HYDRO-CENTER

System Products

Overview
Application
Offering Texts
2006-01-01

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Hydrometer GmbH
Industriestrasse 13
91522 Ansbach
Germany

http://www.hydrometer.de
http://www.hydrometer.com/systems
http://www.hydrometer.com/systems/Downloadcenter.html

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HYDRO-CENTER System Products, Overview

HYDRO-CENTER Family



- Fully digital M-Bus level converter / repeater for 60 M-Bus devices max. (HYDRO-CENTER 60) or 250 M-Bus devices max. (HYDRO-CENTER 250).
- Used in extended M-Bus networks (> 1 km line length)
- Interface to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic input channel select.
- The modem input is capable of communicating with any standard (AT command set) modem (analog, ISDN, cellular, satellite modems).
- With PC network adapter connectable to 10 / 100 MBit/s Ethernet networks.
- Expandable with HYDRO-RADIO transceiver for reading HYDRO-RADIO meters.
- M-Bus baudrate 300..9600 baud.
- Memory-version with 2 MByte data logger memory capable of storing approx. 20000 meter values. Programmable automatic meter reading (1, 5, 15 Minutes, 1, 3, 6, 12, 24 hours or to the 1st and 15th of every month).
- HYDRO-CENTER 60 power supply: 11..38 V DC or 15..38 V AC
  HYDRO-CENTER 250 power supply: 20..38 V DC or 24..38 V AC
- With comfortable Windows® configuration and read out software
- Rail mounting housing, width approx. 157 mm.
- Order Info:

HYDRO-CENTER 60	535 000 50
HYDRO-CENTER 60 Memory	535 000 51
HYDRO-CENTER 250	535 000 52
HYDRO-CENTER 250 Memory	535 000 53

- HYDRO-CENTER software, technical documentation, and installation sheet:
  http://www.hydrometer.com/download/HYDROCENTER_Installation.exe
  http://www.hydrometer.com/download/HYDROCENTER_TechDoc_Eng.pdf
  http://www.hydrometer.com/download/HYDROCENTER_Installation_Eng.pdf
  http://www.hydrometer.com/download/HYDROCENTER_Datasheet_Eng.pdf

HYDRO-CENTER 25



- Fully digital M-Bus level converter for 25 M-Bus devices max..
- Used in smaller M-Bus network (< 1 km line length)
- Interface to PC (RS232) and modem (RS232). Automatic input channel select.
- The modem input is capable of communicating with any standard (AT command set) modem (analog, ISDN, cellular, satellite modems).
- With PC network adapter connectable to 10 / 100 MBit/s Ethernet networks.
- M-Bus baudrate 300..2400 baud.
- Memory-version with 2 MByte data logger memory capable of storing approx. 20,000 meter values. Programmable automatic meter reading (1, 5, 15 Minutes, 1, 3, 6, 12, 24 hours or to the 1st and 15th of every month).
- 230 V AC 50 Hz power supply (120 V AC version also available).
- With comfortable Windows® configuration and read out software
- Rail mounting housing, width approx. 73 mm.
- Order Info:

HYDRO-CENTER 25	535 000 93
HYDRO-CENTER 25 Memory	535 000 94

- HYDRO-CENTER software, technical documentation, and installation sheet:

http://www.hydrometer.com/download/HYDROCENTER_Installation.exe
http://www.hydrometer.com/download/HYDROCENTER25_TechDoc_Eng.pdf
http://www.hydrometer.com/download/HYDROCENTER25_Installation_Eng.pdf
http://www.hydrometer.com/download/HYDROCENTER_Datasheet_Eng.pdf

HYDRO-CENTER 25 Solar



- Fully digital M-Bus level converter for 10(25) M-Bus devices max. for 12 V solar power supplies.
- Used in smaller M-Bus network (< 1 km line length)
- Interface to PC (RS232) and modem (RS232). Automatic input channel select.
- The modem input is capable of communicating with any standard (AT command set) modem (analog, ISDN, cellular, satellite modems).
- M-Bus baudrate 300..2400 baud.
- 2 MByte data logger memory capable of storing approx. 20,000 meter values. Programmable automatic meter reading (5, 15 Minutes, or 1 hour).
- 12 V power supply
- Connections to 12 V solar battery, 12 V solar panel and switched 12 V power supply for GSM modem
- Built-in solar power regulator and power management, controls battery voltage, switches GSM modem on and off and prohibits deep de-charging of the battery.
- Rail mounting housing, width approx. 73 mm.
- Order Info:

HYDRO-CENTER 25 Solar	535 000 55

- HYDRO-CENTER software, technical documentation, and installation sheet:

http://www.hydrometer.com/download/HYDROCENTER_Installation.exe
http://www.hydrometer.com/download/HYDROCENTER25_TechDoc_Eng.pdf
http://www.hydrometer.com/download/HYDROCENTER25Solar_Installation_Eng.pdf
http://www.hydrometer.com/download/HYDROCENTER_Datasheet_Eng.pdf

HYDRO-CENTER Power



- Power supply for one HYDRO-CENTER M-Bus master and one cellular modem.
- 230 V 50 Hz AC input
- 24 V 50 Hz AC output, additional 12 V DC (unregulated) for cellular modem
- Output power 24 VA max.
- No clamping of 230 V mains power supply. 230 V is completely isolated. Therefore, even non-technicians are able to connect the HYDRO-CENTER power.
- Rail mounting housing, width approx. 73 mm.

- Order Info:

HYDRO-CENTER Power	535 000 54

- Installation sheet:
http://www.hydrometer.com/download/HYDROCENTERPOWER_Installation.pdf

M-Bus Receiver 868



❑ Radio receiver for capturing the data telegrams of HYDRO-RADIO consumption meters working in the 868 MHz ISM radio band.

❑ Two-wire interface for direct connection to a HYDRO-CENTER 60 / 250 communication central.

❑ Internal memory for buffering 500 HYDRO-RADIO consumption meters, the last received radio data telegram is is stored, respectively.

❑ Internal antenna

❑ 2 LED indicators for: valid radio telegram received and invalid radio telegram received.

❑ Order Info:

M-Bus Receiver 868	535 001 31
M-Bus Receiver 434	535 001 36

❑ Technical documentation and installation sheet:
http://www.hydrometer.com/download/MBusReceiver868_TechDoc.pdf
http://www.hydrometer.com/download/MBusReceiver868_Installation_Eng.pdf
http://www.hydrometer.com/download/MBusReceiver868_Datasheet_Eng.pdf

HYDRO-PORT Analog



- Converter for measuring devices with 4..20 mA current loop output to M-Bus.
- Two analog inputs, one analog output, optional
- One temperature probe input for Pt resistance probes (Pt100, Pt500, Pt1000)
- User-definable multiplier, divider and offset
- Configurable for all physical M-Bus units
- With comfortable Windows® configuration software
- 12..24 V DC power supply necessary for current loop A/D inputs, measuring current for temperature probe is drawn from the M-Bus.
- Rail mounting housing, width approx. 73 mm.
- Order Info:

HYDRO-PORT Analog	535 000 57

- HYDRO-PORT software, technical documentation, and installation sheet:

http://www.hydrometer.com/download/HYDROPORT_Installation.exe
http://www.hydrometer.com/download/HYDROPORT_Manual_Eng.pdf
http://www.hydrometer.com/download/HYDROPORT_TechDoc_Eng.pdf
http://www.hydrometer.com/download/HYDROPORTAnalog_Installation_Eng.pdf

HYDRO-PORT Control

- M-Bus switching module with digital state inputs
- Two bistable relay outputs, two digital inputs
- Relay switching states (on / off) programmable via M-Bus or switched according to input levels.
- Power supplied by M-Bus, no external power supply
- With comfortable Windows® configuration software
- Rail mounting housing, width approx. 73 mm.
- Order Info:

HYDRO-PORT Control 535 000 59



- HYDRO-PORT software, technical documentation, and installation sheet:

http://www.hydrometer.com/download/HYDROPORT_Installation.exe
http://www.hydrometer.com/download/HYDROPORT_Manual_Eng.pdf
http://www.hydrometer.com/download/HYDROPORT_TechDoc_Eng.pdf
http://www.hydrometer.com/download/HYDROPORTControl_Installation_Eng.pdf

