

安装手册 | Installation guide

超声波热量表

Ultrasonic heat meter



产品标准: EN 1434 / GB/T 32224
计量检定规程: JJG 225

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1. 安装说明

本产品包含塑料及铜件（钢件）等金属元件。该安装说明主要针对受过培训的专业人员，因此不包括基本工作步骤。认真阅读标注警告符号的条款。



重要提示！

切勿损坏流量传感器和积分仪上的检定封印！一旦被破坏，将不享受本公司的质量保证以及检定有效性。表上的封印只能由授权机构服务人员进行拆卸，拆后需更换新的封印。与表配用的各种数据线不允许被截短或更换。

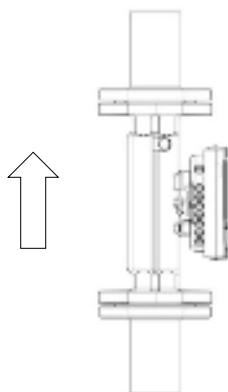


注意！

- 必须遵守流量传感器的使用规程。
- 必须遵守电器设备安装规程进行电器安装。
- 必须遵守流量传感器技术说明中的使用说明。
- 介质温度为 5°C - 120°C、5°C - 130°C。
- 该流量传感器的测量介质指定为水。

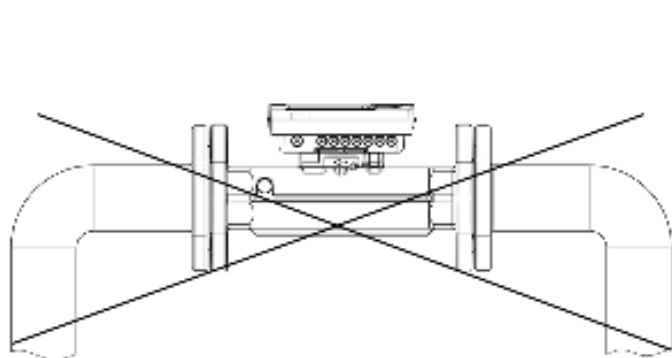
流量传感器的安装

根据流量传感器上的标签，可以将流量传感器安装在高温管道或低温管道中。固定流量传感器时，安装位置要符合允许的介质温度。水流方向必须与流量传感器外壳上的箭头方向一致。确保流量传感器安装后，满管运行。流量传感器的前后不需要特别安装直管段。该传感器可以水平或竖直安装，但必须确保传感器内没有气泡产生，竖直安装时，建议水流方向由下往上。

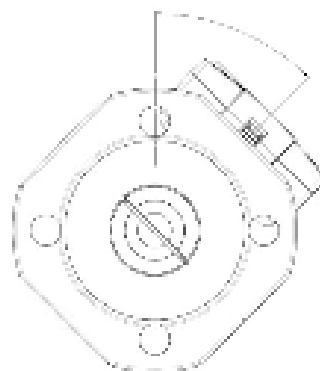


建议水流方向：由下向上

仪表安装在水平管段，但必须确保表内没有气泡，我们建议安装时有一点倾斜，最大倾斜角度可达 90°。



不建议顶部安装

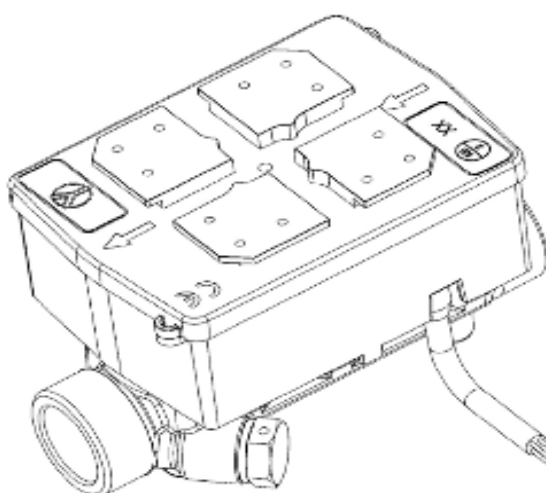


建议倾斜安装

确保流量传感器安装的周围环境远离电磁干扰（如电器开关、电动设备、荧光灯等）。

建议在流量传感器的前后管段安装截止阀便于表的拆卸，流量传感器应安装在维修服务人员方便到达的地方。

流量传感器连接线



能量计算器 ENERGY - INFOCAL 8

计算器 INFOCAL 8

SONO 1500 CT 系列

(9) VCC "+"	●	●	VCC (棕)
(10) 脉冲"FLOW"	●	●	脉冲 (白)
(11) 接地"-"	●	●	接地 (蓝)

白
蓝
黄
棕



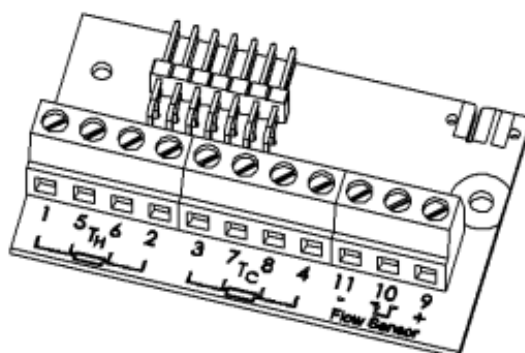
注意：脉冲线与 INFOCAL 8 的连接必须正确，错误的连接会损坏 INFOCAL 8 积分仪。

