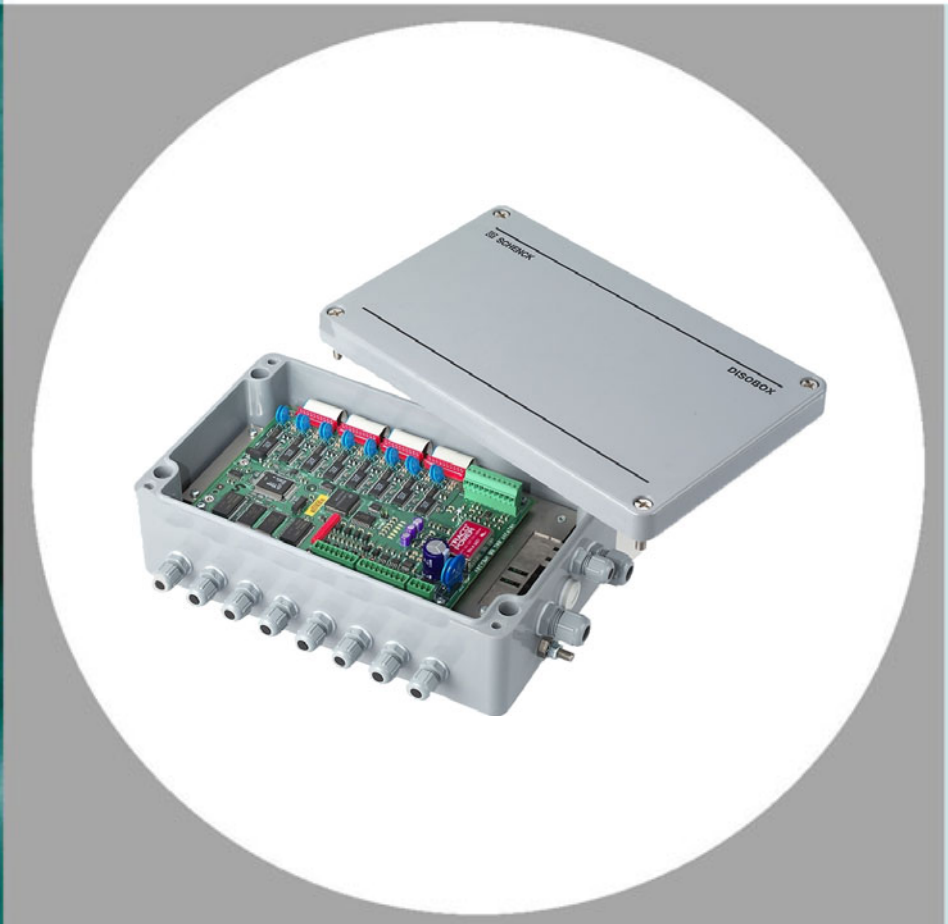
DISOBOX A/D Converter Unit



- **Local weighing electronics, protected to IP 65**
- **One measuring channel / load cell**
- **Monitoring of single load cells**
- **Electronic corner adjustment**
- **Digital transmission of measurement values**
- **Fieldbus connectivity**
- **All components exchange-able without recalibration / reverification**
- **Perfectly compatible with Schenck weighing electronics, legal-for-trade PC programs and/or standard PLC**

Application

The Schenck DISOBOX is designed as multi-channel local analog-to-digital converter unit.
Since the output signals of all connected load cells are digitalised individually, the measuring voltage of every cell can be accessed at any time.
This is of particular benefit

- upon commissioning (dead load distribution analysis, electronic corner adjustment)
- in operation (analysis of load distribution on scale, load cell monitoring)
- and in case of fault (quick identification of affected component).

The digital signal transmission via standard fieldbus system can be planned easily, quickly and reliably.

These features make DISOBOX ideally suitable as data acquisition and control unit for weighing systems combined with Schenck weighing electronics of the DISOMAT family and/or PC-based weighing systems.
Typical applications are road weighbridges and hopper scales.

