Information regarding water meters ith electronic M-Bus and pulse output

Safety instructions

- Attention! The device is only intended for the designated use.
  Attention! Improper use may result in damage to the device. Caution! Opening of the device can lead to damage and possibly injury to hands. The device is filled with resin at the factory and is not designed to be opened.
- Caution! Unauthorized work on the device can no longer guarantee its safety and functionality. Caution! Loss of functionality and injuries may result from unauthorized work on the device. Make sure of the required procedure in advance.
- Caution! Make sure that the installation environment corresponds to the specified operating range. Adhere to specified temperature and limit values at all times.
- Caution. To avoid damaging the device or impairing its functionality, chemical cleaning agents should not be used. If cleaning is necessary, use a dry or slightly damp cloth.
- Notice. The device is equipped with a permanently installed lithium battery, which must not be recharged. This type of battery is classified as dangerous goods (Hazardous goods class 9). The applicable transport regulations must be observed! Data sheets, safety data sheets and test reports of the batteries are available on request. Please also note the following general information on handling batteries.
  Warning! The instrument contains a non-rechargeable lithium battery. Attempting to recharge it will damage the device and possibly cause injury.
- Attention! Under no circumstances may the device be disposed of in normal household waste. Please observe our regulations for disposal mentioned separately in this manual.

General information on handling lithium batteries or devices with lithium batteries:

Caution! The following must be observed when handling lithium batteries and devices with lithium batteries.

- store protected from moisture
- do not heat or throw into fire to avoid explosions
- do not short-circuit
- do not open or damage
- do not recharge
- do not store within reach of children

Product description

Water meter with factory-mounted electronic M-Bus and pulse output module (EDC = ElectronicDataCapture module).

Fields of application

- **Water meter:** for drinking water up to 30/50 °C or 90 °C depending on the inscription on the type plate.
- **Pulse output:** according to ISO 22158; for data transmission.
- **M-Bus-Schnittstelle:** according to M-Bus (EN 13757-3); for data transmission.

General information regarding the EDC clip-on module

ZENNER water meters with factory-mounted battery driven, electronic EDC pulse modules are used for remote readout of meter data respectively for integration of the meter into readout or metering systems. The scanning of the water meter by the electronic of the EDC module is reactionless, ie without influencing the measuring result of the meter. Due to the electronic scanning a forward flow and backflow recognition is possible.

General information regarding the M-Bus interface

By clipping on the battery-powered, electronic pulse detection module EDC (Electronic Data Capture) with M-Bus interface, ZENNER water meters with modulating disc can be „upgraded“ to M-Bus water meters. The activation of the pulse recognition of the EDC pulse module is done automatically. EDC pulse modules from factory delivered water meters are already preconfigured as follows:

- Water meter number (last 8 digits) of the meter where the EDC module is mounted on
- Pulse value of the modulator disk (e.g. 1 rotation = 1 liter)

- Meter value (index).
- The factory assigned primary M-Bus address 0

General information regarding the pulse output

The activation of the pulse recognition of the EDC pulse module is done automatically. EDC pulse modules from factory-delivered water meters are already preconfigured as follows:

- Water meter number (last 8 digits) of the meter where the EDC module is mounted on.
- Pulse value of the modulator disk (e.g. 1 rotation = 1 liter).
- Meter value (index).

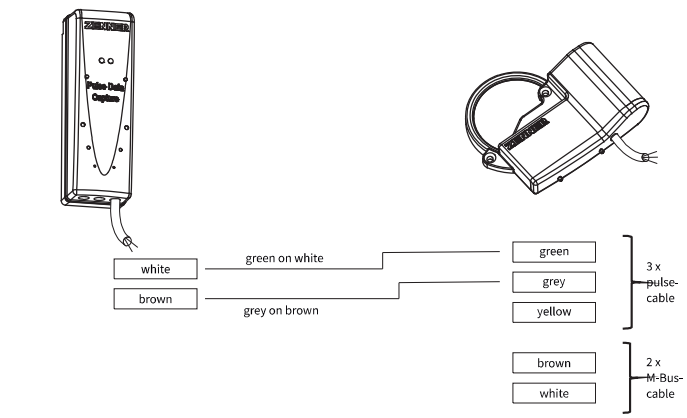
Further settings by the user are not required.

