DISOCONT® Tersus Measurement, Control and Supervisory System

- **Tailored by modules as needed**
- **Product line for MechaTronic scales; a synthesis of mechanics, electrics and software**
- **Installation close to feeder in field enclosure or in control cabinet**
- **Reduced engineering planning and wiring costs**
- **Commissioning and diagnostics supported by graphics**
- **Optimal communication structures because of modular fieldbus technology**
- **Wireless access for service**

Application

DISOCONT Tersus is a system in modular design for controlling of continuous weighing and feeding applications. It is used wherever bulk solids flow has to be measured, fed or batched with the use of

- Loss-in-weight feeders (measuring/feeding)
- Weighfeeders
- Mass flow meters and feeders
- Solids flow meters and feeders
- Belt weighers
- Screw feeder
- Weighing hoppers

The DISOCONT Tersus - electronics are preferably integrated locally into the scale mechanics. So self-contained function units will be created - the MechaTronic scales - which offers numerous advantages:

- Reduced engineering because of minimal number of interfaces; only one unit has to be planned in
- No control cubicle
- Reduced cabling; only power and data cables have to be run
- At a glance - easy service because of the combination of mechanics and electronics

For special applications the DISOCONT Tersus-electronics may be conventionally installed in a control cubicle.
Via the Ethernet interface included in the standard or equipped with a suitable fieldbus interface DISOCONT Tersus fits optimal into automation structures in the plant.

Equipment

The DISOCONT Tersus electronics consist of a system unit VCU and multiple optional expansion units. Its modular design enables the requisite units to be combined for a specific application, at a most cost effective price.

- Central unit VCU for all measurement and control functions with interface to operator panels and extension units
- EasyServe-PC-program for commissioning and service
- Fieldbus communication modules plugged into system unit for transfer of all relevant data to the user's control and scale control system
- Additional VCU-unit for conventional connection to user's control system and expanded control of the scale environment
- Operator panel with graphical display and touch for operation of the scale and/or parameterization
- Integrated web server for service access
- Group control unit-operation, survey and control of scale groups, as shown in separate spec sheet
- Access via LAN, WLAN and Bluetooth

The internal DISOCONT Tersus communication bus permits a flexible arrangement of the units, locally or in cabinets. All modules can be replaced with no need for recalibration and reconfiguration.

The System includes housing options for installation at site and in control cubicles.

Technical features for all weighing and feeding systems

- System accuracy for scales better than 0,05 % (DIN EN 61143-1); Resolution of the weight signal: 24 million parts
- galvanically isolated inputs/ outputs
- power fail save data storage
- factory presettings for easy and quick commissioning
- various languages loadable/ transferrable
- status, event, calibration, and batch reports
- Batch control with adaptive cut-off curve
- Integrated diagnostics and self testing functions (SPC)
- Simulation mode for testing and learning

Functions

DISOCONT Tersus is designed to acquire the actual feed rate [kg/h, t/h] via

- belt load and belt speed for belt weighers MULTIBELT
- changes in weight of material in weigh hopper per unit of time for loss-in-weight feeders
- reactive force for solids flow meters MULTISTREAM
- direct mass flow measurement using the Coriolis force for mass flow meters MULTICOR
- the load of the feeding screw with automatic calibration via a check hopper for screw feeders type MultiFlex

With **feeding** applications, the control deviation is acquired by feed rate set/actual comparison. Depending on type of scale, DISOCONT Tersus routes a control signal to

- speed-controlled weighfeeder drive or the drive of the feed helix
- controllable loss-in-weight feeder discharge unit
- controllable solids and mass flow feeders' prefeeders

The control circuit exactly controls the actual feed rate for conformity with setpoint.

In batching mode, DISOCONT Tersus feeds a preset amount of material and automatically stops feeding at the end of a batch. System uses batch results for automatic self optimization.

Scale Specific Functions

Depending on the software loaded for the different types of scales an feeders, the following functions are available:

- With belt weighers and weighfeeders:
  - Accurate belt speed measurement
  - Belt run monitoring
  - Shifting of control for weighing/feeding to point of discharge
  - Belt influence compensation (BIC)
  - Complete control of scales peripheral devices
  - Auto-calibration (automatic calibration programs), self-starting taring
  - Block control with weigh-feeders leads to constant belt load realized by pre-feeder control
  - On Stream calibration
- With solids flow meters and feeders:
  - Adaption to different measuring chute characteristics
  - Manual and automatic zeroing
  - On Stream calibration
- With mass flow meters and feeders:
  - Accurate speed and torque measurement
  - Manual and automatic zeroing
  - Highly constant feeding
  - On Stream calibration
- With Loss-in-Weight feeders (measuring and feeding):
  - Adaptive FUZZY interference peak elimination
  - Automatic correction of material flow properties during filling
  - Highly constant feeding
  - sets of parameters for quick adaptation on different bulk solids
  - Setup programs for fast change of bulk material
- With Sequential batching:
  - Sequence of up to 10 material types
  - Adaptive feed control
- With Screw feeders:
  - Individual measurement of up to three load points
  - Feeding with high constancy
  - On Stream calibration

DISOCONT Tersus Component-Overview

Type hardware	Functions
VCU 20100	Central control electronic, minimum 1 x per system Optional extension via up to 2 additional VCU
VAI 20100	Extension by one analogue input channel
VAO 20100	Extension by one analogue output channel 0(4) ... 20 mA
VAO 20103	Extension by one analogue output channel 0 ... 10 V
VME 20102	Extension by one load cell interface channel
VFG 20103/ VFG 20104	VCU for field housing
VEG 20100	VCU for cabinet enclosure
VHM 20100	Operator panel for control panel mounting with supply by VCU 20100
VHM 20101	Operator panel for control panel mounting with separate power supply
VHM 20110	Handheld operator panel with cable
VHM 20121	Wireless handheld operator panel
VPB 28020	PROFIBUS Interface
VPN 28020	PROFINET IO Interface
VSS 28020	Modbus Interface
VCB 28020	DeviceNet Interface
VPC 20150	Service-Software EasyServe for PC
VMO or VLG	Optional local motor control unit
	Bluetooth Adapter for the VCU

Type Software for VCU 20100	Functions
VBW 20170	Beltweighers MULTIBELT
VWF 20170	Weighfeeders MULTIDOS
VLW 20170	Loss-in-Weight Feeder MechaTron, ProFlex, PureFeed
VIF 20170	Solids flow meters and feeders MUTISTREAM
VMC 20170	Mass flow meters and feeders MULTICOR
VBC 20170	Multi ingredient batch feeding
VSF 20170	MULTIFLEX screw feeder
VIO 20170	Input/output extension unit VCU

Optional control of a group of scales in accordance with the separate data sheet DISOCONT Master running in separate process computer hardware.

Technical Data

DISOCONT Tersus System unit VCU 20100

Standard Inputs*)	Load cell input ±6 V, R_i > 87 Ω, 2 NAMUR-Inputs 0.03 … 3000 Hz for speed or belt sensor, flap limit switches, 5 Isolated, digital inputs 24 V, 20 mA, save isolation
Optional Inputs*)	Additional load cell input Up to 2 analogue input channels 0(4) ... 20 mA / 0 ... 10 V
Standard Outputs*)	1 isolated analogue output 0(4) mA ... 20 mA, max. 11 V, 6 relay outputs 230 V / 1 A save isolation, 1 relay output 230 V / 1 A with base isolation, Open collector output for external totalizer 30 VDC / 50 mA
Optional Outputs *)	Up to 2 analogue outputs 0(4) ... 20 mA or 0 ... 10 V
Serial interfaces	4 Ethernet RJ45 Interface for operator panel local bus Interface for extension units VCU Connection EasyServe RS232 Optional: 1 x Fieldbus plug in module
Power supply	24 VDC ±20 %; 110 V … 230 V -20 % +10 % 50 Hz or 60 Hz; 35 W
Ambient temperature	-25 °C ... +50 °C outside of the housing
Protection class	IP20
Approbation	CE; In preparation: UL, ATEX

*) Logical signals are freely configured for physical in-/outputs.

Field housing VFG 20103 or 20104 for VCU 20100

Material	Fibre enforced plastics
Dimensions [mm]	260 x 160 x 90
Protection classes	Protection class IP65 (IEC 60529), NEMA4-Typ

Control Cubicle Housing VEG 20100 for VCU 20100

Material	Stainless steel
Dimensions [mm]	250 x 146 x 98 For installing an DIN top-hat-rail or for wall mounting
Protection classes	IP20 (IEC 60529)

