, G, H, I, P	50 ms	60 h	2 A / 250 V	17.5 mm
Universal time relay, 6 time functions, ON/OFF switch, service function, DC solid state output	CIM33	F, Q, G, H, I, P	50 ms	60 h	5 A / 24 V DC	17.5 mm
Universal timer, ON-OFF switch, 2 CO contacts	CM3	E, A, K, N, B1, B, W	50 ms	60 h	5 A / 250 V	17.5 mm
Multi function time relay, 16 time functions	CRV4	E1, W, B, B2, H, E2, K, A L, N, M, B1, G, F, Q, LS, S	0.6 s	60 h	6 A / 250 V	13 mm
Multi function time relay, 16 time functions	CSV4	E1, W, B, B2, H, E2, K, A L, N, M, B1, G, F, Q, LS, S	8 ms	10 h	1.5 A / 30 V	13 mm
Pulse shaper	CPF11	K, L, A	5 ms	600 ms	0.8 A / 24 V	17.5 mm

(Function diagrams: refer to page 152)

CIM1, CIM1R (Railway)

Time relay with mechanical changeover output contact 8 time functions + stepping function, ON-OFF switch, 50 ms ... 60 h, DIN Rail mounting according to DIN 43 880

Type: CIM1/UC24-240V

Sophisticated multifunction time relay, 1 changeover power contact with zero crossing switching (50/60 Hz), 8 time functions, stepping function and service function ON/OFF, time ranges: 50 ms ... 60 h, multifunction LED state indicator, suitable for any time-control application and also staircase lighting, Light-switch neon lamp current absorption on input B1, Manual switching function for maintenance, emergency, etc., 16.6 Hz power supply applications. Railway version available.

Maximum contact load
Recommended minimum contact load

16 A / 250 V AC-1 384 W DC-1 10 mA / 10 V

LED function table:

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch



LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

0.6, 6, 60 s / 6, 60 min / 6, 60 h

± 0.1 % or DC: 2 ms / AC: 10 ms

AgNi / 1 CO, micro disconnection

 $t_{min}:$ -5 % \ldots +0 % / $t_{max}:$ -0 % \ldots +5 %

t_{min} ... t_{max}, 0.5 ... 6

20 ms (AC / DC)

< 45 ms

 $\leq 30 \text{ ms}$

≥ 20 ms

16 A / 13 A

240 W / 85 W

30 A

250 V

4 kVA

Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering (50 / 60 Hz)

Contacts

Material CIM1 / CIM1R / Type Rated operational current at 40 °C / 60 °C Max. inrush current Max. switching voltage AC-1 Max. AC load AC-1 (Fig.1) Max. DC load DC-1 30 V / 250 V (Fig.2)

Power supply- and control input

Nominal voltage (A1, B1) Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Mechanical life of contact Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types UC (AC/DC) 15...60 Hz Railway

UC 24-240 V (UC = AC / DC) UC 19 ... 250 V approx. 1 W 15 ... 60 Hz ≤ 0.5 mA

1 kVrms 1 minute 2.5 kVrms 1 minute

≤ 10 mA

15 / 17 V

-40 ... 85 °C / -40 ...60 °C (Railway: -46 °C) 30 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.4 Nm Lexan / 70 g

CIM1/UC24-240V CIM1R/UC24-240V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve

20 16 DC-10 5 Current [A] 2 1 0.5 0.2 0.1 0 50 100 150 200 250 300 Voltage [V]

Dimensions [mm]



CIM12, CIM12R (Railway)

Time relay with AC solid-state output 8 time functions and stepping function, ON-OFF switch, 50 ms ... 60 h, DIN Rail mounting according to DIN 43 880

Type: CIM12/UC24-240V

Sophisticated multifunction time relay, 1 triac output, suitable for high frequency of operations and inductive loads, 8 time functions, stepping function and service function ON/OFF, time ranges: 50 ms ... 60 h, multifunction LED state indicator, suitable for any time-control application and also staircase lighting, Light-switch neon lamp current absorption on input B1, manual switching function for maintenance, emergency, etc., 16.6 Hz applications. Railway version available.

Maximum contact load	2 A / 250 V
Minimum contact load	50 mA

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch

LED function table:

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

0.6, 6, 60 s / 6, 60 min / 6, 60 h

 $t_{min}: -5 ~\% ~\dots +0 ~\% / ~t_{max}: -0 ~\% ~\dots +5 ~\% \\ \pm ~0.1 ~\% ~or ~DC: 2 ~ms / ~AC: 10 ~ms$

 $t_{min}\,\ldots\,t_{max}\text{, }0.5\,\ldots\,6$

20 ms (AC / DC)

Triac, zero crossing

UC 24-240 V (UC = AC / DC)

< 45 ms

≤ 30 ms

≥ 20 ms

2 A

100 A

250 V 300 VA

78 A²s

< 1 mA

UC 19 ... 250 V

approx. 1 W

15 ... 60 Hz

≤ 0.5 mA

≤ 10 mA

15 / 17 V

IP 20 0.4 Nm

Lexan / 70 g

Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering (50 / 60 Hz)

Output

Type Rated operational current at 40 °C (Fig.1) Max. inrush current (10 ms) Max. switching voltage Max. AC load AC-1 I²t value Leakage current

Power supply- and control input

Nominal voltage Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

Insulation

164 | 15/16

Test voltage between output and control input 2.5 kVrms 1 minute

General Specifications

Ambient temperature storage /operation Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types UC (AC/DC), 15...60 Hz Railway

CIM12/UC24-240V CIM12R/UC24-240V

-40 ... 85 °C / -40 ...60 °C (Railway: -70 °C) Stranded wire 2.5 mm², 2 x 1.5 mm²



EN 50155, EN 60730



WORLD OF RELAYS



Connection diagram



Fig. 1 Output derating curve



Dimensions [mm]



This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

CIM13, CIM13R (Railway)

Time relay with DC solid-state output 8 time functions and stepping function, ON-OFF switch, 50 ms ... 60 h DIN Rail mounting according to DIN 43 880

Type: CIM13/UC24-240V

Sophisticated multifunction time relay, 1 transistor output, 8 time functions, stepping function and service function ON/OFF, time ranges from 50 ms ... 60 h, multifunction LED state indicator, suitable for any time-control application and also staircase-light control, light-switch neon lamp current absorption on input B1, manual switching function for maintenance, emergency, etc., 16.6 Hz applications. Railway version available.

Maximum contact load	4 A / 30 V
Recommended minimum contact load	1 mA

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch

LED function table:

E-O A K N B1 S LS 2 BW-O ค



0.6, 6, 60 s / 6, 60 min / 6, 60 h

± 0.1 % or DC: 2 ms / AC: 10 ms

 $t_{min}:$ -5 % \ldots +0 % / $t_{max}:$ -0 % \ldots +5 %

t_{min} ... t_{max}, 0.5 ... 6

20 ms (AC / DC)

≤ 45 ms

 $\leq 30 \text{ ms}$

≥ 20 ms

MOS FET

4 A 40 A

30 V

< 10 µA

Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering (50 / 60 Hz)

Output

Type Rated operational current (Fig. 1) Max. inrush current (10 µs) Max. switching voltage Leakage current

Power supply- and control input

Nominal voltage (UC = AC / DC) Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

UC 24-240 V (UC = AC / DC)

UC 19 ... 250 V approx. 1 W 15 ... 60 Hz ≤ 0.5 mA $\leq 10 \text{ mA}$ 15 / 17 V

Insulation

Test voltage between output and control input 2.5 kVrms 1 minute

General Specifications

Ambient temperature storage /operation Conductor cross section Ingress protection degree Max. Screw torque Housing material / Weight

Standard types

UC (AC/DC), 15...60 Hz Railway

-40 ... 85 °C / -40 ...60 °C (Railway: -70 °C) Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.4 Nm Lexan / 70 g

CIM13/UC24-240V

CIM13R/UC24-240V





Connection diagram



Time Relays 2.2

Fig. 1 Output derating curve



Dimensions [mm]



Technical approvals, conformities

EN 50155; EN 60730



CIM14

Time relay with NO contact for high inrush currents up to 800 A 8 time functions + stepping function, ON-OFF switch, 50 ms ... 60 h, DIN Rail mounting according to DIN 43 880

Type: CIM14/UC24-240V

Sophisticated multifunction time relay, 1 NO power contact for high inrush currents up to 800 A with zero crossing switching (50/60 Hz), 8 time functions, stepping function and service function ON/OFF, time ranges: 50 ms ... 60 h, multifunction LED state indicator, suitable for any time-control application and also staircase lighting, Light-switch neon lamp current absorption on input B1, Manual switching function for maintenance, emergency, etc., 16.6 Hz power supply applications. Railway version available.

Maximum contact load
Recommended minimum contact load

16 A / 250 V AC-1 384 W DC-1 100 mA / 12 V

LED function table:

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch



LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

0.6, 6, 60 s / 6, 60 min / 6, 60 h

± 0.1 % or DC: 2 ms / AC: 10 ms

 $t_{min}:$ -5 % \ldots +0 % / $t_{max}:$ -0 % \ldots +5 %

 $t_{min}\,\ldots\,t_{max},\,0.5\,\ldots\,6$

20 ms (AC / DC)

≤ 45 ms

≤ 30 ms

≥ 20 ms

Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering (50 / 60 Hz)

Contacts

Material Rated operational current at 40 °C / 60 °C Max. inrush current

Max. switching voltage AC-1 Max. AC load AC-1 (Fig.1) Max. DC load DC-1 24 V

Power supply- and control input

Nominal voltage (A1, B1) Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Mechanical life of contact Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types UC (AC/DC) 15...60 Hz W / AgSnO₂ 16 A / 13 A 165 A / 20 ms 800 A / 200 µs 250 V 4 kVA 384 W

UC 24-240 V (UC = AC / DC) 16.8 ... 250 V

1.2 VA / 0.43 W 16 ... 60 Hz ≤ 0.5 mA ≤ 10 mA 15 / 17 V

1 kVrms 1 minute 2.5 kVrms 1 minute

-40 ... 85 °C / -40 ...60 °C 5 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.4 Nm Lexan / 70 g

CIM14/UC24-240V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 50155, EN 60730 Rus CE X

166 | 15/16

CIM2, CIM2R (Railway)

Time relay with mechanical changeover output contact 7 time functions and 7 time ranges from 50 ms ... 60 h, DIN Rail mounting according to DIN 43 880

Type: CIM2/UC24-240V

Sophisticated multifunction time relay, 1 changeover power contact switching in zero crossing (50/60 Hz), 7 time functions and service function ON/OFF, 7 time ranges from 50 ms to 60 h, multifunction LED state indicator, suitable for any time-control application, light-switch neon lamp current absorption on input B1, manual switching function for maintenance, emergency, etc., 16.6 Hz power supply applications. Railway version available.

Maximum contact load	1
Recommended minimum contact load	1

16 A / 250 V AC-1 384 W DC-1 10 mA / 10 V

Relay

OFF

ON

OFF

ON

 $t_{min}:$ -5 % \ldots +0 % / $t_{max}:$ -0 % \ldots +5 %

0.6, 6, 60 s / 6, 60 min / 6, 60 h

± 0.1 % or DC: 2 ms / AC: 10 ms

AgNi / 1 CO, micro disconnection

UC 24-240 V (UC = AC / DC)

t_{min} ... t_{max}, 0.5 ... 6

20 ms (AC / DC)

Time run

NO

NO

YES

YES

LED function table:

Continuous ON

Short blinking

Long blinking

< 45 ms

 $\leq 30 \text{ ms}$

≥ 20 ms

16 A / 13 A

240 W / 85 W

UC 19 ... 250 V

approx. 1 W

15 ... 60 Hz

 $\leq 0.5 \text{ mA}$

≤ 10 mA

15 / 17 V

1 kVrms 1 minute

2.5 kVrms 1 minute

30 A

250 V

4 kVA

LED

OFF

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch



Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering (50 / 60 Hz)

Contacts

Material CIM2 / CIM2R / Type Rated operational current at 40 °C / 60 °C Max. inrush current Max. switching voltage AC-1 Max. AC load AC-1 (Fig.1) Max. DC load DC-1 30 V / 250 V (Fig.2)

Power supply- and control input

Nominal voltage (A1, B1) Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Mechanical life of contact Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types UC (AC/DC) 15...60 Hz Railway

30 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20

-40 ... 85 °C / -40 ...60 °C (Railway: -46 °C)

IP 20 0.4 Nm Lexan / 70 g

CIM2/UC24-240V CIM2R/UC24-240V WORLD OF RELAYS



Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve

20 16 DC-1 10 5 Current [A] 2 1 0.5 0.2 0.1 0 50 100 150 200 250 300 Voltage [V]

Dimensions [mm]



Technical approvals, conformities

EN 50155, EN 60730

CIM22, CIM22R (Railway)

Time relay with AC solid-state output 7 time functions and 7 time ranges 50 ms ... 60 h, DIN Rail mounting according to DIN 43 880

Type: CIM22/UC24-240V

Sophisticated multifunction time relay, 1 triac output, suitable for high frequency of operations and inductive loads, 7 time functions and service function ON/OFF, 7 time ranges from 50 ms ... 60 h, multifunction LED state indicator, suitable for any time-control application light-switch neon lamp current absorption on input B1, manual switching function for maintenance, emergency, etc., 16.6 Hz applications. Railway version available.

Maximum contact load	2 A / 250 V
Minimum contact load	50 mA

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch

LED function table:



LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

0.6, 6, 60 s / 6, 60 min / 6, 60 h

 $t_{min}: -5 ~\% ~\dots ~+ 0 ~\% / ~t_{max}: -0 ~\% ~\dots ~+ 5 ~\% \\ \pm ~0.1 ~\% ~or ~DC: ~2 ~ms / ~AC: ~10 ~ms$

 $t_{min}\,\ldots\,t_{max},\,0.5\,\ldots\,6$

20 ms (AC / DC)

Triac, zero crossing

UC 24-240 V (UC = AC / DC)

< 45 ms

≤ 30 ms

≥ 20 ms

2 A

100 A

250 V 300 VA

78 A²s

< 1 mA

UC 19 ... 250 V

approx. 1 W

15 ... 60 Hz

≤ 0.5 mA

≤ 10 mA

15 / 17 V

IP 20 0.4 Nm

Lexan / 70 g

Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering (50 / 60 Hz)

Output

Type Rated operational current at 40 °C (Fig.1) Max. inrush current (10 ms) Max. switching voltage Max. AC load AC-1 I²t value Leakage current

Power supply- and control input

Nominal voltage Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

Insulation

Test voltage between output and control input 2.5 kVrms 1 minute

General Specifications

Ambient temperature storage /operation Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types UC (AC/DC), 15...60 Hz Railway

CIM22/UC24-240V CIM22R/UC24-240V

-40 ... 85 °C / -40 ...60 °C (Railway: -70 °C) Stranded wire 2.5 mm², 2 x 1.5 mm²





Connection diagram



Fig. 1 Output derating curve



Dimensions [mm]



Technical approvals, conformities

EN 50155, EN 60730



CIM23, CIM23R (Railway)

Time relay with DC solid-state output 7 time functions and 7 time ranges from 50 ms ... 60 h DIN Rail mounting according to DIN 43 880

Type: CIM23/UC24-240V

Sophisticated multifunction time relay, 1 transistor output, 7 time functions and service function ON/OFF, 7 time ranges from 50 ms ... 60 h, multifunction LED state indicator suitable for any time-control application, light-switch neon lamp current absorption on input B1, manual switching function for maintenance, emergency, etc., 16.6 Hz applications. Railway version available.

Maximum contact load
Recommended minimum contact load

4 A / 30 V 1 mA

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch

LED function table:

MOS FET

4 A

40 A 30 V

< 10 µA

E- 0	+ ~ -	+ ~ -	+ ~ -
A L M G - 2	\s	s	\s
B2 H - 3	A1 A2	A1 B1 A2	A1 B1 A2
	0	0	8

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

7 partial time ranges, t _{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance	$\begin{array}{l} 0.6, 6, 60 s/ 6, 60 min/ 6, 60 h \\ t_{min} \ldots t_{max}, 0.5 \ldots 6 \\ t_{min} : \text{-}5\% \ldots \text{+}0\%/ t_{max} \! : \text{-}0\% \ldots \text{+}5\% \end{array}$
Repetition accuracy	± 0.1 % or DC: 2 ms / AC: 10 ms
Response time, power on, on A1	≤ 45 ms
Min. trigger pulse on B1	20 ms (AC / DC)
Reset time B1 (AC/DC)	≤ 30 ms
Voltage failure buffering (50 / 60 Hz)	≥ 20 ms

Output Type

Time data

Rated operational current (Fig. 1) Max. inrush current (10 µs) Max. switching voltage Leakage current

Power supply- and control input

Nominal voltage (UC = AC / DC) Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

UC 19 ... 250 V approx. 1 W 15 ... 60 Hz $\leq 0.5 \text{ mA}$ $\leq 10 \text{ mA}$ 15/17V

UC 24-240 V (UC = AC / DC)

Insulation

Test voltage between output and control input

General Specifications

Ambient temperature storage /operation Conductor cross section Ingress protection degree Max. Screw torque Housing material / Weight

Standard types UC (AC/DC), 15...60 Hz Railway

2.5 kVrms 1 minute

-40 ... 85 °C / -40 ...60 °C (Railway: -70 °C) Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.4 Nm Lexan / 70 g



CIM23R/UC24-240V





Time Relays 2.2



Fig. 1 Output derating curve

Connection diagram



Dimensions [mm]

- A *** 75 Sor comat 888 17,5

Technical approvals, conformities

EN 50155; EN 60730



CIM3, CIM3R (Railway)

Time relay with mechanical changeover output contact 6 time functions and service function, 7 time ranges from 50 ms...60 h, DIN Rail mounting according to DIN 43 880

Type: CIM3/UC24-240V

Sophisticated multifunction time relay, 1 changeover power contact switching in zero crossing (50/60 Hz), 6 time functions and service function ON/OFF, 7 time ranges from 50 ms to 60 h, multifunction LED state indicator, suitable for any time-control application, light-switch neon lamp current absorption on input B1, manual switching function for maintenance, emergency, etc., 16.6 Hz power supply applications. Railway version available.

Maximum contact load	
Recommended minimum contact load	

16 A / 250 V AC-1 384 W DC-1 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch

LED function table:

FQG-20 HIP-63



LED	Relay	Time run	
OFF	OFF	NO	
Continuous ON	ON	NO	
Short blinking	OFF	YES	
Long blinking	ON	YES	

0.6, 6, 60 s / 6, 60 min / 6, 60 h

± 0.1 % or DC: 2 ms / AC: 10 ms

 $t_{min}:$ -5 % ... +0 % / $t_{max}:$ -0 % ... +5 %

t_{min} ... t_{max}, 0.5 ... 6

20 ms (AC / DC)

< 45 ms

 $\leq 30 \text{ ms}$

≥ 20 ms

Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering (50 / 60 Hz)

Contacts

Material CIM3 / CIM3R / Type Rated operational current at 40 °C / 60 °C Max. inrush current Max. switching voltage AC-1 Max. AC load AC-1 (Fig.1) Max. DC load DC-1 30 V / 250 V (Fig.2)

Power supply- and control input

Nominal voltage (A1, B1) Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Mechanical life of contact Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types UC (AC/DC) 15...60 Hz Railway

CIM3/UC24-240V CIM3R/UC24-240V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 50155, EN 60730



AgNi / 1 CO, micro disconnection 16 A / 13 A 30 A 250 V 4 kVA 240 W / 85 W

UC 24-240 V (UC = AC / DC)
UC 19 250 V
approx. 1 W
15 60 Hz
≤ 0.5 mA
≤ 10 mA
15 / 17 V

1 kVrms 1 minute 2.5 kVrms 1 minute

-40 ... 85 °C / -40 ...60 °C (Railway: -46 °C) 30 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.4 Nm Lexan / 70 g

CIM32, CIM32R (Railway)

Time relay with AC solid-state output 6 time functions and service function, 7 time ranges from 50 ms...60 h, DIN Rail mounting according to DIN 43 880

Type: CIM32/UC24-240V

Sophisticated multifunction time relay, 1 triac output, suitable for high frequency of operations and inductive loads, 6 time functions and service function ON/OFF, 7 time ranges from 50 ms ... 60 h, multifunction LED state indicator, suitable for any time-control application light-switch neon lamp current absorption on input B1, manual switching function for maintenance, emergency, etc., 16.6 Hz applications. Railway version available.

Maximum contact load	2 A / 250 V
Minimum contact load	50 mA

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch

LED function table:

FQG-2 HIP-6



LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

0.6, 6, 60 s / 6, 60 min / 6, 60 h

 $t_{min}: -5 ~\% ~\dots +0 ~\% / t_{max}: -0 ~\% ~\dots +5 ~\% \\ \pm ~0.1 ~\% ~or ~DC: 2 ~ms / ~AC: 10 ~ms$

t_{min} ... t_{max}, 0.5 ... 6

20 ms (AC / DC)

Triac, zero crossing

UC 24-240 V (UC = AC / DC)

< 45 ms

≤ 30 ms

≥ 20 ms

2 A

100 A

250 V 300 VA

78 A²s

< 1 mA

UC 19 ... 250 V

approx. 1 W

15 ... 60 Hz

 $\leq 0.5 \text{ mA}$

≤ 10 mA

15 / 17 V

IP 20

0.4 Nm

Lexan / 70 g

2.5 kVrms 1 minute

Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering (50 / 60 Hz)

Output

Type Rated operational current at 40 °C (Fig.1) Max. inrush current (10 ms) Max. switching voltage Max. AC load AC-1 I²t value Leakage current

Power supply- and control input

Nominal voltage Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

Insulation

Test voltage between output and control input

General Specifications

Ambient temperature storage /operation Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types UC (AC/DC), 15...60 Hz Railway

CIM32/UC24-240V CIM32R/UC24-240V

-40 ... 85 °C / -40 ...60 °C (Railway: -70 °C) Stranded wire 2.5 mm², 2 x 1.5 mm²





Connection diagram



Time Relays 2.2

Fig. 1 Output derating curve



Dimensions [mm]



Technical approvals, conformities

EN 50155, EN 60730



CIM33, CIM33R (Railway)

Time relay with DC solid-state output 6 time functions and service function, 7 time ranges from 50 ms...60 h, **DIN Rail mounting according to DIN 43 880**

Type: CIM33/UC24-240V

Sophisticated multifunction time relay, 1 transistor output, 6 time functions and service function ON/OFF, 7 time ranges from 50 ms ... 60 h, Multifunction LED state indicator, suitable for any time-control application, light-switch neon lamp current absorption on input B1, manual switching function for maintenance emergency, etc., 16.6 Hz applications. Railway version available.

