M-Bus Wire

Readout System

Remote Reading via wire and telephone line
Mobile Reading of level converter with Psion pro hand-terminal

M-Bus Master, Repeater and Level Converter

MR005xx and MR006xx need ext. power supply NT003 also, refer level converter on next page

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

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
- Delivery includes ext. power supply

Ordering information

Master with CPU for 250 slaves	DR 001	**Order No. 18 40 01**
Master with CPU for 120 slaves	DR 002	**Order No. 18 40 02**
Level converter for 250 Slaves	DR 003	**Order No. 18 20 00**
Level converter for 120 Slaves	DR 004	**Order No. 18 20 01**
Repeater for system expansion	DR 007	**Order No. 18 20 02**

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
- Readout values depending on meter

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)	MR004FA	**Order No. 18 40 03**
(20 slaves)	MR006FA	**Order No. 18 40 24**
(3 slaves)	MR005FA	**Order No. 18 40 26**
M-Bus Logger (60 slaves)	MR004DL	**Order No. 18 40 04**
(20 slaves)	MR006DL	**Order No. 18 40 25**
(3 slaves)	MR005DL	**Order No. 18 40 27**

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

Ordering information:

Level converter for 3 terminals	PW 3	**Order No. 18 20 03**
Level converter for 20 terminals	PW 20	**Order No. 18 20 04**
Level converter for 60 terminals	PW 60	**Order No. 18 20 05**
Ext. power supply 230V AC for PW3, PW20	NT003	**Order No. 18 20 06**
Ext. power supply 230V ACor PW60	NT004	**Order No. 18 20 07**

M-Bus Micro-Master

Small M-Bus Master with serial or USB 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
- For serial interface current supply via a Laptop over the PS/2 Keyboard-Connection
- Alternative connection Via USB
- Connection cable 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	**Order No. 18 20 08**
Micro Master for USB connection	MR 003- USB	**Order No. 18 20 26**

TCP/IP Converter

Devices which are normally connected to the RS 232 port on a PC may instead be connected to this unit which is itself connected to a local network (Ethernet 10 BaseT). The PC also connected to the local network may then send and receive signals to the device as though it was connected to its RS 232 port.

This facilitates connections between PC's and M-Bus level converters and central units

After installation of the software driver provided any software which accesses devices using RS 232 may be used. The driver emulates a virtual COM-Port under Windows. The meter reading software Dokom CS supports the use of this converter with direct reading of M-Bus central units and data loggers via the TCP/IP protocol.

Software-features:

Transport-Protocol: TCP/IP, UDP/IP
ARP, ICMP (ping)
Routing-Modus: Slave, Master
RS232C: 150 to115200 Baud

Software-Tools incl.:

1) Virtual serial Port Manager to generate the emulated COM-Ports.
2) Device-Server Manager to configure devices settings via the network
3) Connection Wizard for an easy installation
4) Virtual Serial-Port Monitor to log serial data

Connections:

Ethernet: 10BaseT (RJ45)
Serial: RS232C, DB9
Power supply: 12DC, 150mA

Order information:
TCP/IP Converter with Software and 230V AC power supply unit
Order No 18 40 21

*) Devices with higher power consumption reduce the number of supported meters

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 **Order No. 18 20 15**

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 **Order No. 18 20 16**

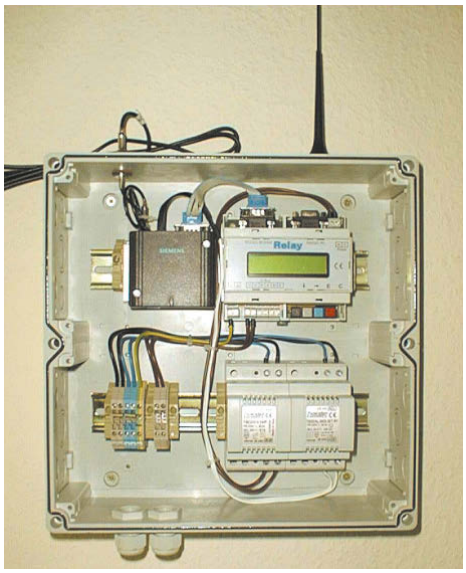
M-Bus Modem-Master 20

- 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 **Order No 18 20 09**

Overview of PC Modems for the connection with M-Bus Modems via phone line:

PC Modem	Order No	MBus Modems	Order No	Mode
MOD002	18 20 15	MOD003 MR007A	18 20 16 18 20 09	Transparent-mode
MOD001-PC	18 20 27	**MR006DL-GSM**	18 40 28	special protocol
		MOD001-DL020 for: MR005FA/DL, MR006FA/DL,	18 19 83	special protocol
		MOD001-DL060 for: MR004FA/DL	18 19 84	special protocol
		MOD001-DL250 for: DR001, DR002	18 19 85	special protocol



