M-Bus Wire

Readout System
Remote Reading via wire and telephone line

M-Bus Master, Repeater and Level Converter

M-Bus Digital Master

Signal processor controlled M-Bus level converter for 120 or 250 terminals, standard loads to 1.5mA *)

- Modular design:
  as master with CPU and integrated master software
  as level converter RS232
  as repeater for extension of the Bus system
- Baud rates: 300 to 9600 Baud
- Protection against current overload and short circuit on the M-Bus
- Protection against external voltage and lightning on the M-Bus
- Echo suppression and collision detection with break-signalling
- Display for data transmission, maximum Bus power and power overload
- Service- and Modem interface

Ordering information

Master with CPU for 250 slaves	DR 001
Master with CPU for 120 slaves	DR 002
Level converter for 250 Slaves	DR 003
Level converter for 120 Slaves	DR 004
Repeater for system expansion	DR 007

M-Bus Display / Logger / Level-Converter

M-Bus Display / Logger / Level-Converter for 60 slaves standard loads to 1.5mA *)

Display:

- Front-CPU with LCD and 4 navigation keys for displaying important M-Bus meter data
- Autosearch of meters with list generation
- Password protection
- Additional level-converter function via RS-232 interface
- Firmware-update via RS-232 interface

Logger:

- Same features as M-Bus Display and additional logging and data storage function
- Historical meter data on LCD
- Configuration and export of meter data via RS-232 direct link or modem
- Readout values depending on meter

Level-Converter:

- Baudrates: 300 up to 9600 Baud
- Overcurrent and short-circuit protection on the M-Bus
- Echo cancellation and collision detection with break signalling
- Displays for power, data transmission, max. bus current and overload in the screw-terminal room

Order information

M-Bus Display (60 slaves)	MR004PA
M-Bus Logger (coming soon)	MR004 DL

*) Terminals with higher power consumption reducing the quantity of supported meters

www.sensus.com
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SENSUS METERING SYSTEMS

M-Bus Level Converter PW3, PW20, PW60

- Level converter for 3, 20 or 60 terminals, standard loads to 1,5mA *)
- Integrated RS232 interface (PC as Master)
- Baud rate 300 to 9600 Baud
- Protection against current overload and short circuit on the M-Bus
- Display for data transmission and status
- Housing for DIN-C-Railing or wall mounting
- Supply
  PW 3, PW 20: 10.8 ... 28 V AC / DC
  PW 60: 20 ... 30 V AC, 20 ... 45 V DC
- Max. 3, 20 or 60 terminals (Standard loads to 1,5mA *)

Ordering information:

Level converter for 3 terminals	PW 3
Level converter for 20 terminals	PW 20
Level converter for 60 terminals	PW 60

*) Terminals with higher power consumption reducing the quantity of supported meters

M-Bus Micro-Master

Small M-Bus Master with serial interface to configure or readout a small installation with a Laptop-Computer

- Maximum 10 terminals (standard loads to1,5mA *)
- Connection speed.: 300 to 9600 Baud
- Bus cut-out for current overload and short-circuit
- Serial interface
- Current supply via a Laptop over the PS/2 Keyboard-Connection
- Connection cable for the current supply and the serial interface is included
- Laptop serves as a transportable temporary connectable Master
- Application as a configuration device with the installation of M-Bus systems
- Optional function with external power supply

Ordering information:

Micro Master incl. adapter cable	MR 003

M-Bus Modem-Master 20

- Analog M-Bus modem with integrated level converter for up to 20 terminals.
- Direct M-Bus data transmission over an analog telephone network
- Maximum of 20 terminals, standard loads to1,5mA *)
- Transmission speed.: 300 to 2400 Baud
- Bus cut-out for current overload and short-circuit
  (continuous short circuit resistant)
- Secure data transferral in accordance with IEC870-5-1/2 with our M-Bus Modem for the PC MOD 002
- 4 LEDs on the front panel displays system status
- Mounting on DIN-C-railing possible
- Power supply: 8...24V DC/AC. 9V AC power supply (230 V AC) unit is included

Ordering information:

Modem Master 20	MR 007 A

Slaves

Slaves are M-Bus terminals for special applications. The following slaves convert measuring values to the M-Bus data protocol for data transmission. For the operation a M-Bus Level converter or a M-Bus Master is necessary.