Maximum contact load	4 A / 30 V
Recommended minimum contact load	1 mA

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch

LED function table:

7 partial time ranges, t_{max} (rotary switch)

Fine adjustment range (rotary knob)

Response time, power on, on A1

Voltage failure buffering (50 / 60 Hz)

+ ~ -	LE
\'s	OF
A1 B1 A2	Co
3	Sh
	1

LED	Relay	Time run
OFF	OFF	NO
Continuous ON	ON	NO
Short blinking	OFF	YES
Long blinking	ON	YES

0.6, 6, 60 s / 6, 60 min / 6, 60 h $t_{min}\,\ldots\,t_{max}\text{, }0.5\,\ldots\,6$ $t_{min}:$ -5 % \ldots +0 % / $t_{max}:$ -0 % \ldots +5 % ± 0.1 % or DC: 2 ms / AC: 10 ms ≤ 45 ms 20 ms (AC / DC) ≤ 30 ms ≥ 20 ms

Output	
Туре	MOS FET
Rated operational current (Fig. 1)	4 A
Max. inrush current (10 µs)	40 A
Max. switching voltage	30 V
Leakage current	< 10 µA

Power supply- and control input

Nominal voltage (UC = AC / DC) Operating voltage range Power consumption Frequency range Allowed DC residual current into B1 AC Neon lamp residual current into B1 Trigger threshold voltage on B1, AC / DC

Insulation

Time data

Time range tolerance

Min. trigger pulse on B1

Reset time B1 (AC/DC)

Repetition accuracy

Test voltage between output and control input

General Specifications

Ambient temperature storage / operation Conductor cross section Ingress protection degree Max. Screw torque Housing material / Weight

Standard types UC (AC/DC), 15...60 Hz Railway

UC 24-240 V (UC = AC / DC) UC 19 ... 250 V approx. 1 W 15 ... 60 Hz $\leq 0.5 \text{ mA}$ ≤ 10 mA

2.5 kVrms 1 minute

15 / 17 V

-40 ... 85 °C / -40 ...60 °C (Railway: -70 °C) Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.4 Nm Lexan / 70 g

CIM33/UC24-240V CIM33R/UC24-240V





Connection diagram



Fig. 1 Output derating curve



Dimensions [mm]



Technical approvals, conformities

EN 50155; EN 60730



CM3

Time relay with two mechanical changeover output contacts 7 time functions, ON-OFF function, 50 ms ... 60 h **DIN Rail mounting according to DIN 43 880**

Type: CM3/... V R

Multifunction time relay, 7 time functions, time ranges: 50 ms ... 60 h, multifunction LED state indicator, ON / OFF switching function for maintenance, emergency, etc., suitable for railway applications

Maximum contact load **Recommended minimum contact load**

5 A / 250 V AC-1 150 W DC-1 10 mA / 10 V

Relay

OFF

ON

OFF

ON

 $t_{min}:$ -5 % ... +0 % / $t_{max}:$ -0 % ... +5 %

0.6, 6, 60 s / 6, 60 min / 6, 60 h

 \pm 0.1 % or DC: 2 ms / AC: 10 ms

Time run

NO

NO

YES

YES

Time functions and related connection diagrams (Function diagrams: refer to page 152) The functions are selectable by rotary switch

LED

OFF

Continuous ON

Short blinking

Long blinking

 $\leq 25 \text{ ms}$

 $\leq 40 \text{ ms}$

≥ 15 ms

t_{min} ... t_{max}, 0.5 ... 6

35 ms (AC / DC)

LED function table:

E-O	0	0	Ø
A K N B1 2	A2 A1	A2 B1 A1	A2 B1 A1
BWS	\s		

Time data

7 partial time ranges, t_{max} (rotary switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering

Contacts

2 CO, micro disconnection Туре Material AgNi Rated operational current 5 A 25 A Max. inrush current Max. switching voltage AC-1 250 V Max. AC load AC-1 (Fig.1) 1250 VA Max. DC load DC-1, 30 V / 250 V (Fig.2) 150 W / 75 W

Power supply and control input

Nominal voltage	DC 12-24 V	DC 24-48 V / AC 24-240 V								
Operating voltage range	9.6 28.8 V	DC 19 60 V	AC 19 250 V							
Power consumption	approx. 1.3 W	approx. 1.3 W								
Frequency range	-	-	45 63 Hz							
Control current into B1	≤ 13.8 mA	≤ 6 mA								
Allowed residual current into B1	\leq 4.5 mA	≤ 1.5 mA								
Trigger threshold voltage on B1	5.8 6.5 V	DC 13 18 V	AC 11 15 V							
Inrush current B1, $\tau = 0.4$ ms	≤ 2.6 A	-	≤ 2.6 A							

Insulation

Test voltage open contact	1 kVrms 1 minute
Test voltage between poles	2.5 kVrms 1 minut
Test voltage between contacts and control input	2.5 kVrms 1 minut

General Specifications

Ambient temperature storage /operation Mechanical life of contacts Conductor cross section Ingress protection degree Max. Screw torque Housing material / weight

Standard types DC

DC, AC 45...63 Hz

-40 ... 80 °C / -25 ...60 °C 15 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP 20 0.4 Nm

kVrms 1 minute kVrms 1 minute

Lexan / 72 g

CM3/DC12-24V R CM3/DC24 -48V/AC24-240V R





Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



EN 50155, EN 60730

CRV4

Multifunction time relay with 16 functions and 7 time ranges 50 ms ... 60 h **DIN Rail mounting according to DIN 43 880**

Type: CRV4/UC24-240V

16 timing functions 6 A C.O. relay output Power supply UC 24 ... 240 V Option for external fine adjustment time range potentiometer LED state indicators for output and control input

Maximum output load

6 A / 250 V

Time functions and related connection diagrams (Function diagrams: refer to page 152)



Time data

7 partial time ranges, t_{max} (rotary switch) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering

Output

Type Material Rated operational current Max. inrush current (10 ms) Max. switching voltage AC-1 Max. AC load AC-1 Max. DC load DC-1 30 V / 250 V

Power supply and control input

Nominal voltage Operating voltage range Power consumption max. Control current into B1 max. Allowed residual current into B1 max. Trigger threshold voltage on B1 typ. AC / DC

General Specifications

Ambient temperature storage /operation Conductor cross section Ingress Protection degree Max. Screw torque Housing material / Weight

Standard types

Accessories

External potentiometer 100k (Panel mounting + scale): Marking strip:

Large

Small

SP-01/100k **BS-13G** BS-13K







Connection diagram



Fig.1 AC electrical endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



174 | 15/16

10 ms 1 CO, micro disconnection AgNi 6 A 15 A

± 0.1 % or 2 ms

20 ms 25 ms

30 ms

0,6 s / 6 s / 60 s / 6 m / 60 m / 6 h / 60 h

 $t_{min}:$ -5 % ... +0 % / $t_{max}:$ -0 % ... +5 %

250 V 1500 VA 180 W / 75 W

UC 24 - 240 V

19,2 ... 250 V 550 mW 7 mA 1.2 mA 14,5 V / 17,5 V

-40 ... 85 °C / -40 ...70 °C Stranded wire 2.5 mm², 2 x 1 mm² IP 20 0.6 Nm Lexan / 50 g

CRV4/UC24-240V

Option: Pot.-Meter SP-01/100k



CSV4

Multifunction time relay with 16 functions and 8 time ranges 0.8 ms ... 60 h **DIN Rail mounting according to DIN 43 880**

Type: CSV4/DC12-36V

16 timing functions 6 A C.O. relay output Power supply DC 12 ... 36 V Option for external fine adjustment time range potentiometer LED state indicators for output and control input

Maximum output load

1.5 A / 24 V

± 0.1 % or 0.2 ms

0,7 ms 0,15 ms

0.05 ms

MOSFET, PNP

DC 12 - 36 V

-40 ... 85 °C / -40 ...70 °C

Stranded wire 2.5 mm², 2 x 1 mm²

10,2 ... 45 V

200 mW

4 mA

1 mA 7,3 V

IP 20 0.6 Nm

Lexan / 50 g

CSV4/DC12-36V

10 ms

1.5 A

10 µA

Yes

4 A 30 V

10 ms/0,1 s/1 s/10 s/1 m/10 m/1 h/10 h

 $t_{min}:$ -5 % \ldots +0 % / $t_{max}:$ -0 % \ldots +5 %

Time functions and related connection diagrams (Function diagrams: refer to page 152)



Time data

8 partial time ranges, t_{max} (rotary switch) Time range tolerance Repetition accuracy Response time, power on, on A1 Min. trigger pulse on B1 Reset time B1 (AC/DC) Voltage failure buffering

Output

Type Rated operational current Max. inrush current (100 ms) Max. switching voltage Leakage current Inductive switch-off voltage protection

Power supply and control input

Nominal voltage Operating voltage range Power consumption Control current into B1 Allowed residual current into B1 Trigger threshold voltage on B1 typ.

General Specifications

Ambient temperature storage /operation Conductor cross section Ingress Protection degree Max. Screw torque Housing material / Weight

Standard types

Accessories

External potentiometer 100k (Panel mounting + scale): Marking strip:

SP-01/100k **BS-13G** Large Small BS-13K



RLD OF



Connection diagram



Output current



Dimensions [mm]



Technical approvals, conformities

ROHS

5) "*L***R**



CPF11

Versatile time relay with DC solid state output, 3 time functions for pulse shaping applications, 5 ... 600 ms DIN Rail mounting according to DIN 43 880

Type: CPF11/DC24V R

Pulse shaper. DC solid state output, short circuit proof. DC 24 V operating voltage. Very suitable as PLC-interface for contact- and sensor signals (NAMUR, 3 – wire) but also for inductive- or lamp loads. Selectable free wheeling diode built in. Adjustable input filter time. LED state indicators for output and control input. Also suitable for panel mounting $2 \times M4$

Maximum output load

2 A / 32 V

Time functions and related connection diagrams (Function diagrams: refer to page 152)

K L A





Logical input setting E, \overline{E} : With \overline{E} the output becomes high when the input is low.

When set the shortest time and function A, the device can be used as a switching amplifier.

Time data

2 partial time ranges, t_{max} (DIP switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Min. trigger pulse width on input B1 Reset time B1

Output

Type: Power MOS FET Rated operational current, Ta = 60 °C Rated operational current, Ta = 50 °C Operational pulse current Short circuit current Max. switching voltage Leakage current (without free wheeling diode) Inductive switch-off voltage protection

Power supply and control input

Nominal voltage	DC 2
Operating voltage range normal operation	15
Operating voltage range NAMUR operation (DIN 19234)	19
Power consumption	≤ 0.6
Trigger threshold voltage E1	≤ 10
Trigger threshold voltage E2	≤ 15

General Specifications

Ambient temperature storage /operation Conductor cross section Ingress Protection degree Max. Screw torque Housing material / Weight

Standard types

Accessories

Label plate: (replacement)

$\begin{array}{l} 60 \mbox{,} 600 \mbox{ ms} \\ t_{min} \hdots t_{max}, 0.5 \hdots 6 \\ t_{min}: \mbox{-}30 \mbox{ } \hdots \hdots 0 \mbox{ } \hdots \hdots$

High side switch 0.7 A 100% duty cycle 0.8 A 100% duty cycle 2 A when tON \leq tOFF , tON \leq 5 s \leq 7 A 32 V \leq 1 μA Selectable free wheeling diode

DC 24 V 15 ... 32 V 234) 19 ... 28 V ≤ 0.6 W ≤ 10 V ≤ 15 V

-40 ... 80 °C / -25 ...60 °C Stranded wire 2.5 mm², 2 x 1 mm² Housing: IP 40, terminals: IP 20 0.4 Nm Lexan / 60 g

CPF11/DC24V R

BZS-DIN 17.5





Connection diagram



Fig. 1 Derating Curve



Fig. 2 Current vs. duty cycle



Dimensions [mm]







Notes





Notes

		 	 	 		 	 	 	 	 			 	 					 -	
								 							 				-	
																			-	
																	-		-	
																			_	
																			-+	
							 	 			 		 	 	 				-	
							_													
-						 		 	 	 									 -	
																			 -	
																			\neg	
	-	 		 				 							 				 \rightarrow	
	-							 											 -	
																			 -	


2.3 Plug-in Time Relays



Application	Types	Functions*	Min. time	Max. time	contact rating	Socket
Timing and blinking relay	CS1	E, W, B, B2	50 ms	60 min	8 A / 250 V	S3-xx
Timing and blinking relay with external potentiometer option	CS2	E, W, B, B2, A, K, N	50 ms	60 h	8 A / 250 V	S3-xx
Universal timer with 2 CO contacts	CS3	E, W, B, B2, A, K, N	50 ms	60 h	6 A / 250 V	S3-xx

*(Function diagrams: refer to page 152)

Time Relays 2.3

CS1

11 pin plug-in time relay according to IEC 67-I-18a, 50 ms ... 60 minutes for wide band 12 ... 240 V operating voltage, internal or external potentiometer operation

Type: CS1/UC 12-240V R

Plug-in time relay 1 change over contact UC 12-240 V operating voltage 4 time functions, time ranges: 50 ms ... 60 min LED for output state indication Option for external fine adjustment time range potentiometer

Maximum contact load	8 A / 250 V AC-1
Recommended minimum contact load	10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 152)

External potentiometer (Pins 5, 7)

Max. potentiometer cable length

 t_{min} : -5 % ... +0 % / t_{max} : -0 % ... +5 %

± 0.1 % or DC: 2 ms / AC: 10 ms

1 CO, micro disconnection

50 m, shielded, GND on pin 5 (Z1)

1 MΩ (see accessories)

0.6, 6, 60 s / 6, 60 min

t_{min} ... t_{max}, 5 ... 60

≤ 30 ms

20 ms

AgNi

250 V

2000 VA

220 W / 75 W

8 A

Ε	W	В	B2	-0	ſ	0	
						2 A	
					-	~	+

Time data5 partial time ranges, tmax (DIP switch)Fine adjustment range (rotary knob)Time range toleranceRepetition accuracyReset timeVoltage failure buffering

Contacts

Type Material Rated operational current Max. switching voltage AC-1 Max. AC load AC-1 (Fig.1) Max. DC load DC-1, 30 V / 250 V (Fig.2)

Power supply- and control input (UC = AC / DC)

 Nominal voltage (A1)
 UC 12 ... 240 V

 Operating voltage range
 10.2 ... 265 V

 Power consumption
 ≤ 1.4 W

 Frequency range
 45 ... 63 Hz

Insulation	
Test voltage open contact	1 kVrms 1 minute
Test voltage between contacts and control input	2 kVrms 1 minute

General Specifications

Ambient temperature storage /operation Mechanical life of contacts Ingress protection degree Housing material / Weight

Standard types UC (AC/DC)

Accessories

 External potentiometer 1 M (Panel mounting + scale)
 SP-01/1M

 Socket
 S3-xx

 Retaining clip
 HF-50

 Transparent front cover
 FA-50

 Front panel mounting set
 FZ-50L (Fra

HF-50 FA-50 FZ-50L (Frame + retaining clip + socket with soldering connections)

-40 ... 85 °C / -25 ...60 °C

 \geq 30 x 10⁶ operations

IP 40 when plugged in

CS1/UC12-240V R

Lexan / 75 g







Option: External Pot.-Meter SP-01/1M

Connection diagram



Fig.1 AC electrical endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



EN 60947

CS2

11 pin plug-in time relay according to IEC 67-I-18a, 50 ms ... 60 h for wide band 12 ... 240 V operating voltage, internal or external potentiometer operation

Type: CS2/UC 12-240V R

Plug-in time relay
1 change over contact
UC 12-240 V operating voltage
7 time functions, time ranges: 50 ms ... 60 h
LED for output state indication
Option for external fine adjustment time range potentiometer

Maximum contact load	8 A / 250 V AC-1
Recommended minimum contact load	10 mA / 10 V

Time functions and related connection diagram (Function diagrams: refer to page 152)

External potentiometer pins 5, 7

Max. potentiometer cable length

50 m, shielded, GND on pin5 (Z1)

0.6, 6, 60 s / 6, 60 min / 6, 60 h

1 CO, micro disconnection

1 MΩ (see accessories)

t_{min} ... t_{max}, 5 ... 60

≥ 30 ms

 $\leq 30 \text{ ms}$

20 ms

AgNi

250 V

2000 VA

220 W / 75 W

UC 12 ... 240 V

≤ 2.3 mA / 1.2 mA 6.5 V / 7 V

10.2 ... 265 V

45 ... 63 Hz

 $\leq 1.4 \text{ W}$

8 A



Time data

7 partial time ranges, t_{max} (DIP switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Min. trigger impulse on B1 Reset time Voltage failure buffering

Contacts

Type Material Rated operational current Max. switching voltage AC-1 Max. AC load AC-1 (Fig.1) Max. DC load DC-1, 30 V / 250 V (Fig.2)

Power supply- and control input (UC = AC / DC)

Nominal voltage (A1, B1) Operating voltage range Power consumption Frequency range Allowed residual current into B1 AC / DC Trigger threshold voltage on B1, AC / DC

Insulation

Test voltage open contact Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Mechanical life of contacts Ingress protection degree Housing material / Weight 2 kVrms 1 minute -40 ... 85 °C / -25 ...60 °C

1 kVrms 1 minute

≥ 30 x 10⁶ operations IP 40 when plugged in Lexan / 75 g

CS2/UC12-240V R

Standard types UC (AC/DC)

00 (A0/D0)

AccessoriesExternal potentiometer 1 M (Panel mounting + scale)SP-01/1MSocketS3-xxRetaining clipHF-50Transparent front coverFA-50Front panel mounting setFZ-50L (Fr

FZ-50L (Frame + retaining clip + socket with soldering connections)









Time Relays 2.3

Connection diagram



Fig.1 AC electrical endurance



Fig. 2 DC load limit curve



Dimensions [mm]

EN 60947



Technical approvals, conformities



This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.

CS₃

11 pin plug-in time relay according to IEC 67-I-18a, 50 ms ... 60 h for wide band 12 ... 240 V operating voltage, 2 change over output contacts



Type: CS3/UC 12-240V R

Plug-in time relay 2 change over contacts UC 12-240 V operating voltage 7 time functions, time ranges: 50 ms ... 60 h LED for output state indication

6 A / 250 V AC-1 Maximum contact load **Recommended minimum contact load** 10 mA / 10 V

Time functions and related connection diagrams (Function diagrams: refer to page 152)

20 ms

AgNi

250 V

1500 VA

180 W / 60 W

UC 12 ... 240 V

 \leq 2.3 mA / 1.2 mA

1 kVrms 1 minute

2 kVrms 1 minute

2 kVrms 1 minute

-40 ... 85 °C / -25 ...60 °C

 \geq 30 x 10⁶ operations

IP 40 when plugged in

CS3/UC12-240V R

soldering connections)

FZ-50L (Frame + retaining clip + socket with

Lexan / 75 g

S3-xx

HF-50

FA-50

10.2 ... 265 V

45 ... 63 Hz

6.5 V / 7 V

≤ 1.4 W

6 A

E W B B2	0	2
AEKNO	A2 A1	A2 B1 A1
	- N ^s	

Time data

7 partial time ranges, t_{max} (DIP switch) Fine adjustment range (rotary knob) Time range tolerance Repetition accuracy Min. trigger start impulse on B1 Reset time Voltage failure buffering

Contacts

Туре Material Rated operational current Max. switching voltage AC-1 Max. AC load AC-1 (Fig.1) Max. DC load DC-1, 30 V / 250 V (Fig.2)

Power supply- and control input (UC = AC / DC)

Nominal voltage (A1, B1) Operating voltage range Power consumption Frequency range Allowed residual current into B1 AC / DC Trigger threshold voltage on B1, AC / DC

Insulation

Test voltage open contact Test voltage between poles Test voltage between contacts and control input

General Specifications

Ambient temperature storage /operation Mechanical life of contacts Ingress protection degree Housing material / Weight

Standard types UC (AC/DC)

Accessories

Socket: Retaining clip Transparent front cover Front panel mounting set 0.6, 6, 60 s / 6, 60 min / 6, 60 h t_{min} ... t_{max}, 5 ... 60 $t_{min}:$ -5 % \ldots +0 % / $t_{max}:$ -0 % \ldots +5 % \pm 0.1 % or DC: 2 ms / AC: 10 ms $> 30 \, \text{ms}$ < 30 ms

2 CO, micro disconnection

Connection diagram



Fig.1 AC electrical endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



EN 60947





2.4 Time Cubes





Notes

	 				 	 			 		-								
							 											-	
		 			 	 	 			 	 	 	 					_	
	 		 	 	 	 	 		 	 	-								
																		\rightarrow	
																		$ \rightarrow$	
	 					 	 			 		 	 					-+	
			 															-+	
		 				 	 			 	 	-							
					 	 	 			 		 	 					_	
				 	 	 	 	 		 	 	 	 	 				-	
																		-	
				 	 	 	 	 		 	 	 	 	 				_	
	 						 											\neg	
																		-+	
	 		 				 											\rightarrow	
							 					 						$ \rightarrow$	
																		\neg	
							 					 						-+	
	 		 				 					 						-+	
	 		 				 	 										-+	
																		\neg	

Timecube®

CT2, CT3

8-pin and 11-pin Timecube®

Type: CT2: 8 pole, CT3: 11 pole

The CT2 or CT3 Timecube[®] is an electronic timer that is inserted between the plug-in industrial relay and the socket. This combination is a modular complete time relay without additional space requirement. It offers up to three changeover contacts with a variety of signal contacts and power contacts.