HYDRO-PORT Pulse



- Converter for metering devices with pulse output (Reed contact, Namur, S0) to M-Bus.
- Two pulse inputs
- Automatic pulse summation
- User-definable multiplier and divider
- Configurable for all physical M-Bus units, manufacturer, generations, and media
- With comfortable Windows® configuration software
- Power supply from M-Bus if Reed contact inputs are used, additional 24 V AC / DC power supply necessary if Namur or S0 inputs are used.
- Rail mounting housing, width approx. 73 mm.
- Order Info:

HYDRO-PORT Pulse	535 000 56

- HYDRO-PORT software, technical documentation, and installation sheet:

http://www.hydrometer.com/download/HYDROPORT_Installation.exe
http://www.hydrometer.com/download/HYDROPORT_Manual_Eng.pdf
http://www.hydrometer.com/download/HYDROPORT_TechDoc_Eng.pdf
http://www.hydrometer.com/download/HYDROPORTPulse_Installation_Eng.pdf

HYDRO-POCKET



❑ Universal mobile handheld computer for configuring and reading HYDROMETER system products and meters:

- ❑ HYDRO-RADIO
- ❑ HYDRO-CENTER
- ❑ HYDRO-LOG
- ❑ HYDRO-PORT

❑ Powerful Windows CE® Pocket PC with colour touch screen.

❑ Windows CE® software for products mentioned above included.



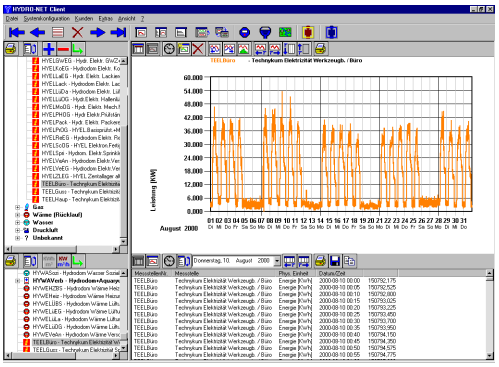
❑ Order Info:

HYDRO-POCKET	580 000 20
HYDRO-POCKET Cable Set for HYDRO-CENTER	580 000 27
HYDRO-POCKET IrDA Optotransceiver	580 000 12
Bluetooth Receiver 868	580 001 32
Bluetooth Receiver 434	580 001 35
Car Installation Set Bluetooth Receiver 868	581 001 33
HYDRO-RADIO Read Out Software for Windows® PC	581 001 xx

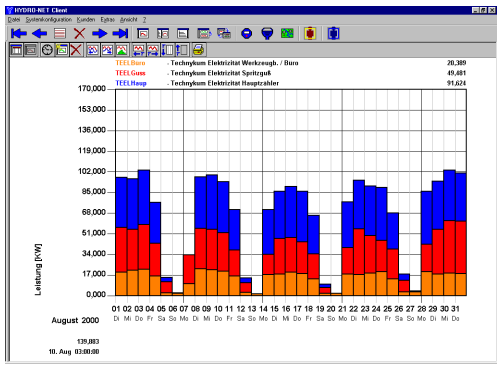
Note: To read or configure HYDRO-RADIO meters (868 MHz / 434 MHz) you will need the Bluetooth Receiver 868 / 434 and the HYDRO-POCKET IrDA Optotransceiver.

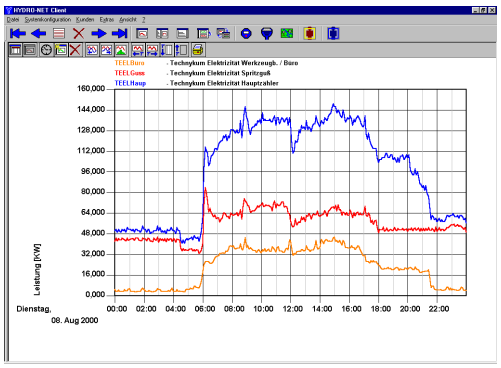
❑ HYDRO-POCKET documentation:
http://www.hydrometer.com/download/HYDROPOCKET_Datasheet_Eng.pdf
http://www.hydrometer.com/download/HYDROPOCKET_Manual_Eng.pdf
http://www.hydrometer.com/download/HYDRORADIO2_Manual_Eng.pdf

HYDRO-NET



- Software for reading, monitoring and visualising any meter data (e.g. electricity meters, heat meters, gas meters, water meters and more).
- Client-Server architecture
- Very user friendly graphical user interface
- Comfortable visualising meter data, e.g. with XY diagrams or tables.
- Manual or automatic meter data export
- Displays absolute meter counts or consumption
- Powerful SQL database for safe data keeping
- Demo-CD on request





- Order Info:

HYDRO-NET for 10 meters	535 000 69
HYDRO-NET for 25 meters	535 000 60
HYDRO-NET for 100 meters	535 000 61
HYDRO-NET for unlimited number of meters	535 000 62
Additional HYDRO-NET Client	535 000 63
Upgrade HYDRO-NET 25 to HYDRO-NET 100	535 000 64
Upgrade HYDRO-NET 25 to HYDRO-NET unlimited	535 000 65
Upgrade HYDRO-NET 100 to HYDRO-NET unlimited	535 000 66

- HYDRO-NET documentation:

http://www.hydrometer.com/download/HYDRONET_Datasheet_Eng.pdf
http://www.hydrometer.com/download/HYDRONET_Manual_Eng.pdf
http://www.hydrometer.com/download/HYDRONET_Devices_Eng.pdf
http://www.hydrometer.com/download/HYDRONET_DATA.exe

M-Bus Water Meters, Overview

Apartment (Submetering) Water Meter Scampy with electronic M-Bus Module IP 54

- Apartment water meter with capsule measuring system and electronic M-Bus module (Scampy).
- Protective class IP 54
- For horizontal and vertical installations
- For 30°C (cold water) and 90°C (warm water)
- Nominal flow rate Qp = 1.5 m3/h
- Metrological class A, **B**, C * H/V



- Versions:

M-MKEMB Apartment Water Meter with M-Bus, IP 54
30°C Qp 1.5 90°C Qp 1.5

- Software for configuration:

http://www.hydrometer.com/download/HYDROSET_Installation.exe
http://www.hydrometer.com/download/HYDROSET_Manual_Eng.pdf

Multi Jet Water Meter with Electronic M-Bus Module IP 54



- Multi jet water meter (dry runner with magnet coupling) with electronic M-Bus module (Flypper II).
- Protective class IP 54
- For horizontal installation and for rising pipes and down pipes
- For 30°C (cold water) or 90°C (warm water)
- Nominal flow rate Qp = 2.5 / 6 / 10 m3/h
- Metrological class A, **B** * H
- Versions:

M-T EZM-MB Multi Jet Water Meter with M-Bus, Horizontal Installation, IP 54

30°C	Qp 2.5	90°C	Qp 2.5
30°C	Qp 6	90°C	Qp 6
30°C	Qp 10	90°C	Qp 10

M-TS EZM-MB Multi Jet Water Meter with M-Bus, Rising Pipe Installation, IP 54

30°C	Qp 2.5	90°C	Qp 2.5
30°C	Qp 6	90°C	Qp 6
30°C	Qp 10	90°C	Qp 10

M-TF EZM-MB Multi Jet Water Meter with M-Bus, Down Pipe Installation, IP 54

30°C	Qp 2.5	90°C	Qp 2.5
30°C	Qp 6	90°C	Qp 6
30°C	Qp 10	90°C	Qp 10

- Software for configuration:

http://www.hydrometer.com/download/HYDROSET_Installation.exe
http://www.hydrometer.com/download/HYDROSET_Manual_Eng.pdf

Multi Jet Water Meter with Electronic M-Bus Module IP 68



- Multi jet water meter (dry runner with magnet coupling) with electronic M-Bus module (Flypper II).
- Protective class IP 68
- For horizontal installation and for rising pipes and down pipes
- For 30°C (cold water)
- Nominal flow rate Qp = 2.5 / 6 / 10 m3/h
- Metrological class A, **B** * H
- Versions:

