M-Bus Master
MultiPort 250D/L

DATA SHEET

- Remote reading with M-Bus
- Up to 250 meters per M-Bus Master and by cascading, up to 1250 meters in a system
- Supporting primary/secondary/enhanced secondary addressing and wild card search with collision detection
- 300/2400/9600 Baud communication speed
- Connection via RS-232, RS-485, USB, GSM/GPRS and optical eye *
- Local reading via display with backlight *
- PIN code protection *

Application

M-Bus is a bus system, which is specially suited for communication with heat, cooling, water, electricity and gas meters.

The system consists of an M-Bus Master and meters with M-Bus interface. Various meter types and brands can be installed and co-exist in the same M-Bus network. The network is typically realised by the use of twisted pair cabling.

The connected meters are read out either by the M-Bus Master directly, where data are shown in the display, or by a reading program connected to one of the M-Bus Master's communication ports.

The M-Bus Master acts as power supply for the M-Bus modules in the meters. This enables a long battery lifetime for meters with battery supply.

The total size of an M-Bus network using Kamstrup M-Bus Masters can be up to 1250 meters when secondary addressing is used. When more M-Bus Masters are coupled in cascade, a total cable length of approximately 14 km can be achieved.

Using primary addressing, a network of up to 250 meters is possible.

M-Bus master 250D is provided with a smart energy-saving feature to reduce power consumption when no meter readings are being carried out.

During installation and maintenance on the M-Bus network, no PC is needed as network analysis, meter search and meter reading can be performed directly on the M-Bus Master by use of the M-Bus Master's push buttons and display *.

M-Bus is standardized according to EN 13757-2 and EN 13757-3.

* Only 250D
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Functionality

The Kamstrup M-Bus Master MultiPort 250D/L is an M-Bus Master designed for connection of up to 250 meters with M-Bus interface. MultiPort 250D/L can be used as master, transparent level converter and repeater.

**M-Bus Master MultiPort 250D/L**

As M-Bus Master, it is operated by the use of the display and the 6 associated push buttons. The display is designed with an easy-to-use menu structure making it easy to perform scanning, reading and analysis on the M-Bus network. Further, it continuously informs about the actual status on the M-Bus net with e.g. unit load and ongoing communication. The operation via push buttons can be protected with a PIN code.
Functionality

**M-Bus Master as level converter**
As level converter, one or more of the integrated communication ports are connected to a reading system, a controller or the like, from where the communication is initiated. MultiPort 250D/L can be accessed from more ports where the integrated port controller prevents any collision.

**M-Bus Master as repeater**
The repeater function provides the possibility of extending the network size in respect of both cable length and number of installed meters. Depending on cable type and installation, the total cable length is up to approx. 10 km, and max 1250 meters can be connected.

**Module area**
A module area provides possibilities for additional communication forms such as GSM/GPRS as well as future functionalities.

**Web server MultiPort 250**
Via the built-in web server, configuration and operation of the M-Bus Master can be performed remotely.
Functionality

**LED**
4 LEDs show status of mains power, data communication between M-Bus Master and modules as well as overload and short circuits in the M-Bus network.

MultiPort 250D/L is designed for indoor installation and the protection class can be up to IP67.

Features

- Usable as M-Bus Master, repeater and level converter
- 128x64 pixels LCD display with backlight *
- Display reading supporting all Kamstrup meters as well as non-Kamstrup meters *
- Primary, secondary and enhanced secondary addressing
- Collision detection with break signal
- Up to 250 slaves per M-Bus Master
- Integrated repeater functionality
- Up to 4 repeaters in one system = totally 1250 meters
- Up to 14 km cable length
- Up to 9600 Baud communication speed
- Byte recovery
- Echo suppression
- Transient protection
- Integrated USB, RS-232, RS-485 and optical eye* with automatic port controller
- Module area e.g. for GSM/GPRS module
- All ports are transparent and galvanically isolated from the M-Bus network
- Integrated web server for remote configuration and operation
- PIN code protected display and optical eye *
- Event loggers for both M-Bus and power *
- Smart energy-saving feature *
- Cable inlet via 9 cable unions
- Local and remote firmware upload for future functionality
- Up to IP67

* Only 250D
Connections and cabling

All connections in MultiPort 250D/L are screw terminals. The M-Bus output consists of 4 pairs of parallel coupled screw terminals accepting cable sizes up to 2 mm².
The cabling topology is typically star or bus or a combination of both.
The cable type is typically unshielded twisted pair with a diameter of up to 1.5 mm². The cable connection is polarity independent.