The Timecubes[®] are suitable for all 8 pin and 11 pin standard industrial relays of the C2 and C3 series according to IEC 67 and also for relays of other manufacturers.

3 sec

٦Г

≤ 200 ms

≤ 80 ms

t_{min} ... t_{max}, 2 ... 30

± 0.5 % or ± 20 ms

5 ms (except the relay)

UC 180 ... 265 V

UC 90 ... 265 V

 $\leq 0.3 \text{ mA}$

 $\leq 0.2 \text{ mA}$

t_{min}: 0 ... + 35 %

Time functions (Function diagrams: refer to page 152) Operating voltage controlled types CT2- / CT3-E30: Function E, on delay CT2- / CT3-A30, off delay

CT2- / CT3-E30: Function E, on delay CT2- / CT3-W30: Function W, one shot CT2- / CT3-B30: Function B, blinker

Time data

4 partial time ranges (DIP switch)

Fine adjustment time range (rotary knob) Time range tolerance Repetition accuracy Reset time Reset time B1 (trigg. inp.) A, K Voltage failure buffering

Power supply- and control input (UC = AC or DC) CT2- / CT3- ... / S DC 9.5 ... 18 V CT2- / CT3- ... / L UC 20 ... 65 V CT2- / CT3- ... / M UC 90 ... 150 V

CT2- / CT3- ... / U CT2- / CT3- ... / H Residual current E, W, B Residual current B1 (trigg. inp.) A, K

General specifications

Ambient temperature storage / operation Ingress protection degree Housing material Weight -40 ... +70 °C / -25 ... +60 °C IP40 Lexan 35 g

CT2- / CT3-K30, pulse shaping

30 sec

3 min

12 mA

6 mA

2 mA

2 mA

2 mA

30 min

Standard types

UC 50 Hz / 60 Hz: 20 ... 265 V DC 12 V

8 pole	11 pole	Voltage
CT2-E30/S CT2-W30/S CT2-B30/S CT2-A30/S CT2-K30/S	CT3-E30/S CT3-W30/S CT3-B30/S CT3-A30/S CT3-K30/S	DC 9.518 V
CT2-E30/L CT2-W30/L CT2-B30/L CT2-A30/L CT2-K30/L	CT3-E30/L CT3-W30/L CT3-B30/L CT3-A30/L CT3-K30/L	UC 2065 V
CT2-A30/M CT2-K30/M	CT3-A30/M CT3-K30/M	UC 90150 V
CT2-A30/U CT2-K30/U	CT3-A30/U CT3-K30/U	UC 180265 V
CT2-E30/H CT2-W30/H CT2-B30/H	CT3-E30/H CT3-W30/H CT3-B30/H	UC 90265 V

Dimensions [mm]





Only 11-pin version shown. The dimension of the 8-pin version are identical

25

Technical approvals, conformities

CT3	(1

Wiring diagram







Notes

 		 	 		 			 		 		 	 			 	 	_
 -			 				 							 			 	
-			 				 							 			-	
 -			 				 							 			 	
	 						 						_	 			 	
-																		
 -			 				 							 				
 -			 				 							 			 	-
																	-	



2.5 Time Modules



The modular timer system consists of individual plug-in timer modules with front cover, an 11-pole plug-in relay and a system socket with retaining spring.

The individual combination allows an optimal device selection for the foreseen application.

Later modifications as for example an exchange of relay from mechanical contacts to a relay with solid-state outputs are possible at any time. The user profits of a universal system of worldwide unique flexibility.





The modular Comat timer CT System

The time delay relays and monitoring relays consist of plug-in CT electronic modules and 11-pole output relays. Both system components can be combined in a variety of combinations. This allows adapting the system for the specific application.

Subsequent modifications, for example a change from mechanical contacts to solid-state outputs, are possible at any time just by replacing the relay.

This system provides the user a complete universal system with worldwide unmatched flexibility.



The system sockets C12B0 or C-155 serve as a basis for the secure reception of the electronic modules. The sockets have a 4-pole module slot in which the CT modules lock firmly and vibration proof also without the output relay. Contact is made with reliable twin knife contacts.

With the A2 connector bridge "C-A2", the neutral conductor (N/-) can be connected from socket to socket. It reduces wiring work considerably.

Robust terminals for wires up to 4 mm² and spacious labeling are other advantages of this practical Comat modular system.

Clear markings close to the terminal connections on the sockets make it easy to identify the connections for wiring and servicing.

The CT modules are proof of the practical oriented experiences of Comat in the field of industrial electronics. All control and display elements are arranged easy accessible at all times on the front side of the modules. The functions and settings are self-explanatory schematically illustrated on the front and allow to review the set values also during operation.

A transparent cover over the module setting components provides protection from unintentional settings and additionally links the module to the output relay.

Triggering is performed with the operating voltage. (L1 or +). No potentialfree contacts are therefore required. The triggering complies to machine standards. Parallel connection to B1 is admissible.

The wide UC voltage range (AC/DC) of the modules give a wide flexibility. It permits the connection to AC or DC supplies and provides a high level of reliability in triggering.

Note: In case of even wider voltage ranges, for example UC 24-240V, triggering currents on B1 are often in the range of 100µA with simultaneous low threshold voltages of less than 20V. Due to capacitive or inductive pickups this may lead to unintentional triggering or switching errors caused by insufficient load on the control contacts (It is not seldom that 50V or more can be measured in open lines).

The output relays show the connection diagram and the technical values on the front side, (exception C3 and C5 relays). A color code indicates an AC coil with red and a DC coil with blue color. Most of the relays have a lockable test button for manual operation .

The standard contacts have proven its reliability for high switching current applications over many years. The contact material AgNi permits a wide switching range and due to the large dimensioning they are designed for a high number of switching cycles. The high breaking capacity of up to 10A/400V and a low load switching capability of 12V/10mA makes the contact suitable for the use in main circuits as well as for low voltage applications.

The twin contacts are switching the load circuit with 2 independent contact tongues. The switching safety for low currents is therefore 100 times higher compared to a single contact relay. Despite the high switching capacity of up to 6A/250V, these contacts are very suitable to switch low currents and voltages up to 1mA/6V.

The solid-state relays are an alternative to mechanical relays. In the standard version, the relay has a potential-free universal semiconductor output for AC or DC loads. The advantage is a bouncing- and wear-free, overload resistant, short circuit protected output with a practical unlimited life cycle.

Solid-state relays are specially recommended for applications of high switching cycles, for example for repeat cycle timers, flushing lights, but also for high inductive switching loads of solenoid valves, couplings, motors, etc. The solid state relays are also suitable for capacitive loads, for example long power lines, or compensated lighting circuits.

Additional protection circuits of the output or of the load are not necessary in any application for this type of Comat relays.

The solid-state relays are insensitive in any aggressive environment such as chemical plants, sewage plants etc. and are therefore an excellent choice for the employment in such environments.



The train symbol indicates products available in a special railway execution according EN 50155. Please refer to our special railway brochure for details.

CT30, CT32, CT33, CT36 Plug-in time modules (combined with industrial relays)



Туре

CT30, CT32, CT33, CT36, /...V R

Plug-in time modules for sockets with module slot in combination with plug-in relays. Power supply and control voltages 24 ... 240 V. Time ranges 30 ms up to 60 h. LED output state indicator.

Time functions and related connection diagrams (Function diagrams: refer to page 152)



Time Relays 2.5

2

		СТ30	СТ32	СТ33	CT36
0 0 0		Economy	Universal	Universal	Repeat cycle timer
A2 A1 A2 B1 A1 A2 B1		EWB	E 00	E 28	I P -0
			A N K B1 2	A N L F K G BI Q	
- ~\is _ ~ + - ~	, Y ^s +		W B S	W H B 8 0	
ime data					
ype		CT 30	CT 32	CT33	CT36
Partial time ranges, t _m	ax	3, 30 /s /min	1.5, 6, 15, 60 /s /min	150, 600 ms 1.5, 6, 15, 60 /s /min /h	2 x 600 ms 2 x 6, 60 /s /min /h
/lin. time t _{min}		0.25 s	0.15 s	30 ms	2 x 50 ms
ine adj. range t _{min}	tmax	2.5 30	110	0.2 1	2 x 5 60
ime range tolerance	t _{min}	-25 0 %	-25 0 %	-25 0 %	-25 0 %
0	t _{max}	0 35 %	0 25 %	0 25 %	0 25 %
Repetition accuracy	-	± 0.2 % or 20 ms	± 0.2 % or 20 ms	± 0.2 % or 20 ms	± 0.2 % or 20 ms
emperature drift of tir	me	0.25 % / K	0.1 % / K	0.1 % / K	0.1 % / K
1in. trigger pulse widt	th B1	-	≥ 30 ms	≥ 30 ms	-
Reset time pow. supp		≤ 200 ms	≤ 150 ms	≤ 150 ms	≤ 150 ms
oltage failure bufferin	g	≥ 20 ms	≥ 20 ms	≥ 20 ms	≥ 20 ms
Output data					
lominal voltage		UC 24 – 48 V	110 – 240, 115, 230 V		
/pe		Solid state	Solid state		
ated operational cur	rent	150 mA	50 mA		
n-state resistance		≤ 25 Ω	≤ 100 Ω		
eakage current		≤ 150 µA	≤ 150 µA		
ower supply and c	ontrol input (UC	,			
ype		CT 30	CT 30	CT36	CT36
lominal voltage		UC 24 – 48 V	UC 110 – 240 V	UC 24 – 48 V	UC 110 – 240 V
perating voltage ran	ge	19 75 V	90 265 V	1960 V	82 265 V
upply current		3 5 mA	2 4 mA	6 12 mA	4 8 mA
/pe		СТ32, СТ33	СТ32, СТ33	СТ32, СТ33	
lominal voltage		UC 24 – 48 V	UC 115 V	UC 230 V	
perating voltage ran	ge	19 60 V	90 150 V	180 265 V	
nput B1 inactive		$\leq 9 V$	≤ 60 V	\leq 100 V	
upply current		5 11 mA	4 7 mA	1 4 mA	
eneral Specification				Dimensions [mm]	
mbient temperature		1	-40 85 °C / -40 60 °C	6 666666	
ngress Protection dec	gree		IP 40 when plugged in		_
lousing material			Lexan		
/eight			25 g		
tandard types					
CT30, CT32, CT33, 0	CT36, UC24-48	CT3x/UC24-48V R		<u> </u>	
T30, CT36, UC110	-240	CT3x/UC110-240V R		38	4 20 54
T32, CT33, UC115		CT3x/UC115V R		Toobnical annreus	
				Technical approva	is, conformities
T32, CT33, UC230		CT3x/UC230V R			



Time Delay Relay-Set Relay, Module and Socket



Relay data's see: Section industrial Relays I MAX иМ **(**ц

Timer-Modul (Function diagrams: refer to page 152)

E Triggering 0 Function see page 152 A2 A1 □ R2(R3) = Time function as R1

A2 B1 A1 A2 B1 A1 R2(R3) = Instantaneous contact

Time range

0.25-3s...

2,5-30min

Time range

0.15s-60min

0,15-1,5s...

6-60 min

Time range

12-60h

Time range

5-60h

2x50ms-60h

2x 50-600ms...

30ms-60h

30-150 ms...

0,25s-30min

0

Ø

CT30 Economy timer

CE

3 functions, voltage controlled, output LED. Seismic approved.

Function / Triggering EWB

CT32 Universal timer

7 functions, voltage controlled, time lapse display, blinking. Seismic approved.

Function / Triggering E - 2-8 A N K B1 2 W B 🔂

CT33 Universal timer



E 00 W H B 🔂 A N L F K G B1 Q 🕑 FQ t2=t1 GH t2=0,5s

CT36 Repeat cycle timer

Pulse or pause start. t1/t2 separately settable. Time lapse display t1/t2.

Function / Triggering I P-O

Power Relay ┢┾┾┾



C3-A30X

Universal

Power Relay 10A. With 3 power changeover-contacts this is the robust relay for AC and DC circuits ranging from 10 mA 10 V.

10A~ 10 mA 10 V

9 38 18 16 μ R +

Set Order-Nr.: CT30.3-A30/...V R AC 24, 48, 115, 230V

DC 24, 48, 110, 220V

Delivery includes:

- Relay C3-A30X/...V R Module CT30/...V R
- Front cover FS-R
- Socket C12B0 R
- · Retaining clip S3-C

Set Order-Nr.:

CT32.3-A30/...VR AC 24, 48, 115, 230V DC 24, 48, 110, 220V

Delivery includes:

- Relay C3-A30X/...V R
- Module CT32/...V R · Front cover FS-R
- Socket C12B0 R
- Retaining clip S3-C

Set Order-Nr.:

CT33.3-A30/...VR



Delivery includes:

- Relay C3-A30X/...V R • Module CT33/...V R
- Front cover FS-R
- Socket C12B0 R
- Retaining clip S3-C

Set Order-Nr.:

CT36.3-A30/V R
_
AC 24, 48, 115, 230 V
DC 24, 48, 110, 220V
Delivery includes:

Module CT36/...V R

- Front cover FS-R
- Socket C12B0 R
- · Retaining clip S3-C

Control Relay



C3-T31X

Relav with 3 twin contacts 6A The control relay with highest

switching reliablility for control

and signal circuits ranging from 5mA 5V. 6A 250V~

5 mA 5V

Set Order-Nr.:



CT30.3-T31/...V R AC 24, 48, 115, 230V DC24, 48, 110, 220V **Delivery includes:** • Relay C3-T31X/...V R Module CT30/...V R • Front cover FS-R Socket C12B0 R · Retaining clip S3-C Set Order-Nr.: CT32.3-T31/...V R AC 24, 48, 115, 230V DC 24, 48, 110, 220V

Delivery includes:

- Relay C3-T31X/...V R
 Module CT32/...V R
- · Front cover FS-R
- Socket C12B0 R
- Retaining clip S3-C

Set Order-Nr.:

- CT33.3-T31/...V R
 - AC 24, 48, 115, 230V DC 24, 48, 110, 220V

Delivery includes:

- Relay C3-T31X/...V R
- Module CT33/...V R Front cover FS-R
- Socket C12B0 R
- Retaining clip S3-C

Set Order-Nr.:

CT36.3-T31/,V R								
AC 24, 48, 115, 230V								
DC 24, 48, 110, 220V								

Delivery includes:

- Relay C3-T31X/...V R
 Module CT36/...V R
- · Front cover FS-R
- Socket C12B0 R · Retaining clip S3-C

Signal Relay '*#[|]'#[|]*#[|]-⇔ 10µAu



C3-T32X

Relay with 3 twin contacts, 10µ gold flush

The twin contact relay with highest switching reliability for signal circuits ranging from 1mA 5V. Recommend. upto 0,2A 30V.

6A 250V~ 1mA 5V



DC 24, 48, 110, 220V

Delivery includes:

• Front cover FS-R

Socket C12B0 R

· Retaining clip S3-C

• Relay C3-T32X/...V R

Module CT36/...V R

Power Relay '/-'/-/-/-



C31L

Universal Power Relay 10A with 3 power changeover-contacts this is the robust relay for AC and DC circuits ranging from 50 mA 10 V.

10 A 250V~ 50 mA 10 V





Delivery includes:

- Relay C31L/...V
 Module CT30/...V
- Front cover FS-C
 Socket C12B0

Retaining clip HF-32

Set Order-Nr.: CT32.31/...V AC 24, 48, 115, 230V DC 24, 48, 110, 220 V

Delivery includes:

- Relay C31L/...V
 Module CT32/...V
 Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT33.31/V									
•									
AC 24, 48, 115, 230V									
DC 24, 48, 110, 220V									
Selleren herberten									

Delivery includes: • Relay C31L/...V

- Module CT33/...V
- Front cover FS-C Socket C12B0
- Retaining clip HF-32



Delivery includes: Relay C31L/...V
 Modul CT36/...V • Front cover FS-C Socket C12B0 • Retaining clip HF-32

Control Relay '#'#'#-⇔



C32L

Relay with

3 twin contacts 6A The control relay with highest switching reliablility for control and signal circuits ranging from 10 mA 5V.

6A 250V~ 10 mA 5V



Set Order-Nr.:										
CT30.32/V										
A										
AC 24, 48, 115, 230V										
DC 24, 48, 110, 220V										
Delivery includes: • Relay C32L/V • Module CT30/V										
Front cover FS-C										

Set Order-Nr.:
Retaining clip HF-32
 Socket C12B0



Delivery includes:

- Relay C32L/...V Module CT32/...V
 Front cover FS-C
- Socket C12B0
- Retaining clip HF-32

Set Order-Nr.:

CT33.32/V
AC 24, 48, 115, 230V
DC 24, 48, 110, 220V
0024,40,110,2204

- Relay C32L/...V
- Module CT33/...V · Front cover FS-C
- Socket C12B0
- Retaining clip HF-32



Delivery includes: Relay C32L/...V
 Module CT36/...V • Front cover FS-C



.....



Time Delay Relay-Set Relay, Module and Socket



µ) MIN

Time range

0.25-3s...

2.5-30min

Time range

0,15-1,5s...

6-60 min

Time range

12-60h

Time range

5-60h

.....

2x50ms-60h

2x 50-600 ms...

30 ms-60 h

30-150ms...

0.15s-60min

0,25s-30min

.....

CE

Timer-Modul (Function diagrams: refer to page 152)

(i unodoin utagi	and relation to page 102/
E Triggering	0000
Function see page 152	A2 A1 A2 B1 A1 A2 B1
□ R2(R3) = Time function as R1 □ R2(R3) = Instantaneous contact	

CT30 Economy timer

3 functions, voltage controlled, output LED. Seismic approved.



CT32 Universal timer

7 functions, voltage controlled, time lapse display, blinking. Seismic approved.

Function / Triggering E 28 A N K B1 2 W B 🔁

CT33 Universal timer



E 00 W H B 🔂 A N L F K G B1 Q 🕑 FQ t2=t1 GH t2=0,5s

CT36 Repeat cycle timer

Pulse or pause start. t1/t2 separately settable. Time lapse display t1/t2.

Function / Triggering I P -**O**

High Power Relay DC

'≠' +≠ -⇔ 16A 400V~



C5-A30X

Universal Power Relay 16A With 3 power changeover-contacts this is the robust relay for AC and DC circuits ranging from 10 mA 10 V.









• Retaining clip S3-C

Set Order-Nr.:

CT33.5-A30/V R
A
AC 24, 115, 230V
DC 24, 110, 220V

Delivery includes: • Relay C5-A30X/...V R

- Module CT33/...V R
- Front cover FS-C5
- Socket S-5M Retaining clip S3-C

Set Order-Nr.:



Delivery includes: • Relay C5-A30X/...V R

Module CT36/...V R

- Front cover FS-C5 Socket S-5M
- Retaining clip S3-C

High Power Relay DC

} - **└│ 10A @ 220V**---



C5-M10X

Highpower Relay, in particular for DC loads upto 10A 220V.... (DC1) With 2 NO contacts in series and a blow magnet for safe arc extinguishing.

16A 400V~ 10mA 10V



Set Order-Nr.: CT30.5-M10/...V R

AC 24, 230V

DC 24, 48, 110, 220 V

- **Delivery includes:** • Relay C5-M10X/...V R
- Module CT30/...V R
- Front cover FS-C5
- Socket S-5M • Retaining clip S3-C

Set Order-Nr.:

CT32.5-M10/...V R

AC 24, 230V DC 24, 48, 110, 220V

- **Delivery includes:**
- Relay C5-M10X/...V R Module CT32/...V R
- Front cover FS-C5
- Socket S-5M • Retaining clip S3-C

Set Order-Nr.:

CT33.5-M10/...V R AC 24, 230V

DC 24, 48, 110, 220V

- Delivery includes: • Relay C5-M10X/...V R
- Module CT33/...V R
- Front cover FS-C5
- Socket S-5M Retaining clip S3-C

Set Order-Nr.: CT36.5-M10/...VR AC 24, 230V DC 24, 48, 110, 220V Delivery includes: Relay C5-M10X/...V R Module CT36/...V R

192 | 15/16

This issue replaces all previous issues. Availability, errors and specifications subject to change without notice.



Notes





Notes

					_			_								 		 		
								-						 		 		 	 	
_					_			_			 	 	 			 		 		
-		 	 	 	-			-			 	 	 		 	 		 		
								_			 		 		 	 				
								-			 	 	 	 	 	 		 	 	
	-			 			-	+	+										\rightarrow	
					_		_	_					 		 	 			$ \rightarrow $	
								\uparrow												
	-			 			-	+											\rightarrow	
								_								 				
		 	 	 				-			 		 							
				 	_			_			 	 	 		 	 		 		
-								-												
					_			_								 		 		
		 	 	 	-		_	-		_	 	 	 		 	 		 		
		 	 	 				_			 	 	 		 	 		 	 	
								1												
								+	\rightarrow											
					_		_	_					 							
								+												
-	-			 			-	+											\rightarrow	
				 				_											$ \rightarrow$	
	-			 				+												
	-				-		_	_					 						\rightarrow	
	-			 			-	+	-										\rightarrow	
				 				-											\rightarrow	



3.0 Monitoring Relays









Notes

		 	 			 	 				 	 	 	 	_				 		
			 			 					 	 		 	_				 		
		 	 			 	 				 	 	 	 	_	_			 		
		 				 			 		 				_				 		
														 		-			\rightarrow		
			 								 	 		 	_				 		
																			\neg		
					-									 	-	-	-		+	+	
						 								 	_	_			 		
																			\neg		
			 			 	 				 	 	 	 	_				 		
		 												 	_						
			 			 	 				 	 	 	 	_				 		
		 	 			 	 				 	 	 	 	_				 		
														 	_	-			\rightarrow		
							 					 		 	_	-	-		 		
														 					\rightarrow		-
														 	_	_			 $ \rightarrow$		
														 					-		
						 						 		 	_	-			 		
														 	_	-	-			-+	
					-											1			\rightarrow	-	
											 			 	_					-+	
]]]]
-					\rightarrow										-	-			-	-	
														 		-			 		
			 			 	 				 	 				-			 		



3.1 Multifunction Monitoring



Application	Types	Monitoring	Monitoring ratings	Output contacts	Design
Multifunction monitoring, AC 15 60 Hz / DC single phase	MRM11	<mark>≿</mark> ≚	U, I, P, f, cosφ	1 CO	35 mm
Multifunction monitoring, AC 15 60 Hz / DC three phase	MRM32	≿ ≚ ≳ ≜	U, I, P, f, cosφ	2 CO	35 mm

3

MRM11

Multifunction monitoring relay AC/DC, single phase DIN Rail mounting according to DIN 43 880

Type: MRM11/...V

Multifunctional monitoring relay for simultaneous measurement of current and voltage and monitoring of U, I, P, $\cos\phi$ and f. Alarm delay setting. Alarm LED. Display for multimeter function, alarm signal and interactive parameter setting.

