HRI-Mei

The data interface and flexible pulse output for Bulk Water Meters

Description

The HRI-Mei is a data capture device for MeiStream an MeiTwin MID bulk water meters. All MeiStream standard registers are prepared to receive the HRI-Mei.

The HRI-Mei can also be mounted afterwards without breaking the meter's seal.

The HRI-Mei provides a high resolution pulse output with water flow direction detection.

Also the data interface can be used for M-Bus applications.

With the HRI-Mei all known data interfaces with Encoder, Electronic and Hybrid registers can be replaced.

Depending on the register a second pulser like the Opto OD can be plugged in additionally e.g. at the MeiStream.

Also other applications requiring reed switches or optical pulse outputs can be supported with only this one data capture device.

Special Features

Compatible to bulk water meters with MeiStream and MeiTwin MID standard register

Load-free inductive scanning of the meter's pointer

Retrofitable

Detection of water flow direction

Electronic pulse output means no switch bouncing

Pulse-weight, mode and length can be changed on site

Self diagnostic and tamper detection

Battery lifetime up to 12 years. With external power supply i.e. a M-Bus central unit lifetime can be expanded

Sealed housing (IP68)

Cable length 3 m

Applications

Meter reading based for billing purposes i.e. mobile reading systems.

Meter remote reading and profiling via cable fixed networks with M-Bus, radio modem or GSM network.

Industrial control applications with the FM-1D/K or FM-2D/K

Data logging in conjunction with various data loggers; i.e. CDL.

Logging and transfer of flow profiles e. g. when using Waterbox internet access.

Robust design allows the use of the HRI-Mei in harsh environments like flooded pits.

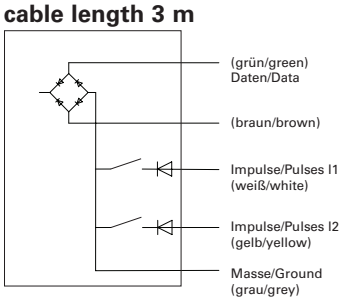
Classical Sensus pulsers and equivalent HRI-Mei mode

Previous pulse outputs	Litres/pulse
RD01, RD011	10 to 100.000 lpp
OD01, OD03, OD07-L, OD07-24V, OD07-24S	10 to 1.000 lpp
OD AM	10 to 1.000 lpp
OD02/EX(cold), special HRI-Mei variant	10 to 1.000 lpp

Systems Overview

Technical Data

cable length 3 m



Pulse output

According to pulse mode

Opto-OD (NAMUR) compatible:

programmable pulse weights

(10, 25,....1000) litre/pulse

Pulse length 6ms

NAMUR acc. EN 60947-5-6

Reed-RD compatible:

programmable pulse weights

(10, 25,....10000) litre/pulse

Pulse length 32, 128 or 500ms

max. Voltage 48 Vdc

max. current 0,2 A

max. switching capacity 4 W

Data interface

M-Bus (autodetected)

Autom. detection of baud rate (300/2400Bd) and type of interface.

Data protocol according IEC870-5/EN1434-3

An Encoder mode provides an easy to use data protocol compatible to the encoder registers.

Transferred Data

Meter index

Fabrication number

Meter ID. equivalent to secondary address

Monthly meter index for programmable day

Meter index for programmable yearly key date and for the year before

Min./max. water flow with date/time

Backward water volume with date/time

Broken pipe and leakage detection with programmable flow thresholds

Tamper detection (*)

The HRI-Mei can be programmed to transfer selected information.

Programmable Data

All changeable data can be set with MiniCom software via the M-Bus / MiniBus data interface. MiniCom download is free of charge from the Sensus web site.

(*) Requires tamper target at the meter.

Pulse Modes

The HRI-Mei provides 4 different pulse output modes via 2 lines.

Parallel usage of the pulse output and serial output is not recommended and may cause problems depending on the application.