M-T EZM	Multi Jet Water Meter with M-Bus, Horizontal Installation, 30°C, IP 68 Qp 2.5 Qp 6 Qp 10
M-TS EZM	Multi Jet Water Meter with M-Bus, Rising Pipe Installation, 30°C, IP 68 Qp 2.5 Qp 6 Qp 10
M-TF EZM	Multi Jet Water Meter with M-Bus, Down Pipe Installation, 30°C, IP 68 Qp 2.5 Qp 6 Qp 10

- Software for configuration:

http://www.hydrometer.com/download/HYDROSET_Installation.exe
http://www.hydrometer.com/download/HYDROSET_Manual_Eng.pdf

Bulk Water Meter with Electronic M-Bus Module IP 68



- Woltman Meter (Tyrbot) with electronic M-Bus module
- Protective class IP 68
- For horizontal and vertical installation
- For 30°C (cold water)
- Nominal diameter DN = 50 / 65 / 80 / 100 / 125 / 150 / 200 / 250 / 300 / 400 / 500 mm
- Versions:

WP-EZM Bulk Water Meter with M-Bus, Woltman Parallel, 30°C, IP 68
DN 50
DN 65
DN 80
DN 100
DN 125
DN 150
DN 200
DN 250
DN 300
DN 400
DN 500

WS-EZM Bulk Water Meter with M-Bus, Woltman Anti-Parallel, 30°C, IP 68
DN 50
DN 65
DN 80
DN 100
DN 150

- Software for configuration:

http://www.hydrometer.com/download/HYDROSET_Installation.exe
http://www.hydrometer.com/download/HYDROSET_Manual_Eng.pdf

Compound Water Meter with Electronic M-Bus Module IP68

- Compound water meter for heavily varying flow rates (Tyrbot) with electronic M-Bus module
- Protective class IP 68
- For horizontal installation
- For 30°C (cold water)
- Nominal diameter DN = 50 / 80 / 100 / 150 mm
- Versions:

WPV-EZM	Compound Water Meter with M-Bus, 30°C, IP 68	
	DN 50	
	DN 80	
	DN 100	
	DN 150	





- Software for configuration:

http://www.hydrometer.com/download/HYDROSET_Installation.exe
http://www.hydrometer.com/download/HYDROSET_Manual_Eng.pdf

HYDRO-RADIO Meters, Overview

Rotating Piston Water Meter Bonyto with HYDRO-RADIO Clamp-On Module

- Volumetric water meter for increased metering precision.
- HYDRO-RADIO clamp-on module for radio reading (up to 100 meter in outside areas without obstacles).
- Protective class IP 68.
- 868 MHz
- 15 years battery life time
- Volume resolution 1 litre



- Versions:

  Rotating Piston Meter with HYDRO-RADIO, 30°C, IP 68
  Qp 1.5
  Qp 2.5

M-Bus Heat Meter, Overview

Ultrasonic Compact Heat Meter SHARKY-HEAT with M-Bus IP 54

- Compact ultrasonic heat meter with M-Bus
- Pt 100 or Pt 500 temperature sensors
- Protective class IP 54 Protective class IP 54
- For 10°C .. 90°C water temperature
- Nominal flow rate Qp = 0.6 / 1.5 / 2.5 m3/h
- Metrological class A, **B**, C * H/V



- Versions:

SHARKY-HEAT	Compact Heat Meter with M-Bus, 10°C..90°C, IP 54
	Qp 0.6
	Qp 1.5
	Qp 2.5

- Software for configuration:

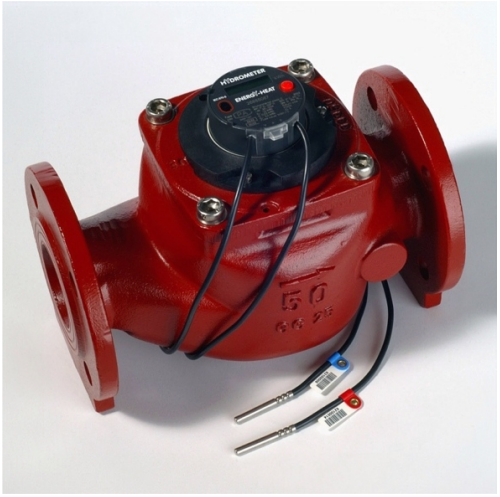
http://www.hydrometer.com/download/HYDROSET_Installation.exe
http://www.hydrometer.com/download/HYDROSET_Manual_Eng.pdf

Mechanical Compact Heatmeter RAY-HEAT with M-Bus IP 54

- Compact heat meter with multi-jet measuring principle
- Pt 500 temperature probe
- Protective class IP 54
- For 10°C .. 90°C water temperature
- Nominal flow rate 440: Qp = 0.6 / 1.5 / 2.5 m3/h
  Nominal flow rate 441: Qp = 3.5 / 6 / 10 m3/h
  Nominal flow rate 442: Qp = 15 / 25 / 40 / 60 m3/h



- Versions:
  RAY-HEAT
  Compact heat meter with M-Bus, 10°C..90°C, IP 54
  - Qp 0.6
  - Qp 1.5
  - Qp 2.5
  - Qp 3.5
  - Qp 6
  - Qp 10
  - Qp 15
  - Qp 25
  - Qp 40
  - Qp 60



- Software for configuration:
  http://www.hydrometer.com/download/HYDROSET_Installation.exe
  http://www.hydrometer.com/download/HYDROSET_Manual_Eng.pdf

HYDRO-CENTER Sets, Overview

The HYDRO-CENTER sets are providing a completely built M-Bus system for typical applications, including power supply, installation box, and modem for remote connection.
All sets (except HYDRO-CENTER Set Solar) are coming in a well designed IP55 plastic housing (for installation in dry places, approx. 31x40x15 cm) or a IP66 metal housing (for installation in wet places, approx. 30x40x21 cm).
By using the HYDRO-CENTER Power supply there is no clamping of 230 V AC within the installation box, therefore even non-technicians can open up the installation box. All voltage within the box is below 42 V.





HYDRO-CENTER Set in an IP55 class plastic housing
Note: The product delivered may vary in design





HYDRO-CENTER Set in an IP66 class metal housing
Note: The product delivered may vary in design

HYDRO-CENTER Sets without Modem

HYDRO-CENTER Set 25 M

- HYDRO-CENTER 60 Memory
- IP55 installation box (plastic for dry rooms)
- Completely built up for direct connection of up to M-Bus 25 meters.

HYDRO-CENTER Set 25 M IP66

- HYDRO-CENTER 60 Memory
- IP66 installation box (metal, for wet rooms)
- Completely built up for direct connection of up to M-Bus 25 meters.

HYDRO-CENTER Set 60 M

- HYDRO-CENTER 60 Memory
- HYDRO-CENTER Power
- IP55 installation box (plastic for dry rooms)
- Completely built up for direct connection of up to M-Bus 60 meters.

HYDRO-CENTER Set 60 M IP66

- HYDRO-CENTER 60 Memory
- HYDRO-CENTER Power
- IP66 installation box (metal, for wet rooms)
- Completely built up for direct connection of up to M-Bus 60 meters.

HYDRO-CENTER Set 250 M

- HYDRO-CENTER 250 Memory
- HYDRO-CENTER Power
- IP55 installation box (plastic for dry rooms)
- Completely built up for direct connection of up to M-Bus 250 meters.

HYDRO-CENTER Set 250 M IP66

- HYDRO-CENTER 250 Memory
- HYDRO-CENTER Power
- IP66 installation box (metal, for wet rooms)
- Completely built up for direct connection of up to M-Bus 250 meters.

- Order info:

HYDRO-CENTER Set 25 M	535 000 95
HYDRO-CENTER Set 25 M IP66	535 000 96
HYDRO-CENTER Set 60 M	535 000 80
HYDRO-CENTER Set 60 M IP66	535 000 81
HYDRO-CENTER Set 250 M	535 000 82
HYDRO-CENTER Set 250 M IP66	535 000 83

HYDRO-CENTER Sets with 56 K Analog Modem

HYDRO-CENTER Set 25 M Analog

- HYDRO-CENTER 60 Memory
- 56K analog modem
- IP55 installation box (plastic for dry rooms)
- Completely built up for direct connection of up to M-Bus 60 meters and telephone line.

