

MS 8100

安装使用说明书 - HRI

HRI有两个版本：

- **HRI -A**脉冲模块可提供高精度脉冲输出
- **HRI -B**数据模块额外提供一个数据接口，能读取水表ID和读数

备件 1

HRI传感器、卡口接环、扇形小盖、2个螺丝、2个螺丝铅封、1个粘合剂



安装:
在安装前，要把HRI底部的铝箔揭开。
安装时需要螺丝刀，扭矩约为0.6Nm。

配塑料计数器的水表 2

取下小盖，
将HRI装到相应位置，使得计数器表面的两个小柱插入HRI底部的两个小孔。
锁上螺丝。
防撬起见，把两个塑料铅封装入螺丝孔内，盖住螺丝。
此款计数器不需要卡扣接环和粘合剂。

配铜封计数器的水表 3

取下小盖，
将HRI用螺丝固定在卡扣接环上。
防撬起见，把两个塑料铅封装入螺丝孔内，盖住螺丝。
把安装了HRI的卡扣接环固定在计数器上并旋转，使其嵌入相应位置。
压住卡扣接环顺时针旋转，直到其上筋位卡到正确位置。
如果需要，可用粘合剂固定。
需要拆下时，把卡扣接环上的杠杆向上抬并逆时针旋转。

种类 4

根据订单要求，HRI可以提供多种不同的脉冲模式

HRI 脉冲模块: A3 ,A4
HRI 数据模块: B2, B3 ,B4

脉冲量如下:
D = 1 / 2.5 / 5 / 10 / 25 / 50 / 100 / 250 / 500 或1000

信号线	脉冲模式			
	B1	B2	A3/B3	A4/B4
I1 (白线)	绝对值脉冲**	正向脉冲	正反向脉冲	绝对值脉冲**
I2 (黄线)	状态篡改报警/错误 (常开)	反向脉冲	方向信号	状态篡改报警/错误 (常闭)

**) 绝对值脉冲: 反向流量发生时，没有脉冲输出，需要由等量正向流量补偿后，才会继续输出脉冲。即是说，在此期间，即使计数器还在计量，也没有任何脉冲输出

连线方式

数据输出 (HRI 类型 B): 数据线(绿线/棕线)

外接电源时，绿线接正极；棕线接负极。

脉冲输出: 脉冲信号线（白线/黄线），具体代表的脉冲信号参见上表。

电池:

电池: 3V锂电池，设计使用寿命10年。

技术参数

- 温 度 存储状态: -20°C.....+65°C
工作状态: -10°C.....+65°C

- 电线长度 : 1.5m
- 防水等级: IP 68
- EMC符合EEC98/34指令，等同于欧洲标准 EN61000-6-1

所有模式的脉冲输出(I1/I2):
基于 ISO/TC30标准的开漏晶体管开关
最高电压: 24V DC/ 最高电流: 20mA / 最高功率: 0.48VA / 最高频率: 5Hz
闭合时最大电压: 0.3V + I * 260 Ω
如果没有使用数据接口，连接绿线和棕线的串联电阻可以降到150Ω。

HRI-A	水表口径	脉冲当量 (宽度)		
		D1 (124ms)	D10 (500ms)	D100 (500ms)
A4	15-40	1l	10l	100l
A3	15-40	1l	----	----

HRI-B: 脉冲长度为固定的124ms。
A3/B3模式下，水流方向信号线I2比I1快18 μs。
允许电线续接最长达10m。
户外有线连接时，务必使用瞬态电压保护电路。

数据接口 (仅HRI-Bx)

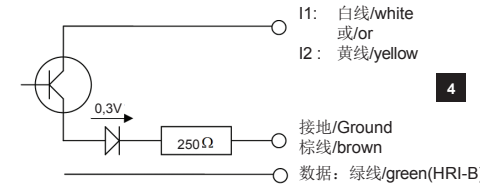
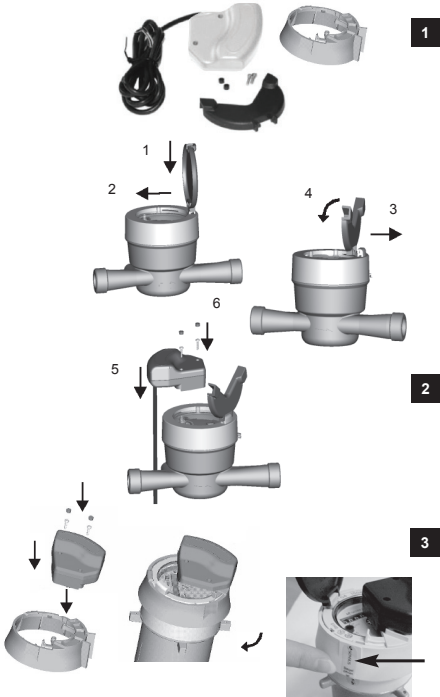
可提供M-Bus和MiniBus 接口(自动速度检测: 300/2400 比特率)
遵循EN13757-3协议，等同IEC 870 / EN 1434
数据: 水表ID, 水表读数, (可选分辨率1L或1 m)
允许电线长度: 按M-Bus标准
通过M-Bus接口，读数次数是不限的；通过MiniBus，每天读取的次数最好不超过5次，以免电池过分使用，无法保证使用寿命。