温度传感器的安装

温度传感器应轻拿轻放。传感器配对线标有两种不同颜色的标签：红色表示高温端，蓝色表示低温端。

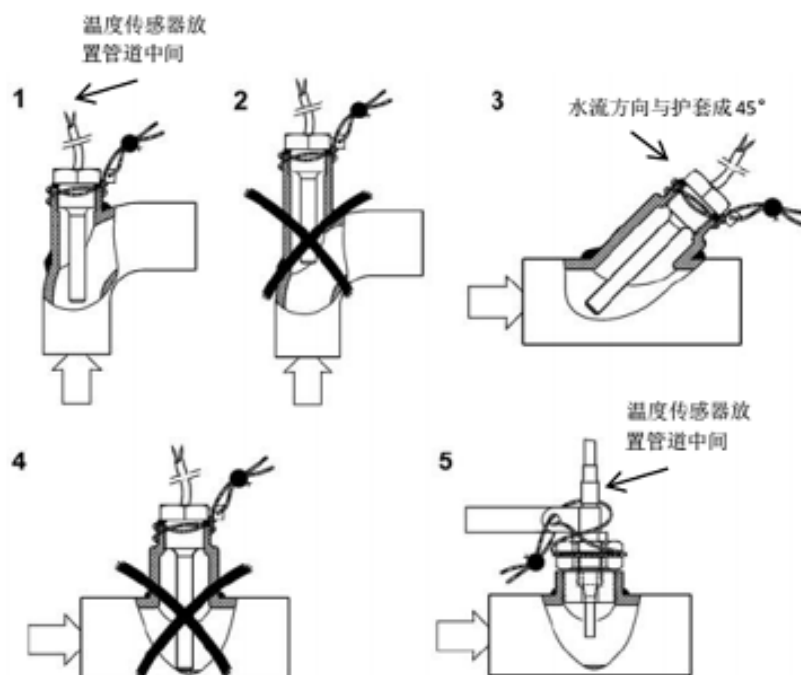
安装时，将温度传感器连线穿过线槽，并按照下表连接到端口。

表的类型	传感器颜色	两线端口	四线端口	安装位置
热量表回水管安装	红	5T _H 6	1/5 T _H 6/2	进水管
	蓝	7T _C 8	3/7 T _C 8/4	回水管
热量表进水管安装	红	5T _H 6	1/5 T _H 6/2	进水管
	蓝	7T _C 8	3/7 T _C 8/4	回水管
冷量表回水管安装	蓝	7T _C 8	3/7 T _C 8/4	进水管
	红	5T _H 6	1/5 T _H 6/2	回水管
冷量表进水管安装	蓝	7T _C 8	3/7 T _C 8/4	进水管
	红	5T _H 6	1/5 T _H 6/2	回水管
空调表回水管安装	红	5T _H 6	1/5 T _H 6/2	进水管
	蓝	7T _C 8	3/7 T _C 8/4	回水管
空调表进水管安装	红	5T _H 6	1/5 T _H 6/2	进水管
	蓝	7T _C 8	3/7 T _C 8/4	回水管



注：上图为 INFOCAL 8 接线板，根据不同线制的温度传感器，进行相应接线。

如果将传感器安装到护套中，必须确保插入护套底部，否则会影响温度传感器的测量精度。护套最好能够倾斜 45°或 90°安装。倾斜 45°安装时，护套的顶端必须指向水流的相反方向，而且在管道中间。在温度传感器安装完护套后，用封签封好。



2. 电源

电池

该计算器内标配 3.6 V 直流锂电池。电池不可充电或短路，环境温度低于 40°C 可延长电池寿命。

废弃电池需妥善处理。

内部电源模块

可使用 24 V AC 或 230 V AC 供电。两端不可短接，否则会损坏内部适配器板。

内部适配器板可识别主电源是否供电，如果主电源断电，备用电池会继续供电，此时，时间和日期继续更新，但计量包括流量计量将停止工作。此配置产品库存时间不得大于一年。

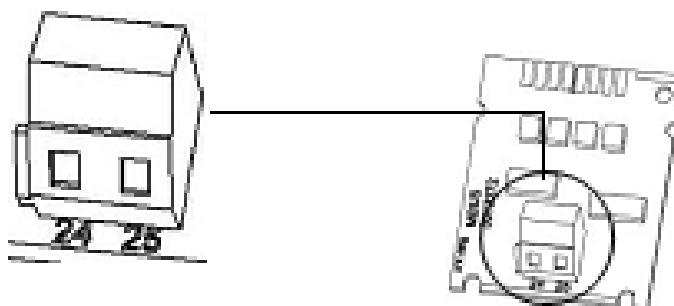
3. 附加模块

INFOCAL 8 支持两个相同或是不同的通讯模块。对于无线通讯，附加的通讯模块可供选择。不同的通道会对应不同的报文，而且在工厂会预先设定。客户也通过软件设定报文。每个插槽口拥有自己的一级地址。对于二级地址，每个 INFOCAL 8 都是唯一的，在工厂内就会被设定，与 SN 序列号一致。

M-Bus 通讯模块

M-Bus 通讯模块是热量表与外部设备（M-Bus 集中器）进行数据传输的接口。多块热量表可以连接到同一集中器。模块上有一个标有 24、25 符号的连接端子，用于连接到 M-Bus 总线。