HYDRO-CENTER Set 25 M IP66 Analog

- HYDRO-CENTER 60 Memory
- 56K analog modem
- IP66 installation box (metal for wet rooms)
- Completely built up for direct connection of up to M-Bus 60 meters and telephone line.

HYDRO-CENTER Set 60 M Analog

- HYDRO-CENTER 60 Memory
- HYDRO-CENTER Power
- 56K analog modem
- IP55 installation box (plastic for dry rooms)
- Completely built up for direct connection of up to M-Bus 60 meters and telephone line.

HYDRO-CENTER Set 60 M IP66 Analog

- HYDRO-CENTER 60 Memory
- HYDRO-CENTER Power
- 56K analog modem
- IP66 installation box (metal for wet rooms)
- Completely built up for direct connection of up to M-Bus 60 meters and telephone line.

HYDRO-CENTER Set 250 M Analog

- HYDRO-CENTER 250 Memory
- HYDRO-CENTER Power
- 56K analog modem
- IP55 installation box (plastic for dry rooms)
- Completely built up for direct connection of up to M-Bus 250 meters and telephone line.

HYDRO-CENTER Set 250 M Analog IP66

- HYDRO-CENTER 250 Memory
- HYDRO-CENTER Power
- 56K analog modem
- IP66 installation box (metal for wet rooms)
- Completely built up for direct connection of up to M-Bus 250 meters and telephone line.

Order Info:

HYDRO-CENTER Set 25 M Analog	535 000 97
HYDRO-CENTER Set 25 M Analog IP66	535 000 98
HYDRO-CENTER Set 60 M Analog	535 000 84
HYDRO-CENTER Set 60 M Analog IP66	535 000 85
HYDRO-CENTER Set 250 M Analog	535 000 86
HYDRO-CENTER Set 250 M Analog IP66	535 000 87

HYDRO-CENTER Sets with Cellular-Modem

HYDRO-CENTER Set 25 M GSM

- HYDRO-CENTER 60 Memory
- Cellular modem
- IP55 installation box (plastic for dry rooms)
- Completely built up for direct connection of up to M-Bus 60 meters

HYDRO-CENTER Set 25 M IP66 GSM

- HYDRO-CENTER 60 Memory
- Cellular modem
- IP66 installation box (metal for wet rooms)
- Completely built up for direct connection of up to M-Bus 60 meters

HYDRO-CENTER Set 60 M GSM

- HYDRO-CENTER 60 Memory
- HYDRO-CENTER Power
- Cellular modem
- IP55 installation box (plastic for dry rooms)
- Completely built up for direct connection of up to M-Bus 60 meters

HYDRO-CENTER Set 60 M IP66 GSM

- HYDRO-CENTER 60 Memory
- HYDRO-CENTER Power
- Cellular modem
- IP66 installation box (metal for wet rooms)
- Completely built up for direct connection of up to M-Bus 60 meters

HYDRO-CENTER Set 250 M GSM

- HYDRO-CENTER 250 Memory
- HYDRO-CENTER Power
- Cellular modem
- IP55 installation box (plastic for dry rooms)
- Completely built up for direct connection of up to M-Bus 250 meters

HYDRO-CENTER Set 250 M GSM IP66

- HYDRO-CENTER 250 Memory
- HYDRO-CENTER Power
- Cellular modem
- IP66 installation box (metal for wet rooms)
- Completely built up for direct connection of up to M-Bus 250 meters

❑ Order Info:

HYDRO-CENTER Set 25 M GSM	535 000 99
HYDRO-CENTER Set 25 M GSM IP66	535 001 08
HYDRO-CENTER Set 60 M GSM	535 000 88
HYDRO-CENTER Set 60 M GSM IP66	535 000 89
HYDRO-CENTER Set 250 M GSM	535 000 90
HYDRO-CENTER Set 250 M GSM IP66	535 000 91

HYDRO-CENTER Set with Cellular Modem and Solar Power Supply





HYDRO-CENTER Set Solar with cellular modem and solar power supply
Note: The product delivered may vary in design

HYDRO-CENTER Set Solar

- ❑ HYDRO-CENTER 25 Solar
- ❑ Cellular modem
- ❑ 12 V / 30 Wp solar panel
- ❑ 12 V / 32 Ah maintenance free lead accumulator
- ❑ 10 meter cable
- ❑ IP66 installation box (metal for wet rooms)
- ❑ Completely built up for direct connection of 10..20 M-Bus meters.

❑ Order Info:

HYDRO-CENTER Set Solar	535 000 92

Application examples HYDRO-CENTER System Products

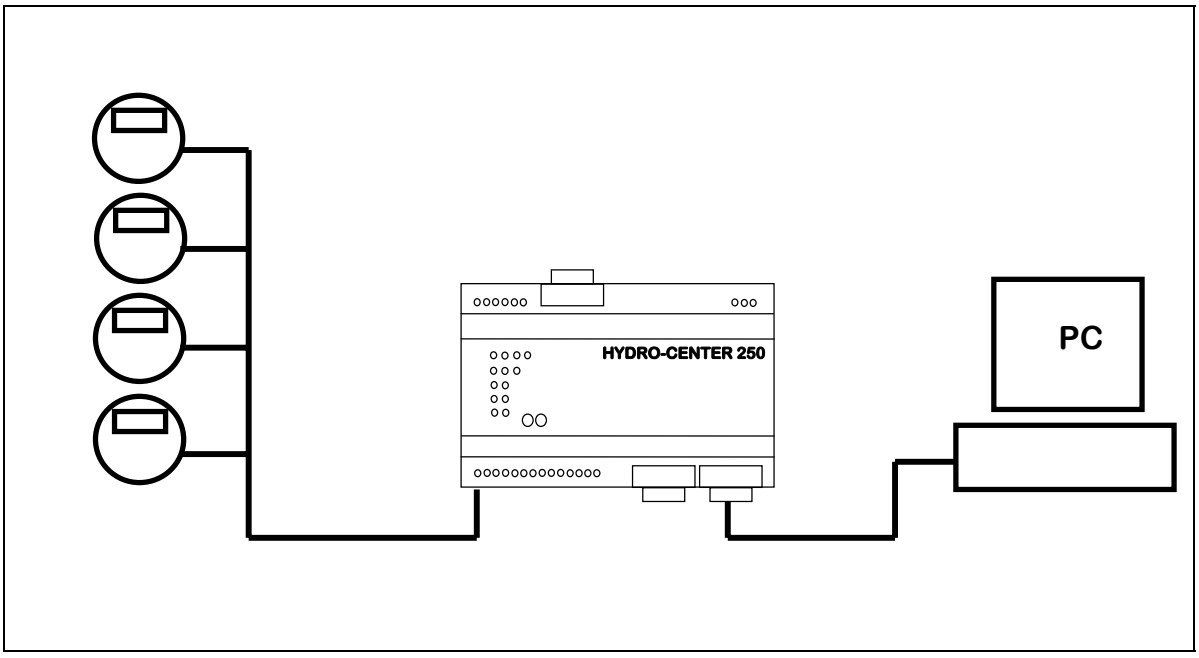
Without reconfiguration or reprogramming the HYDRO-CENTER fits for many purposes. In general one has to decide about two things:

1. How many M-Bus devices should be connected to one HYDRO-CENTER?
   Depending on the number of M-Bus devices select the HYDRO-CENTER 60 or the HYDRO-CENTER 250 or user cascaded HYDRO-CENTERs for even more M-Bus devices.

2. Should the HYDRO-CENTER automatically collect data (data logger) or is it only a M-Bus level converter / repeater?
   Use the HYDRO-CENTER Memory for automatic data logging and use the standard HYDRO-CENTER if the data logger function is not necessary.

