

Data sheet

## M-Bus Master

### MultiPort 250D/L

- 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 and optical eye (only 250D)
- Local reading via display with backlight\*
- PIN code protection\*



\* Only 250D

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## Application

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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\*.

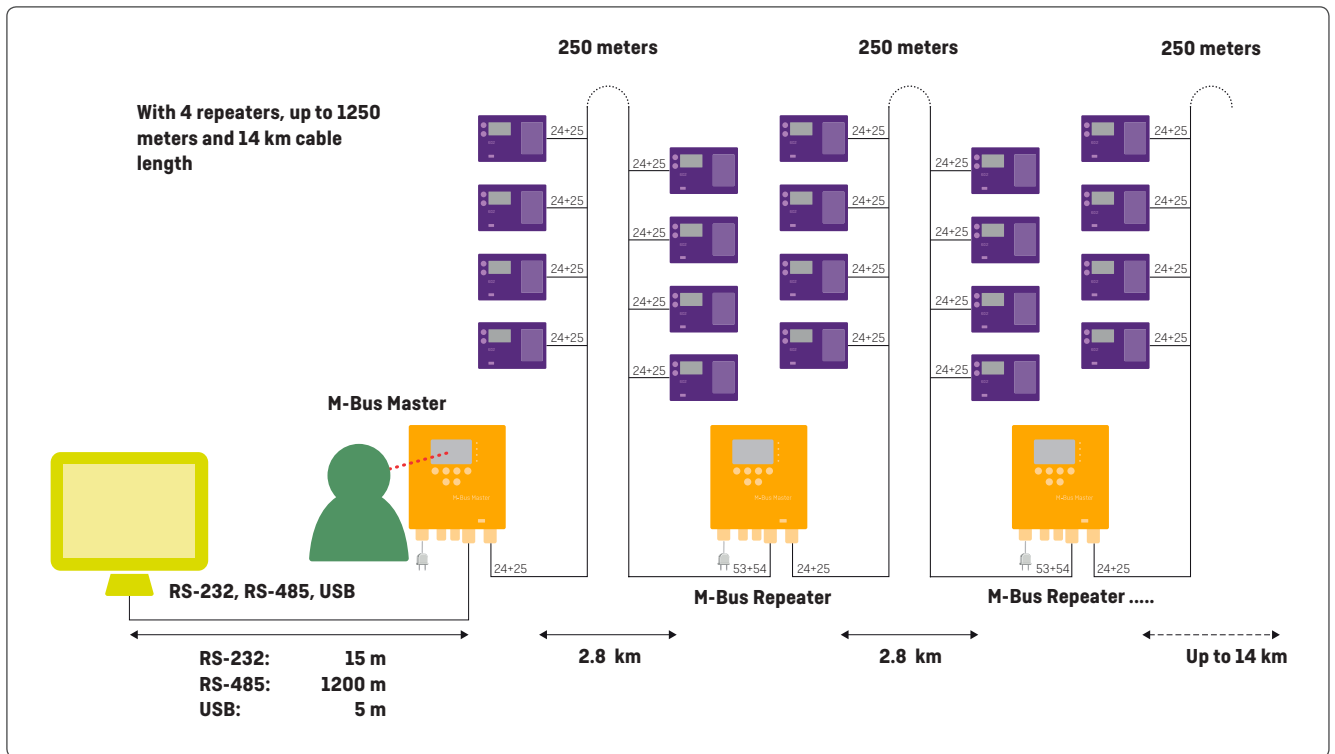
M-Bus is standardized according to EN 13757-2 and EN 13757-3.