- 连接不分极，具有电绝缘性。
- M-Bus 模块符合 EN 1434-3 的标准，波特率为 300 或 2400。
- 2×2.5 mm² 电线。
- 拉电流：一个 M-Bus 负载。



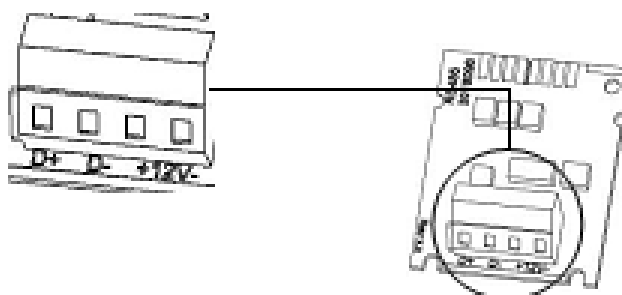
集成无线通讯功能

集成无线通讯功能可以使能量计算器直接与无线接收器进行通讯。单向通讯特点：

- 传输速率为 6 到 25 秒（根据报文长短可变）
- 无线报文包含实际消耗的热量、体积等数值
- 传输频率：868 MHz 或 434 MHz
- 可提供多种接收器（例如：蓝牙、GPRS、LAN 等）
- 通讯协议是经过加密的协议
- 采集方式：行走采集、驱车采集、固定网络采集等

RS 485 通讯模块

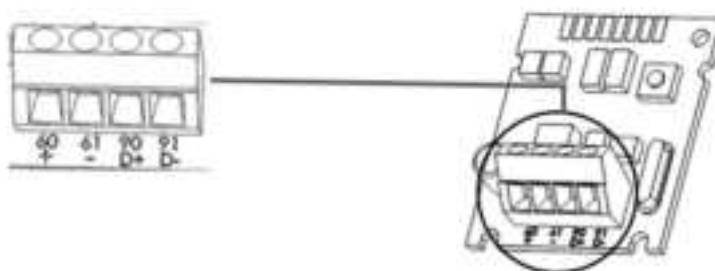
RS 485 通讯模块是一个与外部设备进行数据传输的串行接口，执行 M-Bus 协议。该模块包含 4 个接线端子，分别标识 D+、D-、+12 V 和 -12 V。该模块需要外供直流 12 V ± 5 V (<5 W)。



ModBus 通讯模块

ModBus 通讯模块是热量表与外部设备进行数据传输的接口。模块上有 4 个连接端子。60、61 为电源接线端子，可接 (12-24) VAC/VDC $\pm$ 10%。90、91 为通讯接线端子。

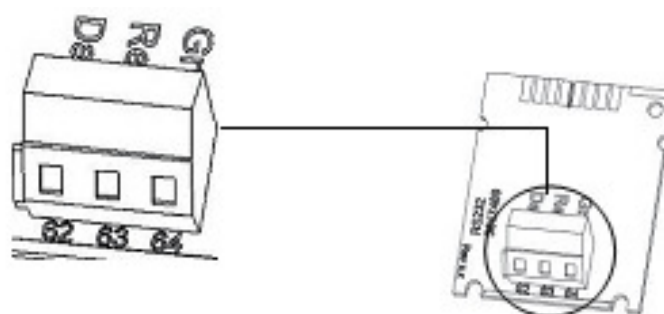
- 可接直流或交流电源
- ModBus 协议
- 模块符合 EN 1434-3 的标准，多种波特率可选



RS 232 通讯模块

RS 232 模块是热量表与外部设备（如 PC）进行数据传输的串行接口。模块上有一个标有 62(Dat)、63(Req)以及 64(GND)符号的连接端子。

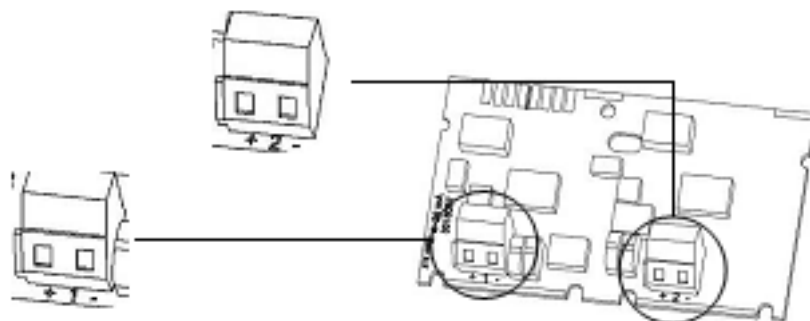
与外部设备（如 PC）连接需使用特殊适配线。适配线的颜色与连接端子的匹配为：62=棕色，63=白色，64=绿色。



模拟输出模块

该模块包含 2 个被动的模拟量输出口，相关输出量代表意义可以使用软件配置。输出口被标记“1”和“2”并且在接线端子上有对应的极性“+”和“-”。

- 被动，外供电：直流电 10...30 V
- 电流回路：4...20 mA，4 mA= 0；20 mA=配置的最大数值
- 最大过载电流 20.5 mA，过大的电流会导致错误电流
- 程序会设定电流在 3.5 mA 或 22.6 mA 会报错
- 输出类型：功率，瞬时流量，温度



4.简单操作

热量表上方的按键，用来转换不同的显示循环。按键时间的长短不同，显示循环也不同。按键时间少于 3 秒钟，显示一个循环内的各个内容，按键时间长于 3 秒钟则转换到下一个循环。主循环中的能量窗口为基本窗口。如果持续 4 分钟不按键（操作失误除外），则计算器自动进入省电模式并关闭显示，再次按键时则显示能量。