Mode B2:

I1: Forward pulses

I2: Backward pulses

Mode B3:

I1: For-/Backward pulses

I2: signal for the flow direction (1)

Mode B4 (default):

I1: balanced pulses (2)

I2: Alarm (opens when there is an alarm or cable cut) (3)

Mode B5:

Opto-OD (NAMUR) pulse output (6 ms)

I1: pulses with flow direction code

I2: not used

Temperature range:

HRI-Mei standard for cold water (30 °C) and warm water (50 °C).

Environmental temperature range: -10 °C ... +60 °C

(1) Ground level means reverse flow

(2) Backward pulses are compensated by suppressing the same quantity of forward pulses

(3) Alarms can be programmed for broken pipe, leakage, tampering, cable cut and indicated by ground level at the output

Possible Pulse Values

Pulse output	(l)	1			10			50			100			250			1000		
Pulse length	(ms)	32	128	500	32	128	500	32	128	500	32	128	500	32	128	500	32	128	500
1 l pointer	DN 20 *)	x	x	-	x	x	-	x	x	x	x	x	x	x	x	x	x	x	x
10 l pointer	DN 40	not possible			x	x	-	x	x	x	x	x	x	x	x	x	x	x	x
	DN 50				x	x	-	x	x	x	x	x	x	x	x	x	x	x	x
	DN 65				x	x	-	x	x	x	x	x	x	x	x	x	x	x	x
	DN 80				x	-	-	x	x	x	x	x	x	x	x	x	x	x	x
	DN 100				x	-	-	x	x	-	x	x	x	x	x	x	x	x	x
	DN 125				x	-	-	x	x	-	x	x	x	x	x	x	x	x	x
100 l pointer	DN 150	not possible									x	x	-	x	x	x	x	x	x
	DN 200										x	x	-	x	x	x	x	x	x
	DN 250										x	x	-	x	x	-	x	x	x
	DN 300										x	-	-	x	x	-	x	x	x

*) only for 612 MTW as bypass meter for MeiTwin

x standard value

Indication example

HRI-Mei B4/ D10 /T500 / 50 °C
Mode Divider / Pulse length / max. Medium temperature

$$\text{Divider (D)} = \frac{\text{Pulse output}}{\text{Pointer (pick up)}}$$

Examples for ordering

HRI-Mei variant (examples *)	Settings	Water Meter	Application **
HRI-Mei/B4/D10/T500/50 °C	Mode B4 (balanced pulses & alarm contact opens at alarm) Pulse weight 100 lpp Pulse length 500 ms Medium temperature (inside the meter) max. 50 °C	Cold water DN40....125	Remote counter and Scada systems
	Mode B4 (balanced pulses & alarm contact opens at alarm) Pulse weight 1000 lpp Pulse length 500 ms Medium temperature (inside the meter) max. 50°C	Cold water DN 150....300	
HRI-Mei/B5/D1/T6/50 °C	Mode B5 (Namur) Pulse weight 10 lpp Pulse length 6 ms	Cold water DN 40....125	Frequency converter
	Mode B5 (Namur) Pulse weight 100 lpp Pulse length 6 ms	Cold water DN 150....300	
HRI-Mei-CDL/D1/50 °C	Mode B3 Pulse weight 10 lpp with CDL plug	CDL Data logger Cold water DN 40....125	Cosmos Data Logger
	Mode B3 Pulse weight 100 lpp with CDL plug	CDL Data logger Cold water DN 150....300	
HRI-Mei/B3/D1/T32/50 °C	Mode B3 (pulse & direction output) Pulse weight 10 lpp Pulse length 32 ms Medium temperature (inside the meter) max. 50 °C	Kaltwasser DN 40....125	Radio Module or Remote transmission systems with impulse and direction input
	Mode B3 (pulse & direction output) Pulse weight 100 lpp Pulse length 32 ms Medium temperature (inside the meter) max. 50 °C	Kaltwasser DN 150....300	

* other variants on request
** for cold water up to 50 °C

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