\* Only 250D

## 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

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

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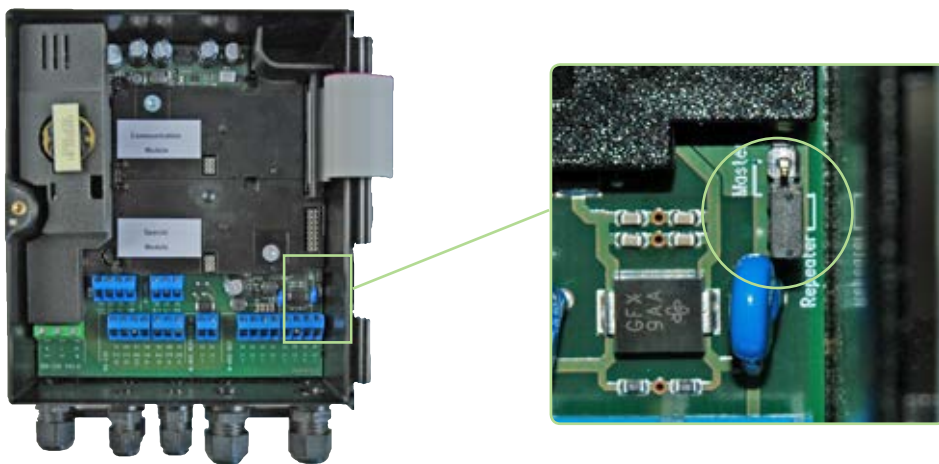
### M-Bus Master as level converter

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. 14 km, and max 1250 meters can be connected.



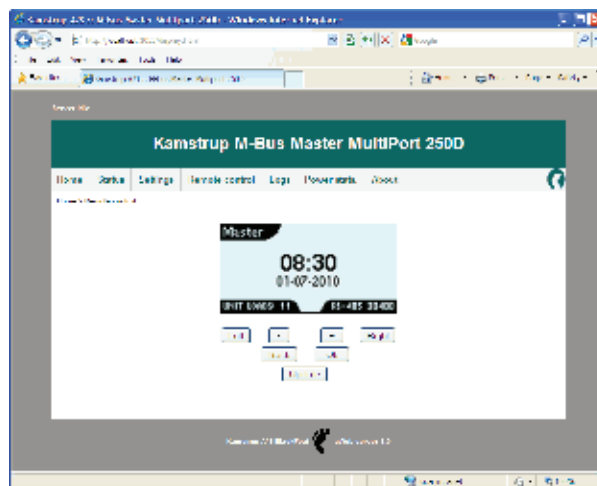
Setting for master or repeater mode

### Module area

A module area provides possibilities for 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

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### 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

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- 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
- 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

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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 mm<sup>2</sup>.

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 mm<sup>2</sup>. The cable connection is polarity independent.

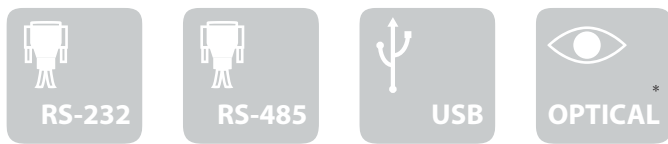
## Communication

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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:



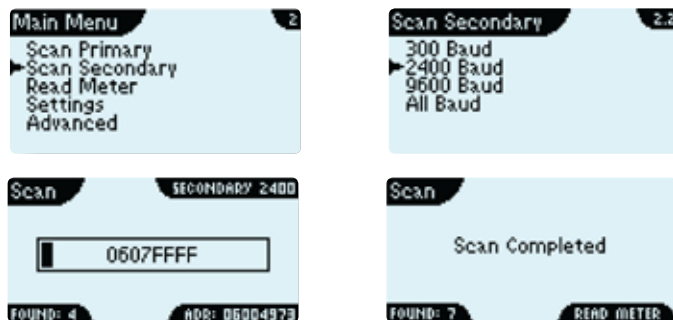
When more communication ports are simultaneously used, an integrated port controller secures that only communication via one port at a time is possible.

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.

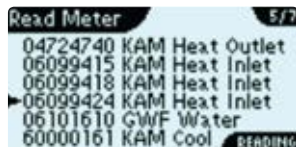


## Communication

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### 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 modul'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)