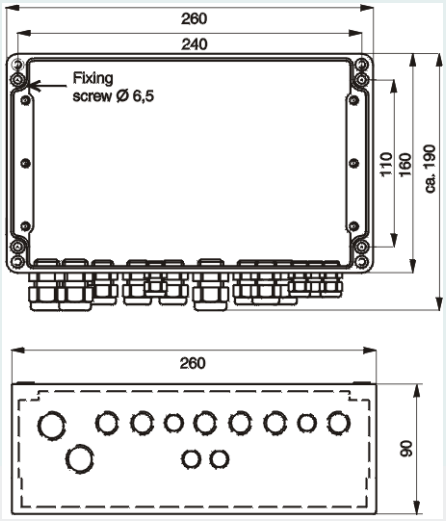
DISOCONT Tersus operator panel VHM

VHM	20100	20101	20110	20121
Display [mm]	TFT colour display 115 x 89			
Input	Touch for pen and glove operation			
Power supply	24 VDC 4 W	110 ... 230 VAC, 10 W	24 VDC 4 W	Battery, charger 110 ... 230 VAC 10 W
Ambient temperature	-15 °C ... +50 °C			
Dimensions [mm] W x H	202 x 154			
Depth [mm]	45,5	75,5	50	75
Protection class front	IP65	IP65	IP65	IP65
Protection class back	IP20	IP20		
Interfaces	Ethernet RJ45 and local bus			
Approbation	CE Optional: UL, ATEX			

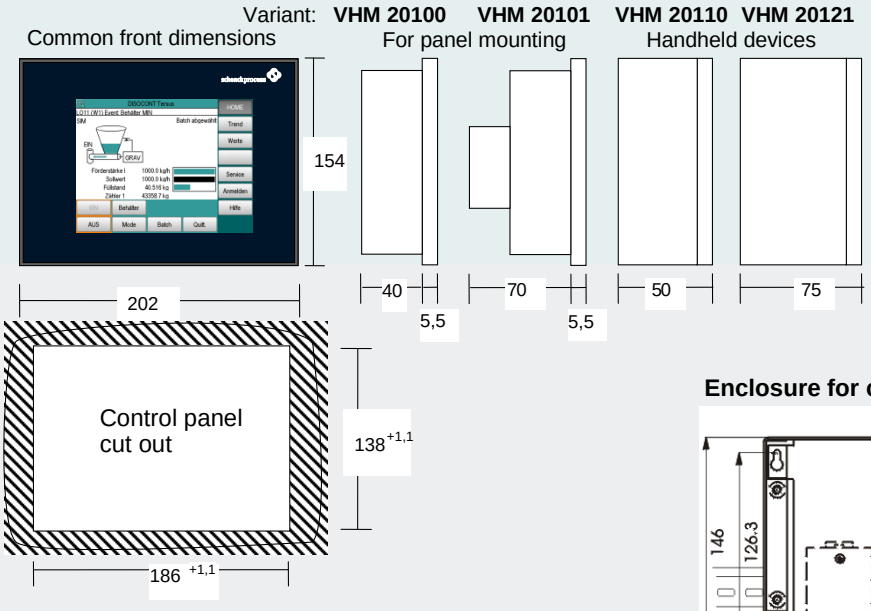
Option Fieldbus- interfaces to plant control

Quantity	Maximum one in main-VCU
Type	PROFIBUS DP-V2 PROFINET IO Ethernet Modbus-TCP EtherNet/IP DeviceNet Modbus RS232/RS422/RS485
Data	All process variables All parameters and configuration Via web server: Logged process data

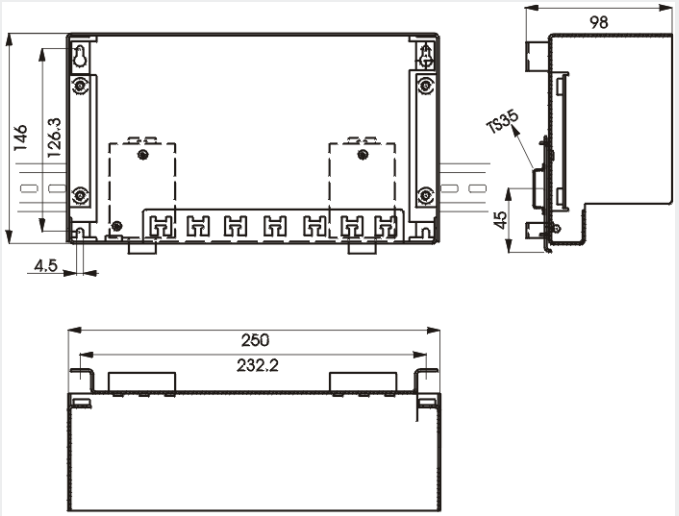
Field housing VFG 20103/20104



Dimensions of the DISOCONT Tersus Operator Panel versions



Enclosure for cabinet mounting VEG 20100



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