1 change-over alarm contact 5 A 250 V. Comfortable parameter setting.

Monitoring function



0.1 ... 480 V / ±0.1 ... 690 V

0.1...5A

ca. 30 ms

6 A

15 A

250 V

1250 VA

120 W / 25 W

10 mA / 10 V

1.5 kV 1 minute

2.0 kV 1 minute

2.0 kV 1 minute

2.0 kV 1 minute

1.5 kV 1 minute

LCD: -20 ... +60 °C

30 x 10⁶ operations

Lexan EXL 9330

IP20, (electronics: IP40)

-40 ... +85 °C / -40 ...+60 °C

Stranded wire 2.5 mm², 2 x 1.5 mm²

0.1 ... 999.9 s (factory adjustment = 0.0 s)

0.1 ... 999.9 s (factory adjustment = 0.0 s)

AC 15 ... 150 Hz

U, I, f, P, S, cosp

1 CO / AgNi 0.15

 $1 M\Omega / 5 M\Omega$

Measuring circuit data

Voltage setting ranges AC / DC Current setting ranges AC / DC Frequency Input resistance U / I Measured variables

Time data

Voltage failure buffering

Alarm contacts

Type / Material Rated operational current Max. inrush current Max. switching voltage Max. AC load AC-1 (Fig.1) Max. DC load DC-1, 24 V / 220 V (Fig.2) Recommended min. contact load Alarm delay setting time Reset time setting range

UC12-48V	UC110-240V
12 48 V	110 240 V
10 60 V	85 250 V
16 63 Hz	16 63 Hz
1.6 W / 3.2 VA	1.5 W / 2.6 VA
	12 48 V 10 60 V 16 63 Hz

Insulation

Measuring input – Measuring input Measuring input – Supply Measuring input – Contact Supply – Contact Contact set – Contact set

General specifications

Ambient temperature storage /operation

Mechanical life of contacts Conductor cross section Ingress protection degree Max. screw torque Housing material Weight

Standard types AC/DC 12-48 V, 15...60 Hz AC/DC 110-240 V, 15...60 Hz

MRM11/UC12-48V MRM11/UC110-240V

107 g

0.4 Nm





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



MRM32

Multifunction monitoring relay AC/DC, three phase DIN Rail mounting according to DIN 43 880

WORLD OF RELAYS

Type: MRM32/...V

Multifunctional monitoring relay for simultaneous measurement of current and voltage and monitoring of U, I, P, $\cos \phi$ and f and $\Delta \phi$. Alarm delay setting. Alarm LED. Display for multimeter function, alarm signal and interactive parameter setting.

2 change-over alarm contacts 5 A 250 V. Comfortable parameter setting.

Monitoring function



Measuring circuit data

Voltage setting ranges AC / DC Current setting ranges AC / DC Frequency Input resistance U / I Measured variables

Time data

Voltage failure buffering

Contacts

Type / Material Rated operational current Max. inrush current Max. switching voltage Max. AC load AC-1 (Fig.1) Max. DC load DC-1, 24 V / 220 V (Fig.2) Recommended min. contact load Alarm delay setting time Reset time setting range

Power supply

Nominal voltage AC/DC Operating voltage range AC frequency Power consumption

Insulation

Measuring input – Measuring input Measuring input – Supply Measuring input – Contact Supply – Contact Contact set – Contact set

General specifications

Ambient temperature storage /operation

Mechanical life of contacts Conductor cross section Ingress protection degree Max. screw torque Housing material Weight

Standard types AC/DC 12-48 V, 15...60 Hz AC/DC 110-240 V, 15...60 Hz

2 CO / AgNi 0.15 6 A 15 A 250 V 1250 VA 120 W / 25 W 10 mA / 10 V 0.1 ... 999.9 s (factory adjustment = 0.0 s)

0.1 ... 999.9 s (factory adjustment = 0.0 s)

U, I, f, P, S, $\cos\varphi$ und $\Delta\varphi$ (phase sequence)

0.1 ... 480 V / ±0.1 ... 690 V

0.1 ... 5 A AC 15 ... 150 Hz

ca. 30 ms

 $1 \text{ M}\Omega / 5 \text{ M}\Omega$

UC12-48V	UC110-240V
12 48 V	110 240 V
10 60 V	85 250 V
16 63 Hz	16 63 Hz
1.6 W / 3.2 VA	1.5 W / 2.6 VA
1.5 kV 1 minute	
2.0 kV 1 minute	
2.0 kV 1 minute	
2.0 kV 1 minute	

1.5 kV 1 minute

-40 ... +85 °C / -40 ... +60 °C LCD: -20 ... +60 °C 30 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP20, (electronics: IP40) 0.4 Nm Lexan EXL 9330 125 g

MRM32/UC12-48V MRM32/UC110-240V



Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



Monitoring Relays 3.1



Notes

						 					 			 _	_	 		 		
-						 					 	 		-	-	 				
																				_
			 	 		 		 			 	 		 _	_	 	 	 		
			 	 				 			 	 			+	 		 		
			 	 		 	 				 				_	 		 		
		 	 	 		 		 			 	 		 _	-	 	 	 		
															+			+	+	_
														 _	_			 		
-														 	-			-	-	
					_									_				-		
			 	 		 		 			 	 		 _	_	 	 	 		
			 	 				 				 			-		 	 		
						 					 	 		 _	_	 	 	 		
						 					 	 		-	-	 				
															+			-		_
	-													 _	-					
					-			 							+			+	-	
	-										 	 		 _	_			 		
															T					
-	-														+			\rightarrow	-	-
-					_									-	-					
								 							+			\rightarrow	-	
						 		 			 			 _	-			 \rightarrow		
															T					
																		+	-	
	-													 _	-					



	\mathbf{C}	mat
F	REI	LECO
WORLD	OF	RELAYS

3.2 Voltage Monitoring



Application	Types	Monitoring	Monitoring ratings	Output contacts	Design
Voltage monitoring, AC 15 60 Hz / DC single phase	MRU11	<mark>≻</mark>	0.1 AC 480 V / DC 690 V	1 CO	35 mm
Voltage monitoring, AC 15 60 Hz / DC three phase	MRU32	<mark>≿</mark> ≚	0.1 AC 480 V / DC 690 V	2 CO	35 mm

MRU11

Voltage monitoring relay AC/DC, single phase DIN Rail mounting according to DIN 43 880

Type: MRU11/...V

Voltage monitoring relay with over- and under voltage thresholds up to 700 V. Alarm delay setting. Alarm LED. Display for voltmeter function, alarm signal and interactive parameter setting.

1 change-over alarm contact 5 A 250 V. Comfortable parameter setting.

Monitoring function



Measuring circuit data

Voltage setting ranges AC / DC Frequency Input resistance U / I Measured variables 0.1 ... 480 V / ±0.1 ... 690 V AC 15 ... 150 Hz 1 M Ω U, f

ca. 30 ms

Time data

Voltage failure buffering

Alarm contacts

Type / Material Rated operational current Max. inrush current Max. switching voltage Max. AC load AC-1 (Fig.1) Max. DC load DC-1, 24 V / 220 V (Fig.2) Recommended min. contact load Alarm delay setting time Reset time setting range

Power supply

Nominal voltage AC/DC Operating voltage range AC frequency Power consumption

Insulation

Measuring input – Measuring input Measuring input – Supply Measuring input – Contact Supply – Contact Contact set – Contact set

General specifications

Ambient temperature storage /operation

Mechanical life of contacts Conductor cross section Ingress protection degree Max. screw torque Housing material Weight

Standard types AC/DC 12-48 V, 15...60 Hz AC/DC 110-240 V, 15...60 Hz

1 CO / AgNi 0.15 6 A 15 A 250 V 1250 VA 120 W / 25 W 10 mA / 10 V 0.1 ... 999.9 s (factory adjustment = 0.0 s) 0.1 ... 999.9 s (factory adjustment = 0.0 s)

UC12-48V	UC110-240V
12 48 V	110 240 V
10 60 V	85 250 V
16 63 Hz	16 63 Hz
1.6 W / 3.2 VA	1.5 W / 2.6 VA

1.5 kV 1 minute 2.0 kV 1 minute 2.0 kV 1 minute 2.0 kV 1 minute 1.5 kV 1 minute

-40 ... +85 °C / -40 ... +60 °C LCD: -20 ... +60 °C 30 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP20, (electronics: IP40) 0.4 Nm Lexan EXL 9330 107 g

MRU11/UC12-48V MRU11/UC110-240V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



MRU32

Voltage monitoring relay AC/DC, three phase DIN Rail mounting according to DIN 43 880

Type: MRU32/...V

Voltage monitoring relay with over- and under voltage thresholds up to 700 V. Alarm delay setting. Alarm LED. Display for voltmeter function, alarm signal and interactive parameter setting.

2 change-over alarm contacts 5 A 250 V. Comfortable parameter setting.



Measuring circuit data

Voltage setting ranges AC / DC Frequency Input resistance U / I Measured variables

0.1 ... 480 V / ±0.1 ... 690 V AC 15 ... 150 Hz 1 MΩ U, f, Δφ (phase sequence)

ca. 30 ms

Time data

Voltage failure buffering

Alarm contacts

Type / Material Rated operational current Max. inrush current Max. switching voltage Max. AC load AC-1 (Fig.1) Max. DC load DC-1, 24 V / 220 V (Fig.2) Recommended min. contact load Alarm delay setting time Reset time setting range

Power supply

Nominal voltage AC/DC Operating voltage range AC frequency Power consumption

Insulation

Measuring input – Measuring input Measuring input – Supply Measuring input – Contact Supply – Contact Contact set – Contact set

General specifications

Ambient temperature storage /operation

Mechanical life of contacts Conductor cross section Ingress protection degree Max. screw torque Housing material Weight

Standard types AC/DC 12-48 V, 15...60 Hz AC/DC 110-240 V, 15...60 Hz 2 CO / AgNi 0.15 6 A 15 A 250 V 1250 VA 120 W / 25 W 10 mA / 10 V 0.1 ... 999.9 s (factory adjustment = 0.0 s) 0.1 ... 999.9 s (factory adjustment = 0.0 s)

UC12-48V	UC110-240V
12 48 V	110 240 V
10 60 V	85 250 V
16 63 Hz	16 63 Hz
1.6 W / 3.2 VA	1.5 W / 2.6 VA

1.5 kV 1 minute 2.0 kV 1 minute 2.0 kV 1 minute 2.0 kV 1 minute 1.5 kV 1 minute

-40 ... +85 °C / -40 ... +60 °C LCD: -20 ... +60 °C 30 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² IP20, (electronics: IP40) 0.4 Nm Lexan EXL 9330 125 g

MRU32/UC12-48V MRU32/UC110-240V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



Monitoring Relays 3.2



Notes

 		 	 		 			 		 		 	 			 	 	_
 -			 				 							 			 	
-							 							 			-	
 -			 				 							 			 	
 	 						 						_	 			 	
-																		
 -			 				 							 				
 -			 				 							 			 	-
																	-	



3.3 Current Monitoring



Application	Types	Monitoring	Monitoring ratings	Output contacts	Design
Current monitoring, AC 15 60 Hz / DC single phase	MRI11	A	0.1 5 A	1 CO	35 mm
Current monitoring, AC 15 60 Hz / DC three phase	MRI32	2	0.1 5 A	2 CO	35 mm
Over-current monitoring, 48 62 Hz	EOCR	~	0.5 6 A / 3 30 A / 5 60 A	1 CO	54 mm

0.5 ... 6 A / 3 ... 30 A / 5 ... 60 A

Å

EUCR

Under-current monitoring, 48 ... 62 Hz

1 CO

54 mm

MRI11

Current monitoring relay AC/DC, single phase DIN Rail mounting according to DIN 43 880

Type: MRI11/...V

Current monitoring relay with over- and under voltage thresholds up to 5 A. Alarm delay setting. Alarm LED. Display for voltmeter function, alarm signal and interactive parameter setting.

1 change-over alarm contact 5 A 250 V. Comfortable parameter setting.

Monitoring function Outside Inside Over Under Alarm = 15 - 16 / 25 - 26 closed Alarm ok hysteresis Measuring circuit data Current setting ranges AC / DC 0.1 ... 5 A Frequency AC 15 ... 150 Hz Input resistance U / I 5 MΩ Measured variables I, f Time data Voltage failure buffering ca. 30 ms Alarm contacts Type / Material 1 CO / AgNi 0.15 Rated operational current 6 A Max. inrush current 15 A 250 V Max. switching voltage 1250 VA Max. AC load AC-1 (Fig.1) Max. DC load DC-1, 24 V / 220 V (Fig.2) 120 W / 25 W Recommended min. contact load 10 mA / 10 V Alarm delay setting time 0.1 ... 999.9 s (factory adjustment = 0.0 s) Reset time setting range 0.1 ... 999.9 s (factory adjustment = 0.0 s) UC110-240V Power supply UC12-48V Nominal voltage AC/DC 12 ... 48 V 110 ... 240 V 85 ... 250 V Operating voltage range 10 ... 60 V 16 ... 63 Hz AC frequency 16 ... 63 Hz 1.6 W / 3.2 VA 1.5 W / 2.6 VA Power consumption Insulation Measuring input - Measuring input 1.5 kV 1 minute 2.0 kV 1 minute Measuring input - Supply Measuring input - Contact 2.0 kV 1 minute Supply - Contact 2.0 kV 1 minute Contact set - Contact set 1.5 kV 1 minute **General specifications** -40 ... +85 °C / -40 ...+60 °C Ambient temperature storage /operation LCD: -20 ... +60 °C Mechanical life of contacts 30 x 10⁶ operations Stranded wire 2.5 mm², 2 x 1.5 mm² Conductor cross section IP20, (electronics: IP40) Ingress protection degree 0.4 Nm Max. screw torque Housing material Lexan EXL 9330 Weight 107 g Standard types

Standard types AC/DC 12-48 V, 15...60 Hz AC/DC 110-240 V, 15...60 Hz

MRI11/UC12-48V MRI11/UC110-240V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



MRI32

Current monitoring relay AC/DC, three phase DIN Rail mounting according to DIN 43 880

Type: MRI32/...V

Current monitoring relay with over- and under current thresholds up to 5 A. Alarm delay setting. Alarm LED. Display for voltmeter function, alarm signal and interactive parameter setting.

2 change-over alarm contacts 5 A 250 V. Comfortable parameter setting.

Monitoring function



MRI32/UC110-240V





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve







Technical approvals, conformities



AC/DC 110-240 V, 15...60 Hz

EOCR, EUCR

Current monitoring relay with 2 current inputs DIN Rail mounting according to DIN 43 880

Type: EOCR-AR-... / ... V (Over current), EUCR-BR-... / ... V (Under current) AC current monitoring relay for 1 or 3 phase lines, 1 change over alarm contact 3 A / 250 V Integrated current transformer coupling system, 6 A, 30 A, 60 A types

Monitoring function



Measuring circuit data

Setting ranges Frequency range Accuracy Hysteresis Max. continuous current 6 / 30 / 60 A type Peak current (1 sec) 6 / 30 / 60 A type 1) Expansion of the current ranges: Lower currents (see table at right): Higher currents:

Time data

Alarm delay time adjustment range Reset time adjustment range Response time, power on, on A1

Contacts

Type / Material Rated operational current Max. switching voltage, AC-1 Max. AC load Max. DC load

Power supply			
Nominal voltage (UC = AC/DC)	UC 24 V	AC 115 V	AC 230 V
Operation voltage range [V]	19 30	88 130	184 264
Power consumption [W]	1.5	1.5	1.5
Frequency [Hz]	50 / 60	50 / 60	50 / 60

Insulation

Test voltage between contacts and supply inp. Test voltage between curr. transf. and other circuits 2 kVrms 1 minute 4 kVrms 1 minute

The EOCR-AR and the EUCR-BR monitor over-

current and undercurrent on AC power circuits. One or two current paths can be monitored

directly up to 60 (75) A, by means of the inte-

tic alarm resetting (tR) permit universal usage in motor and transformer protection systems,

monitoring of electrical heating elements and

in the control of pumps, ventilation systems,

The adjustable alarm delay (t0) and the automa-

grated current loop transformers.

suction and feed devices.

48 ... 62 Hz 2.5 %

0.3 ... 30 s

3 A 250 V

750 VA

90 W

0.5 ... 150 s

80 ... 150 ms

3 % from set value

60 A / 90 A / 120 A 3 kA / 5 kA / 5 kA

0.5 ... 6 A / 3 ... 30 A / 5 ... 60 A

Two or more loops through the current transformer.

External current transformer. See accessories

1 CO, micro disconnection / AgNi

General specifications

Ambient temperature storage /operation	-25 85 °C / -20 60 °C
Ingress protection degree	Housing: IP 40, terminals: IP 20
Max. screw torque	0.8 Nm
Weight	120 g

Standard types	Over current	Under current
Current [x] 05/30/60	EOCR-AR- x /UC24V	EUCR-BR-x /UC24V
	EOCR-AR- x /AC115V	EUCR-BR-x /AC115V
	EOCR-AR- x/AC230V	EUCR-BR-x /AC230V

Accessories

Current transformer for expanded current values, 50, 100, 250, 500 A

SRCT-35-.../5A









Connection diagram



Expansion of current ranges

[A]	>	1x	2x	3x	4x	5x
1 ²⁰ 1	-05	0,5-6	0,25-3	0,17-2	0,13-1,5	0,1-1,2
	-30	2,5-30	1,25-15	0,83-10	0,62-7,5	0,5-6
	-60	5-60	2,5-30	1,7-20	1,25-15	1-12

Dimensions [mm]



208 | 15/16



3.4 3-Phase Monitoring



Application	Types	Monitoring	Monitoring ratings	Output contacts	Design
3 Phase monitoring	SSU33L	@	, ↓ 230 V, ▲ 400 V	1 CO	11 pin
Mains monitoring relay, 50 Hz	SSU34	3~	100 V, 400 V, 500 V	2 CO	50 mm
Mains monitoring relay, 60 Hz	SSU36	3~	208 V, 460 V, 480 V	2 CO	50 mm

11 pin plug-in 3 phase monitoring relay according to IEC 67-I-18a

Type: SSU33L/... V

1 change over alarm contact 6 A 250 V

Monitoring function



The SSU33 (50Hz) provides comprehensive monitoring of three-phase mains supplies with or without neutral.

The following mains faults are monitored: Error signal \bigcirc U (V \downarrow , V \bigtriangleup):

Exceeding or dropping below the fixed voltage values Umin/Umax for L1-N or L1-L2 (no differential voltage, phase position or frequency fault).

Error signal \bigcirc U, $\triangle \varphi$, $\triangle f$:

One or more of the three voltages, phase positions, phase sequence or the mains frequency are diverging from the required value.

Depending on the nature of their occurrence $\Delta\text{-errors}$ are evaluated cumulatively. Any error is signalled by the red LED and is reported after expiry of the set alarmdelay time. In the correct status (ok) the green LED is illuminated (4-5 open, 4-7 closed).

		,
Measuring circuit data	Type star with N	Type delta
Nominal mains voltage	230 V	400 V
Constant under voltage threshold \pm 5 %	$L1 - N \le 160 V$	$L1-L2 \le 280 V$
Constant over voltage threshold \pm 5 %	$L1 - N \ge 275 V$	$L1-L2 \ge 480 V$
Difference voltage adjustment range 1)	20 100 V	20 100 V to N
$arphi$ adjustment range $^{1)}$	3 15 °	3 15 °
f adjustment range ¹⁾	3 15 Hz	3 15 Hz
¹⁾ adjustment with the same rotary knob		
Time data		
Alarm delay adjustment range	0.2 5 s	
Reset time	50 ms	
Contacts		
Type / Material	1 CO, micro disconr	nection / AgNi
Rated operational current	6 A	
Max. inrush current (10 ms)	30 A	
Max. switching voltage	250 V	
Max. AC load AC-1 (Fig.1)	1500 VA	
Max. DC load DC-1, 30 V / 250 V (Fig.2)	180 W / 75 W	
Recommended min. contact load	10 mA / 12 V	
Power supply data	Type star with N	Type delta
Nominal mains voltage	230 V	400 V
Operating voltage range	160 275 V	280 470 V
Power consumption	1.5 W	1.5 W
Input current	1.5 mA	1.5 mA
Frequency	50 Hz	50 Hz
Insulation		
Test voltage between contacts and supply	2 kVrms 1 minute (b	asic insulation)
General specifications		
Ambient temperature storage /operation	-40 +85 °C / -25	+60 °C
Mechanical life of contacts	30 x 10 ⁶ operations	
Ingress protection degree	IP 40 when plugged	
Housing material	Lexan, alu front plate	e
Weight	300 g	
Standard types		_
AC 230 50 Hz	SSU33L/AC230V	(Star connection)

AC 400 50 Hz

Accessories: Socket: Retention clip: Front panel mounting set:

supply data	Type star with N	Type delta	
l mains voltage	230 V	400 V	
ng voltage range	160 275 V	280 470 V	
consumption	1.5 W	1.5 W	
irrent	1.5 mA	1.5 mA	
су	50 Hz	50 Hz	
ion			

SSU33L/AC230V	(Star connection)
SSU33L/AC400V	(delta connection)

S-3B HF-24 FZ-23





Connection diagram



Fig.1 AC voltage endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities



50 Hz, 3 phase monitoring relay DIN Rail mounting according to DIN 43 880

Type: SSU34/... V

Monitoring relay for under / over voltage, phase sequence, phase loss, phase angle, frequency, asymmetry. Star or delta operation. 2 change over alarm contacts 6 A 250V

Monitoring function



The SSU34 (50Hz) provide comprehensive monitoring of three-phase mains supplies with or without neutral.