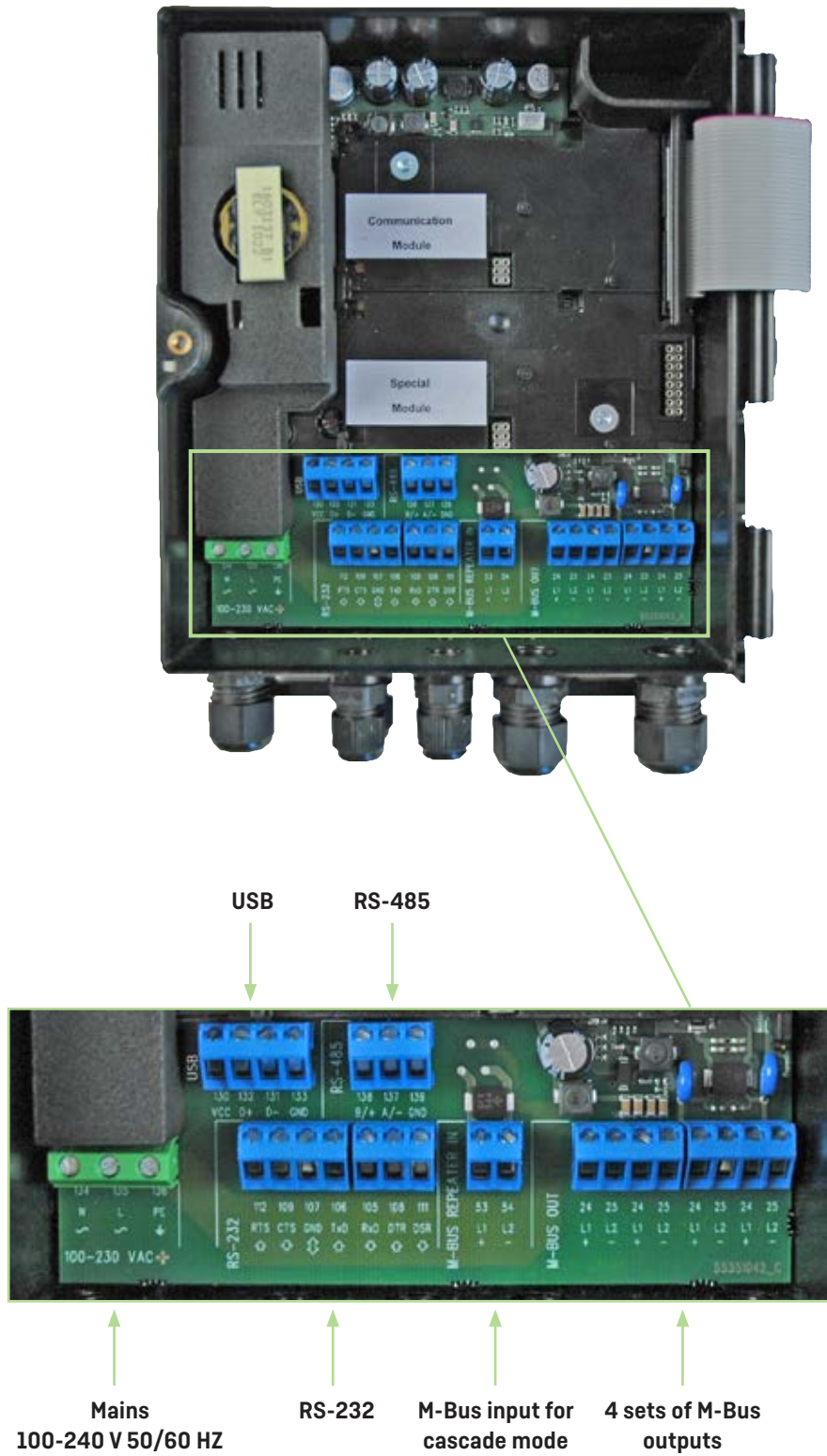
The meter's serial number is used for enhanced secondary addressing. This number is unique to each meter and cannot be changed after production.