The pulse length and the type of pulse output can be adjusted with the appropriate ZENNER-Software by use of a ZENNER infrared optical head. At combined M-Bus and pulse output modules the standard pulse output mode is Mode U, i.e. balanced pulses are being emitted.

Wiring diagram for connecting the ZENNER PDC module to the EDC pulse module:

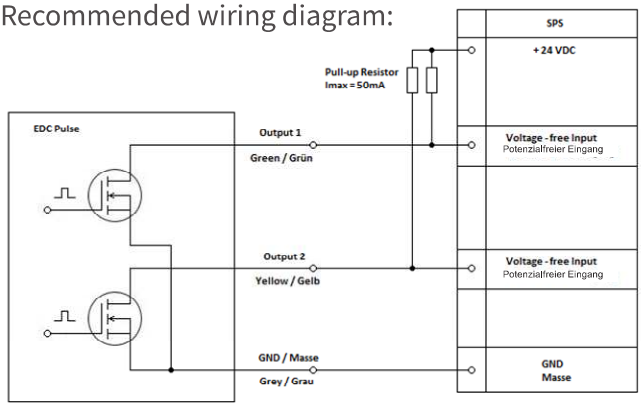
PDC with 2-wire cable:

EDC Pulse / M-Bus with 5-wire cable:



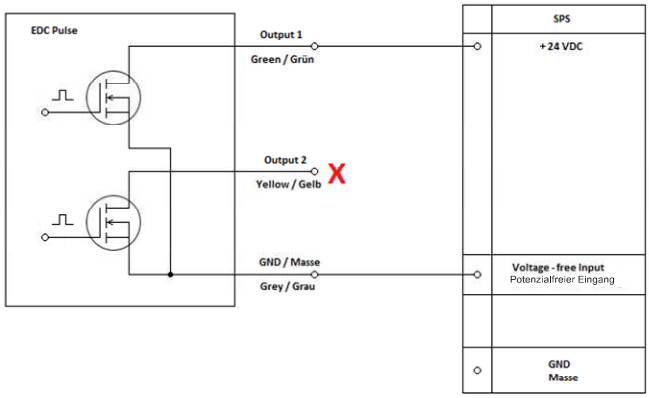
When combining EDC M-Bus / Pulse with PDC modules, the wires (yellow, brown and white) can be ignored.

Recommended wiring diagram:



Possible wiring diagram with the following restrictions:

- Output 2 must not be used
- Note the maximum load at output 1 (24VDC / 50mA)



Technical data pulse output	
Power supply	Lithium long-life battery (lifetime up to 15 years depending on environmental conditions)
Pulse output	According to ISO 22158, Mode U, B1 and B2 (Mode B3 available on request)
Operating temperature	> 0°C bis + 55 °C
Protection class	IP 68
Cable length	1.5 m
Elektro-magnetic compatibility	complies with the Directive 89/336 / EEC
Number of conductors	3
Output type N-channel	Open-Drain (equivalent to an open collector)
Max. output voltage	24 VDC
Max. output current	50 mA
Pulse length	125 ms
Output resistance	110 Ω
Output capacitance	1 nF
Status output (depending on the mode of output 2)	Normal state = closed / active; Manipulation = open / inactive. The function allows also a cable break detection by appropriate external systems.
Flow direction	forward = open/inactive; backflow = closed/active

Description of the pulse outputs according to ISO 22158		
	Output 1	**Output 2**
Data Set Type “U”	Balanced pulses	Alarm module unmounted resp. Manipulation
Data Set Type “B1” *	Forward pulses	Reverse pulses
Data Set Type “B2” *	Forward and reverse pulses	Flow direction (open = forward)
Data Set Type “B3” - Quadrature signal (Phase shift 90°) *	Forward and reverse pulses (Output 1 before Output 2)	Forward and reverse pulses (Output 2 before Output 1)

* The adjustment of the outputs is possible with the appropriate ZENNER-Software by use of a ZENNER MinoConnect bluetooth or USB and the combined ZENNER IrDA optical head.

