HRI-Mei
The data interface and flexible pulse output for Bulk Water Meters

Main 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

DESCRIPTION

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

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.

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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.

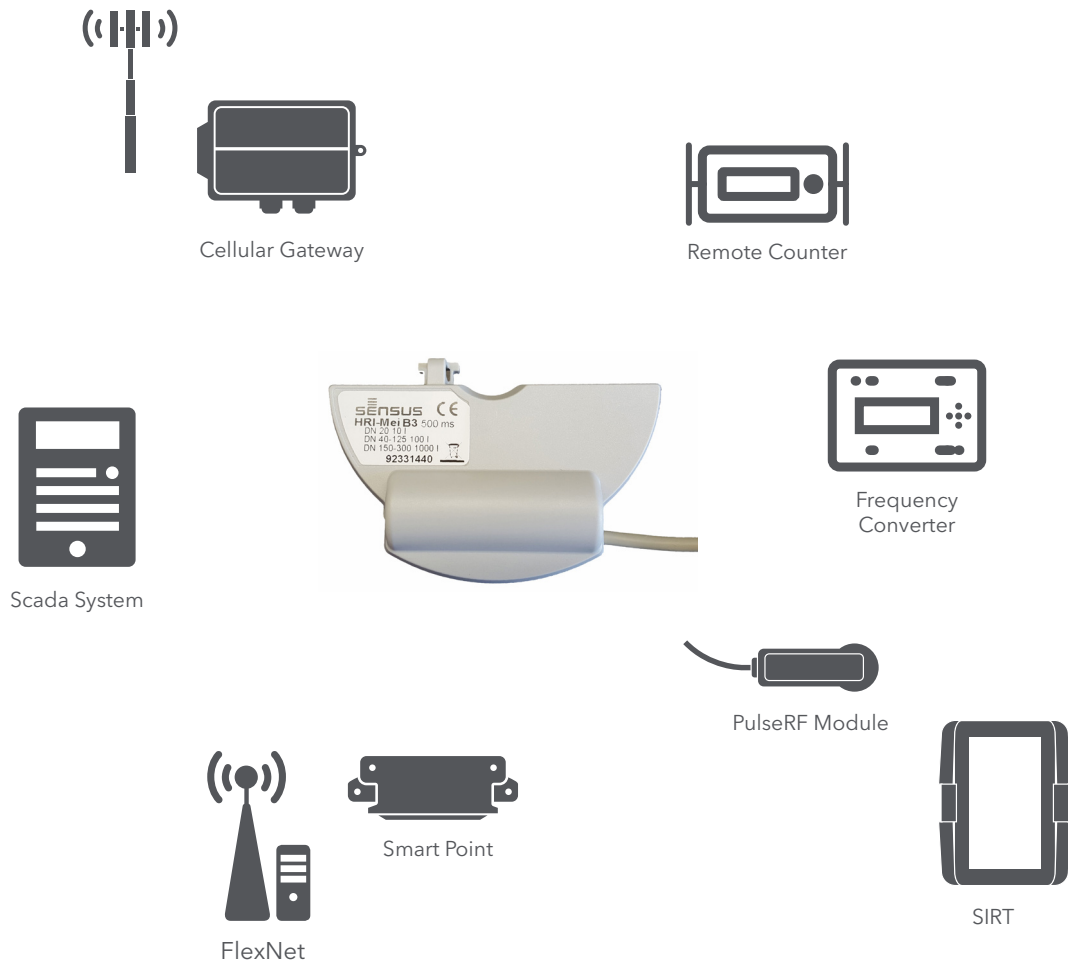Data logging in conjunction with various data loggers.

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

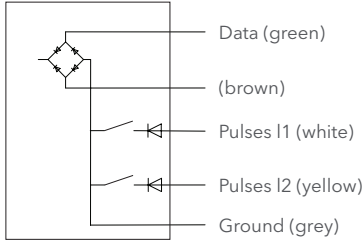| Previous pulse outputs	Litres/pulse
RD01, RD011	10 to 100.000 lpp
OD01, OD03, OD07-L, OD07-24V, OD07-24S	10 to 1.000 lpp
OD AM	10 to 1.000 lpp
OD02/EX (cold), special HRI-Mei variant	10 to 1.000 lpp

System Overview

Cellular Gateway

Remote Counter

Scada System

Frequency Converter

PulseRF Module

Smart Point

FlexNet

SIRT

HRI-Mei

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Technical Data

weight (incl. cable)	245 g
cable length	3 m

Data (green)

(brown)

Pulses I1 (white)

Pulses I2 (yellow)

Ground (grey)

Pulse output

According to pulse mode

Opto-OD (NAMUR) compatible: programmable pulse weights: (10, 25,....1000) litres/pulse

Pulse length 6 ms

NAMUR acc. EN 60947-5-6

Reed-RD compatible: programmable pulse weights (10, 25,....10000) litres/pulse

Pulse length 32, 128 or 500 ms

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 (requires tamper target at the meter)

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

Programmable Data

All changeable data can be set with MiniCom 3 software via the M-Bus / MiniBus data interface. MiniCom 3 download is free of charge from the Sensus website.

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

Option

HRI-Mei is optionally available as a variant which is cerified ATEX ⟨Ex⟩ II 3G Ex ic IIC T4 Gc X. This is suitable for potentially explosive atmospheres according zone 2.

For HRI-Mei with ATEX marking only the pulse outputs are configurable and usable. No M-Bus device may be connected to the serial interface in hazardous area.

Detailed instructions are documented at the manual.

The variant with ATEX is marked with a label:

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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 and 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 and 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/B3/D1/T32/50 °C	Mode B3 (pulse and direction output) Pulse weight 10 lpp Pulse length 32 ms Medium temperature (inside the meter) max. 50 °C	Cold water DN 40....125	Radio Module or Remote transmission systems with impulse and direction input
	Mode B3 (pulse and direction output) Pulse weight 100 lpp Pulse length 32 ms Medium temperature (inside the meter) max. 50 °C	Cold water DN 150....300	

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

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SYSTEM CERTIFIED
ISO 9001:2015   No.03496/0