5.显示

可通过不同的窗口循环显示计算器中的数据（如：能量、工作时间、流量、当前温度、最大值等）。热量表有 6 个不同的显示循环：主循环、结算日期循环、信息循环、脉冲循环、计费循环和月循环。

循环中的某些窗口或整个循环可以根据需要取消显示，不同的显示窗口组成多个交替的显示，周期为 2 - 4 秒。显示器上的循环标有数字 1 - 6，可以指导帮助操作者快速切换显示。主循环设置当前数据为默认值，如：能量、体积、流量等。

数据显示

循环	顺序	窗口 1	窗口 2	窗口 3
“1” 主循环	1.1	累计能量		
	1.2	累计体积		
	1.3	冷量(空调表)		
	1.4	瞬时流量		
	1.5	功率		
	1.6	进/回水温度		
	1.7	温差		
	1.8	运行时间		
	1.9	错误代码		
	1.10	显示测试		
“2” 结算日期 循环	顺序	窗口 1	窗口 2	窗口 3
	2.1	结算日期 1	结算日期 1 能量	Accd 1A
	2.2	Accd 1	下年结算日期 1	
	2.3	上年结算日期 1	上年结算日期 1 能量	Accd 1L
	2.4	结算日期 2	结算日期 2 能量	Accd 2A
	2.5	Accd 2	下年结算日期 2	
	2.6	上年结算日期 2	上年结算日期 2 能量	Accd 2L
	2.7	结算日期 1	脉冲输入 1	脉冲输入能量 1
	2.8	上年结算日期 1	脉冲输入 1	脉冲输入能量 1
	2.9	结算日期 2	脉冲输入 1	脉冲输入能量 1
	2.10	上年结算日期 2	脉冲输入 1	脉冲输入能量 1
	2.11	结算日期 1	脉冲输入 2	脉冲输入能量 2
	2.12	上年结算日期 1	脉冲输入 2	脉冲输入能量 2
	2.13	结算日期 2	脉冲输入 2	脉冲输入能量 2
	2.14	上年结算日期 2	脉冲输入 2	脉冲输入能量 2
“3” 信息循环	顺序	窗口 1	窗口 2	窗口 3
	3.1	当前日期	当前时间	
	3.2	SEC_Adr	二级地址	
	3.3	Pri_Adr 1	第一个初级地址	
	3.4	Pri_Adr 2	第二个初级地址	
	3.5	安装位置		
	3.6	In0	体积	
	3.7	端口 1	安装的模块号	
	3.8	端口 2	安装的模块号	
	3.9	集成无线状态		
	3.10	软件版本	校验和	

“4” 脉冲循环	顺序	窗口 1	窗口 2		窗口 3
	4.1	脉冲输入 1	累计体积脉冲输入 1		脉冲值 1[L/p]
	4.2	脉冲输入 2	累计体积脉冲输入 2		脉冲值 2[L/p]
	4.3	脉冲输出 1	脉冲输出 1 能量		
	4.4	脉冲输出 2	脉冲输出 2 数值		
“5” 计费循环	顺序	窗口 1		窗口 2	窗口 3
	5.1	计费表 1		计费类型 1	计费限制 1
	5.2	计费表 1 的结算日期 1		结算日期 2 的计费表 1	Accd 1A
	5.3	计费表 1 的结算日期 2		结算日期 2 的计费表 1	Accd 1A
	5.4	计费表 2		计费类型 2	计费限制 2
	5.5	计费表 2 的结算日期 1		结算日期 1 的计费表 2	Accd 1A
	5.6	计费表 2 的结算日期 2		结算日期 2 的计费表 2	Accd 2A
	5.7	计费表 3		计费类型 3	计费限制 3
	5.8	计费表 4		计费类型 4	计费限制 4
“6” 月循环	顺序	窗口 1	窗口 2	窗口 3	窗口 4
	6.1	LO6	上月	能量	体积
	6.2	LO6	月份-1	能量	体积
	:	:	:	:	:
	6.24	LO6	月份-24	能量	体积

6. 错误代码

出现错误时，错误代码显示在主循环窗口中。在基本显示模式下所有错误代码与基本显示交叉出现（但 C-1 永久显示）。清除故障后错误代码显示自动消失，所有显示时间长于 6 分钟的错误代码将自动存入错误日志中。

错误显示	错误说明
C-1	闪存或内存基本参数损坏
E 1	超出温度范围 [-19.9 °C - 199.9 °C] 传感器短路或损坏
E 5	不能通讯（通讯频率过高）
E 8	主电源不供电（如果仅使用主板）或电池电量低
E 9	使用时间提示
E A*	泄露：检测到管道开裂
E b*	泄露：检测到热量表泄露
E C*	泄露：泄露脉冲输入 1
E d*	泄露：泄露脉冲输入 2

* 可选

7.技术指标

积分仪 INFOCAL 8 概况

SONOMETER™ 1100 + 1500 CT	
应用	供热计量-制冷计量-冷热计量
型式批准	CPA
电池供电	3.6 V DC 2*AA-cell 最长使用寿命 12 年; 3.6V DC D-cell最长使用寿命16年
交流电供电	24 V AC; 230 V AC / 0.15 W
温度传感器类型	Pt 500 配对温度传感器 (Φ5.2 mm / 6 mm)
温度传感器导线长度	两线或四线制 P 500: 1.5 / 3 / 5 / 10 / 20 m (Optional)