通过数据接口，以下数据可以在MiniCom上设置（3.0以上版本）
括号内为出厂的预设值。
第一地址 (0)
第二地址 (HRI出厂编号)
水表ID (HRI出厂编号)
水表读数 (0) 注: 如果底部铝箔丢失，有可能读数不是0
脉冲模式 (根据订单要求)
脉冲量 (根据订单要求)

注意: 水表的分辨率不能改变，需要下订单时注明清楚，以便预设。
如果HRI是安装在表上出货，第二地址、水表ID以及水表读数就按水表信息设置。
如果同时使用数据接口和脉冲输出，接收设备上需要有无源接口。在数据传输时，可能会发生脉冲信号丢失的现象，由脉冲接收器的电路决定。

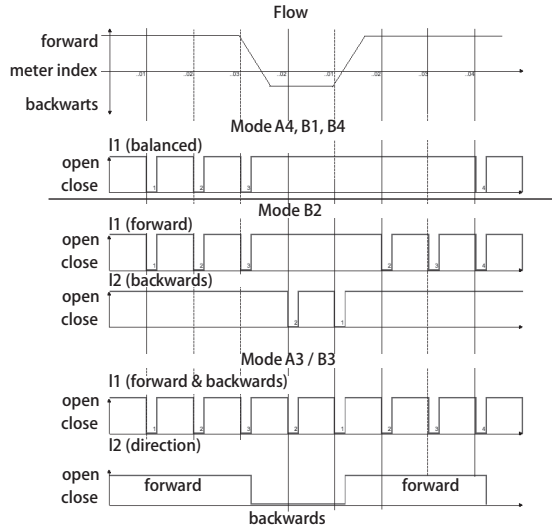
处理建议

此产品内含锂电池。保护环境起见，不能在使用后将电池连同外壳随意丢弃。
可以通过Sensus仪表系统的售后服务中心回收。
如自己处理，请务必根据环境保护的相关条例，妥善处理

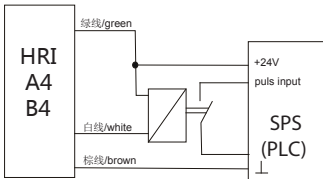


应用举例/Application examples:

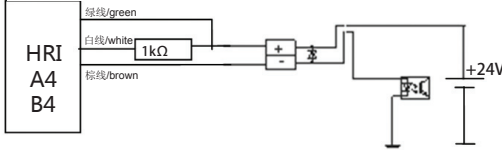
外接电源的连接为可选项。一般情况下HRI由内置电池供电。



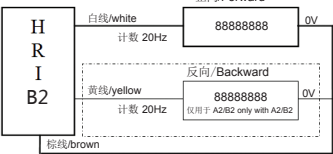
PLC转到接地一端/ PLC with switched ground
HRI 使用外接电源/ PLC with external power supply



SPS 用外接电源
PLC 用开关电源

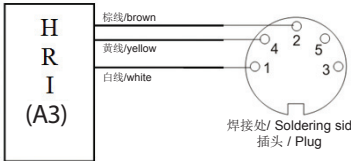


TR100 (829372)
远传显示



此应用可用于检测HRI所有模式。

连接CDL



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 aluminum foil at the bottom side. A screwdriver Torx (T8) or Slot (3.5*0.6) is recommended for mounting. The torque should be 0.6Nm

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 is 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 close"

**) 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 :

Battery 3V Lithium with autonomy lifetime 10 years.

Technical data

- Temperature range Storage: -20° to +65° C
Operation: -10° 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 * 260Ω
If the data interface isn't used the serial resistance can be reduced by 150Ω with the connection of green and brown wire.
Pulse length 124ms fixed,
Flow direction (B3) signal I2 is 18 μs prior to I1
Operational cable length up to 10m
Transient voltage protection is necessary 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-no., meter index (optional 1 litre or 1 m³ resolution)
Operational cable length: according to M-Bus specification.
With MBus the account of reading is unlimited, with MiniBus the reading shouldn't be more than 5 times per day to avoid battery lifetime less than 10 years.
With the data interface following values can be set via MiniCom (version >3.0); standard setting from the factory in brackets:
Operational cable length: according to M-Bus specification.
With MBus the account of reading is unlimited, with MiniBus the reading shouldn't be more than 5 times per day to avoid battery exhausted.
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: 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 and to protect the environment should not be disposed in household rubbish when its serviceable life is over. Disposal can take place through a Sensus Metering Systems Service Centre. If however you want to take care of the disposal yourself, please comply with the local and national regulations for environmental protection.