The following mains faults are monitored: Error signal \bigcirc U (Va, Va):

Exceeding or dropping below the set voltage values Umin/Umax for L1-N or L1-L3,L (no differential voltage, phase position or frequency fault).

/ AgNi

In case of power failure the alarm is activated without delay!

Error signal **2** ΔU , $\Delta \phi$, Δf :

One or more of the three voltages, phase positions, or the mains frequency are diverging from the required value. Depending on the nature of their occurrence Δ -errors are evaluated cumulatively. Error signal ③:

Connection polarity reversal (wrong phase-sequence). Any error is signalled by the red LED "fail" and is reported after expiry of the set alarm-delay time (for error signal ③ undelayed) via 5-6 and 7-8. In the correct status (ok) the green LED is illuminated (5-6 and 7-8 open, 5-4 and 7-3 closed).

100 V	400 V	500 V
40 55	160 225	200 280
61 70	235 275	300 350
5 25	20 100	20 100
3 15	3 15	3 15
3 15	3 15	3 15
	40 55 61 70 5 25 3 15	40 55 160 225 61 70 235 275 5 25 20 100 3 15 3 15

 $^{1)}$ L - N $^{2)}$ adjustment with the same rotary knob

Time data	
Alarm delay adjustment range	0.2 5 s
Reset time	100 400 ms
Contacts	
Type / material	2 CO, micro disconnection
	F A

Rated operational current	5 A
Max. inrush current (20 ms)	15 A
Max. AC switching voltage AC-1	250 V
Max. AC load AC-1 (Fig.1)	1250 VA
Max. DC load 30 V / 250 V DC-1	150 W / 60 W
Recommended min. contact load	10 mA / 12 V

Power supply data			
Nominal mains voltage	100 V	400 V	500 V
Operating voltage range [V] ¹⁾	35 70	140 285	180 360
Power consumption [W]	≤ 1.5	≤ 1.5	≤ 1.5
Input current [mA]	150	30	25
Frequency [Hz]	50	50	50

Insulation

Test voltage between	contacts and supply
----------------------	---------------------

General specifications

Ambient temperature storage /operation Mechanical life of contacts Ingress protection degree Max. screw torque Housing material / Weight

Standard types

50 Hz , AC 100, 400, 500 " ..." enter the voltage for full type designation



30 x 10⁶ operations

3 kVrms 1 minute (basic insulation)

-40 ... +85 °C/-10 ...+60 °C

Housing: IP 40, terminals: IP 20

SSU34/AC...V





Connection diagram



Fig. 1 AC electrical endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947 CE



60 Hz, 3 phase monitoring relay DIN Rail mounting according to DIN 43 880

Type: SSU36/... V

Monitoring relay for under / over voltage, phase sequence, phase loss, phase angle, frequency, asymmetry. Star or delta operation. 2 change over alarm contacts 6 A 250V

Monitoring function



In case of power failure the alarm is activated without delay

Error signal **2** ΔU , $\Delta \phi$, Δf :

One or more of the three voltages, phase positions, or the mains frequency are diverging from the required value. Depending on the nature of their occurrence Δ -errors are evaluated cumulatively. Error signal ③:

The SSU36 (60Hz) provide comprehensive

The following mains faults are monitored:

Exceeding or dropping below the set voltage

values Umin/Umax for L1-N or L1-L3,L (no diffe-

rential voltage, phase position or frequency fault).

or without neutral.

Error signal \bigcirc U (V $_{\Delta}$, V $_{\perp}$):

monitoring of three-phase mains supplies with

Connection polarity reversal (wrong phase-sequence). Any error is signalled by the red LED "fail" and is reported after expiry of the set alarm-delay time (for error signal ③ undelayed) via 5-6 and 7-8. In the correct status (ok) the green LED is illuminated (5-6 and 7-8 open, 5-4 and 7-3 closed).

Measuring circuit data			
Nominal mains voltage	208 V	460 V	480 V
Under voltage adj. range [V] 1)	85 115	186 260	194 270
Over voltage adj. range [V] ¹⁾	125 145	270 318	284 332
Δ voltage adj. range [V] ^{1) 2)}	10 50	20 100	20 100
$\Delta \phi$ adjustment range [°] ²⁾	5 24	4 21	4 21
Δf adjustment range [Hz] $^{2)}$	3 22	3 19	3 19
¹⁾ L - N ²⁾ adjustment with the same rotary knob			

0.2 ... 5 s

5 A 15 A

250 V

1250 VA

150 W / 60 W

10 mA / 12 V

100 ... 400 ms

Time data

Alarm delay adjustment range Reset time

Contacts
Type / material
Rated operational current
Max. inrush current (20 ms)
Max. AC switching voltage AC-1
Max. AC load AC-1 (Fig.1)
Max. DC load 30 V / 250 V DC-1
Recommended min. contact load

Power supply data			
Nominal mains voltage	208 V	460 V	480 V
Operating voltage range [V] ¹⁾	75 150	160 331	170 346
Power consumption [W]	≤ 1.5	≤ 1.5	≤ 1.5
Input current [mA]	70	25	25
Frequency [Hz]	60	60	60

Insulation

Test voltage between contacts and supply
--

General specifications

Ambient temperature storage /operation Mechanical life of contacts Ingress protection degree Max. screw torque Housing material / Weight

Standard types

60 Hz , AC 208, 460, 480

" ... " enter the voltage for full type designation

3 kVrms 1 minute (basic insulation)

2 CO, micro disconnection / AgNi

-40 ... +85 °C / -10 ...+60 °C 30 x 10⁶ operations Housing: IP 40, terminals: IP 20 0.5 Nm Lexan / 350 g

SSU36/AC...V





Connection diagram



Fig. 1 AC electrical endurance



Fig. 2 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947 CE 💥





3.5 Isolation Monitoring



Application	Types	Monitoring	Monitoring ratings	Output contacts	Design
Isolation monitoring, DC networks	ESU-D2		1 50 kΩ	1 CO / 1 CO+NO	50 mm

ESU-D2

Insulation monitoring relay for unearthed DC-networks **DIN Rail mounting according to DIN 43 880**



Type: ESU-D2/... V

Earth insulation resistance monitoring relay Pre alarm 1 CO and main alarm 1 NO + 1 CO contact outputs 5 A / 250 V UC 24 ... 48 V, UC 110 ... 240 V operating voltages, monitoring of DC 12 ... 48 V power supply networks. Monitoring of earth interruption on the device. The device measures single or combined resistances occurring against + or - pole of the DC network. Adjustable alarm delay. Proved reliability in rolling stock applications.

Monitoring function



ouving of the state

The ESU-D2 monitors the isolation resistance in non-grounded DC-networks (24 – 48 V).

Two alarm steps (prealarm AL1 and main alarm AL2) are indicated via separate output contacts.

Displays: bargraph-display of the measured earthing resistance (green = ok). Two red LEDs show the ground tenden-

cy towards plus (+) or minus (-). Output terminals 5 V for the external display of the earthing

resistance (0,1 V/kΩ).

Test functions: Periodic automatic check, also with key "Test".

Environmental failures: monitoring of AC-short circuit, overvoltage, ground interruption.

Measuring circuit data	
Measuring / setting range for pre alarm	1 50 kΩ / 4 30 kΩ
Constant value for main alarm	4 kΩ
Tolerance	≤ 10 %
Overvoltage alarm level of DC network	60 V
Input current + \rightarrow -	≤ 5 mA
Sampling current pulses +/- \rightarrow earth	0.2 mA
Overvoltage safety from earth to +/- poles	AC 250 V
Max. capacity $+/- \rightarrow$ earth	1.5 μF ¹⁾

1) Types for capacitances until 60 µF on request

Time data

Alarm delay time adjustment range Fault detection time Auto reset time, fail to OK

Contacts

Type / Material Rated operational current / min. contact load Max. switching voltage (Fig. 1)

Power supply

Nominal voltage Operation voltage range Power consumption Voltage failure buffering

Insulation

Test voltage contacts to other circuits

General specifications

Ambient temperature storage /operation Ingress protection degree Max. screw torque Weight

Standard types UC 110-240 UC24-48

Connection diagram



Connect E1, E2 separately on E.

Fig. 1 DC load limit curve



Dimensions [mm]



Technical approvals, conformities

EN 60947



2 CO, 1 NO micro disconnection / AgNi 5 A / 1 mA 12 V 250 V

UC 110 – 240 V	
88 265 V	
2 W	
≥ 50 ms	

2 kVrms 1 minute

0.1 ... 10 s

800 ms

1 s

-40 ... 85 °C / -10 ... 60 °C Housing: IP 40, terminals: IP 20 0.5 Nm 250 g

ESU-D2/UC110-240V ESU-D2/UC24-48V


3.6 Monitoring Modules



The modular monitoring system consists of individual plug-in monitoring modules with front cover, an 11-pole plug-in relay and a system socket with retaining spring.

The individual combination allows an optimal device selection for the foreseen application.

Later modifications as for example an exchange of relay from mechanical contacts to a relay with solid-state outputs are possible at any time. The user profits of a universal system of worldwide unique flexibility.



Notes

	 				 	 			 		-								
							 											-	
		 			 	 	 			 	 	 	 					_	
	 		 	 	-														
																		-	
																		$ \rightarrow$	
	 					 	 			 		 	 					-+	
			 															-+	
		 				 	 			 	 	-							
					 	 	 			 		 	 					_	
				 	 	 	 	 		 	 	 	 	 				-	
																		-	
				 	 	 	 	 		 	 	 	 	 				_	
	 						 											\neg	
																		-+	
	 		 				 											\rightarrow	
							 					 						$ \rightarrow$	
																		\neg	
							 					 						-+	
	 		 				 					 						-+	
	 		 				 											-+	
																		\neg	



The modular Comat monitoring CT System

The monitoring relays consist of plug-in CT electronic modules and 11-pole output relays. Both system components can be combined in a variety of combinations. This allows adapting the system for the specific application. Subsequent modifications, for example a change from mechanical contacts to solid-state outputs, are possible at any time just by replacing the relav.

This system provides the user a complete universal system with worldwide unmatched flexibility.

The system sockets C12B0 or CS-155 serve as a basis for the secure

reception of the electronic modules. The sockets have a 4-pole module

slot in which the CT modules lock firmly and vibration proof also without

With the A2 connector bridge "C-A2", the neutral conductor (N/-) can be

connected from socket to socket. It reduces wiring work considerably.

Robust terminals for wires up to 4mm² and spacious labeling are other

Clear markings close to the terminal connections on the sockets make it

The CT modules are proof of the practical oriented experiences of

Comat in the field of industrial electronics. All control and display ele-

ments are arranged easy accessible at all times on the front side of the

modules. The functions and settings are self-explanatory schematically illustrated on the front and allow to review the set values also during

A transparent cover over the module setting components provides protection from unintentional settings and additionally links the module to

Triggering is performed with the operating voltage. (L1 or +). No potentialfree contacts are therefore required. The triggering complies to machine

The output relays show the connection diagram and the technical values on the front side, (exception C3 and C5 relays). A color code indicates an AC coil with red and a DC coil with blue color. Most of the relays

The standard contacts have proven its reliability for high switching current applications over many years. The contact material AgNi permits a wide switching range and due to the large dimensioning they are designed for a high number of switching cycles. The high breaking capacity of up to 10A/400V and a low load switching capability of 12V/10mA makes the contact suitable for the use in main circuits as well as for low

The twin contacts are switching the load circuit with 2 independent contact tongues. The switching safety for low currents is therefore 100 times higher compared to a single contact relay. Despite the high switching capacity of up to 6A/250V, these contacts are very suitable to switch

the output relay. Contact is made with reliable twin knife contacts.

advantages of this practical Comat modular system.

standards. Parallel connection to B1 is admissible.

have a lockable test button for manual operation.

easy to identify the connections for wiring and servicing.



Solid-state relays are specially recommended for applications of high switching cycles, for example for repeat cycle timers, flushing lights, but also for high inductive switching loads of solenoid valves, couplings, motors, etc. The solid state relays are also suitable for capacitive loads, for example long power lines, or compensated lighting circuits.

Additional protection circuits of the output or of the load are not necessary in any application for this type of Comat relays.

as chemical plants, sewage plants etc. and are therefore an excellent choice for the employment in such environments.

The solid-sate relays are insensitive in any aggressive environment such

low currants and voltages up to 1mA/6V.

voltage applications.

operation.

the output relay.

The train symbol indicates products available in a special railway execution according EN 50155. Please refer to our special railway brochure for details.

CT512, CT515, CT516

Plug-in current monitoring modules (combined with industrial relays) 0.2 A, 2 A, 6 A. DC 24 V operation



Туре

-(2)

-0

supply

мах

¤¤+

R

P.

Туре

t

tr

CT512, CT515, CT516 /24V R

CT512R, CT515R, CT516R /36V R

Plug-in current monitoring modules for sockets with module slot in combination with plug-in relays. DC 24 V operation. LED alarm state indicators for OK and fail. Separate adjustment of upper and lower level.



300 mV

100 ms

DC 24 V

18 ... 30 V

3 ... 7 mA

- 30 V

25 g

≤ 3 %

Time data

Alarm delay time settings Reset time

Power supply Nominal voltage Operation voltage range Supply current Polarity reversal protection

Temperature drift -25 ... 60 °C

General specifications

Ambient temperature storage/operation Ingress Protection degree Housing material Weight

Voltage drop on internal shunt res. @ Imax

-40 ... 85 °C / -25 ... 60 °C IP 40 when plugged in Lexan

100 ms, 500 ms, 2 s

200 mV

DC 36 V

5 mA

- 51 V

18 ... 45 V

≤3%

100 mV

≤ 3 %

Connection diagram



Dimensions [mm]



Standard types CT512/, CT515/, CT516/ DC24

CT51x/DC24V R





Remark: This module is part of several ready for connection units consisting of socket, relay and module. A wide variety of suitable relays is available.

Technical approvals, conformities



CT524

Plug-in DC voltage monitoring module. DC 24 V operation.

(combined with industrial relays)

Туре

CT524/24V R

Plug-in DC voltage monitoring module for sockets with module slot in combination with 11p plug-in relays. DC 24 V operation. LED alarm state indicators for OK and fail. Separate adjustment of upper and lower level.



Standard types DC 24

CT524/DC24V R

Remark: This module is part of several ready for connection units consisting of socket, relay and module. A wide variety of suitable relays is available.

Technical approvals, conformities







DC Voltage Monitoring-Set **DC Current Monitoring-Set**



Power Relay

╘┤┾╎┾╎┝

Control Relay

╵#<u>╵</u>#╵#└─

Signal Relay '*#[|]'#[|]*#-⇔ 10µAu



Relay with 3 twin contacts,

The twin contact relay with highest switching reliability for signal circuits ranging from 1mA 5V. Recommend. upto 0,2A 30V.



CT516.3-T32/DC24V R

Power Relay ピーチーク



C31L

Universal Power Relay 10A with 3 power changeover-contacts this is the robust relay for AC and DC circuits ranging from 50 mA 10 V.

10 A 250V~

50 mA 10 V



Set Order-Nr.: CT524.31/DC24V

- Delivery includes: Relay C31L/DC24V
- Module CT524/DC24V
- Front cover FS-C Socket C12B0
- Retaining clip HF-32

CT524.31R/...V

DC 24, 36V

Set Order-Nr.:

CT512.31/DC24V

- Delivery includes:
- Relay C31L/DC24V Module CT512/DC24V
- Front cover FS-C
- Socket C12B0 • Retaining clip HF-32

CT512.31R/...V

DC 24, 36V

Set Order-Nr.:

CT515.31/DC24V

- Delivery includes: Relay C31L/24V
- Module CT515/24V
- · Front cover FS-C Socket C12B0
- Retaining clip HF-32
- CT515.31R/...V

DC 24, 36V

Set Order-Nr.:

CT516.31/DC24V

- Delivery includes: Relay C31L/DC24V Module CT516/DC24V
- Front cover FS-C
- Socket C12B0
 Retaining clip HF-32
- CT516.31R/...V DC 24, 36V

Control Relay





C32L

Relay with

3 twin contacts 6A The control relay with highest switching reliablility for control and signal circuits ranging from 10 mA 5V.





Set Order-Nr.:								
CT524.32/DC24V								
Delivery includes: • Relay C32L/DC24V • Module CT524/DC24V • Front cover FS-C • Socket C12B0 • Retaining clip HF-32	Ţ							
CT524.32R/V								
DC 24, 36V								
Set Order-Nr.:								
CT512.32/DC24V								
Delivery includes: • Relay C32L/DC24V • Module CT512/DC24V								



 Socket C12B0 • Retaining clip HF-32





Set Order-Nr.:

- CT515.32/DC24V
- Delivery includes: Relay C32L/24V
- Module CT515/24V Front cover FS-C
- Socket C12B0 • Retaining clip HF-32
- CT515.32R/...V





- Front cover FS-C Socket C12B0
- Retaining clip HF-32

DC 24, 36V

Ŧ

CT516.32R/. V



Monitoring Relays 3.6



DC Voltage Monitoring-Set DC Current Monitoring-Set



High Power Relay DC

'≠'≠'≠-亡 16A 400V~

High Power Relay DC

1000

.....







Notes

	 				 	 			 		-								
							 											-	
		 			 	 	 			 	 	 	 					_	
	 		 	 	-														
																		-	
																		$ \rightarrow$	
	 					 	 			 		 	 					-+	
			 															-+	
		 				 	 			 	 	-							
					 	 	 			 		 	 					_	
				 	 	 	 	 		 	 	 	 	 				-	
																		-	
				 	 	 	 	 		 	 	 	 	 				_	
	 						 											\neg	
																		-+	
	 		 				 											\rightarrow	
							 					 						$ \rightarrow$	
																		\neg	
							 					 						-+	
	 		 				 					 						-+	
	 		 				 											-+	
																		\neg	
_		 		 	 	 		 	 	 	 	 	 				 		



4.0 Sockets



Rated current

Specifications Rated load

- All terminals/DIN rail

Cross-section of connecting wire

Integrated retaining clip/plastic

Ambient temperature operation/storage

Associated, plug-in 8-pin MRC relays

Suitable for holding the Releco coding ring For coding the relay and the socket.

- Terminal/terminal

Max. screw torque

Screw dimensions

Labelling space

Connection label

Mounting

Weight

- Single-wire - Multi-wire

Insulation

S2-B

Socket for 8-pin standard relay according to IEC 67-I-5B





Connection diagram

7(A2)	[6 (24)
8(21)	<u>_</u>	5 (22)
1(11)	_	4 (12)
2(A1)	L	3 (14)

Accessories

Coding ring, blue set:

Retaining spring, steel Retaining clip, plastic

S2-B

2-pole, 1 connection level Coding ring optional Integrated retaining clip and labelling space

10 A

10 A / 300 V Test voltage V rms / 1 min 2,5 kV 2,5 kV 4 mm² or 2 x 2,5 mm² 22 - 14 AWG 1,2 Nm M3, Pozi, slot for relay series C2 detachable 1...8; DIN/EN DIN rail T35 or mounting plate -40 (no ice)....60 °C /-40 ... 80 °C 48g

C2-A, C2-G, C2-T

S2-BC

Packaging unit: 5 pcs S3-C, S3-CT (with Timecube) CP-15B

Dimensions [mm]





Technical approvals, conformities



EN 60947-1, EN 61810-1

Туре

S20-B

Socket for 8-pin standard relay according to IEC 60067

Туре	S20-B	_
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	2-pole, 1 connection level	
	Integrated retaining clip and labelling space	
Rated current	10 A	
Specifications		-
Rated load	10 A / 300 V	-
Insulation	Test voltage V rms / 1 min	
– All terminals/DIN rail	2,5 kV	
– Terminal/terminal	2,5 kV	
Cross-section of connecting wire		
– Single-wire	2,5 mm ² or 2 x 1,5 mm ²	
– Multi-wire	22 - 14 AWG	
Max. screw torque	0,7 Nm	
Screw dimensions	M3, Pozi, slot	
Integrated retaining clip/plastic	for relay series C20	
Labelling space	detachable	
Connection label	18; DIN/EN	
Mounting	DIN rail T35 or mounting plate	
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C	Connect
Weight	48 g	20111001
Associated, plug-in 8-pin relays	C20-A	- 7(A2) 8(21)





Connection diagram

7(A2)	·[6 (24)
8(21)	t[5(22)
1(11)	F[4 (12)
2(A1)	L[3 (14)

Dimensions [mm]



Technical approvals, conformities



EN 60947-1, EN 61810-1

Accessories

Retaining spring, steel Retaining clip, plastic HF-32, HF-33 (with Timecube) S30-CM

MRC series

Туре

S2-L, S2-P, S2-PO

Socket for PCB and soldering according to IEC 67-I-5b for relays C2-...



S2-L

10 A

2,5 kV

10 A / 300 V

1...8; DIN/EN

test voltage Vrms / 1min

2-pole, flange panel mountable

S2-P 2-pole, printed circuit

S2-PO 2-pole, printed circuit with flange

-40 (no ice)....60 °C /-40 ... 80 °C

Rated current

Specifications

Accessories

Retaining spring, steel

Rated load Insulation Between terminals Connection label Ambient temperature operation/storage Weight

S3-C

17g

Printed cicuit lay-out [mm]



Dimensions [mm]



Technical approvals, conformities



S3-B

Socket for 11-pin standard relay according to IEC 67-I-18b

10 A

2,5 kV

2,5 kV

10 A / 250 V

22 - 14 AWG

M3, Pozi, slot

detachable 1... 11; DIN/EN

55g

for relay series C3

C3-E, C3-N, C3-S

1,2 Nm

Test voltage V rms / 1 min

4 mm² or 2 x 2,5 mm²

Туре

S3-B 3-pole, 1 connection level Coding ring optional Integrated retaining clip and labelling space

Rated current Specifications

Rated load Insulation All terminals/DIN rail - Terminal/terminal Cross-section of connecting wire - Single-wire - Multi-wire Max. screw torque Screw dimensions Integrated retaining clip/plastic Labelling space Connection label Mounting Ambient temperature Weight

Associated, plug-in 11-pin MRC relays

Suitable for holding the Releco coding ring For coding the relay and the socket.