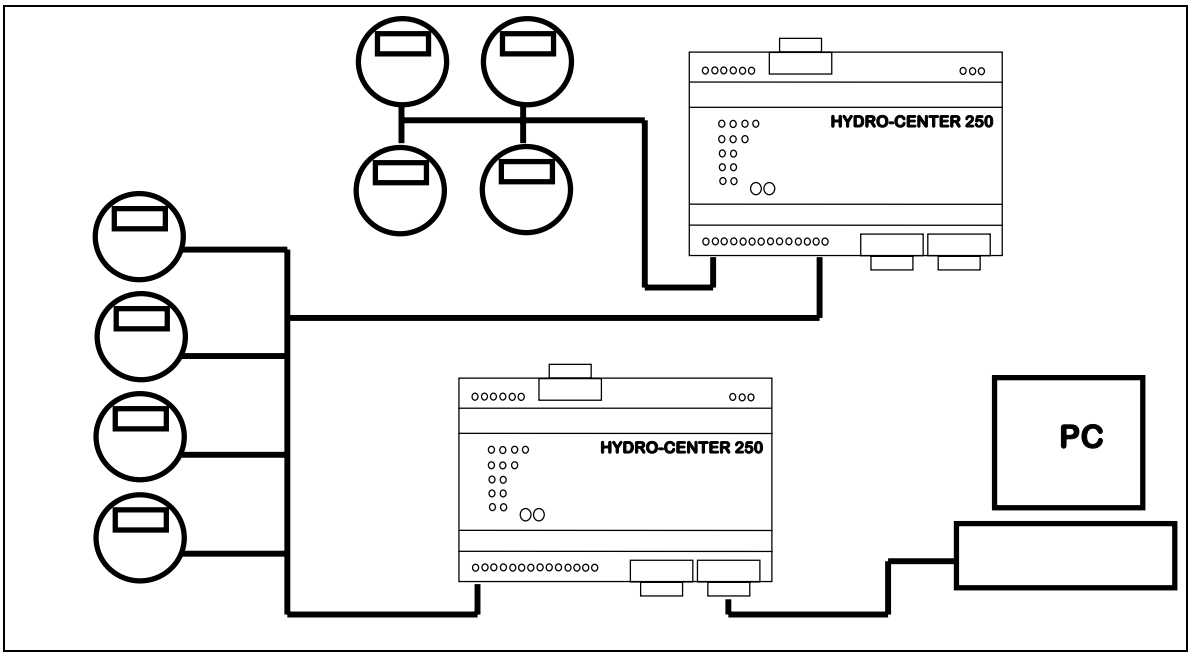
M-Bus Level Converter

Use the HYDRO-CENTER 60 or 250 without memory option for this application. The PC is connected directly to the PC interface of the HYDRO-CENTER and reads out the M-Bus devices. You may connect 60 or 250 devices max.



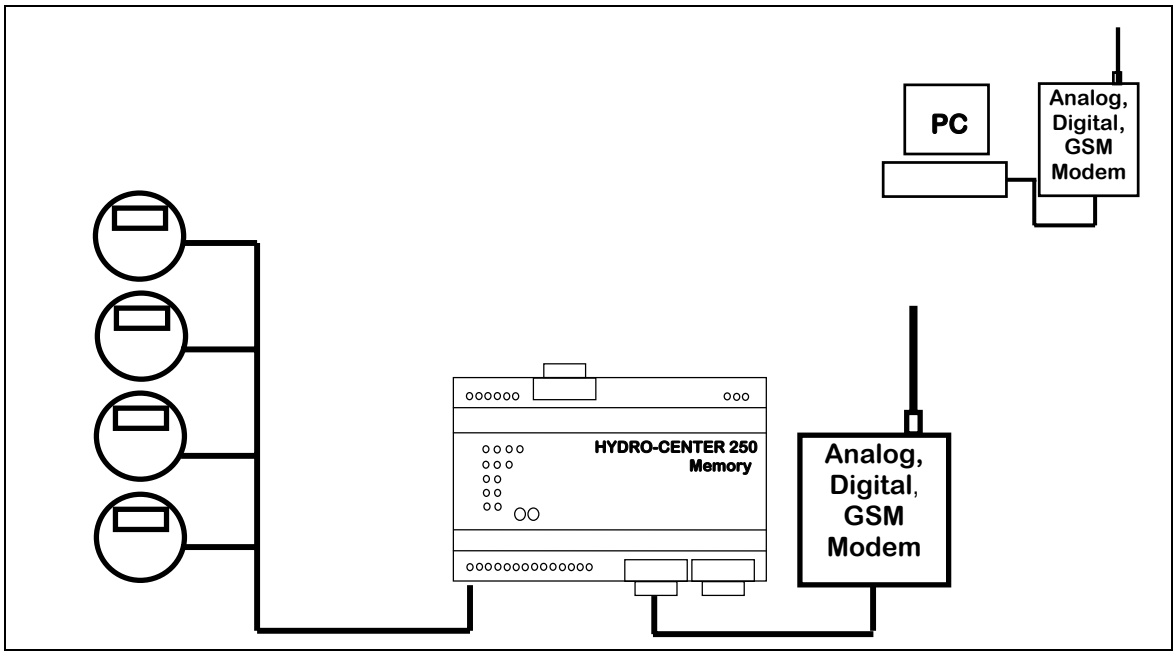
M-Bus Level Converter and Repeater

If there are more than 250 M-Bus devices in one M-Bus network or if the M-Bus network has got very long lines, then a M-Bus Repeater is used. The HYDRO-CENTER can be used as Repeater without reconfiguration. Use the HYDRO-CENTER 60 or 250 without memory option for this application, also.



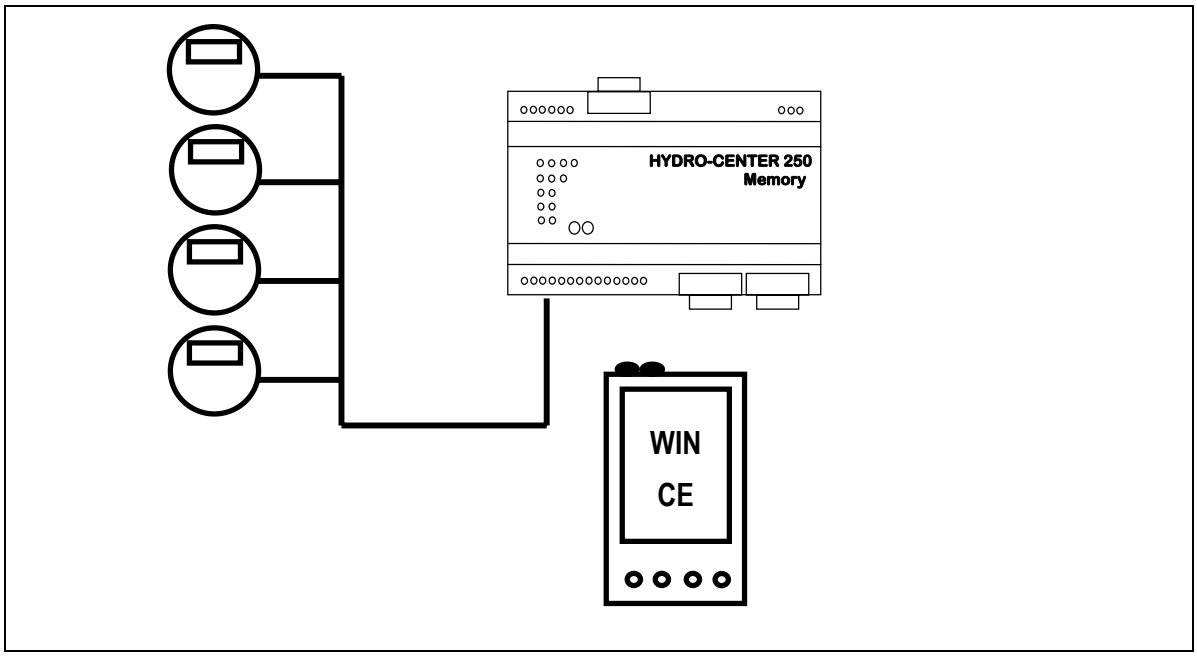
M-Bus Remote Reading

If the M-Bus network is at a remote site you may use the telephone network (analog, digital (ISDN), wireless (GSM)) to read out the M-Bus devices. If you only want to collect data of the very moment you are calling (current values, reading date values stored in the M-Bus meter itself) then you can use a HYDRO-CENTER without memory option. However, in most cases the HYDRO-CENTER Memory is used since it is able to read out the meters at specific time points and collects the data in its non-volatile Flash-EPROM memory. The collected data are then retrieved at once by making a remote call. Note, that you have to use a HYDRO-CENTER Memory if you want to use a cellular-modem (GSM), since only the Memory version is able to store the PIN-code of the phone card, necessary with cellular modems.