Communication

Communication is half duplex allowing two-way communication with one slave at a time.

Transparent reading
MultiPort 250D/L is equipped with the following communication ports for communication with e.g. remote reading programs, BMS systems and controllers:

* Only 250D

When more communication ports are simultaneously used, an integrated port controller secures that only communication via one port at a time is possible.
Communication via above ports is transparent and includes collision detection. Communication speeds supported are 300/2400/9600 Baud.

Local scanning on MultiPort 250D
When scanning the M-Bus network from the M-Bus Master, both primary and secondary scanning can be used.
Communication speeds 300, 2400 or 9600 Baud can be used individually as well as all 3 speeds in combination.
Communication

Local reading on MultiPort 250D
When reading MULTICAL® meters from the M-Bus Master, both M-Bus specific and manufacturer specific data are shown on the display. From other meters, M-Bus specific data are shown.

M-Bus addressing
Primary, secondary and enhanced secondary addressing are supported. Due to the integrated collision detection, wild card search is allowed when using secondary and enhanced secondary addressing.

By wild card search, some or all digits of the M-Bus module’s secondary or enhanced secondary addresses can be replaced by wild cards when searching for meters.

Primary addressing (001-250)
Each meter needs a unique primary address between 001 and 250. Using the same address for more than one meter will result in collision and it is not possible to read the meters.

Kamstrup M-Bus modules will automatically use the last 2-3 digits of the customer number as their primary address.

Secondary addressing (00000000-99999999)
Using secondary addressing, the last eight digits of the meter number are used as M-Bus ID number.

Kamstrup MULTICAL® meters use the customer number as their secondary address. The customer number is configurable.

Enhanced secondary addressing (00000000-99999999/00000000-99999999)
The meter’s serial number is used for enhanced secondary addressing. This number is unique to each meter and cannot be changed after production.

GSM/GPRS
M-Bus Master 250D/L can be fitted with the Kamstrup GSM 6H or GSM 8H modem enabling remote reading via GSM and GPRS.

As remote reading program, Kamstrup PcBase III, PcNet III or USB Meter Reader are recommended.
## Connections

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<tr>
<th>Number</th>
<th>Abbreviation</th>
<th>Description</th>
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<td><strong>Mains</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>134</td>
<td>N</td>
<td>Neutral</td>
</tr>
<tr>
<td>135</td>
<td>L</td>
<td>Live</td>
</tr>
<tr>
<td>136</td>
<td>PE</td>
<td>Protective Earth</td>
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<tr>
<td><strong>USB</strong></td>
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<td>130</td>
<td>VCC</td>
<td>Supply Voltage</td>
</tr>
<tr>
<td>131</td>
<td>D-</td>
<td>Data-</td>
</tr>
<tr>
<td>132</td>
<td>D+</td>
<td>Data+</td>
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<tr>
<td>133</td>
<td>GND</td>
<td>Ground</td>
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<tr>
<td><strong>RS-485</strong></td>
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<tr>
<td>137</td>
<td>A/-</td>
<td>Transmit/Receive inverting pin</td>
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<tr>
<td>138</td>
<td>A/+</td>
<td>Transmit/Receive non-inverting pin</td>
</tr>
<tr>
<td>139</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td><strong>RS-232</strong></td>
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<td></td>
</tr>
<tr>
<td>105</td>
<td>RxD</td>
<td>Received Data</td>
</tr>
<tr>
<td>106</td>
<td>TxD</td>
<td>Transmitted Data</td>
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<tr>
<td>107</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>108</td>
<td>DTR</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>109</td>
<td>CTS</td>
<td>Clear To Send</td>
</tr>
<tr>
<td>111</td>
<td>DSR</td>
<td>Data Set Ready</td>
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<tr>
<td>112</td>
<td>RTS</td>
<td>Request To Send</td>
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<tr>
<td><strong>M-Bus Repeater Input</strong></td>
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<tr>
<td>53</td>
<td>L1</td>
<td>M-Bus input to Master in Repeater mode</td>
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<tr>
<td>54</td>
<td>L2</td>
<td>M-Bus input to Master in Repeater mode</td>
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<tr>
<td><strong>M-Bus Master Output</strong></td>
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<td>24</td>
<td>L1</td>
<td>M-Bus output from Master</td>
</tr>
<tr>
<td>25</td>
<td>L2</td>
<td>M-Bus output from Master</td>
</tr>
</tbody>
</table>
Connections

- USB
- RS-485
- Mains 100-240 V 50/60 HZ
- RS-232
- M-Bus input for cascade mode
- 4 sets of M-Bus outputs
Dimensions