The integrated weighing functions also enable its use as complete multi-channel scale, e.g. combined with a PLC system.

Equipment

DISOBOX is equipped with max. 8 measuring channels (as a function of type). To every channel, a load cell can be connected. Access to individual signals enables every load point to be calibrated individually (electronic corner adjustment) with no need to open the box.

Every channel has its own highly resolving A/D converter (no multiplexer). Therefore, DISOBOX is also suitable for measurement and control of fast processes, e.g. feed operations.
The integrated I/O signals enable time-critical signals, e.g. overload interrupt, to be controlled direct, bypassing the connected control systems.

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The individual load cell signals are available at any time also during operation and can be used, e.g. for sensor monitoring or prompt detection of error source.

The measuring channels can be organised into three independent groups, with every group corresponding to a complete, legal-for-trade scale with

- Filtering of weight values
- Status acquisition (no-motion, ...)
- Tare memory
- Zero set
- Multi-range/multi-divisional functions (3 ranges)
- Zero point tracking
- ...

Combined with DISOVIEW E, the legal-for-trade PC software, more scales can be realised (see below).

Communication

All measurement values (channel values and scale weights) can be transferred to host system via serial interface.
The available option cards ensure flexible adaption to any industrial communication system:

- Asynchronous interface card RS 232/485, MODBUS protocol
- Profibus DP-V0. Process image mechanism with 32-byte data width, 12 Mbaud max. data rate
- DeviceNet
- Ethernet. The Ethernet card supports http (web browser) and Modbus-TCP protocols which enables system-wide communication using an existing Ethernet infrastructure. Furthermore, configuration, monitoring and diagnosis can be accessed via Intranet / Internet without additional cabling, or modem, etc.
  (Access from the outside, e.g. via Internet, can be limited, or disabled, by granting respective privileges.)

In addition to the communication interface, DISOBOX readies a second serial interface (RS 232 / 485 / 422) that can be used, e.g. for

- configuration
- serial I/O extension
- secondary or large-size display
- printer.

Inputs/Outputs

The DISOBOX inputs/outputs (4 In / 4 Out, 24 VDC) also enable direct, local process control, for instance, in form of overload messages, feed contacts or release signals.

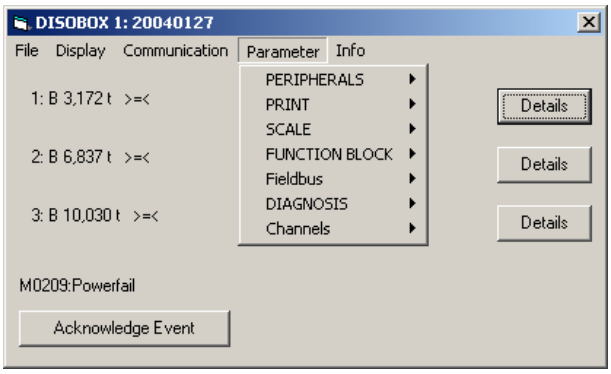
Configuration / Calibration

Combined with Schenck systems (DISOMAT, DISOVIEW E PC program), system is configured and calibrated using the connected Master. For more comprehensive configurations, e.g. for combination with external systems, the DISOPLAN configuration program is used. This program enables access to all parameters and complete calibration and readies a weight display, if required.

Furthermore, the complete status of a DISOBOX can be read out (backup) and reloaded into a same-type or replacement unit (restore).

DISOPLAN DISOBOX runs under any commercial Windows version (from WIN 95 onward). Communication with DISOBOX unit(s) takes place

- point to point
- via RS 485 bus
- via Ethernet



Verification

DISOBOX is EU-approved as legal-for-trade weighing system, both as A/D converter module in combination with a DISOMAT B plus or the Schenck PC software DISOVIEW E, and as standalone unit, e.g. combined with a suitable display and control unit.

The approval allows the complete active electronics to be replaced in case of fault, with no need for recalibration or reverification. All setting and calibration parameters are stored in a non-volatile memory in the passive system part. Together with the DISOPLAN backup and restore functions, downtimes can be avoided.