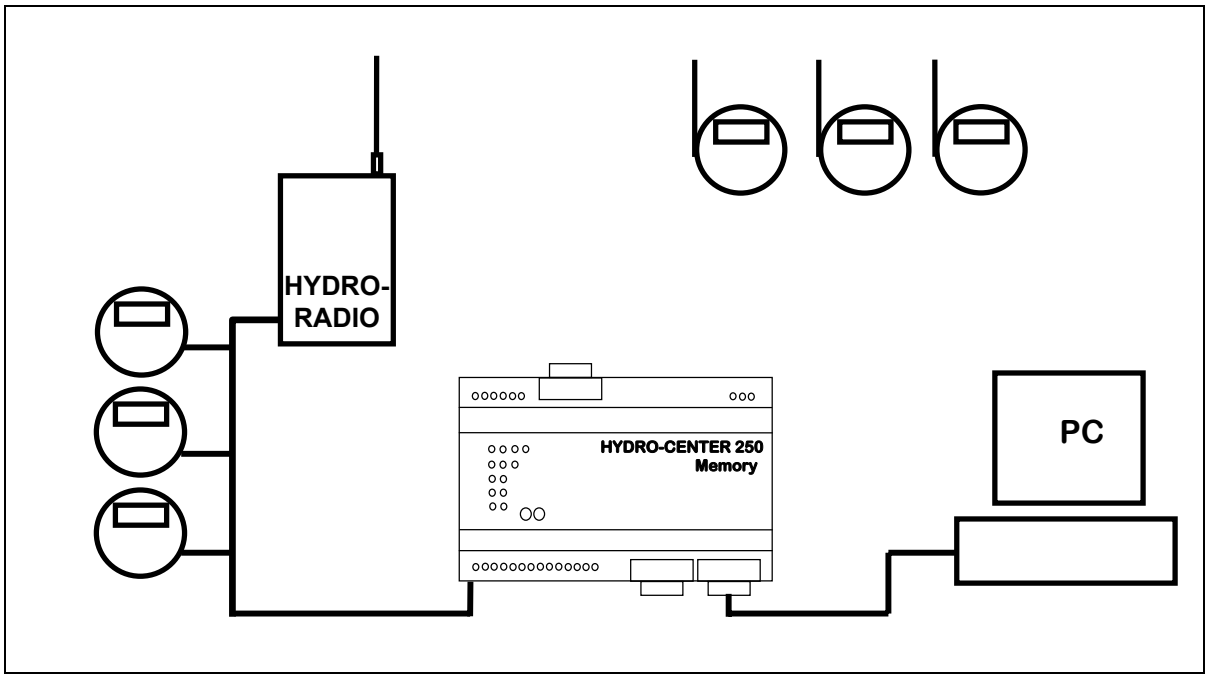
M-Bus Handheld Computer Reading

If the M-Bus network is at a remote site and not telephone connection is possible / wanted you may collect the data on-site using a handheld-computer. If you only want to collect data of the very moment you are on-site (current values, reading date values stored in the M-Bus meter itself) then you can use a HYDRO-CENTER without memory option. However, in most cases the HYDRO-CENTER Memory is used since it is able to read out the meters at specific time points and collects the data in its non-volatile Flash-EPROM memory. The collected data are then retrieved at once with the handheld-computer.



M-Bus und HYDRO-RADIO Meters in One System

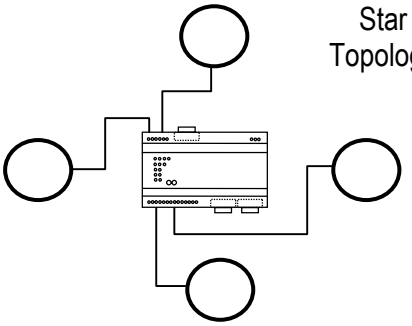
A HYDRO-RADIO transceiver can be connected to the HYDRO-CENTER to read out HYDRO-RADIO meters. Depending on the application a HYDRO-CENTER or HYDRO-CENTER Memory may be used.



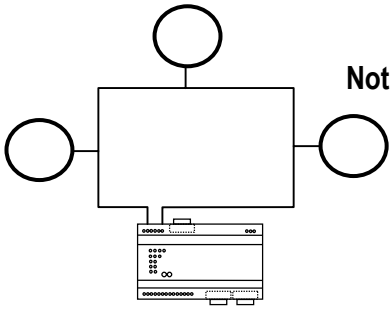
M-Bus Network Installation Notes

Topology

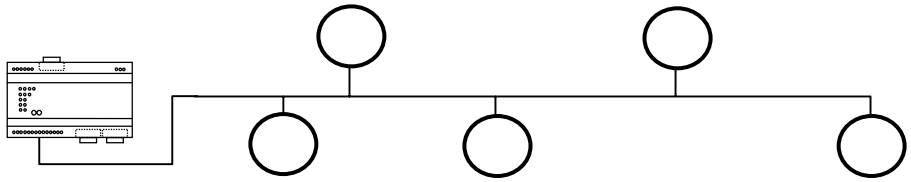
The topology of the M-Bus network is (almost) arbitrary. Only the ring topology as shown beneath should be avoided. In general the length of the cables should be minimized.



Star Topology



Ring Topology **Not Recommended !**

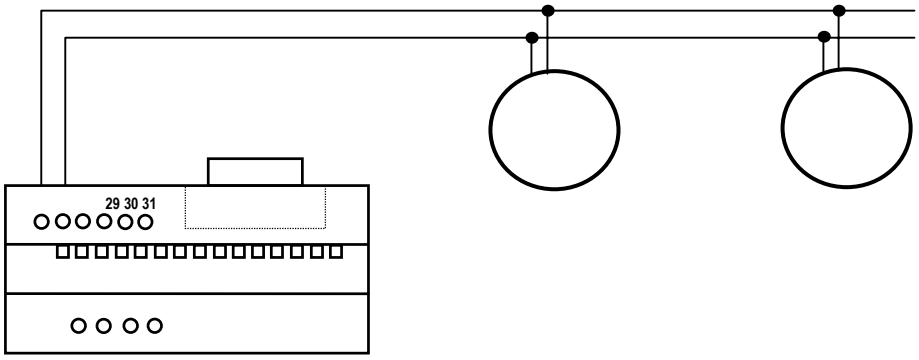


Bus Topology

Usually a mixture between star and bus topology should be used.

M-Bus Cable

The M-Bus uses two wire cables which are going from the M-Bus Master / Repeater (HYDRO-CENTER) to each M-Bus device (bus structure). The M-Bus is polarity independent and needs no line termination resistors at the end of the cables.



Any cable type may be used as long as the cable is suitable for 42 V / 500 mA. Shielding is not necessary and not recommended since the capacity of the cable should be minimized.

In most cases a standard telephone cable is used which is a twisted pair wire with a diameter of 0.75 mm^2 each (2 x 0.75 mm^2). This type of cable should be used for the main wiring. For the wiring to the meters from the main wiring (last 1 .. 5 m to the meter) a cable with smaller diameter may be used.

Maximum Cable Length in M-Bus Networks

The question for the maximum possible cable length in M-Bus networks is not easy to answer since several parameters are critical. However, an example calculation is shown here to give an estimation.

Cable Type:	2 x 0.75 mm
Cable Resistance:	75 Ohm / km
Cable Capacity:	50 nF / km
Capacity of one M-Bus Device:	1 nF
Current of one M-Bus Device:	1.5 mA

The limiting parameters in M-Bus networks are mainly the cable resistance and the cable capacity plus the capacity of the devices (= bus capacity).

The cable resistance causes, depending on the bus current, a bus voltage drop. The maximum bus voltage drop may not be more than 16 V .. 18 V since the minimum bus voltage at any device must not be lower than 24 V (40 V – 24 V = 16 V).