Accessories Coding ring, blue set:

Retaining spring, steel Retaining clip, plastic

S3-BC Packaging unit: 5 pcs S3-C, S3-CT (with Timecube) CP-15B

DIN rail T35 or mounting plate

-40 (no ice)....60 °C /-40 ... 80 °C

C3-A, C3-G, C3-T, C3-X, C3-M, C3-R,





Connection diagram

Dimensions [mm]



Ø8.2 Sockets 4.0 24 Ø5.3 8 MЗ hate ₹Ğ RELECO 3022 3000 29.75 (F) r B 38 <u>n</u>or (???) ⊐ S2-B EA R 7005 1 68

Technical approvals, conformities





MRC series

S30-B Socket for 11-pin standard relay according to IEC 60067

Туре

S30-B 3-pole, 1 connection level Integrated retaining clip and labelling space

Rated current	10 A
Specifications	
Rated load	10 A / 250 V
Insulation	Test voltage V rms / 1 min
All terminals/DIN rail	2,5 kV
– Terminal/terminal	2,5 kV
Cross-section of connecting wire	
– Single-wire	2,5 mm ² or 2 x 1,5 mm ²
– Multi-wire	22 - 14 AWG
Max. screw torque	0,7 Nm
Screw dimensions	M3, Pozi, slot
Integrated retaining clip/plastic	for relay series C30
Labelling space	detachable
Connection label	1 11; DIN/EN
Mounting	DIN rail T35 or mounting plate
Ambient temperature	-40 (no ice)60 °C /-40 80 °C
Weight	55 g
Associated, plug-in 11-pin relays	C30-A, C30-M, C30-T, C30-R, C30-X





Connection diagram

Associated, plug-in 11-pin relays

Accessories

Retaining spring, steel Retaining clip, plastic

HF-32, HF-33 (with Timecube) S30-CM

9 (34)	
10(A2)	8(32)
11(31)	7(24)
1(11)	6 (21)
2(A1)	5(22)
3 (14)	4(12)

Dimensions [mm]





Technical approvals, conformities



S3-MP

Socket for 11-pin standard relay according to IEC 67-I-18b

Туре	S3-MP	
	3-pole, 1 connection level	
	Integrated retaining clip and labelling space	
	Accepts plug-in modules M3P in parallel	
	with the coil	
Rated current	10 A	
Specifications		
Rated load	10 A / 250 V	
Insulation	Test voltage V rms / 1 min	
– All terminals/DIN rail	2,5 kV	
– Terminal/terminal	2,5 kV	
Cross-section of connecting wire		
– Single-wire	4 mm ² or 2 x 2,5 mm ²	
– Multi-wire	22 - 14 AWG	
Max. screw torque	1,2 Nm	
Screw dimensions	M3, Pozi, slot	
Integrated retaining clip/plastic	for relay series C3	
Labelling space	detachable	
Connection label	111; DIN/EN	Connection diagram
Mounting	DIN rail T35 or mounting plate	
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C	10(A2)
Weight	54g	

Associated, plug-in 11-pin MRC relays C3-A, C3-G, C3-T, C3-X, C3-M, C3-R, C3-E, C3-N, C3-S

Suitable for holding the Releco coding ring For coding the relay and the socket.

Accessories

Coding ring, blue set:

Paralel module Retaining spring, steel Retaining clip, plastic

S3-BC Packaging unit: 5 pcs M3P S3-C, S3-CT (with Timecube) CP-15B

ORLD OF RE L





Dimensions [mm]





Technical approvals, conformities



MRC series **S3-S** Socket for 11-pin standard relay according to IEC 67-I-18b

S3-S 3-pole, 2 connection level Coding ring optional Integrated retaining clip and labelling space

10 A

10 A / 250 V Test voltage V rms / 1 min 2,5 kV 2,5 kV
4 mm ² or 2 x 2,5 mm ² 22 - 14 AWG 1,2 Nm M3, Pozi, slot for relay series C3 detachable 111; DIN/EN
DIN rail T35 or mounting plate -40 (no ice)60 °C /-40 80 °C 69g

C3-A, C3-G, C3-T, C3-X, C3-M, C3-R, C3-E, C3-N, C3-S

DIN rail or panel mounting. Removable label.

EN /DIN and sequencial numbering. According to EN 60947.1 and IEC 61810.1

Accessories

Coding ring, Set red:

Retaining spring, steel Retaining clip, plastic

S3-BC Packaging unit: 5 pcs S3-C, S3-CT (with Timecube) CP-15B

LD



Connection diagram

10(A2) 11(31)	9 (34) 8 (32)
6 (21) 6 (21)	7(24) 5(22)
2 (A1) 1 (11)	3 (14) 4 (12)

Dimensions [mm]







EN 60947-1, EN 61810-1

Туре

Rated current

Specifications Rated load Insulation

- Single-wire - Multi-wire Max. screw torque Screw dimensions

Labelling space Connection label Mounting

Weight

- All terminals/DIN rail - Terminal/terminal

Cross-section of connecting wire

Integrated retaining clip/plastic

Ambient temperature operation/storage

Associated, plug-in 11-pin MRC relays

Suitable for holding the Releco coding ring

For coding the relay and the socket.

MRC series S3-L, S3-P, S3-PO

Туре

Weight

Socket for PCB and soldering, according to IEC 67-I-5b for relays C3-...



Retaining spring, steel

S3-C





Dimensions [mm]



Technical approvals, conformities





Sockets 4.0

Δ

C12B0

Socket for 11 pin plug-in relays C3, C31, C32 and plug-in control modules



Туре:	C12B0 R 3-pole, 1 level Module slot for timer- and monitoring modules, over voltage suppressing- and LED indicator modules coil bridge bus bar to connect in A2	
Rated current	10 A	
Specifications		18220
Rated load	10 A / 400 V (cURus: 250 V)	
Insulation	Test voltage Vrms / 1 min	
– All terminals/DIN rail	2,5 kV	
– Terminal/terminal	2,5 kV	
Cross-section of connecting wire		
– Single-wire	1 x 6 mm², 2 x 1,5 mm²	
– Multi-wire	1 x 4 mm ² /AWG12, 2 x 1,5 mm ² /AWG16	Connection diagram
Max. screw torque	0,7 Nm	
Screw dimensions	M3, Pozi, slot	
Labelling space	detachable	11 (31)
Connection label	112; DIN/EN	6 (21) 7 (24)
Mounting	DIN rail TS35 or panel mounting 1 x M4	
Ambient temperature operation/storage	-25 (no ice)60 °C /-40 80 °C	12 (B1) → ⊂ ⊃ → 3 (14
Weight	61g	
-		
Associated plug-in 11-pin relays	C3, C31, C32	Dimensions [mm]
Accessories		
Retaining springs, steel	HF-32 (Relays C31, C32)	
	S3-C (Relays C3)	
	S3-CT (Timecube + Relays C3)	
	HF-33 (Timecube + Relays C31, C32)	
Coil bridge bus bar	C-A2	
Marking strip cardboard white 8 x 16	L-16/1 (under transp. plastic cover)	
R-Modul		
Module LED	RL1/UC 12-24 V	C-A2-
	RL1/AC 110-240 V	FOR PLUG-IN MODULES
Module freewheeling diode	RD1/DC 12-220 V	FOR PLUC MODULES
Module freewheeling diode + LED	RDL1/DC 12-24 V	38 4 20
	RDL1/DC 48 V	
Module RC-suppressor	RC1/UC 12-48 V	
	RC1/UC 110-240 V	
Module RC-suppressor + LED	RCL1/UC 24 V	
	RCL1/UC 48 V	
	RCL1/AC 110-240 V	

Technical approvals, conformities



S4-J

Socket for 14-pin standard relay according to IEC 67-I-18b

Туре

S4-J 4-pole, 2 connection level Logic wiring Integrated retaining clip and labelling space

Rated current	10 A
Specifications	
Rated load	10 A / 250 V
Insulation	Test voltage V rms / 1 min
– All terminals/DIN rail	2,5 kV
– Terminal/terminal	2,5 kV
Cross-section of connecting wire	
- Single-wire	4 mm ² or 2 x 2,5 mm ²
– Multi-wire	22 - 14 AWG
Max. screw torque	1 Nm
Screw dimensions	M3,5, Philips-slot (combo)
Integrated retaining clip/plastic	for relay series C4
Labelling space	detachable
Connection label	114; DIN/EN
Mounting	DIN rail TS35 or mounting plate
Ambient temperature	-40 (no ice)60 °C /-40 80 °C
Weight	80g
Associated, plug-in 11-pin MRC relays	C4-A, C4-X, C4-R

Accessories

Retaining spring, steel Retaining clip, plastic

C4-A, C4-X, C4-R

S4-C **CP-15B**





Connection diagram

12(41) 14(A2)	10(42) 11(44)
9 (31)	7(32) 8(34)
6 (21)	4(22) 5(24)
3(11) 13(A1)	1 (12) 2 (14)

Dimensions [mm]







CE Lloyd's 📈 EN 60947, EN 61810

MRC series

Туре

S4-L, S4-P, S4-PO

Socket for soldering and printed circuit for relays C4-...



S4-L

10 A

10 A / 250 V

2.5 kV rms 1 min

-30 °C ... +60 °C

4-pole, flange panel mountable

S4-P 4-pole, printed circuit

S4-PO 4-pole, printed circuit with flange

Rated current

Specifications

Rated load Test voltage benachbarte Pole Ambient temperature Weight

Accessories

Retaining spring, steel

S4-CL

21g



Printed cicuit lay-out [mm]



Dimensions [mm]

S4-PO S4-L



∬ 0 1.<u>2-∥- ---</u>2.8

Technical approvals, conformities



S5-S

Socket for square base relay C5-...

Туре

S5-S

3-pole, 2 level Logic wiring Integrated retaining clip and labelling space

Rated current	16 A
Specifications	
Rated load	16 A / 400 V
Insulation	Test voltage V rms / 1 min
– All terminals/DIN rail	4 kV
– Terminal/terminal	4 kV
Cross-section of connecting wire	
– Single-wire	4 mm ² or 2 x 2,5 mm ²
– Multi-wire	22 - 14 AWG
Max. screw torque	1,2 Nm
Screw dimensions	M3,5, Pozi, slot
Integrated retaining clip/plastic	for relay series C5
Labelling space	detachable
Connection label	19, A, B; DIN/EN
Mounting	DIN rail TS35 or mounting plate
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C
Weight	81g

Associated, plug-in 11-pin MRC relays

Mounting in DIN rail TS35 or mounting plate. Labelling space. According to EN 60947 and IEC 61810 $\,$

Accessories

Retaining spring, steel Retaining clip, plastic S4-C CP-15B

C5-A, C5-G, C5-X, C5-M, C5-R





Connection diagram

9 (31) B (A2)	3 (32) 6 (34)
8 (21)	2(22) 5(24)
7 (11) A (A1)	1 (12) 4 (14)









MRC series

Rated current

Specifications Rated load

- All terminal/DIN rail

Cross section of connecting wire

Integrated retaining clip/plastic

- Terminal/terminal

Screw dimensions

Labelling space

Connection label Mounting

Insulation

- Single wire

Multi wire
 Max. screw torque

S5-M

Type:

Socket for square base relay C5-...



Connection diagram

	9 (31)	3 (32) 6 (34)
[11 (B1) → C	8 (21)	2 (22) 5 (24)
10 (A1) —⊂ ⊃	7 (11)	1 (12) 4 (14)

Associated, plug-in 11-pin MRC relays

Ambient temperature operation / storage

Accessories

Weight

Coil bridge bus bar Retaining clip, plastic C-A2 S5MCP

S5-M

16 A

4 kV

4 kV

1 Nm

92g

M3,5, Pozi, slot

detachable 1 ... 12, DIN/EN

for relay series C5

16 A / 400 V

Test voltage Vrms / 1 min

1 x 6 mm², 2 x 2,5 mm²

1 x 6 mm²/AWG10, 2 x 1,5 mm²/AWG16

DIN rail TS35 or panel mounting 1 x M4

-40 (no ice) \ldots 60° C/-40 \ldots 80° C

3-pole, 3 level

indicator modules

Module slot for timer- and monitoring modules,

over voltage suppressing- and LED

coil bridge bus bar to connect in A2

C5-A, C5-G, C5-X, C5-M, C5-R

Dimensions [mm] 65 28.7 Б 27.6 M4 Ċ 6 @[@ в С 38 ∞ ඕ [🕲 @[@ ඕ 29.5 88



MRC series **S5-L, S5-P, S5-PO**

Socket for soldering and printed circuit for relays C5-...



Туре

S5-L

3-pole, flange panel mountable

S5-P 3-pole, printed circuit

S5-PO 3-pole, printed circuit with flange

-40 (no ice)....60 °C / -40 ... 80 °C

16 A / 400 V (UL: 300 V)

16 A

Rated current

Specifications

Accessories

Retaining spring, steel

Rated load Ambient temperature operation/storage Weight

S4-CL

20g



Printed cicuit lay-out [mm]



Dimensions [mm]



Sockets 4.0

Technical approvals, conformities

₩_(S5-P only) EN 60947-1, EN 61810-1

QRC series S7-C Socket for miniature relays C7-... and C80 series time relays



C83, C85, 84

S7-BB

CP-09B

C7-A2x, C7-T, C7-G, C7-X, C7-W, C7-H

Associated plug-in 8-pin QRC relays Associated C80 time relays

Accessories

Coil bridge bus bar Retaining clip, plastic

Please note:

This socket replaces former socket S7-M fully compatible





Connection diagram

	4 (24)
6 (21)	2(22)
5 (11)	3 (14)
7 (A1)	1 (12)

Dimensions [mm]









QRC series S7-I/O Socket for miniature relays C7-...



Туре	S7-I/O	-
	2-pole, 2 level	
	Integrated clip and marking label	
	Coil bridge bus bar to connect in A2	
	Logic wiring	
Rated current	10 A	
Specifications		
Rated load	10 A / 250 V	
Insulation	Test voltage V rms / 1 min	
– All terminals/DIN rail	2,5 kV	
– Terminal/terminal	2,5 kV	
Cross-section of connecting wire		
– Single-wire	4 mm ² or 2 x 2,5 mm ²	
– Multi-wire	22 - 14 AWG	
Max. screw torque	1,2 Nm	
Screw dimensions	M3, Pozi, slot	
Integrated retaining clip/plastic	for relay series C7	
Labelling space	detachable	
Connection label	18; DIN/EN	Connection diagram
Mounting	DIN rail TS35 or mounting plate	
Ambient temperature operation/storage	-40 (no ice)60 °C / -40 80 °C	8(A2) 4
Weight	38g	9 2
Associated, plug-in 8-pin QRC relays	C7-A2x, C7-T, C7-G, C7-X, C7-W, C7-H	7(A1) 5(11) 1

Associated, plug-in 8-pin QRC relays

Accessories

Coil bridge bus bar Retaining clip, plastic S7-BB CP-01B





Technical approvals, conformities 🔊 🔊 🖓 🖓 🖓 🖓 🖓 🖓

EN 60947-1, EN 61810-1

7(A1)

QRC series S7-16 Socket for miniature relays C7-A10...

Comat RELECO

S7-16
1-pole, 1 lev
Integrated re

Rated current	16 A
Specifications	
Rated load	16 A / 250 V
Insulation	Test voltage V rms / 1 min
– All terminals/DIN rail	2,5 kV
- Terminal/terminal	2,5 kV
Cross-section of connecting wire	
– Single-wire	4 mm ² or 2 x 2,5 mm ²
– Multi-wire	22 - 14 AWG
Max. screw torque	1,2 Nm
Screw dimensions	M3, Pozi, slot
Integrated retaining clip/plastic	for relay series C7-A10
Labelling space	detachable
Connection label	18; DIN/EN
Mounting	DIN rail TS35 or mounting plate
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C
Weight	31g

1-pole, 1 level Integrated retaining clip and labelling space



Connection diagram



Dimensions [mm]

S7-16 for relays C7-A10 (16 A)









Associated, plug-in 5-pin QRC relays

Accessories

Туре

Retaining clip, plastic

CP-07B

C7-A10

QRC series S7-L, S7-P, S7-PO

Socket for PCB and soldering for miniature relays C7



Туре

S7-L

2-pole, flange panel mountable

S7-P 2-pole, printed circuit

S7-PO 2-pole, printed circuit with flange

10 A

Rated current

Specifications Rated load Dielectric strength adjacent pin Connection label Integrated retaining clip/plastic

Ambient temperature operation/storage Weight

Accessories

Retaining clip, plastic for S7-P Retaining clip, plastic for S7-L + S7-PO 10 A / 250 V 2.5 kV rms / 1 min 1...8; DIN/EN for relay series C7 S7-P: (CP-07B) S7-L + S7-PO: (CP-01B) -40 (no ice)....60 °C /-40 ... 80 °C 10g

CP-07B CP-01B



Printed cicuit lay-out [mm]



Dimensions [mm]





Technical approvals, conformities



QRC series

Accessories

Retaining clip, plastic

S9-M

Socket for miniature 4 pole relay C9-...



Туре	S9-M
	4-pole, 2 level
	Integrated clip and marking label
Rated current	6 A
Specifications	
Rated load	6 A / 250 V
Insulation	Test voltage V rms / 1 min
– All terminals/DIN rail	2,5 kV
– Terminal/terminal	2,5 kV
Cross-section of connecting wire	
– Single-wire	4 mm ² or 2 x 2,5 mm ²
– Multi-wire	22 - 14 AWG
Max. screw torque	0.7 Nm
Screw dimensions	M3, Pozi, slot
Integrated retaining clip/plastic	for relay series C9 (CP-01B)
Labelling space	detachable
Connection label	114; DIN/EN
Mounting	DIN rail TS35 or mounting plate
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C
Weight	54g
Socket for 4 poles, QRC relays	C9-A, C9-E, C9-R

CP-01B



Connection diagram

12(41) 14(A2)	4 (42) 8 (44)
11(31)	3 (32) 7 (34)
10(21)	2 (22) 6 (24)
9(11) 13(A1)	1 (12) 5 (14)

Dimensions [mm]









S9M-V4	S9M-V1-	S9M-BX	Bridge c	an be divide	d by hand
$\begin{array}{ccccccc} 44 & 34 & 24 & 14 \\ \otimes & \otimes & \otimes & \otimes \end{array}$		$\overset{14}{\otimes}\overset{44}{\otimes}\overset{34}{\otimes}$	~ ~		4 ⊗
$\begin{array}{ccccccc} 42 & 32 & 22 & 12 \\ \otimes & \otimes & \otimes & \otimes \end{array}$	-		1		2 ⊗
C9 relay S9-M (1)	C9 relay S9-M (2)) C9 re S9-M	- 11	C9 relay S9-M (4)]
	$ \begin{array}{c c} \mathbf{A2} & \mathbf{A2} & \mathbf{A} \\ \otimes & \otimes & \otimes \end{array} $		- 1 11	$\begin{array}{c c} \mathbf{A2} & \mathbf{A2} & \mathbf{A1} \\ \otimes & \otimes & \otimes \end{array}$	11
$\begin{array}{cccc} 41 & 31 & 21 & 11 \\ \otimes & \otimes & \otimes & \otimes \end{array}$		11 41 31 ⊗ ⊗ ⊗			1 ⊗
Cable 24 VD	c s	S9M-V1	Cal	ble 230 VDC	1

QRC series S9-L, S9-P, S9-PO

Socket for PCB and soldering for miniature relays C9

ORLD OF REL А

Туре

S9-L

4-pole, flange panel mountable

S9-P 4-pole, printed circuit

S9-PO 4-pole, printed circuit with flange

6 A

Rated current

Specifications Rated load Dielectric strength adjacent pin Connection label Integrated retaining clip/plastic

Ambient temperature operation/storage Weight

Accessories

Retaining clip, plastic for S9-P Retaining clip, plastic for S9-L + S9-PO 6 A / 250 V 2.5 kV rms / 1 min 1...14; DIN/EN for relay series C9 S9-P: (CP-07B) S9-L + S9-PO: (CP-01B) -40 (no ice)....60 °C /-40 ... 80 °C 12g

CP-07B CP-01B



Printed cicuit lay-out [mm]



Dimensions [mm]





Technical approvals, conformities



IRC series **S10** Socket for Interface relay



Туре

S10

10 A

1-pole, 1 connection level Logic wiring Integrated retaining clip and labelling space Coil bridge bar for A2, 11

Rated current

Specifications	
Rated load	107
Insulation	Test
– All terminals/DIN rail	5 k\
Contact terminals	2,5
Contact / Coil terminals	5 K
Cross-section of connecting wire	
– Single-wire	4 m
– Multi-wire	22 -
Max. screw torque	1,2
Screw dimensions	ΜЗ,
Integrated retaining clip/plastic	for I
Labelling space	deta
Connection label	1;
Mounting	DIN
Ambient temperature operation/storage	-40
Weight	23g

A / 250 V st voltage V rms / 1 min ٢V KV ٢V mm² or 2 x 2,5 mm² - 14 AWG Nm 3, Pozi, slot relay series C10, CSS (CP-17B) tachable .5; DIN/EN N rail TS35 or mounting plate 0 (no ice)....60 °C /-40 ... 80 °C 23g

Connection diagram



Socket for plug-in 10A IRC relays

Coil bridge bars

C10-A, C10-T, CSS, C10-G

S10-BB **CP-17B**

Dimensions [mm]