Since the system is sealed without jumpers, DISOBOX normally remains closed. Parameterisation and calibration are effected via serial interface, stamping uses a modification counter for relevant parameters, so that no dirt or moisture can enter into the electronics upon maintenance / calibration.

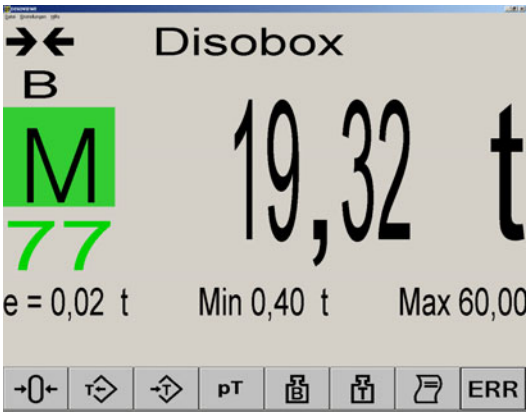
DISOVIEW E

Many data intensive weighing applications, e.g. road weighbridges or group rate control systems, have taken to employ a PC as powerful and economical platform for data management and operator prompting – normally still combined with a conventional weighing electronics for legal-for-trade display and data storage.

The combination of DISOBOX and legal-for-trade DISOVIEW E weighing program opens up new possibilities:

- DISOBOX sits on scale locally.
- Data are digitally transferred to PC free from interferences.
- No additional devices near PC
- DISOVIEW represents the legal-for-trade, convenient and flexible scale on PC screen direct.
- The DISOVIEW application interface allows easy access to data and scale functions from user programs.

DISOVIEW E lets you represent up to 8 legal-for-trade scales.
For details on DISOVIEW E, see Spec Sheet BV-D 2066.



Accessories

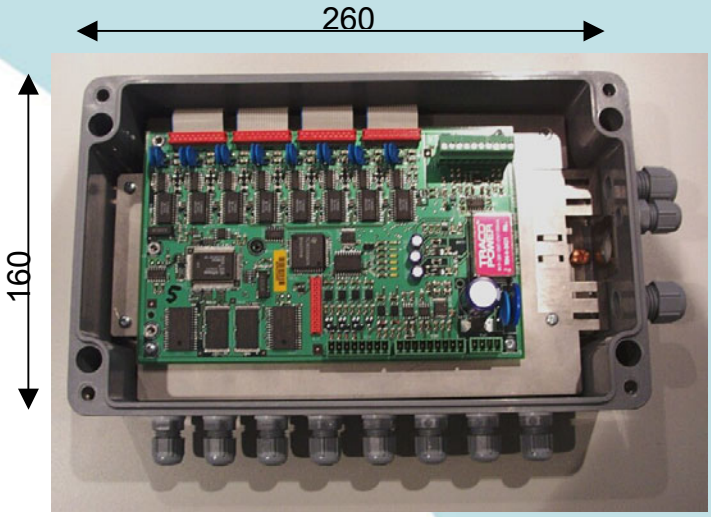
DISOBOX is supplied with nominal 24V DC (admissible range 18 – 36 V). In many cases, this voltage is available in system.
Optionally, up to three DISOBOX units can be supplied by additional power supply VNT 20410. The latter also enables a serial RS 232 interface (PC-COM) to be converted to RS 485, so that max. 300 m distance to DISOBOX can be bridged.

Designed for simulation of 8 load cells, scale simulator VWZ 20410 lets you test hardware and sequences.