$R = U / I$

R: Cable Resistance
U: Voltage Drop over Cable Length
I: Bus Current
N: Number of connected M-Bus Devices

$U_{max} = 16$ V
$I = N * 1.5$ mA

$R = 16 / (1.5 * N)$ Ohm

The cable resistance, therefore, limits the maximum possible cable length from the M-Bus Master / Repeater (HYDRO-CENTER) to the device with the largest distance away from it (largest cable segment). The table beneath shows an estimation of the maximum cable segment length:

Number M-Bus Devices	Max. Cable Segment Resistance	Max. Cable Segment Length (75 Ohm / km)
1	10.7 kOhm	142 km
10	1.1 kOhm	14.7 km
50	213 Ohm	2.8 km
100	106 Ohm	1.4 km
150	71 Ohm	0.95 km
200	53 Ohm	0.71 km
250	43 Ohm	0.57 km

The cable segment length is the distance from the HYDRO-CENTER to the M-Bus device furthest away.

NOTE: The given maximum cable segment length takes into account only the bus resistance and not the bus capacity. Therefore, some of the cable lengths in the table may not be possible in reality. At the end of the chapter is a table with real example configurations.

The cable capacity plus the capacity of the M-Bus devices (= bus capacity) is responsible for sloppy signal edges. Therefore, the bus capacity limits the maximum data transfer rate of the M-Bus. The HYDRO-CENTER is able to drive approx. 1 µF at a baudrate of 300 baud. The table beneath gives an estimation of the bus capacity / baudrate relationship:

Baudrate	Max. Bus Capacity	Example Configuration
300 Baud	1000 nF	1 Device + 20 km Cable (1 * 1 nF + 20 * 50 nF) 50 Devices + 19 km Cable (50 * 1 nF + 19 * 50 nF) 250 Devices + 14 km Cable (250 * 1 nF + 14 * 50 nF)
2400 Baud	300 nF	1 Device + 6 km Cable (1 * 1 nF + 6 * 50 nF) 50 Devices + 5 km Cable (50 * 1 nF + 5 * 50 nF) 250 Devices + 1 km Cable (250 * 1 nF + 1 * 50 nF)
9600 Baud	100 nF	1 Device + 2 km Cable (1 * 1 nF + 2 * 50 nF) 50 Devices + 1 km Cable (50 * 1 nF + 1 * 50 nF)

The given cable length is the sum over all cables attached to one HYDRO-CENTER.

NOTE: The mentioned example configurations are taking into account only the bus capacity but not the bus resistance. Therefore, some of the cable lengths in the table may not be possible in reality. At the end of the chapter is a table with real example configurations.

The tables beneath are showing some example configurations depending on bus resistance and capacity.

In general the following topology is taken:

All devices are connected to the HYDRO-CENTER after max. cable segment length



NOTE: The table values are theoretical maximum values. Usually the M-Bus devices are connected to the cable with varying distances from the HYDRO-CENTER. Therefore, larger cable length can be achieved in reality. However, for very large cable length additional parameters must be taken into account (e.g noise) and, therefore, cable length larger than approx. 10 km should not be used without amplification.

Baudrate: **300 Baud**
Cable Resistance: 75 Ohm / km
Cable Capacity: 50 nF / km

Capacity of one M-Bus Device: 1 nF
Current of one M-Bus Device: 1.5 mA

Number of Devices	Max. Complete Cable Length (Bus Capacity)	Max. Cable Segment Length (Bus Resistance)	Max. Cable Length for Configuration shown above
1	20 km	142 km	20 km
50	19 km	14.7 km	14.7 km
250	14 km	0.57 km	0.57 km

Baudrate: **2400 Baud**
Cable Resistance: 75 Ohm / km
Cable Capacity: 50 nF / km

Capacity of one M-Bus Device: 1 nF
Current of one M-Bus Device: 1.5 mA

Number of Devices	Max. Complete Cable Length (Bus Capacity)	Max. Cable Segment Length (Bus Resistance)	Max. Cable Length for Configuration shown above
1	6 km	142 km	6 km
50	5 km	14.7 km	5 km
250	1 km	0.57 km	0.57 km

Baudrate: **9600 Baud**
Cable Resistance: 75 Ohm / km
Cable Capacity: 50 nF / km

Capacity of one M-Bus Device: 1 nF
Current of one M-Bus Device: 1.5 mA

Number of Devices	Max. Complete Cable Length (Bus Capacity)	Max. Cable Segment Length (Bus Resistance)	Max. Cable Length for Configuration shown above
1	2 km	142 km	2 km
50	1 km	14.7 km	1 km

❑ Software for calculating M-Bus network distances:
http://www.hydrometer.com/download/MBusNetworkCalculation.exe

Offering Texts for HYDRO-CENTER System Products

HYDRO-CENTER 25
Fully digital M-Bus level converter for 25 M-Bus devices max., interfaces to PC (RS232) and modem (RS232). M-Bus baudrate 300..2400 baud. Power supply 230 V AC 50 Hz. Rail mounting housing.

HYDRO-CENTER 60 Memory
Fully digital M-Bus level converter for 25 M-Bus devices max., interfaces to PC (RS232) and modem (RS232). Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..2400 baud. Power supply 230 V AC 50 Hz. Rail mounting housing.

HYDRO-CENTER 60
Fully digital M-Bus level converter / repeater for 60 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. M-Bus baudrate 300..9600 baud. Power supply 11..38 V DC or 15..38 V AC. Rail mounting housing.

HYDRO-CENTER 60 Memory
Fully digital M-Bus level converter / repeater for 60 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory.
M-Bus baudrate 300..9600 baud. Power supply 11..38 V DC or 15..38 V AC. Rail mounting housing.

HYDRO-CENTER 250
Fully digital M-Bus level converter / repeater for 250 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. M-Bus baudrate 300..9600 baud. Power supply 20..38 V DC or 24..38 V AC. Rail mounting housing.

HYDRO-CENTER 250 Memory
Fully digital M-Bus level converter / repeater for 250 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Power supply 20..38 V DC or 24..38 V AC. Rail mounting housing.

HYDRO-CENTER Power
Power supply for HYDRO-CENTER M-Bus level converter / repeater family. 230 V 50 Hz AC input, 24 V 50 Hz AC output (max. 1 A) and 12 V DC output (max. 200 mA). Rail mounting housing.

HYDRO-CENTER Solarcontrol
Time controlled on- / off- switch for HYDRO-CENTER and cellular modem to provide 12 V solar power supply. Rail mounting housing.

HYDRO-PORT Analog

Converter for measuring devices with 4..20 mA current loop output to M-Bus. Two analog inputs, one analog output 4..20 mA optional, one analog input for a platinum resistor temperature probe. Configurable for all physical M-Bus units, with comfortable Windows® configuration software, 24 V DC power supply.

HYDRO-PORT Control

M-Bus switching module with two relay outputs and two digital state inputs. Switching state of the relay outputs programmable via M-Bus or depending on digital inputs. With comfortable Windows® configuration software, no power supply except M-Bus necessary.

HYDRO-PORT Pulse

Converter for metering devices with pulse output (Reed contact, Namur, S0) to M-Bus. Two pulse inputs, automatic pulse summation, configurable for all physical M-Bus units, manufacturer, generations, and media. With comfortable Windows® configuration software. Power supply from M-Bus if used with Reed contact, 24 V AC / DC power supply if used with Namur or S0 input. Rail mounting housing.

HYDRO-CENTER Set 25 M

Fully digital M-Bus level converter for 25 M-Bus devices max., interfaces to PC (RS232) and modem (RS232). Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..2400 baud. Completely built up in class IP55 plastic installation box including power supply for connecting to 230 V 50 Hz AC mains power.

HYDRO-CENTER Set 25 M IP66

Fully digital M-Bus level converter for 25 M-Bus devices max., interfaces to PC (RS232) and modem (RS232). Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..2400 baud. Completely built up in class IP66 metal installation box including power supply for connecting to 230 V 50 Hz AC mains power.