## Connections

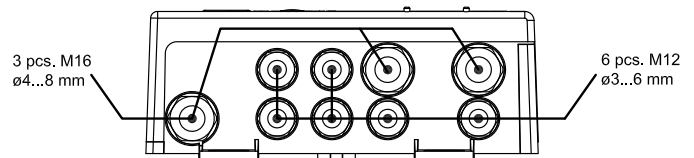
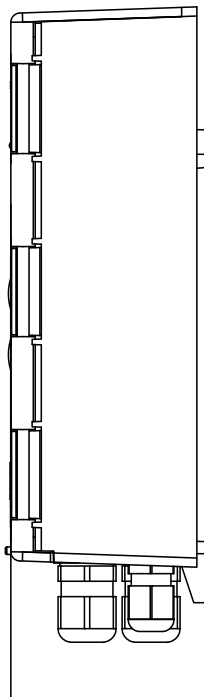
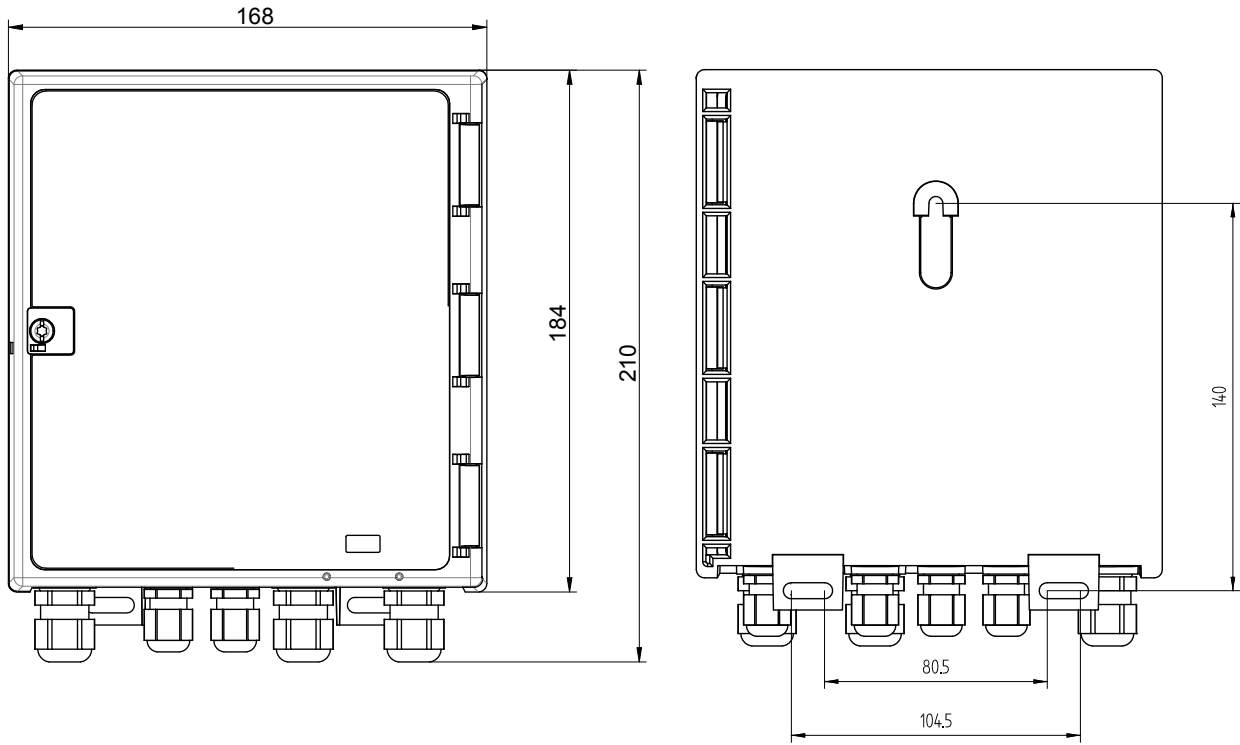
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Number	Abbreviation	Description
<b>Mains</b>		
134	N	Neutral
135	L	Live
136	PE	Protective Earth
<b>USB</b>		
130	VCC	Supply Voltage
131	D-	Data-
132	D+	Data+
133	GND	Ground
<b>RS-485</b>		
137	A/-	Transmit/Receive inverting pin
138	A/+	Transmit/Receive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

## Connections



## Dimensions



## Technical data

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### 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 mm <sup>2</sup>
Communication ports	RS-232, RS-485, USB, optical eye*
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 (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

\* Only 250D

## Ordering

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Description	Order No
M-Bus Master MultiPort 250L	MBM-M200000
M-Bus Master MultiPort 250D	MBM-M210000
RS-232 cable D-sub 9A, 145 cm	6699-335
USB cable, 145 cm	6699-336

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### Local Sales & Support:

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