温度输入

SONOMETER™ 1100 + 1500 CT			
测量周期	T	s	交流电供电: 2 秒; 2*AA-cell 电池供电 16 秒;
始动温差测量范围	$\Delta\theta$	K	0.125

流量传感器概况

SONOMETER™ 1100 + 1500 CT	
应用	供热系统-制冷系统
型式批准	EN 1434 2 级: q_p 0.6 ...60 m ³ /h
流量计安装位置	任意位置
电池供电	外接电源 3.0 ...5.5 V DC

流量传感器技术数据 (提供的标准产品 $q_i:q_p=1:100$)

公称流量	q_p	m ³ /h	10	15	25	40	60
公称口径	DN	mm	40	50	65	80	100
全长	L	mm	300	270	300	300	360
始动流量		l/h	20	40	50	80	120
最小流量	q_i	l/h	100	150	250	400	600
最大流量	q_s	m ³ /h	20	30	50	80	120
过载流量		m ³ /h	24	36	60	90	132
工作压力	PN	MPa	1.6	2.5	2.5	2.5	1.6
公称流量下的压力损失	Δp	kPa	9.5	8	7.5	8	7.5

16 附：有害物质含量说明

热量表	有害物质					
部件名称	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷线路板	0	0	0	0	0	0
电池	0	0	0	0	0	0
塑料壳、盖板、支架	0	0	0	0	0	0
温度传感器	X	0	0	0	0	0
按键	0	0	0	0	0	0
电池固定块	0	0	0	0	0	0
螺丝	0	0	0	0	0	0
墙体安装支架	0	0	0	0	0	0
模块	0	0	0	0	0	0
方标签	0	0	0	0	0	0
封印	0	0	0	0	0	0
操作说明书	0	0	0	0	0	0
脉冲线缆	0	0	0	0	0	0
包装箱	0	0	0	0	0	0
铜壳	X	0	0	0	0	0
定位销	X	0	0	0	0	0
整流器	0	0	0	0	0	0
换能器	0	0	0	0	0	0

本表格依据 SJ/T 11364 的规定编制。

0：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

X：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

丹佛斯(上海)投资有限公司

Climate Solutions • danfoss.cn • +86 400 061 9988 • chinacs@danfoss.com

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1. INSTALLATION INSTRUCTIONS

This installation guide is intended for trained personnel and does not contain any working steps.

Important !

The seal on the energy meter must not be damaged! A damaged seal will result in immediate invalidation of the factory warranty and verification. The cables supplied with the meter must not be shortened or changed in any other way.

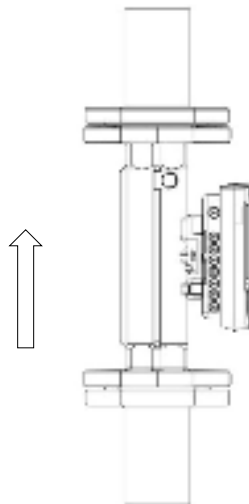


Notes:

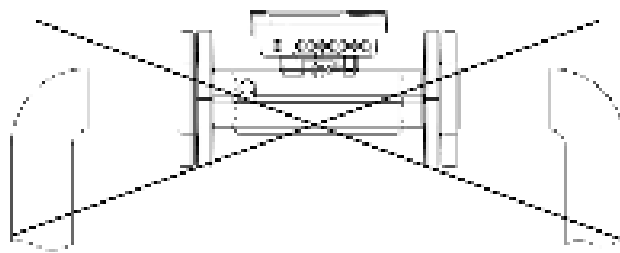
- The regulations on the use of flow sensor must be observed!
- The meter installation is only to be performed by an installation and/or electrical contractor using personnel trained in the installation and use of electrical equipment and familiar with the Low Voltage Directive.
- Medium: Water without additives.
- The specified medium temperature is 5°C - 120°C, 5°C - 130°C.

Installation of heat meter

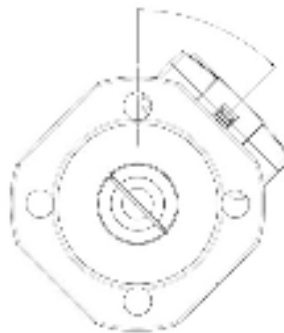
Depending on the application, the energy meter is installed in the hot or cold line of the system. The installation location is printed on the meter. The flow sensor must be installed so that the direction of flow corresponds to the direction of the arrow on the sensor. The flow sensor must always be filled with liquid. Calming sections are not necessary before and after the flow sensor, but calming sections of 3xDN are recommended before the meter. The meter can be installed in both horizontal and vertical pipe, but make sure no air bubbles inside. We recommend installing the flow sensor in a tilted position. The minimum system pressure must be 1 bar to avoid cavitation.