HYDRO-CENTER Set 60 M

Fully digital M-Bus level converter / repeater for 60 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP55 plastic installation box including power supply for connecting to 230 V 50 Hz AC mains power.

HYDRO-CENTER Set 60 M IP66

Fully digital M-Bus level converter / repeater for 60 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP66 metal installation box including power supply for connecting to 230 V 50 Hz AC mains power.

HYDRO-CENTER Set 250 M

Fully digital M-Bus level converter / repeater for 250 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP55 plastic installation box including power supply for connecting to 230 V 50 Hz AC mains power.

HYDRO-CENTER Set 250 M IP66

Fully digital M-Bus level converter / repeater for 250 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP66 metal installation box including power supply for connecting to 230 V 50 Hz AC mains power.

HYDRO-CENTER Set 25 M Analog

Fully digital M-Bus level converter for 25 M-Bus devices max., interfaces to PC (RS232) and modem (RS232). Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..2400 baud. Completely built up in class IP55 plastic installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in 56 K analog modem.

HYDRO-CENTER Set 25 M Analog IP66

Fully digital M-Bus level converter for 25 M-Bus devices max., interfaces to PC (RS232) and modem (RS232). Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..2400 baud. Completely built up in class IP66 metal installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in 56 K analog modem.

HYDRO-CENTER Set 60 M Analog

Fully digital M-Bus level converter / repeater for 60 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP55 plastic installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in 56 K analog modem.

HYDRO-CENTER Set 60 M Analog IP66

Fully digital M-Bus level converter / repeater for 60 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP66 metal installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in 56 K analog modem.

HYDRO-CENTER Set 250 M Analog

Fully digital M-Bus level converter / repeater for 250 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP55 plastic installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in 56 K analog modem.

HYDRO-CENTER Set 250 M Analog IP66

Fully digital M-Bus level converter / repeater for 250 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP66 metal installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in 56 K analog modem.

HYDRO-CENTER Set 25 M GSM

Fully digital M-Bus level converter for 25 M-Bus devices max., interfaces to PC (RS232) and modem (RS232). Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..2400 baud. Completely built up in class IP55 plastic installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in cellular GSM modem.

HYDRO-CENTER Set 25 M GSM IP66

Fully digital M-Bus level converter for 25 M-Bus devices max., interfaces to PC (RS232) and modem (RS232). Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..2400 baud. Completely built up in class IP66 metal installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in cellular GSM modem.

HYDRO-CENTER Set 60 M GSM

Fully digital M-Bus level converter / repeater for 60 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP55 plastic installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in cellular GSM modem.

HYDRO-CENTER Set 60 M GSM IP66

Fully digital M-Bus level converter / repeater for 60 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP66 metal installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in cellular GSM modem.

HYDRO-CENTER Set 250 M GSM

Fully digital M-Bus level converter / repeater for 250 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP55 plastic installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in cellular GSM modem.

HYDRO-CENTER Set 250 M GSM IP66

Fully digital M-Bus level converter / repeater for 250 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory.
M-Bus baudrate 300..9600 baud. Completely built up in class IP66 metal installation box including power supply for connecting to 230 V 50 Hz AC mains power. Including built-in cellular GSM modem.

HYDRO-CENTER Set Solar

Fully digital M-Bus level converter / repeater for 60 M-Bus devices max., interfaces to PC (RS232), modem (RS232), M-Bus input, optical IRDA interface, and HYDRO-RADIO transceiver. Automatic meter reading with 2 MByte data logger memory. M-Bus baudrate 300..9600 baud. Completely built up in class IP66 metal installation box including solar power supply with solar panel (12 V / 15 Wp), 10 metre cable, accumulator (12 V / 17 Ah) and HYDRO-CENTER SolarControl. Built-in cellular GSM modem.

HYDRO-NET 20 / HYDRO-NET 100 / HYDRO-NET unlimited

Software for reading, monitoring and visualising any meter data (all media). Meter reading directly or via remote connection (telephone, intranet, internet). Client-Server software architecture for multi-user systems with very user friendly graphical interface. Comfortable visualising meter data, e.g. with XY diagrams or tables. Manual or automatic meter data export. Automated alarms for limit extension or erroneous meter read-out. Powerful SQL database for safe data keeping with automated backup function. Version for 20 or 100 meters max. or unlimited number of meters.

Offering Texts for M-Bus Water and Heat Meters

Apartment Water Meter Scampy IP 54

Electronic measuring capsule system apartment meter with M-Bus and optical interface, LC-display, variable M-Bus protocol delivering meter count, current flow rate, and 3 reading dates, Qp = 1.5 m3/h, protective class IP 54.

Housing Options:

- ❑ On-Wall Housing
- ❑ On-Wall Housing with Cover
- ❑ Under-Wall Housing

Temperature Options:

- ❑ 30°C (cold water)
- ❑ 90°C (warm water)

Multi Jet Water Meter Flypper II IP 54

Electronic multi jet water meter with M-Bus and optical interface, LC-display, variable M-Bus protocol delivering meter count, current flow rate, and 3 reading dates, protective class IP 54.

Temperature Options:

- ❑ 30°C (cold water)
- ❑ 90°C (warm water)

Installation Options:

- ❑ Horizontal
- ❑ Rising Pipe
- ❑ Down Pipe

Nominal Flow Rate Qp:

- ❑ 2.5 m3/h
- ❑ 6 m3/h
- ❑ 10 m3/h

Multi Jet Water Meter Flypper II IP 68

Electronic multi jet water meter with M-Bus and optical interface, LC-display, variable M-Bus protocol delivering meter count, current flow rate, and 3 reading dates, protective class IP 68, 30°C (cold water).

Installation Options:

- ❑ Horizontal
- ❑ Rising Pipe
- ❑ Down Pipe

Nominal Flow Rate Qp:

- ❑ 2.5 m3/h
- ❑ 6 m3/h
- ❑ 10 m3/h

Bulk Water Meter Tyrbot IP 68

Electronic bulk water meter with M-Bus interface, LC-display, variable M-Bus protocol delivering meter count, current flow rate, and 3 reading dates, protective class IP 68, 30°C (cold water).

Nominal Diameter DN:

- ❑ 50 mm (WP oder WS)
- ❑ 65 mm (WP oder WS)
- ❑ 80 mm (WP oder WS)
- ❑ 100 mm (WP oder WS)
- ❑ 125 mm (WP)
- ❑ 150 mm (WP oder WS)
- ❑ 200 mm (WP)
- ❑ 250 mm (WP)
- ❑ 300 mm (WP)
- ❑ 400 mm (WP)
- ❑ 500 mm (WP)

Compound Water Meter Tyrbot IP 68

Electronic compound water meter with M-Bus interface, LC-display, variable M-Bus protocol delivering meter count, current flow rate, and 3 reading dates, protective class IP 68, 30°C (cold water).

Nominal Diameter DN:

- ❑ 50 mm (Type 226 or 228)
- ❑ 80 mm (Type 226 or 228)
- ❑ 100 mm (Type 226 or 228)
- ❑ 150 mm (Type 226)

Ultrasonic Compact Heat Meter Sharky IP 54

Electronic ultrasonic compact heat meter with M-Bus and optical interface, LC-display, variable M-Bus protocol delivering meter count, volume, flow and return temperature, current flow rate, and 2 reading dates, protective class IP 54, 10°C .. 90°C.

Nominal Flow Rate Qp:

- ❑ 0.6 m3/h
- ❑ 1.5 m3/h
- ❑ 2.5 m3/h

Mechanical Compact Heat Meter RAY-HEAT IP 54

Electronic compact heat meter using multi jet measuring principle, M-Bus interface, optical interface, LC-display, variable M-Bus protocol delivers meter count, volume, inlet and outlet temperatures, current flow, 1 reading date, protective class IP 54, 10°C .. 90°C.

Nominal Flow Rate Qp:

Type 440:

- ❑ 0.6 m3/h
- ❑ 1.5 m3/h
- ❑ 2.5 m3/h

Type 441:

- ❑ 3.5 m3/h
- ❑ 6 m3/h
- ❑ 10 m3/h

Type 442:

- ❑ 15 m3/h
- ❑ 25 m3/h
- ❑ 40 m3/h
- ❑ 60 m3/h