Special Applications

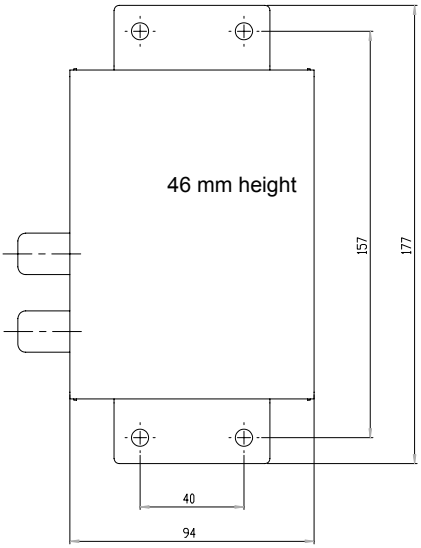
Further to the applications described above, DISOBOX lets you solve tasks that cannot be realized using conventional weighing electronics:

- If you renounce on single load cell monitoring, a group of load cells can be connected to each measuring channel (observe totals impedance). In this case, one DISOBOX can acquire the weight of up to 8 scales (e.g. surge hopper) and transfer it to a control system.
- Through individual configuration of single measuring channes, DISOBOX enables a scale to be designed from load cells of different rated capacities or sensitivities, e.g. in case of systems with heavily varying load on single mounts.
- This feature lets you repair systems whose load cells are no longer available. There is no need to equip the scale with new sensors, simply replace the defective cell. (If your system is legal-for-trade, observe limitation of admissible load cell combinations, if any).
- DISOBOX is used in place of the previous cable summation box. More often than not, the old load cell cable can be used for serial transmission. Inevitable repair thus becomes an attractive upgrade.



Housing height: 90mm
Fixing screw spacing: 240 x 110 mm, fastening material is supplied.

Dimensioned drawing: Power Supply VNT 20410



Technical Data

Processor	SAB 161
RAM	1 MB
Flash	2 MB
EEPROM	16 kB
Clock	software, no buffer
Display	none
Keyboard	none
Housing	Local plastic housing, protected to IP65
No. of measuring channels	1 - 8, as a function of type
Load cell supply	5 V AC
Load cell impedance / channel	44 – 4000 Ω
Totals impedance	> 44 Ω
Input signal / channel	0 – 19 mV
Scan rate	132 / sec. / meas. channel
Wiring technique	4- or 6-wire
No. of scales	max. 3; assignment of measuring channels to scales selected at will
Minimum signal voltage	$0{,}6\mu V/d * \sqrt{n}$ n: number of measuring channels / scale
No. of increments in certified applications	$N \leq 8.000d$
Multi-range / multi-divisional scales	3 ranges, $N \leq 8.000d$ each $E_{max}/d_{min} \leq 15{,}000d$
Power supply	24 VDC (18 - 36 V)
Required power	max. 5 Watt
Operating temperature, legal-for-trade	-10 - +40 °C
Storage temperature, non-legal-for-trade	-30 - +60 °C
Binary outputs	4 x 24 V galv. isolated
Inputs	4 x 24 V galv. isolated or 2 x 24 V galv. isolated + 2 x NAMUR
Serial interface	RS 232 / 485 9600 – 115.000 baud
Fieldbus interfaces	Profibus DeviceNet Ethernet MODBUS

Equipment Supplied	**Type**	**Ordering No.**
Base units		
DISOBOX base unit, A/D converter unit with 8 measuring channels	VME 20480	V021988.B01
DISOBOX base unit, A/D converter unit with 4 measuring channels	VME 20440	V021988.B03
Bus cards		
DeviceNet option, mounted and wired		V024870.B01
Profibus option, mounted and wired		V024871.B01
Ethernet option, mounted and wired		V024872.B01
Modbus option, mounted and wired		V024873.B01
Complete unit		
VME 20480 with DeviceNet		V021988.B11
VME 20480 with Profibus		V021988.B21
VME 20480 with Ethernet		V021988.B31
VME 20480 with Modbus		V021988.B41
VME 20440 with DeviceNet		V021988.B13
VME 20440 with Profibus		V021988.B23
VME 20440 with Ethernet		V021988.B33
VME 20440 with Modbus		V021988.B43
Accessories		
Power supply / serial adapter IP20	VNT 410	V028209.B01
Adapter cable RS 232 ⇔ USB		V029499.B01
Load cell simulator, 8-channel	VWZ 410	V024383.B01
DISOPLAN DISOBOX	VPL 20490	V029764.B01

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