

INSTALLATION AND OPERATING INSTRUCTIONS – HRI

HRI is available in two versions.

- The **HRI-A PulseUnit** provides high-resolution pulse outputs.
- The **HRI-B DataUnit** has additionally a data interface for reading meter ID number and index.

Delivery parts 1

HRI sensor, bayonet ring, cut meter lid, 2 screws, 2 screw seals, 1 adhesive seal

Installation:

Just before mounting the HRI on the meter it is essential to remove the aluminium foil at the bottom side. A screwdriver Torx (T8) or slot (3.5*0.6) is recommended for mounting. The torque should be 0.6 Nm

Meters with plastic register 2

Change the lids and put the HRI on the meter, so that the two pins on top of the register fit exactly into the holes at the bottom of the HRI. Fit the two screws. For tamper protection fit the plastic seals on top of the screws. The bayonet ring and the adhesive seal are not used for this register type.

Meter with glass-copper register 3

First exchange the lids. Mount the HRI with both the screws on the bayonet ring. For tamper protection fit the plastic seals on the top of the screws. Fit the bayonet ring with the mounted HRI on the top of the meter register and turn it until it drops into place. Push and turn the bayonet ring clockwise until the lever clicks into place. If required fit the adhesive seal. To remove the HRI lift the lever and rotate anticlockwise.

Type 4

Depending on the order specification, HRI can be in these different pulse modes:

HRI Pulse Unit: Type A3 and A4

HRI Data Unit: Type B2, B3 and B4

with following pulse weights:

Possible values for residential meters:

D = 1 / 2.5 / 5 / 10 / 25 / 50 / 100 / 250 / 500 or 1000

| Pulse mode | Wire | |
|--------------|------------------------------|---------------------------------|
| | I1 (white) | I2 (yellow) |
| B1 | Balanced pulses** | Tamper/ Error "normally open" |
| B2 | Forward flow pulses | Reverse flow pulses |
| A3/B3 | Forward and backwards pulses | Flow direction |
| A4/B4 | Balanced pulses** | Tamper/ Error "normally closed" |

**) Balanced pulses: Reverse flow must be compensated by identical forward flow before more pulses are output. That means, no output pulses during this period even the meter is counting forward.

Ground (brown)

DATA (green) only for HRI Type B (alternatively for external power supply)

Battery or external power supply (for all B types): 3V Lithium battery with autonomy lifetime of more than 10 years.

With unbroken permanent external power supply of 24VDC (max. 50VDC) unit lifetime is increased to more than 15 years. In case of external power failure the battery of the module takes over the supply. All stored data are retained and the volume detection continues automatically. The external power supply can also be an M-Bus central unit.

Technical data

- Temperature range
Storage: -20 °C to +65 °C
Operation: -10 °C to +65 °C
- Cable length: 1.5 m
- Hermetically sealed housing IP 68
- EMC acc. EEC directive 98/34 equal European standards EN61000-6-1

Pulse-outputs (I1/I2) all types

Open drain transistor switch according ISO/TC30
Vmax: 24V DC / Imax: 20mA / Pmax: 0,48VA / fmax: 5Hz

Max. voltage by closed switch: 0.3V + I * 260 Ω

If the data interface isn't used the serial resistance can be reduced by 150 Ω with the connection of green and brown wire.

| HRI-A | Meter DN | Pulse weight (length) | | |
|-------|----------|-----------------------|-------------|--------------|
| | | D1 (124ms) | D10 (500ms) | D100 (500ms) |
| A4 | 15-40 | 1I | 10I | 100I |
| A3 | 15-40 | 1I | ---- | ---- |

HRI-B: Pulse length 124 ms fixed,
Flow direction (A3/B3) signal I2 is 18µs prior to I1
Operational cable length up to 10 m
Transient voltage protection is highly recommended for wiring outside buildings.

Data interface (HRI-Bx only)

M-Bus and MiniBus (Auto speed detection: 300/2400 Baud)

Protocol according EN13757-3 equal IEC 870 / EN 1434-3

Data: meter ID, meter index (optional 1 litre or 1 m³ resolution)

Operational cable length: according to M-Bus specification.

With M-Bus reading is unlimited, with MiniBus the reading shouldn't be more than 5 times per day to avoid a battery lifetime of less than 10 years.

With the data interface the following values can be set via MiniCom (version >3.0); standard setting from the factory in brackets:

- Primary address (0)
- Secondary address (HRI-Fabrication No.)
- Meter ID No. (HRI-Fabrication No.)
- Meter index (0); if the aluminium foil is missing, index can be different
- Pulse mode (according the order)
- Pulse weight (according the order)

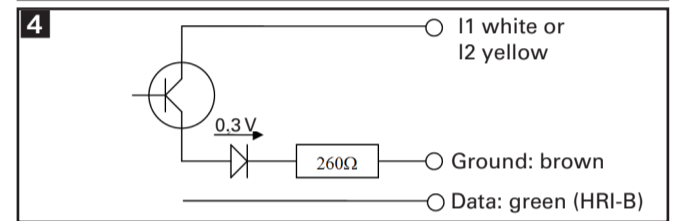
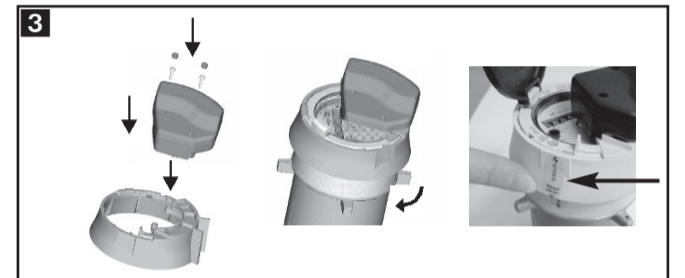
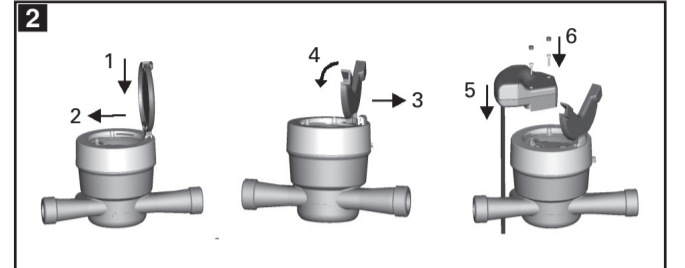
Attention: The resolution of meter index can't be changed, so this setting must be correctly defined with the order.

If the HRI is ordered mounted on top of a meter, the secondary address, meter ID no. and meter index are preset with the meter's values. Setting on site isn't necessary.

If data interface and pulse output is used at the same time, potential free connection for the connected devices are requested. During data communication pulse lost is possible depending on the pulse collector's input circuit.

Disposal instructions

This product contains a lithium battery. To protect the environment it should not be disposed in household rubbish when its serviceable life is over. Disposal can take place through a Sensus Service Center. If however you want to take care of the disposal yourself, please comply with the local and national regulations for environmental protection.



Application examples

All connections with external power supply are optional. It can use the HRI's internal battery.