EN 60947-1, EN 61810-1

Accessories

Retaining clip, plastic

S10-P

Printed circuit socket for Interface relays, C10 and CSS



Type:

S10-P Printed circuit socket for 1-pole IRC relay

10 A

Specifications

Rated current

Rated load Insulation Coil terminals to contacts Hard Brass tin-platted terminals Integrated retaining clip/plastic Labelling space Connection label Ambient temperature operation/storage Weight

10 A / 250 V Test voltage V rms / 1 min 5 kV rms 0,5 x 1 mm for relay series C10, CSS (CP-24B) detachable 1...5; DIN/EN -40 (no ice)....60 °C /-40 ... 80 °C 7g



Accessories

Retaining clip, plastic

CP-24B













IRC series S12 Socket for Interface relay



Туре	S12	
	I/O socket for C12 relays with 2 x CO	
	Logic connection , 5 A	
Rated current	5 A	
Specifications		_
Rated load	5 A / 250 V	
Insulation	Test voltage V rms / 1 min	
– All terminals/DIN rail	5 kV	
Contacts terminals	2,5 kV	
Contacts / Coil terminals	5 kV	
Cross-section of connecting wire		
– Single-wire	4 mm ² or 2 x 2,5 mm ²	
– Multi-wire	22 - 14 AWG	
Max. screw torque	1,2 Nm	
Screw dimensions	M3, Pozi, slot	
Integrated retaining clip/plastic	for relay series C12 (CP-17B)	
Labelling space	detachable	
Connection label	19; DIN/EN	
Mounting	DIN rail TS35 or mounting plate	Conn
Ambient temperature operation/storage	-40 (no ice)60 °C /-40 80 °C	
Weight	31g	
		5(A2
Socket for IRC relays	C12, C12G	6 (A2



Connection diagram

5(A2) 6(A2)	9(22) 3(12) 3(12) 2(11) 7(24) 1(14)
4(A1)	7(24) 1(14)

Socket for IRC rela

Accessories Coil bridge bars

Retaining clip, plastic

V10-G, V40-G, V10-R, V40-R, V10-A, V40-A B20-G, B20-R, B20-A, CP-07B CP-17B

Dimensions [mm]







Technical approvals, conformities





S12-P

Printed circuit socket for Interface relays, C12



Туре:	S12-P Printed circuit socket for 2-pole C12 relay							
Rated current	5 A							
Specifications								
Rated load	5 A / 250 V							
Insulation	Test voltage V rms / 1 min							
– Pole / Pole	3 kV							
 Coil / contact terminals 	5 kV							
Hard brass tin-plated terminals	0,5 x 1 mm							
Weight	7g							
Integrated retaining clip/plastic	for relay series C12, (CP-24B)							



Accessories

Retaining clip, plastic

CP-24B

Dimensions [mm]







Technical approvals, conformities

EC 61810 EN 60947



Notes

					_			_								 		 		
								-				 		 		 		 	 	
_					_			_			 	 	 			 		 		
-		 	 	 	-			-			 	 	 		 	 		 		
								_			 		 		 	 				
		 	 	 				-			 	 	 	 	 	 		 	 	
	-			 			-	+	+										\rightarrow	
					_		_	_					 		 	 			$ \rightarrow $	
								\uparrow												
	-			 			-	+											\rightarrow	
								_								 				
		 	 	 				-			 		 							
				 	_			_			 	 	 		 	 		 		
-								-			_									
					_			_								 		 		
		 	 	 	-		_	-		_	 	 	 		 	 		 		
		 	 	 				_			 	 	 		 	 		 	 	
								1												
								+	\rightarrow											
-				 				+								 			\rightarrow	
								+												
-	-			 			-	+											\rightarrow	
				 				_											$ \rightarrow$	
	-			 				+												
-				 			_	+	\rightarrow							 			\rightarrow	
	-			 			-	+	-										\rightarrow	
				 				-											\rightarrow	


5.0 SMS Relay



- Easy configuration with PC and «FAST SMS SET™» configuration software
- Sequential alert messaging to 5 different subscribers
- Analog and/or digital inputs
- Monitoring of all inputs and outputs with SMS messaging
- Request of analogue values by SMS
- Remote control of outputs by SMS
- Power failure notification by SMS messaging
- Status change messages by SMS
- User defined message text
- Remote access and status display by PC/Notebook
- Call-In Function
- Alarm messages by e-mail
- App for Android operated smartphones







Monitoring | Alerting | Controlling

SMS Relay	
CMS-10	DIN

Configuration software

Digital

Inputs

SWS Relay - SWS_config_for_fly





Language



5M51	Relay Input	r settings			
Digital Analog IF Event message (Input is HIGH)		Send status message	a		
Madison Square Sarden		1. Receiver	John Hea	e,+1123#5670	
Water pump DN		2. Receiver	Doug Ligh	N.+8611952288	
Remaring chars for necesage (max. 100 chars)	35	3. Receiver	Water Co	xol,+219647382	
	and a state of	4. Receiver	Foy Veni,	+413847553	
CNI message delay (SMS send only / Input is continuor HIGH duri	ng the set time)	5. Receiver	Max Doo	+3391827364	2
🕫 Event message (Input is LOW)		 Confirmation Waiting for confirmation 	DR	10	Hinutes
Madixon Square Barden		Number of bops if no	and the state	2	Repetitio
Water pump DFF		seceived	Contraction	14	
Remaining chars for nessage (max. 100 chars)	34	F Keyword for confi	mation	Úk.	
☑ Off [®] message delay (SMS send only if Input is continuous LOW due		If not selected. No ke by identification of ve			
15 (01.393) 9 i ∩ n ∩ h					

Analog Inputs

- ✓ Free selectable units e.g.: I, kg, m³, psi, F, sqm, lbs
- Any min/max value can be defined. Scale adjustment automatic
- ✓ Value inquire by SMS
- Automatic alerting if min/max values are exceeded
- Status display on PC/Notebook via GSM network

2 2 1 4 1 A	市 昭 ×	10 B	10.4							
tings Phonebook Isput 1	Input 2	hpu 3 Ir	put 4 Input 5 In	put 6	0.000001 0.000	Aput 2 Dulpu	A Sugard E &			
			SMS	Rel	ay Inp	out 2 s	ettings			
Ngibil Analog							Send status message to			
Scaling and unit Unit Line		i.	400 2 200		ΠD		1. Receiver	John Hei	e,+112345670	-
Decinal format dd		Liter	≧ <u>200</u> 100	1			2. Receiver	Doug Lig	N, 48611952288	•
min 20		Liter	0		34567		3.Receiver	Valer D	xol,+219647382	•
Messages				Va	tage on input	M	4. Receiver	Floy Veni	+413847553	
Tark overflow				_			5. Receiver	Max Doo	+3391827364	•
220.0 Uts				*	1	-				
Tank level is OK.				-	1	P /	 Continuation Waiting for continuation 		10	Hinutes
1200 Uta				_	P	+			1	
Roll tank now		20.0	Ulw				Number of loops if no o seceived	anfimation	5	Repetitions
IF If change is > than	Value East	naining vol.				10	Convertile continu		CK.	_
P Message delay		10	C.	Ch			It not selected: No key	word meeded to	continuation. Co	
Manage lock fine		12					by identification of send	iers phone nue	bes (May or no m	essage test)
Send value periodich		1.4			~ ~ ~ ~					
A sero vake periodiciji	08.00	_	* Weekly Monday	•	C Month	•				
Decisión exercises	-	volume is		-	P					
Periodic message	Request	Task leve								
in comparison	Anover	Tank vok				_				



One touch to have everything under control

Comat is presenting an app making handling, controlling, monitoring and remote switching of a SMS-Relay even more easily and clearly presented. Switch on your heating, open your garage door or irrigate your lawn simply by clicking a button. Your smart phone is thereby your remote control. After installation and configuration the SMS Relay from Comat and after download and installation of the App from Google Playstore, just import the device configuration data to your smart phone, enter the phone number of the device and it is ready for use.

You will find a specific instruction on our website www.comat.ch

With the Android App the display of all input states and the switching of the outputs is simple. It's available for download, free of charge in Google Playstore.

Characteristics

- Polling of input values
- Easy control of outputs
- Status display
- Monitoring of alarm history
- Simultaneous control of multiple SMS Relays







Attention! The Android App simplifies the operation of the SMS Relay. The communication in the background is by chargeable text message.







Remote maintenance

The remote maintenance of the SMS Relay is performed via the Internet. Multiple SMS Relay can be managed from anywhere by a web access on the SMS Relay remote access portal.

- Upload / download the configuration file
- Diagnosis (signal strength, provider information, device information)
- Date / Time settings
- Monitoring inputs and switching outputs

Please find more information on our website www.comat.ch.





Technical Data's

Тур	CMS-10F/AC110-240V	CMS-10F/DC12-48V	CMS-10ADF/DC12-48V	CMS-10ACDF/DC12-48V									
Operating voltage	AC 110-240V~ 50/60 Hz	DC 12-48V≕ 😎 max. 10%	DC 12-48V≕ 👓 max. 10%	DC 12-48V≕ 😎 max. 10%									
Power consumption	8VA/6W	4,2W	4,2W	4,2W									
Switching capacity	4x 10 A 250 V; Sum of current max. 20 A												
Temperature range	Tu: -25+55° C; Rel. humidity	r: 10…95% (non condensing); Pr	otection IP 20										
Inputs	6x digital (trigger level 85V~)	6x digital (trigger level 9,5V)	6 x digital and/or alalog (trigger level 9,5 V) (analog 0-10 V)	2 x analog (4-20 mA) 4 x digital and/or alalog (trigger level 9,5V=) (analog 0-10V=)									
Outputs	4x CO contacts µ 10A/250V AC-1												
Provider (Phone/Network)	User selectable (dependent on SIM card)												
Frequency	GSM QuadBand (850; 900; 1800; 1900 MHz)												

Installation note

The base unit device is delivered fully operational and includes the small aerial CMS-ANT. Before installation, the final location of installation must be taken into consideration. For installation inside a control panel, the small device aerial may not be suitable and needs to be replaced by the antenna with magnetic pod (CMS-ANT-MAG/2.5M) or by the external antenna (CMS-ANT-SPEZ/5M). These two antennas provide considerably better results and improve communication with the mobile network. Please ask our product specialists if you require any support.

Dimensions





Тур	Description
CMS-10F/AC110-240V	SMS Relay AC 110-240V with 6 digital inputs incl. small antenna (CMS-ANT)
CMS-10F/DC12-48V	SMS Relay DC 12-48V with 6 digital inputs incl. small antenna (CMS-ANT)
CMS-10ADF/DC12-48V	SMS Relay DC 12-48V with 6 digital and analog inputs incl. small antenna (CMS-ANT)
CMS-10ACDF/DC12-48V	SMS Relay DC 12-48V with 2 anlog current inputs and 4 analog and/or digital voltage inputs, incl. small antenna (CMS-ANT)
	small antenna, antenna with magnetic pod and 2.5 m cable, programming cable, USB-RS232 Interface connector, S SET™»-up programming software and operation manual
CMS-10FKIT/AC110-240V	Installation kit complete with 6 digital inputs (SMS Relay AC 110 - 240 V)
CMS-10FKIT/DC12-48V	Installation kit complete with 6 digital inputs (SMS Relay DC 12-48V)
CMS-10ADFKIT/DC12-48V	Installation kit complete with 6 digital and /or analog inputs (SMS Relay DC 12-48V)
CMS-10ACDFKIT/DC12-48V	SMS Relay Kit DC12-48V with 2 anlog current inputs and 4 analog and/or digital voltage inputs
Accessories	
CMS-RS232	SMS Relay programming cable RS232
CMS-USB	USB-RS232 interface connector (including driver CD)
CMS-ANT	Small spare antenna for base unit, 63mm long
CMS-ANT-MAG/2.5M	Antenna with magnetic pod and 2.5m antenna cable
CMS-ANT-SPEZ/5M	External antenna with 5 m antenna cable
CMS-ANT-KAB/5M	Antenna cable 5 m (extension)
CMS-ANT-KAB/10M	Antenna cable 10 m (extension)
CMS-ANT-KAB / 20 M	Antenna cable 20 m (extension)
CMS-CAP	Device cover (spare)
CMS-CD	CD with FAST SMS SET -up programming software and manual
DR-15-24	Power supply 15 W, 24 V. DIN-rail mounting
DR-30-24	Power supply 36W, 24V. DIN-rail mounting
ZPT-10-H	PT100/PT1000 Amplifier
RF01-U	Room temperature sensor 050 °C without display
RF01-U-D	Room temperature sensor 050 °C with display
RTBSB-001-010	Room thermostat 530 °C with operating controls
WF50 ext-U	Outdoor temperature sensor -50+50 °C
KS-110	AC sensor for monitoring of humidity and temperature in control panels, archives and cabinets
PS1	Water gauge suitable for application of level measurements in water installations





CMS-10F/ CMS-10ADF/	SMS Relay SMS Relay incl. small antenna 63mm
CMS-10ACDF/	 WITHOUT programming cable, magnetic pod antenna, USB converter and programming s Suitable for user which already possess the accessories
CMS-10FKIT/	SMS Relay KIT
	SMS Relay KIT SMS Relay incl. small antenna 63 mm
CMS-10FKIT/ CMS-10ADFKIT/ CMS-10ACDFKIT/	 SMS Relay incl. small antenna 63mm Including programming cable, magnetic pod antenna with 2.5m cable, USB converter
CMS-10ADFKIT/	SMS Relay incl. small antenna 63mm

SMS Relay 5.0

Туре

SMS Relay	
CMS-10	

DIN



Power supplyInput

Voltage range:

Max. current:

Setting range:

Power range:

Nominal load:

Voltage range:

Max. current:

Setting range: Power range:

Nominal load:

Output

Frequency range:

DC Nominal voltage:

Power supplyInput

Output

Frequency range:

DC Nominal voltage:

85-264 V AC, 120-370 V DC

85-264 V AC, 120-370 V DC

47-63 Hz

21,6-26,4V

0-0,63A

47-63 Hz

0,88A

24V 21,6-26,4V

0-1,5A

36 W

15,2W

0,88A

24 V

Type DR-15-24

DR-30-24











IP65









Туре		
KS-110	AC sensor for indoors and ou	itdoors
	 Measuring of humidity and Temperature Measuring range: Measuring element: Output: Humidity Measuring range: Measuring element Output: 	temperature in control panels, archives and cabinets -40 °C+80 °C Solid state 0-10V 0%100% relative humidity Capacitive 0-10V
PS1	Level and water gauge	
		fountains or in water installations up to a depth of 5m (0-0.5 bar) es on request.
	 Cable in special design wit 	h pressure compensation line
	Output signal:	0 - 10 V, 3 - wire
	Application temperature:	+5°C bis +70 °C
App SMSrelay	App for Android operated sm	nart phones
	The App is available free of cl	narge in the Google Playstore.
	KS-110 PS1	KS-110 AC sensor for indoors and ou • Measuring of humidity and • Temperature • Measuring range: • Measuring element: • Output: • Humidity • Measuring range: • Measuring range: • Output: • Humidity • Measuring element • Output: • Measuring element • Output: • Measuring element • Output: • Suitable for applications in Additional measuring rang • Suitable for applications in Additional measuring rang • Cable in special design wit • Output signal: • Application temperature:



			 	 			 	 			 	 	 	 	_			 			
			 	 	 			 			 	 	 	 	_			 			
			 	 			 	 			 	 	 		_			 			
															-				\rightarrow	\rightarrow	
																-					
																			-+	-	
							 	 				 		 	_	-			\rightarrow		
				 			 	 			 				-						
								 							_	-			\square		
																			\neg	\neg	
	-					_									-				+	\rightarrow	
							 							 	_						
	-			 			 					 		 					\rightarrow	\rightarrow	
															-				+	-	
	-			 			 	 			 	 		 	_					-+	
																			Τ		
-															-				-+	-	
							 	 				 		 	_				\rightarrow		
																				-	
	-			 			 							 					\rightarrow	\rightarrow	
					-										-				+	-	





SMS Relay 5.0



_						 	 				 		 			 		 		
-		 		 		 		 	 	 	 					 		 		
-						 	 	 					 					 		
					-+	 		 												
				 		 	 				 		 			 			$ \rightarrow$	
					T									T	T					
					\rightarrow															
				 		 		 					 			 			\rightarrow	
-						 		 		 						 		 		
-													 							
				 	\rightarrow			 								 				
-													 							
				 	-															
	-																			
-								 					 						$ \rightarrow$	
				 	\rightarrow			 								 			$ \rightarrow$	
					1															



6.0 Softstarters



Performance electronics on the highest level

- Reduces wear in the entire drive train through soft start-up
- Optimal starting torque through intelligent current control during start-up
 - Protects the engine through integrated, adjustable motor protection with l²t-monitoring
- Minimises wiring effort and component costs: integrated bypass and motor protection
- Safe to use: comprehensive self-monitoring

Softstarters



Three phase AC motors have proven themselves for the operation of pumps, conveyor belts, compressors and countless other drive technology applications. The direct start or the star-delta starter cause impact on the mechanical components in the drive train. This leads to signs of wear, damage and premature failures. On the other hand, abrupt starts lead to voltage drops which burden the power supply network and affect the surrounding components.

Softstarter by Comat Releco prevents disruptions and ensures a smooth start-up with a reduced starting torque and slow breaking sequences without loading the drive system. Thanks to modern semiconductor power amplifiers and fanless design, you can enjoy absolutely wear-free. The compact construction with integrated cooling element only requires little space in the control cabinet.

Softstarter by Comat Releco is available in four series:

The CCL range has been developed for the operation of heat pumps and compressors. Intelligent current limitation during start-up reduces the drive power by up to 65%. The integrated motor protection allows the adjustment of the nominal power and replaces an additional motor protection switch. Thanks to an integrated bypass relay, there are no additional costs for external bridging.

The CCM range is available with two or three switched phases and is designed for a large number of switching cycles per hour. The bypass is integrated in accordance with the version. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value. The CCMB range also offers a dynamic break function with automatic standstill detection.

The starting torque limiters of the CTC range are activated via an upstream contactor. The start-up torque can be limited to 1 to 85 % of the nominal torque. Typical applications are blowers and smaller machinery.





Starting Torque Limiter – CTC3415



Type: CTC3415

The starting torque limiters of the CTC range are activated via an upstream contactor. The start-up torque can be limited to 1 to 85 % of the nominal torque. Typical applications are blowers and smaller machinery.

Output	
Switching element	Thyristor
Numbers of phases	3
Nominal voltage (U _{nom})	400 VAC
Output voltage range	208 – 480 VAC
Reverse voltage	1200 Vrrm
Peak reverse voltage	1300 Vrsm
Min. load	50 mA
Max. leakage current	5 mA
Max. inrush current	120 A
Operation current AC-53B @ Unom	15 A
Switching cycles / h	3000 cycles/h
Startup time	0,5 – 5 s
Max. response time	1 period
Limit load	1800 A ² t
Insulation	
Insulation voltage	4 kV
Dielectric strength	660 V
General Specifications	
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm ²
Ingress protection degree	IP 20
Mounting	DIN rail TS35
-	



Connection diagram



Dimensions [mm]

Standard type

Housing material

Weight

Starting Torque Limiter

CTC3415

650 g

PPE Noryl SE1 / Aluminium









Starting Torque Limiter – CTC3425

Type: CTC3425

The starting torque limiters of the CTC range are activated via an upstream contactor. The start-up torque can be limited to 1 to 85 % of the nominal torque. Typical applications are blowers and smaller machinery.

Output

Output		1355
Switching element	Thyristor	D.
Numbers of phases	3	55.
Nominal voltage (U _{nom})	400 VAC	
Output voltage range	208 – 480 VAC	
Reverse voltage	1200 Vrrm	
Peak reverse voltage	1300 Vrsm	
Min. load	50 mA	
Max. leakage current	5 mA	
Max. inrush current	120 A	
Operation current AC-53B @ U _{nom}	25 A	
Switching cycles / h	3000 cycles/h	
Startup time	0,5 – 5 s	
Max. response time	1 period	Connection diagram
Limit load	6300 A ² t	eenneeden alagram
Insulation		1/11 2/10 5/12
Insulation voltage	4 kV	1/L1 3/L2 5/L3
Dielectric strength	660 V	
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	\$ \$ \$ \$ \$ \$
Connection terminals	Screw terminal 10 mm ²	2/T1 4/T2 6/T3
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	PPE Noryl SE1 / Aluminium	Dimensions [mm]
Weight	650 g	[]

Standard type

Starting Torque Limiter

CTC3425













Compressor Softstarter – CCL33H415US



Type: CCL33H415US

Output

Bypass

Min. load

Switching element

Numbers of phases

Nominal voltage (Unom)

Output voltage range

Reverse voltage Peak reverse voltage

The CCL range has been developed for the operation of heat pumps and compressors. Intelligent current limitation during start-up reduces the drive power by up to 65%. The integrated motor protection allows the adjustment of the nominal power and replaces an additional motor protection switch Thanks to an integrated bypass relay, there are no additional costs for external bridging. Comprehensive monitoring detects over- and undercurrent, incorrect phase sequences and wiring errors. CCL Softstarter is available in three versions with a nominal current of up to 35 A. Cage clamp terminals allow quick wiring.