PadPuls M1C und M1

The PadPuls pulse collectors enable the application of a consumption meter with pulser as an adequate M-Bus to slave transfer.

- Operation without mains supply, voltage supply from M-Bus or built in battery
- Full counting function also with battery operation (e.g. with Bus failure)
- Connection of potential free pulsers
- Connection of pulsers with S0-Interface according to DIN 43864 (only M1C)
- Contact bounce suppression
- Adjustable pulse value and unit
- Configuration via the Bus (software included)
- M1C for mounting on DIN-Top hat rail
- M1 for wall mounting

Ordering information:

Pulse collector PadPuls	M1C
Pulse collector PadPuls	M1

*) Terminals with higher power consumption reducing the quantity of supported meters

PadPuls M2C

The 2-channel pulse collector PadPuls M2C allows the use of 2 meters with pulse output as M -Bus slaves. So data from a standard water or electricity meter can be read out central by M-Bus. Optionally the user can activate a tariff function, by which energy or volume pulses can be accumulated in separate meter readings for primary and secondary tariffs.

- Two separated pulse inputs
- Safe detection of up to 5 pulses per second at each input
- Pulse debouncing
- Pulse value free adjustable
- Unit free selectable (e.g. Wh, k\Wh, MWh, kJ, m3, l, ...)
- Counter length: 8 decimal digits
- Due-date function with integrated realtime clock
- M-Bus protocol according to EN 1434-3
- Parameters fully settable by M-Bus, including overwrite protection
- Transmission rate: 300 and 2400 baud with auto baud detection
- Fully operable in case of M-Bus failure through integrated backup battery
- Dimensions W x H x D: 93 x 51 x 58 mm
- Mounted on DIN-Top rail
- PadPuls M2 without Tariff input
- PadPuls M2 with housing for wall mounting W x H x D:80 x 80 x 52 mm

Ordering information:

PadPuls M2C with 0.23 Ah battery	IM 003GC
PadPuls M2C with 1.35 Ah battery	IM 003GCB
PadPuls M2 with 0.23 Ah battery	IM 003G
PadPuls M2 with 1.35 Ah battery	IM 003GB

PadPuls M4 and M4L

The pulse collector connects up to 4 consumption meters with pulse output.

- Four separate pulse inputs
- Secure detection of up to 15 pulses per second on each entry
- Dampening times = 5ms
- Freely selectable pulse value (0,01 to 99)
- Specification of the units (e.g. mWh, kJ, l,...)
- Counter length: 8 digits
- Integrated real-time clock for keydate readout
- Primary and secondary addressing
- Complete configuration via M-Bus
- Configuration software is included
- Transfer rate: 300, 2400 Baud with Auto-Baud Detection
- Internal battery, i.e. operation also possible without M-Bus
- PadPuls M4 with LC-Display for direct reading of all meter indexes
- Padpuls M4L without LC-display
- Wall- or DIN-Top hat rail mounting
- Tarif mode: 2 pulse entries and 2 tarif change signals
- Extended pulse sampling for opto pulsers and long distance cables may be activated

Ordering information:
PadPuls M4 with display
M-Bus Adapter PadPuls M4L without display

PadIn 4

PadIn 4 enables status monitoring of up to 4 independent switching contacts via M-Bus. The current state (on / off) of digital inputs are transmitted in the protocol.