Cable assignment pulse output	
Green	Output 1
Yellow	Output 2
Grey	Ground (GND)

Cable assignment M-Bus interface (reverse polarity protection)	
Brown	M-Bus 1
White	M-Bus 2

Datalogger	
Annual due date values	max. 16
Monthly values	18 plus 18 half-monthly values
Daily values	96
Quarter-hour values	96

Log values, which are stored in the EDC can only be read via the optical interface of the EDC module. For this purpose the special IrDA Combi head of ZENNER in conjunction with the radio transceiver MinoConnectRadio and appropriate software is required.

Technical data M-Bus interface	
Power supply	Lithium long-life battery (lifetime up to 15 years depending on environmental conditions)
M-Bus telegram	M-Bus (EN 13757-3)
Operating temperature	> 0°C to +55°C
Protection class	IP 68
Cable assignment	reverse polarity protection
Supported baud rates (configurable)	300, 2400 (standard ex works), 9600
Cable length	1.5 m
Elektro-magnetic compatibility	complies with the Directive 89/336 / EEC

Content of the main M-Bus telegram		
Identifier	**Value**	**Description**
SID	76767676	Serial number (configurable)
MAN	ZRI	Manufacturer
GEN	2	Generation
MED	Water	Medium (configurable)
RADR	10	Primary address (configurable)
FAB	12345678	Fabrication number
TIMP	42191.35764	Equipment Date, Time
QM	120.762 m^3	Current value
QM	1.18 m^3	Actual reverse volume (accumulated)
QM[1]	55.193 m^3	Last due date value
TIMP[1]	42005	Last due date value time stamp
QM[2]	100.571 m^3	Last monthly value
TIMP[2]	42186	Last monthly value time stamp
QM[3]	80.545 m^3	Last half-monthly value
TIMP[3]	42170	Last half-monthly value time stamp
QM[4]	111.283 m^3	Last daily value
TIMP[4]	42190	Last daily value time stamp
QMPH	1.75 m^3/h	Current flow rate
OnHours	7 h	Operation hours EDC module
OpHours	1 h	Operation hours water meter
OnHours_ERR	0 h	Operation hours with errors
ERR	0x00000008	Errors and warnings (hexadecimal)

Beyond the information listed in the table further data - depending on the functions of the reading software (due date values, monthly and half-monthly data) - can be transferred via M-Bus.

The following parameters can be modified with conventional software (according to EN1434):

- Serial number of the water meter
- Medium
- M-Bus primary address
- Baud rate of the M-Bus interface (300, 2400 or 9600 baud)
- Manufacturer-specific parameters can be changed only with ZENNER software.

Log values, which are stored in the EDC and which are not included in the M-Bus telegram (more date values, monthly, half monthly-, daily values, ¼ h - values), can only be read via the optical interface of the EDC module. For this purpose the special IrDA Combi head of ZENNER in conjunction with the MinoConnect and appropriate software is required.

Disposal

This device contains a non-removable and non-rechargeable lithium battery. Batteries contain substances, which could harm the environment and might endanger human health if not disposed of properly. To reduce the disposal quantity so as unavoidable pollutants from electrical and electronic equipment in waste, old equipment should be re-used prior or materials recycled or reused as another form.This is only possible if old equipment, batteries, other accessories and packaging of the products are returned to the manufacturer or handed in at recycling centres. Our business processes generally provide that we or the specialist companies we use take old devices including batteries, other accessories and packaging material back with us after they have been replaced or at the end of their useful life and dispose of them properly.
Insofar as no other contractual arrangement has been made in this respect, your local or municipal authority or the local waste disposal company can give you information relating the collection points for your used equipments. ZENNER will always ensure correct disposal.

Caution!

Do not dispose of the devices with domestic waste. In this way, you will help to protect natural resources and to promote the sustainable reuse of material resources.
For any question, please contact
info@zenner.com

The declaration of conformity and the newest information on this product can be called up from
www.zenner.com

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