Thyristor

integrated

400 VAC

1300 Vrsm

10 A

230 – 400 Vrms 1200 Vrrm

З

	(42)
10.00	TUNK
an ye Leton	
12 10 10 10	annen gr

Connection diagram



Dimensions [mm]



Technical approvals, conformities

Max. leakage current	5 mA			
5	67 A			
Max. inrush current (t=450 ms)	• • • •			
Operation current AC-58 @ U _{nom}	15 A			
Switching cycles / h	max. 12 cycles/h			
Response/Release time	500 ms			
Limit load	610 A ² t			
Input				
Voltage	230 VAC			
Min. voltage	196 VAC			
Max. voltage	264 VAC			
Release voltage	110 VAC			
Max. current	7 mA			
Insulation				
Insulation Insulation voltage	4 kV			
	4 kV 660 V			
Insulation voltage				
Insulation voltage Dielectric strength General Specifications				
Insulation voltage Dielectric strength	660 V			
Insulation voltage Dielectric strength General Specifications Ambient temperature storage/operation	660 V -20 – 80°C / -20 – 65°C			
Insulation voltage Dielectric strength General Specifications Ambient temperature storage/operation Connection terminals	660 V -20 – 80°C / -20 – 65°C Screw terminal 6 mm ²			
Insulation voltage Dielectric strength General Specifications Ambient temperature storage/operation Connection terminals Ingress protection degree Mounting	660 V -20 – 80°C / -20 – 65°C Screw terminal 6 mm ² IP 20 DIN rail TS35			
Insulation voltage Dielectric strength General Specifications Ambient temperature storage/operation Connection terminals Ingress protection degree	660 V -20 – 80°C / -20 – 65°C Screw terminal 6 mm ² IP 20			

Standard type

Starting Torque Limiter

CCL33H415US

Compressor Softstarter – CCL33H425US

Type: CCL33H425US

The CCL range has been developed for the operation of heat pumps and compressors. Intelligent current limitation during start-up reduces the drive power by up to 65%. The integrated motor protection allows the adjustment of the nominal power and replaces an additional motor protection switch Thanks to an integrated bypass relay, there are no additional costs for external bridging. Comprehensive monitoring detects over- and undercurrent, incorrect phase sequences and wiring errors. CCL Softstarter is available in three versions with a nominal current of up to 35 A. Cage clamp terminals allow quick wiring.

Output					
Switching element	Thyristor				
Numbers of phases	3				
Bypass	integrated 400 VAC				
Nominal voltage (U _{nom})					
Output voltage range	230 – 400 Vrms				
Reverse voltage	1200 Vrrm				
Peak reverse voltage	1300 Vrsm				
Min. load	10 A				
Max. leakage current	5 mA				
Max. inrush current (t=450 ms)	112 A				
Operation current AC-58 @ Unom	25 A				
Switching cycles / h	max. 12 cycles/h				
Response/Release time	500 ms				
Limit load	1800 A ² t				
Input					
Voltage	230 VAC				
Min. voltage	196 VAC				
Max. voltage	264 VAC				
Release voltage	110 VAC				
Max. current	7 mA				
Insulation					
Insulation voltage	4 kV				
Dielectric strength	660 V				
General Specifications					
Ambient temperature storage/operation	-20 – 80°C / -20 – 65°C				
Connection terminals	Screw terminal 6 mm ²				
Ingress protection degree	IP 20				
Mounting	DIN rail TS35				
Housing material	PPE Noryl SE1				
Weight	470 g				

Standard type

Starting Torque Limiter

CCL33H425US





Connection diagram



Dimensions [mm]





Compressor Softstarter – CCL33H435US



Type: CCL33H435US

Output

Bypass

Min. load

Limit load

Min. voltage

Max. voltage

Max. current

Insulation

Mounting

Weight

Release voltage

Insulation voltage

Dielectric strength

General Specifications

Ingress protection degree

Connection terminals

Ambient temperature storage/operation

Input Voltage

Switching element

Numbers of phases

Nominal voltage (Unom)

Output voltage range

Max. leakage current

Switching cycles / h

Response/Release time

Max. inrush current (t=450 ms)

Operation current AC-58 @ Unom

Reverse voltage Peak reverse voltage

The CCL range has been developed for the operation of heat pumps and compressors. Intelligent current limitation during start-up reduces the drive power by up to 65%. The integrated motor protection allows the adjustment of the nominal power and replaces an additional motor protection switch Thanks to an integrated bypass relay, there are no additional costs for external bridging. Comprehensive monitoring detects over- and undercurrent, incorrect phase sequences and wiring errors. CCL Softstarter is available in three versions with a nominal current of up to 35 A. Cage clamp terminals allow quick wiring.

Thyristor

integrated

400 VAC 230 – 400 Vrms

1200 Vrrm

1300 Vrsm

max. 12 cycles/h

10 A

5 mA

135 A

35 A

500 ms

1800 A²t

230 VAC

196 VAC

264 VAC

110 VAC

7 mA

4 kV

660 V

IP 20

470 g

DIN rail TS35

PPE Noryl SE1

З

	(199)
and second	
	annan E

Connection diagram



Dimensions [mm]



Technical approvals, conformities

Standard type Starting Torque Limiter

Housing material

Starting Torque Limiter

CCL33H435US

-20 - 80°C / -20 - 65°C

Screw terminal 6 mm²

Softstarter 2 phases switched – CCM3H403USi

Type: CCM3H403USi

Softstarter CCM3 have two switched phases and are available with a nominal current of 3 to 50 A. The types CCM3...USi feature an integrated bypass. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value.

Output

Output					
Switching element	Thyristor				
Numbers of phases	2				
Bypass	integrated				
Nominal voltage (Unom)	400 VAC 400 – 480 VAC				
Output voltage range					
Reverse voltage	1200 Vrrm				
Peak reverse voltage	1300 Vrsm				
Min. load	3 A				
Max. leakage current	5 mA				
Max. inrush current	18 A				
Operation current AC-53B @ Unom	3 A				
Switching cycles / h	120 cycles/h				
Startup time	0,5 – 10 s				
Deceleration time	0,5 – 10 s				
Limit load	72 A ² t				
Input					
Voltage	24 – 230 VAC				
Min. voltage	20,4 VAC				
Max. voltage	253 VAC				
Release voltage	5 VAC				
Max. current	15 mA				
Insulation					
Insulation voltage	4 kV				
Dielectric strength	660 V				
General Specifications					
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C				
Connection terminals	Screw terminal 6 mm ²				
Ingress protection degree	IP 20				
Mounting	DIN rail TS35				
Housing material	PPE Noryl SE1 / Aluminium				
Weight	270 g				
Standard type					

Standard type

Starting Torque Limiter

CCM3H403USi





Connection diagram



Dimensions [mm]







Softstarter 2 phases switched – CCM3H415



Type: CCM3H415

Softstarter CCM3 have two switched phases and are available with a nominal current of 3 to 50 A. The types CCM3...USi feature an integrated bypass. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value.

Output					
Switching element	Thyristor				
Numbers of phases	2				
Bypass	_				
Nominal voltage (Unom)	400 VAC 400 – 480 VAC				
Output voltage range					
Reverse voltage	1200 Vrrm				
Peak reverse voltage	1300 Vrsm				
Min. load	3 A				
Max. leakage current	5 mA				
Max. inrush current	90 A				
Operation current AC-53B @ Unom	15 A				
Switching cycles/h	3000 cycles/h				
Startup time	0,5 – 10 s				
Deceleration time	0,5 – 10 s				
Limit load	1800 A ² t				
Input					
Voltage	24 – 230 VAC				
Min. voltage	20,4 VAC				
Max. voltage	253 VAC				
Release voltage	5 VAC				
Max. current	15 mA				
Insulation					
Insulation voltage	4 kV				
Dielectric strength	660 V				
General Specifications					
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C				
Connection terminals	Screw terminal 6 mm ²				
Ingress protection degree	IP 20				
Mounting	DIN rail TS35				
Housing material	PPE Noryl SE1 / Aluminium				
Weight	650 g				
Standard type					

Starting Torque Limiter

CCM3H415



Connection diagram



Dimensions [mm]





Technical approvals, conformities

Softstarter 2 phases switched- CCM3H425

Comat RELECO

Type: CCM3H425

Softstarter CCM3 have two switched phases and are available with a nominal current of 3 to 50 A. The types CCM3...USi feature an integrated bypass. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value.

Output

o		
Standard type		
Weight	1050 g	
Housing material	PPE Noryl SE1 / Aluminium	
Mounting	DIN rail TS35	
Ingress protection degree	IP 20	
Connection terminals	Screw terminal 10 mm ²	
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
General Specifications		
Dielectric strength	660 V	
Insulation voltage	4 kV	
Insulation		
Max. current	15 mA	
Release voltage	5 VAC	
Max. voltage	253 VAC	
Min. voltage	20,4 VAC	
Voltage	24 – 230 VAC	
Input		
Limit load	6300 A ² t	
Deceleration time	0,5 – 10 s	
Startup time	0,5 – 10 s	
Switching cycles/h	3000 cycles/h	
Operation current AC-53B @ Unom	25 A	
Max. inrush current	150 A	
Max. leakage current	5 mA	
Min. load	3 A	
Peak reverse voltage	1300 Vrsm	
Reverse voltage	1200 Vrrm	
Output voltage range	400 – 480 VAC	
Nominal voltage (Unom)	400 VAC	
Bypass	_	
Numbers of phases	2	
Switching element	Thyristor	
output		

Starting Torque Limiter

CCM3H425



Connection diagram



Dimensions [mm]







Softstarter 2 phases switched- CCM3H415DS

Type: CCM3H415DS

The motor contactor CCM3H415DS have two switched phases and a nominal current of 15 A.

Thyristor 2

400 VAC 400 – 480 VAC 1200 Vrrm 1300 Vrsm 3 A 5 mA 90 A **15 A**

3000 cycles/h 1 period

1 period 1800 A²t

20,4 VAC

253 VAC

5 VAC

15 mA

Output
Switching element
Numbers of phases
Bypass
Nominal voltage (U _{nom})
Output voltage range
Reverse voltage
Peak reverse voltage
Min. load
Max. leakage current
Max. inrush current
Operation current AC-53B @ Unom
Switching cycles / h
Startup time
Deceleration time
Limit load

Input

Voltage Min. voltage Max. voltage Release voltage Max. current

Insulation

Insulation voltage Dielectric strength

General Specifications

Ambient temperature storage/operation Connection terminals Ingress protection degree Mounting Housing material Weight

Standard type

Starting Torque Limiter

4 kV 660 V

-20 – 80°C / -5 – 40°C Screw terminal 6 mm² IP 20 DIN rail TS35 PPE Noryl SE1 / Aluminium 650 g

24 - 60 VDC / 24 - 480 VAC

CCM3H415DS





Connection diagram



Dimensions [mm]







Technical approvals, conformities

Softstarter 3 phases switched – CCM33H425US



Type: CCM33H425US

Softstarter CCM33 have three switched phases and are available with a nominal current of up to 85 A. The types CCM33...USi feature an integrated bypass. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value.

Output

Output					
Switching element	Thyristor				
Numbers of phases	3				
Bypass	externally				
Nominal voltage (U _{nom})	400 VAC				
Output voltage range	400 – 480 VAC				
Reverse voltage	1200 Vrrm				
Peak reverse voltage	1300 Vrsm				
Min. load	3 A				
Max. leakage current	5 mA				
Max. inrush current (t=450 ms)	150 A				
Operation current AC-53B @ Unom	25 A				
Switching cycles/h	120 cycles/h				
Startup time	0,5 – 30 s				
Deceleration time	0,5 – 60 s				
Limit load	6300 A ² t				
Input					
Voltage	24 – 230 VAC				
Min. voltage	20,4 VAC				
Max. voltage	253 VAC				
Release voltage	5 VAC				
Max. current	15 mA				
Insulation					
Insulation voltage	4 kV				
Dielectric strength	660 V				
General Specifications					
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C				
Connection terminals	Screw terminal 10 mm ²				
Ingress protection degree	IP 20				
Mounting	DIN rail TS35				
Housing material	PPE Noryl SE1 / Aluminium				
Weight	1050 g				

Standard type

Starting Torque Limiter

CCM33H425US



Connection diagram

1/L1 Ø	3/L2 Ø	5/L3	A1 Ø	ø	Ø	11 Ø	12 Ø
×	×	×		, A	ţ	ا م	ţ
2/T1	4/T2	6/T3	A2	13	14	23	24

Dimensions [mm]









Type: CCM33H450US

Softstarter CCM33 have three switched phases and are available with a nominal current of up to 85 A. The types CCM33...USi feature an integrated bypass. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value.

Output Switching element	Thyristor	
Numbers of phases	3	
Bypass	externally	
Nominal voltage (Unom)	400 VAC	
Output voltage range	400 – 480 VAC	
Reverse voltage	1200 Vrrm	
Peak reverse voltage	1300 Vrsm	
Min. load	3 A	
Max. leakage current	5 mA	
Max. inrush current (t=450 ms)	300 A	
Operation current AC-53B @ Unom	50 A	Connec
Switching cycles / h	120 cycles/h	
Startup time	0,5 – 30 s	
Deceleration time	0,5 – 60 s	
Limit load	25300 A ² t	1/L ⁻
Input		Ø
Voltage	24 – 230 VAC	3
Min. voltage	20,4 VAC	ø
Max. voltage	253 VAC	2/T
Release voltage	5 VAC	
Max. current	15 mA	
Insulation		Dimens
Insulation voltage	4 kV	
Dielectric strength	660 V	
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Connection terminals	Screw terminal 35 mm ²	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	PPE Noryl SE1 / Aluminium	
Weight	2600 g	
Standard type		
Starting Torque Limiter	CCM33H450US	



Connection diagram



Dimensions [mm]



Technical approvals, conformities

Softstarter 3 phases switched – CCM33H530USi



Type: CCM33H530USi

Softstarter CCM33 have three switched phases and are available with a nominal current of up to 85 A. The types CCM33...USi feature an integrated bypass. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value.

Output

Output	
Switching element	Thyristor
Numbers of phases	3
Bypass	externally
Nominal voltage (U _{nom})	480 VAC
Output voltage range	200 – 480 VAC
Reverse voltage	1200 Vrrm
Peak reverse voltage	1300 Vrsm
Min. load	3 A
Max. leakage current	5 mA
Max. inrush current (t=450 ms)	180 A
Operation current AC-53B @ Unom	30 A
Switching cycles / h	120 cycles/h
Startup time	0,5 – 30 s
Deceleration time	0,5 – 60 s
Limit load	6300 A ² t
Input	
Voltage	24 – 230 VAC
Min. voltage	20,4 VAC
Max. voltage	253 VAC
Release voltage	5 VAC
Max. current	15 mA
Insulation	
Insulation voltage	4 kV
Dielectric strength	660 V
General Specifications	
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm ²
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g

Standard type

Starting Torque Limiter

CCM33H530USi



Connection diagram

1/L1 Ø	3/L2 Ø	5/L3	A1 Ø	ø	Ø	11 Ø	12 Ø
×	×	×	Ţ	ا م م	ţ	۲, ø	ţ
2/T1	4/T2	6/T3	A2	13	14	23	24

Dimensions [mm]





Technical approvals, conformities



Type: CCM33H550USi

Softstarter CCM33 have three switched phases and are available with a nominal current of up to 85 A. The types CCM33...USi feature an integrated bypass. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value.

Thyristor 3 externally 480 VAC 200 – 480 VAC	
3 externally 480 VAC 200 – 480 VAC	
480 VAC 200 – 480 VAC	
200 – 480 VAC	
1000 \/	
1200 Vrrm	
1300 Vrsm	
3 A	
5 mA	
300 A	
50 A	Co
120 cycles/h	
0,5 – 30 s	
0,5 – 60 s	
25300 A ² t	
24 – 230 VAC	
20,4 VAC	
253 VAC	
5 VAC	
15 mA	
	Dir
4 kV	
660 V	
-20 – 80°C / -5 – 40°C	
Screw terminal 35 mm ²	
IP 20	
DIN rail TS35	
PPE Noryl SE1 / Aluminium	
2600 g	
CCM33H550USi	
	1200 Vrm 1300 Vrsm 3 A 5 mA 300 A 50 A 120 cycles/h 0,5 - 30 s 0,5 - 60 s 25300 A ² t 24 - 230 VAC 20,4 VAC 253 VAC 5 VAC 15 mA 4 kV 660 V -20 - 80°C / -5 - 40°C Screw terminal 35 mm ² IP 20 DIN rail TS35 PPE Noryl SE1 / Aluminium 2600 g



Connection diagram



Dimensions [mm]



137

4 <u>3.8</u> 144.8

Technical approvals, conformities

20.4 0 55 20.4

Softstarter with dynamic breaking – CCMB3H425 (2 phases switched)

Type: CCMB3H425

Softstarter CCMB also offers a dynamic break function with automatic standstill detection in addition to the functions of the CCM3 range. They provide an output for an external bypass and have a nominal current of 25A.

Output		
Switching element	Thyristor	
Numbers of phases	2	
Bypass	externaly	
Nominal voltage (U _{nom})	400 VAC	
Output voltage range	400 – 480 VAC	
Reverse voltage	1600 Vrrm	
Peak reverse voltage	1650 Vrsm	
Min. load	1 A	
Max. leakage current	5 mA	
Max. inrush current	200 A	
Operation current AC-58 @ Unom	25 A	
Response/Release time	100 ms	
Limit load	6300 A ² t	
Input		
Voltage	24 – 230 VAC	
Min. voltage	20,4 VAC	
Max. voltage	253 VAC	
Release voltage	5 VAC	
Max. current	15 mA	
Insulation		
Insulation voltage	4 kV	
Dielectric strength	660 V	
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 65°C	
Connection terminals	Screw terminal 6 mm ²	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	
Housing material	PPE Noryl SE1 / Aluminium	
Weight	1050 g	

Standard type

Starting Torque Limiter

CCMB3H425





Connection diagram



Dimensions [mm]









																					-	
-					 \vdash				 					\rightarrow						-+	-	
-				 	 \vdash		 	 	 			 	 		 							
														-								
				 	 \vdash		 	 	 			 	 		 	 		 				µ
	1																					
-	1	-			\vdash							-							\rightarrow	-+	-	$ \neg $
					\square																	
\vdash		-			 \vdash				 					\rightarrow						-+	-	
-				 	 \vdash		 	 	 			 	 		 	 				-+		
	1																					
																				-		
<u> </u>	-			 			 	 	 				 		 	 		 				
-	-				\vdash	-			 					\rightarrow							-	$ \neg $
											[ſ									
-					 \vdash															\rightarrow	-	
<u> </u>	-			 	 \vdash			 	 						 	 		 				
																			-	-	-	
L	1			 	 \vdash		 	 					 		 							\mid
	1																					
		1			\vdash				 					\rightarrow						+	-	$ \neg $
\vdash	-				 \vdash								\rightarrow	\rightarrow						\rightarrow	-	$ \rightarrow$
-				 	\vdash		 	 	 			 	 		 						-+	
	1																					
L	-			 	\vdash		 	 				 	 							\rightarrow		\mid
	1																					
-	1				++																-	
				 	 \vdash			 	 			 	 		 			 			-+	
				 	 \vdash			 	 			 			 							
		1			\vdash				 					\rightarrow						+	-	
		-		 	 \vdash				 					-+						\rightarrow	-	
-					1 I.								- I	- I								

RELECO Worldwide Sales Net



WINTERS INSTRUMENTS S.A. B1640BIN Martinez - Buenos Aires www.winters.com.ar

AUSTRALIA ARLIN PTY. LTD. Springvale Vic 3171 www.arlin.com.au

AUSTRIA AVS SCHMERSAL VERTRIEBS GMBH 1230 Wien www.avs-schmersal.at

BELGIUM MULTIPROX N.V. 9300 Aalst www.multiprox.be

BOLIVIA GRUPO LARCOS INDUSTRIAL LTDA. La Paz www.grupolarcos.com

BRAZIL COMAT RELECO DO BRASIL 09550-190 Sao Caetano/Sao Paulo www.comatreleco.com.br

CANADA TURCK CHARTWELL CANADA INC. Markham, Ontario L6G 1B5 www.chartwell.ca

CHILE ELECTRÓNICA RHOMBERG LTD. Santiago de Chile www.rhomberg.cl

CHINA (Tianiin) ELCO ELECTRONICS CO. LTD. Tianiin 300385 www.elco-holding.com

COLOMBIA ACJ HIGH VOLTAGE LTD. Bogota D.C. Colombia www.acj.com.co

CZECH REPUBLIC OEM AUTOMATIC SPOL. S.R.O. 250 66 Zdiby www.oem-automatic.cz

DENMARK OEM AUTOMATIC KITSO A/S 3450 Allerød www.oemautomatic.dk

ECUADOR

IANDCECONTROL S.A. (I & C) Quito www.iandcecontrol.com

FRANCE

RELECOMAT FRANCE SARL 06220 Sophia-Antipolis www.relecomat.fr

FINLAND

OEM FINLAND OY 20750 Turku www.oem.fi

GERMANY

COMAT RELECO GMBH 21465 Reinbek www.comatreleco.de

GREECE VASSILIS GETSOS 15562 Cholargos - Athens www.ksa.gr

INDIA

PARAMOUNT INDUSTRIES Bangalore 560 010 www.paramount.net.in

IRAN

SEYED GHASEM RIAZI TRADING 15949 Teheran www.sgrtrading.com

IRELAND TCM CONTROLS LTD. Dublin 12 www.tcmcontrols.com

ITALY

SOFTING ITALIA SRL. 20090 Cesano Boscone www.softingitalia.it

KOREA

MEC MAHANI ELECTRIC CO. LTD. 135-080 Seoul www.mec.co.kr

LITHUANIA

HIDROTEKA ENGINEERING SERVICES 51333 Kaunas www.hidroteka.lt

MALAYSIA

AMPTRONIC SDN BHD Selangor, Malaysia www.amptron.com.my

MAROCCO MAGHREB ELECTRO-TECHNIQUE SARL.

Casablanca 20250 www.beltransfo.com

MEXICO

TURCK MEXICO S. DE R.L. DE C.V. Saltillo Coahuila 25315 www.turck.com.mx

NETHERLANDS VIERPOOL BV. 3606 AS Maarssen www.vierpool.nl

NEW ZEALAND CUTHBERT STEWART LTD

Wellington - Auckland www.cuthbertstewart.co.nz

NORWAY OEM AUTOMATIC AS

3044 Drammen www.oem.no

PAKISTAN

GINZA INTERNATIONAL CORPORATION Karachi - 74000 Ginza-int@cyber.net.pk





USA TURCK INC. Plymouth MN 55441 www.turck-usa.com



COMAT AG • BERNSTR. 4 CH-3076 WORB TEL. +41 (0)31 838 55 77 FAX +41 (0)31 838 55 99 www.comat.ch • info@comat.ch www.releco.com • sales@releco.com