- Power supplied by M-Bus, no neccessity of additional power supply
- Connection of four voltage free contacts
- Connection of opto couplers possible
- Debouncing of inputs
- M-Bus protocol according to EN1434-3
- Parameters fully settable by M-Bus including overwrite protection
- Dimensions W x H x D: 56 x 77 x 110 mm, mounted on a wall or DIN-Top rail

Ordering information
Status monitoring module PadIn 4

AnDi4

The quad analog-digital converter AnDi4, converts analog measured values into M-Bus data protocol. The meter values are determined by request through the M-Bus, converted and sent back to the M-Bus. The measured value can be changed into formats determined by the user e.g. pressure or temperature.

- Power supply: 24V DC
- Four inputs - each input acts like an independent M-Bus terminal.
- Each input can be individually configured via the M-Bus:
  Primary address
  Secondary address
  Medium
  Unit for the measured value
- Own range of values, i.e. the value calculated by the A/D converter can be exchanged into almost any range (e.g. 0 to 6 bar or –100 to 400°C,...)
- Securing of user data in EEPROM, configuration safety
- Configuration software is included
- Connection of sensors, which operate in the range of 0 – 20mA, 4 – 20mA, 0 – 10V
- A power supply of 15-17.5 V, 35 mA is available for each connected sensor

Ordering information:

Analog-digital converter	AnDi4

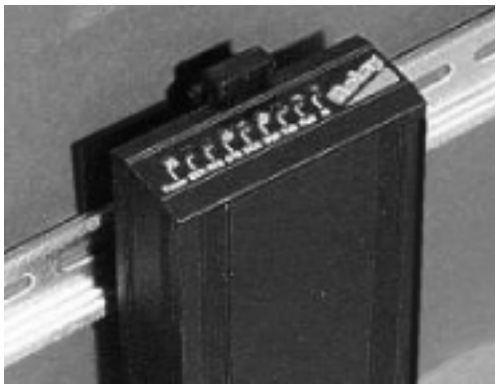
Accessories

M-Bus Modem for PC

The M-Bus PC modem enables in co-operation with the M-Bus modem for level converter and the Modem Master 20 a real 11-bit M-Bus data transfer via an analog telephone network. Thus the transfer is ensured in accordance with the EN1434-3 standard.

- Operating voltage: 10...36V DC or 8...24V AC
- External 9V AC mains supply (230 V AC) is included
- 8 LED´s on the front panel indicating actual system status
- Also applicable as desktop device

Ordering information:
M-Bus Modem for PC MOD 002



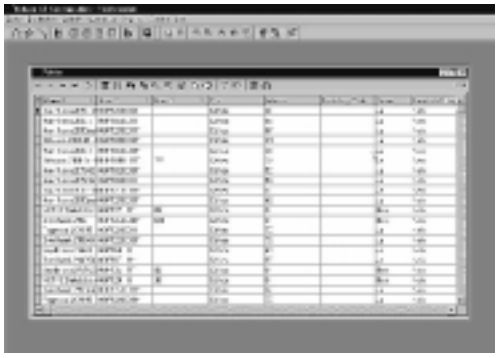
M-Bus Modem for Level Converter

M-Bus the modem for level converters is particularly appropriate for data exchange with the M-Bus PC modem MOD 002. It enables a genuine 11-bit data transfer via an analog telephone network. The delivered cable contained in the scope of supply, can be connected with anyone of our level converters (e.g. DR 003, PW3, PW60,...).

- 8 LED´s on the front panel indicate actual system status
- Operating voltage: 10...36V DC or 8...24V AC
- External 9V AC mains supply unit (230 V AC) is included
- Mounting on a top hat rail also possible

Ordering information:
M-Bus Modem for Level converter MOD 003

Software



DOKOM CS for PC

Readout software for M-Bus networks

- System requirements: WINDOWS '95, '98, ME, XP, NT or 2000.
- Software in several languages available
- User orientated
- Modular design with drivers for mobile and stationary interrogation
- Single use or network capable
- Available drivers: M-Bus, Telephone, Radio, Mobile interrogation TCP/IP (LAN and WAN)
- Licence depends on quantity of connected meters

Ordering information:
DOKOM CS software contains of CD-ROM, manual and dongle for 3, 20, 60, 120, 250, 500 or unlimited quantity of meters

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