Installation direction of flow from down to up



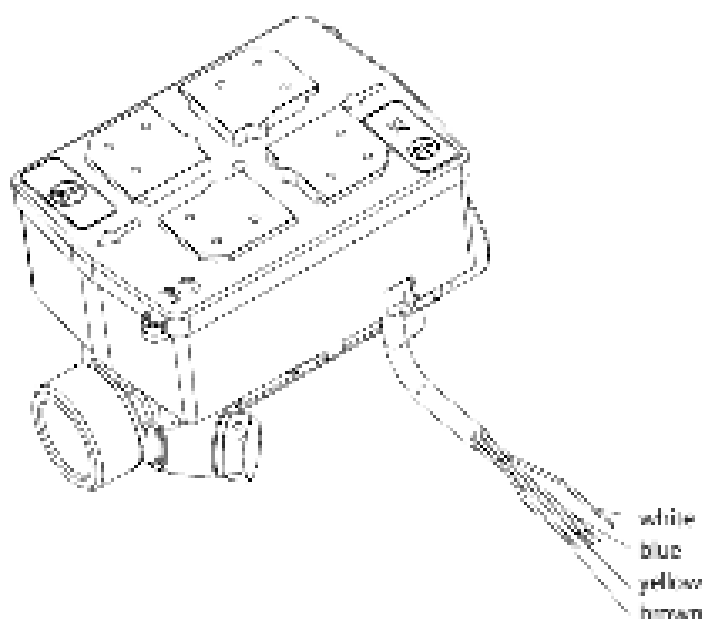
Don't allow top mounted



Recommend tilted position

Make sure the meter is installed sufficiently far away from possible sources of electromagnetic interference (switches, electric motors, fluorescent lamps, etc.). It is recommended that stop valves are fitted before and after the flow sensor to simplify dismantling. The flow sensor should be installed in a convenient position for service and operating personnel.

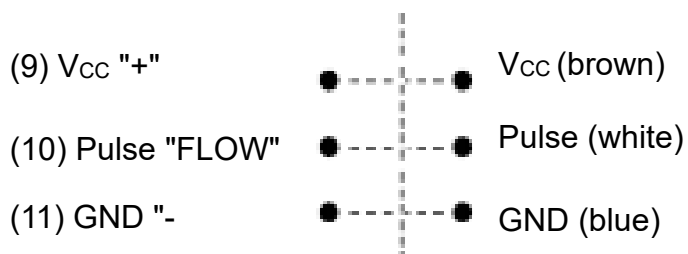
Flow sensor cable connecting



ENERGY - INFOCAL 8 connecting terminal

INFOCAL 8

SONO 1500 CT



Installation of temperature sensors

Handle the temperature sensors carefully! The sensor cables are fitted with coloured type labels:

Red: sensor in hot line, blue: sensor in cold line.

The operation of any violation of this guidance will result in immediate invalidation of the factory warranty and verification.

2. POWER SUPPLY

Battery

3.6 V DC lithium battery is fitted in the standard version. Battery is not to be charged or short-circuited. Ambient temperatures below 40 °C extend the life of the battery.

Disused batteries must be disposed of properly.

Mains unit

24 V AC or 230 V AC mains units can be changed or retrofitted at any time. Never connect between two phases, as this would destroy the mains unit. The mains unit notifies the meter if mains voltage is present. If the mains fail, the backup battery in the mains unit provides the power supply. The date and time are still updated, but none of the measuring functions work, incl. the flow rate measurement. The maximum inventory time of the product with this mains unit shall not be more than one year.

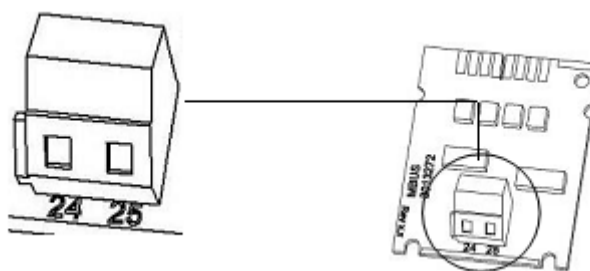
3. EXTENSION MODULE

The calculator supports two communication channels over the same or different interfaces. An additional communication module can be used in radio operation. The protocol is different for each of the two channels and is preset ex works, but can be set to customer-specific requirements using software. Each channel has its own primary address, but only one secondary address exists, which is set to the serial number ex works.

M-Bus communication module

The M-Bus communication is a serial interface for communication with external devices (M-Bus control center). A number of meters can be connected to a control center. 2 wire terminal with marking "24" and "25" can connect to M-Bus.

- The connection is not polarity-conscious and is electrically isolated
- M-Bus protocol to EN 1434-3 standard, 300 or 2400 bauds (auto baud detect)
- Terminals suitable for a cable with 2 wires of 2.5 mm²
- Current drawn: one M-Bus load



Radio-communication module

The integrated radio function is an interface for communication of predefined protocols with Hydrometer radio receivers.

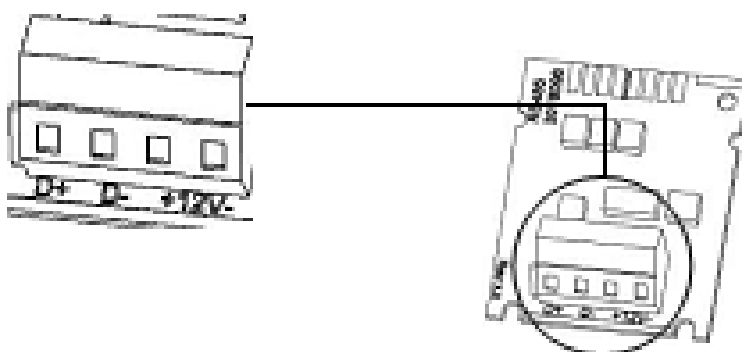
Unidirectional transmission communication has the following specification:

- The module sends every 6 ... 25 s (depending on protocol length)
- Data actuality: the integrated radio module always accesses the current meter counts
- Transmission frequency: 868 or 434MHz
- Various receivers are available for receiving the protocol (e.g. Bluetooth, GPRS, LAN)
- Encrypted protocol: Real Data Radio or Open Metering
- Reading modes: walk-by, drive-by, fixed network

RS 485 communication module

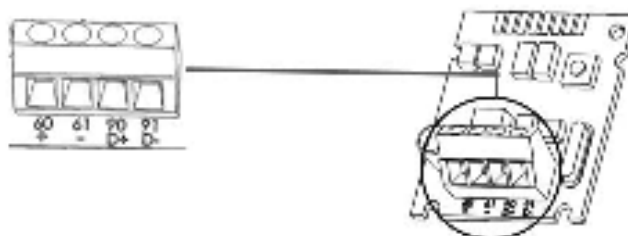
The RS 485 communication module is a serial interface for communication with external devices, e.g. a PC. The module contains a 4 wire terminal with marking "D +", "D -", "+12 V" and "-12 V". The module requires an external power supply of 12 V DC $\pm$ 5V

- cable :4 $\times$ 2.5 mm²
- Protocol: M-Bus
- Transmission speed: 2400 baud



ModBus communication module

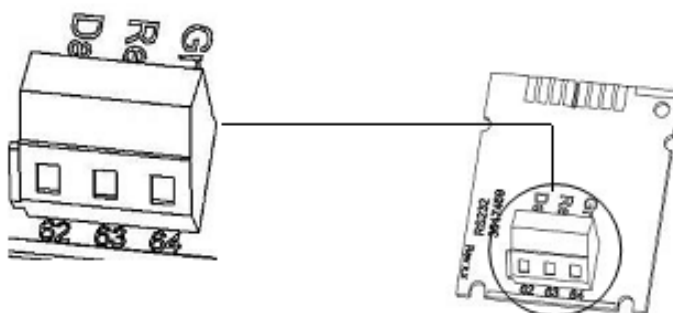
ModBus communication module is a serial interface for communication with external devices. The module contains a 4 wire terminals with marking "60, 61" and "90, 91". The module requires an external power supply of (12-24) VAC/VDC $\pm$ 10% for 60, 61.



RS 232 communication module

The RS 232 communication module is a serial interface for communication with external devices, e.g. a PC. The transmission speed is 300 or 2400 baud. A special data cable is required for connecting the module to the PC. The module contains a 3 wire terminal with marking 62 (Dat), 63 (Req) and 64 (GND). The coloured wires are to be connected as shown:

62 = brown 63 = white 64 = green

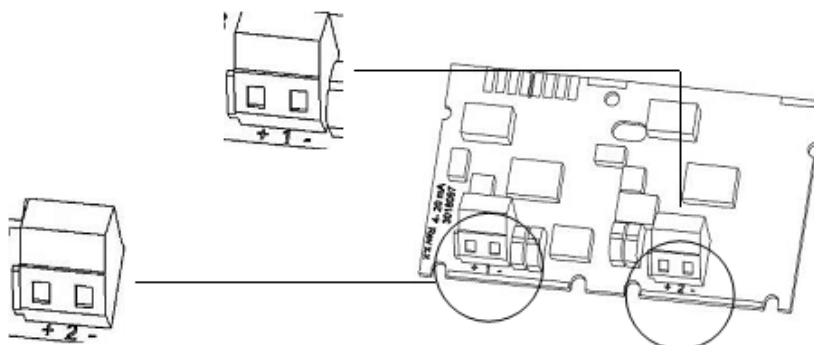


Analogue output module

The analogue module has the size of 2 standard modules and has two 4-20 mA outputs. The connection cable between the main pcb board and the module has to be installed on port 1 (left slot). The values can be programmed with the software. The outputs are marked "1" and "2" on the terminal strip with the respective polarity "+" and "-".

- External power supply: 10 ... 30 V DC
- Current loop 4 ... 20 mA, where 4 mA = 0 value; 20 mA = programmed max. value
- Overload up to 20.5 mA, then fault current
- Errors are generated at 3.5 mA or 22.6 mA (programmable)

- Output values: power, flow rate, temperatures



4. SIMPLE OPERATION

The pushbutton is used to switch through the various displays. The button can be pressed for a short or long time. A short press of the button (<3 seconds) switches to the next display within a loop and a long press (>3 seconds) switches to the next display loop. The “Energy” window (sequence 1.1) in the main loop is the basic display. The meter automatically switches off the display to save power if the button is not pressed for approx. 4 minutes (except in the event of fault) and returns to the basic display when the button is pressed again.

5. DISPLAY

The various display windows comprise up to several displays that change at intervals of 2s – 4 s. The loops in the display are numbered 1- 6 to help the user find his way around quickly. The main loop is programmed with the current data as default setting, e.g. for energy, volume and flow rate.