168 x 184 x 210 mm

3 pcs. M16 ø4...8 mm

6 pcs. M12 ø3...8 mm
## M-Bus Master MultiPort 250D/L
### DATA SHEET

#### Technical data

**Electrical (M-Bus)**
- **Number of slaves per M-Bus Master**: 250 at 1 unit load per slave
- **Number of slaves in total**: 1250 with 1 M-Bus Master and 4 repeaters
- **Cable length per M-Bus Master**: Up to approx. 2800 m, depending on cable type, cable topology and number of connected slaves
- **Cable length in total**: Up to approx. 14 km with 1 M-Bus Master and 4 repeaters
- **Cable size**: Max 2 mm²
- **Communication ports**: RS-232, RS-485, USB, optical eye*, GSM/GPRS (optional)
- **Communication speeds**: 300/2400/9600 Baud
- **Data frame**: 1 start bit, 8 data bits, 1 parity bit (even), 1 stop bit
- **Addressing modes, transparent**: Primary/secondary/enhanced secondary
- **Addressing modes, direct reading**: Primary/secondary
- **Address range, primary**: 001-250
- **Address range, secondary**: 00000000-99999999
- **Address range, enhanced secondary**: 00000000-99999999/00000000-99999999
- **Bus mark/space**: 41 VDC/28 VDC
- **Communication detection level**: 7 mA
- **Collision detection level**: 25 mA
- **Max normal operating level**: 375 mA
- **Warning level**: 377 mA
- **Overload level**: 500 mA

**Electrical GSM 6H**

**2G (GSM/GPRS/EDGE)**
- **Frequencies**: 900-1800 MHz
- **Transmitting power**: 900 MHz class 4, 2 W
- **GPRS classes**: 8, B
- **Communication speeds GSM**: 300/2400/9600 baud
- **Communication speeds GPRS**: 300/2400 baud

**Electrical GSM 8H**

**2G (GSM/GPRS/EDGE)**
- **Frequencies**: 900-1800 MHz
- **Transmitting power**: 900 MHz class 4, 2 W
- **GPRS classes**: 12, B
- **EDGE class E2, 900 MHz**: 0.5 W
- **EDGE class E2, 1800 MHz**: 0.4 W

**3G (UMTS/HSPA)**
- **Frequencies**: 900-2100 MHz
- **Class 4**: 900 MHz, 2 W
- **Class 3**: 2100 MHz, 0.25 W

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* Only 250D
## Technical data

### Electrical (HTTP)
- **Communication ports**: RS-232, RS-485, USB
- **Communication speed**: 9600/38400 Baud
- **Data frame**: 1 start bit, 8 data bits, no parity bit, 1 stop bit

### Electrical (general)
- **Power supply**: 100-240V 50/60 Hz
- **Power consumption**: Max 40 W

### Mechanical
- **Operating temperature**: 0...55 °C, non-condensing, indoor use
- **Storage temperature**: -20...+60 °C
- **Protection class**: Up to IP67, depending on cabling
- **Dimensions**: 210 x 168 x 64 mm (H x W x D)
- **Weight**: 1 kg

### Approvals and Standards
- **Approval**: CE mark
- **Standards**: EN 13757-2, EN 13757-3

## Ordering

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
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<tbody>
<tr>
<td>M-Bus Master MultiPort 250L</td>
<td>MBM-M200000</td>
</tr>
<tr>
<td>M-Bus Master MultiPort 250D</td>
<td>MBM-M210000</td>
</tr>
<tr>
<td>M-Bus Master MultiPort 250D with GSM 6H 2G</td>
<td>MBM-M210200</td>
</tr>
<tr>
<td>M-Bus Master MultiPort 250D with GSM 8H 3G</td>
<td>MBM-M210U00</td>
</tr>
<tr>
<td>M-Bus Master MultiPort 250L with GSM 6H 2G</td>
<td>MBM-M200200</td>
</tr>
<tr>
<td>M-Bus Master MultiPort 250L with GSM 6H 3G</td>
<td>MBM-M200U00</td>
</tr>
<tr>
<td>RS-232 cable D-sub 9A, 145 cm</td>
<td>6699-335</td>
</tr>
<tr>
<td>USB cable, 145 cm</td>
<td>6699-336</td>
</tr>
<tr>
<td>GSM 6H 2G</td>
<td>670ZB0000000.1</td>
</tr>
<tr>
<td>GSM 8H 3G</td>
<td>670UB0000000.1</td>
</tr>
</tbody>
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