GSM-Modem with M-Bus Data logger MR006DL

- M-Bus Data logger MR006DL with 1 MByte data memory for max. 20 meters
- Dual-band GSM-Modem (D+E Net), ready configured
- Incl. power supply unit
- Antenna connection outside FME-Plug to change the antenna, if necessary
- Mini-Magnet Antenna for D+E Net (0dB) is included
- Every component is ready assembled in one housing:
  - Housing of impact-proof Polystyrol, flame proof VDE0471
  - Grey Ral7035
  - Dimensions: D x L x H = 300 x 300 x 132 mm (without extensions)
  - With 2 cable entries M20 for diameter 5-13 mm cable
  - Protection class: Housing and + Cable output: IP68, Antenna plug: IP54 (can be improved to IP65 after antenna mounting)
  - Clamp connection for: main power supply cable and M-Bus cable
- Software FService for the configuration of the data logger
- GSM SIM card is not included !

Ordering information:
GSM Modem MR006DL-GSM **Order No 18 40 28**

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	**Order No. 18 20 10**
Pulse collector PadPuls	M1	**Order No. 18 20 11**

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, m^3, 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	**Order No. 18 40 07**
PadPuls M2C with 1.35 Ah battery	IM 003GCB	**Order No. 18 40 08**
PadPuls M2 with 0.23 Ah battery	IM 003G	**Order No. 18 40 05**
PadPuls M2 with 1.35 Ah battery	IM 003GB	**Order No. 18 40 06**

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	**Order No. 18 20 12**
M-Bus Adapter PadPuls M4L without display	**Order No. 18 20 13**

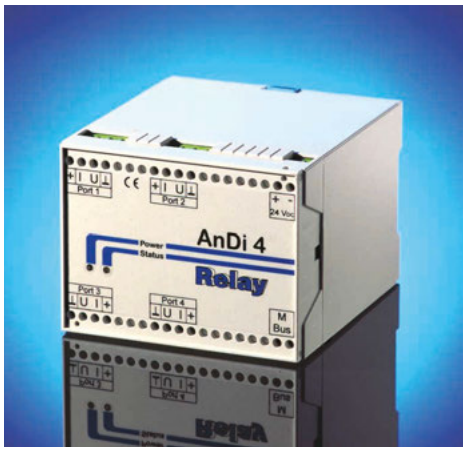
PadIn 4

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	**Order No. 18 40 09**



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		**Order No. 18 20 14**
ext. power supply for AnDi4 or for M1C with S0 connection	NT005	**Order No. 18 40 10**

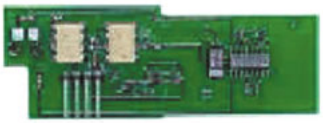
Sensus M-Bus Module

HRI Data B1/D1 for domestic water meters

The Module is compatible with HRI prepared Sentinel domestic water meters. It can be supplied fitted to new meters or it can be retrofitted to meters already installed in the network.

For further descriptions and HRI variants refer to leaflet LS8100 INT.

Order No. 68115351



M-Bus plug in module for heat meters

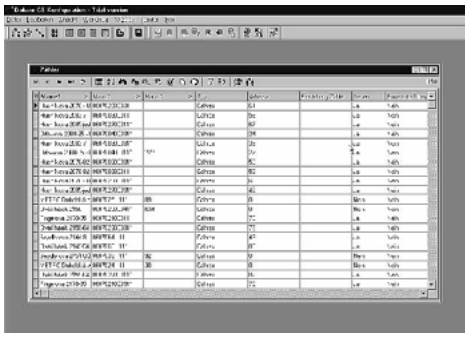
The module is compatible with PolluTherm und PolluStatE heat meters. It can be supplied fitted to new meters or it can be retrofitted to meters already installed in the network. **Order No. 68505020**

Resida-M for apartment water meters

M-Bus module for Residia apartment meters.
It can be supplied fitted to new meters or it can be retrofitted to meters already installed in the network **Order No. On demand**

For further descriptions refer to leaflet LS8300 INT

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

Further descriptions refer LS 1300 INT

SensusREAD for hand-terminal

mobile reading of level converters with the hand-terminal PSION WA pro WinCE compatible

- several language versions
- user friendly
- routing or free read out
- USB docking station for data transfer with a PC
- different data format for evaluation- and billing software processing

Further description refer LS 3400

Order information:

PSION WA pro hand-terminal	**Order No. 18 40 30**
USB docking station for data transfer with a PC	**Order No. 18 40 34**
Interface card for data coupler	**Order No. 18 40 34**
Dokom Mobile (WinCE)	**Order No. On demand**

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