Data display

LOOP	Sequence	Windows 1	Windows 2	Windows 3
"1" Main Loop	1.1	Accumulated energy		
	1.2	Volume		
	1.3	Accumulated energy (cooling)		
	1.4	Flow rate		
	1.5	Power		
	1.6	Forward/Return temperature		
	1.7	Temperature difference		
	1.8	Operating time		
	1.9	Error code		
	1.10	Display test		
"2" Accountin g date loop		Windows 1	Windows 2	Windows 3
	2.1	Accounting date 1	Accounting date 1 energy	"Accd 1A"
	2.2	"Accd 1"	Future accounting date 1	
	2.3	Accounting date 1 previous year	Accounting date 1 previous year energy	"Accd 1L"
	2.4	Accounting date 2	Accounting date 2 energy	"Accd 2A"
	2.5	"Accd 2"	Future accounting date 2	
	2.6	Accounting date 2 previous year	Accounting date 2 previous year energy	"Accd 2L"
	2.7	Accounting date 1	Pulse input 1	Pulse input volume 1
	2.8	Accounting date 1 previous year	Pulse input 1	Pulse input volume 1
	2.9	Accounting date 2	Pulse input 1	Pulse input volume 1
	2.10	Accounting date 2 previous year	Pulse input 1	Pulse input volume 1
	2.11	Accounting date 1	Pulse input 2	Pulse input volume 2
	2.12	Accounting date 1 previous year	Pulse input 2	Pulse input volume 2
	2.13	Accounting date 2	Pulse input 2	Pulse input volume 2
	2.14	Accounting date 2 previous year	Pulse input 2	Pulse input volume 2
"3" Info loop		Windows 1	Windows 2	
	3.1	Current date	Current time	
	3.2	"Sec_Adr"	Secondary address	

SONOMETER™ 1100 + 1500 CT

	3.3	"Pri_Adr 1"		Primary address 1			
	3.4	"Pri_Adr 2"		Primary address 2			
	3.5	Installation position					
	3.6	Pulse input 0		Volume			
	3.7	"Port 1"		No. of mounted module in Port 1			
	3.8	"Port 2"		No. of mounted module in Port 2			
	3.9	Status of integrated radio					
	3.10	Software version		Checksum			
	3.11	Medium Tyfocor LS					
"4" Impulse loop		Windows 1		Windows 2		Windows 3	
	4.1	Pulse input 1		Accumulated valuepulse input 1		Pulse value 1	
	4.2	Pulse input 2		Accumulated valuepulse input 2		Pulse value 2	
	4.3	Pulse output 1		Value of pulse output 1			
	4.4	Pulse output 2		Value of pulse output 2			
"5" Tariff loop		Windows 1		Windows 2		Windows 3	
	5.1	Tariff counter 1		Tariff type 1		Tariff limit 1	
	5.2	Accounting date 1 tariff 1		Accounting date 1 tariff counter 1		"Accd 1A"	
	5.3	Accounting date 2 tariff 1		Accounting date 2 tariff counter 1		"Accd 2A"	
	5.4	Tariff counter 2		Tariff type 2		Tariff limit 2	
	5.5	Accounting date 1 tariff 2		Accounting date 1 tariff counter 2		"Accd 1A"	
	5.6	Accounting date 2 tariff 2		Accounting date 2 tariff counter 2		"Accd 2A"	
	5.7	Tariff counter 3		Tariff type 3		Tariff limit 3	
	5.8	Tariff counter 4		Tariff type 4		Tariff limit 4	
"6" Monthly value loop		1	2	3	4	5	6
	6.1	LOG	Date of last month	Energy	Tariff counter1	Tariff counter2	Volume
	6.2	LOG	Date of month – 1	Energy	Tariff counter1	Tariff counter2	Volume
	:	:	:	:	:	:	:
	6.24	LOG	Date of month – 23	Energy	Tariff counter1	Tariff counter2	Volume

6. ERROR CODES

The error code is displayed in the main loop if an error occurs. The permanent display shown corresponds to the “normal” display (e.g. a temperature sensor error is not shown in the flow rate display). All the other windows can still be selected by pressing the button. The error code display appears again automatically if the button is not pressed for approx. 4 minutes.

The error display disappears automatically as soon as the cause of the error has been cleared. All errors present longer than 6 minutes are saved in the error log.

Error display	Error description
C-1	Basic parameter error flash or RAM
E 1	Temperature measurement error - Temperature range exceeded [-9.9 °C ... 190 °C] - Sensor short-circuit - Sensor break
E 5	Reading too frequently - M-Bus communication not possible for short time
E 8	No primary voltage (only if mains unit used) Powered by back-up battery or low battery voltage
E 9	Reminder of used duration
E A*	Leakage: pipe break detected
E b*	Leakage: leakage detected in energy meter
E C*	Leakage: leakage pulse input 1
E d*	Leakage: leakage pulse input 2

* Optional



ANNEX: HAZARDOUS SUBSTANCES TABLE

Heat meter	Hazardous Substances					
Components Name	Pb	Hg	Cd	Cr(VI)	PBB	PBDE
PCB	O	O	O	O	O	O
Battery	O	O	O	O	O	O
Calculator housing, adaptor and cover	O	O	O	O	O	O
Temperature sensor	X	O	O	O	O	O
Foil button	O	O	O	O	O	O
Battery rubber	O	O	O	O	O	O
Screw	O	O	O	O	O	O
Wall mounting fixture	O	O	O	O	O	O
Module	O	O	O	O	O	O
Square label	O	O	O	O	O	O
Sealing label	O	O	O	O	O	O
Manual	O	O	O	O	O	O
Pulse cable	O	O	O	O	O	O
Carton box	O	O	O	O	O	O
Brass body	X	O	O	O	O	O
Pin	X	O	O	O	O	O
Straightener	O	O	O	O	O	O
Transducer	O	O	O	O	O	O

This table is prepared in accordance with the provisions of SJ/T 11364.

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: Indicates that said hazardous substance contained in all of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

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