INSTALLATION GUIDE

SVM F22 Calculator
SVM F29 Heat Meter

Delivery · Commissioning · Connections
Compact mounting · Wall mounting · Functional test

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Content

Delivery

Calculator F22 and the combined heat meter F29 can be delivered in various power supply options. Note that F22 with a standard A-cell should not be used together with flow sensor ULTRAFLOW® 54 since the battery life will be less than 10 years.

Battery supplied and mains supplied calculators are delivered in transport mode. Only the RTC is active in transport mode, and no measurements take place. Transport mode is indicated on the LCD with the word “no” displayed in the upper left corner.

Commissioning

Press and hold the push button for 5 second in order to exit the transport mode, and enter init mode. Init mode is really the same thing as service mode, but some sequences are left out in init mode. When entering init mode the LCD changes and “00” is displayed in the upper left corner.

Init/Service mode contains the following menu sequences:

00	RTC [HHMM]
01	Date [YYMMDD]
02	Pulse value, without decimals [0000-9999]
03	Pulse value, no. of decimals [0-4]
04	Account day 1 [YYMM] (n.a. in init mode)
05	Account day 2 [YYMM] (n.a. in init mode)
06	Primary communication address [0000-0255]
07	Reset error time [0=reset, 1=save] (n.a. in init mode)
08	Flow sensor placing [0=low temperature, 1=high temperature] (n.a. in init mode)
09	Recommended battery replacement date [YYMMDD] (n.a. in init mode)
0A	Exit init/service mode [0=return to “00”, 1=go to operation mode “10”]

Table 1

Commissioning

Use the push button to change the meter settings according to the init/service sequence above.

The push button has a dual function. When the button is pressed and held the meter toggles through the service sequence without any values being changed. When the button is pressed and released again, the value of the current flashing digit is changed one step (+1).

Use the push button, as in the example below to change the date:

1. Sequence ”00” is displayed when the meter is set into init mode. Keep the button depressed until sequence ”01” is displayed.
2. Sequence ”01” is displayed with YYMMDD = 110520. The first digit flashes. The date shall be set to 110525.
3. Press and hold the push button until the next digit starts flashing, and keep the button depressed until the last digit, the one to be changed, starts flashing.
4. Press and release the button five times until the last digit is set to 5.
5. Press and hold the push button again until sequence ”02” is displayed.
6. When all desired changes are made, press and hold the push button until sequence ”0A” is displayed.
7. Press and release the push button to change the digit in sequence ”0A” from 0 to 1.
8. Press and hold the push button once again until sequence ”10” (operation mode) is displayed.

Note! Meters delivered with a customized setting can go directly from transport mode to operation mode (sequence 10).

After leaving init mode it is only possible to return to service mode by pressing the sealed service button, cf. the user manual for F22.

Connections

SVM F22 and F29 are equipped with connecting pins for option boards and terminal blocks for connecting signal leads, located under the lid in the base of the calculator. Connect the signal leads to the screw terminals according to Table 2, below:

Terminal no acc. to EN1434	Marking on terminal	Signal
5	”Filled thermometer”	Temperature sensor, high temperature
6	”Filled thermometer”	Temperature sensor, high temperature
7	”Unfilled thermometer”	Temperature sensor, low temperature
8	”Unfilled thermometer”	Temperature sensor, low temperature
10	+	Flow sensor pulse input (signal)
11	-	Flow sensor pulse input (GND)
9	+3V	Flow sensor power supply
24	MBUS	Data output M-Bus
25	MBUS	Data output M-Bus
51	- AL	Alarm outlet (GND)
n.a.	IN -	Pulse inlet, common signal zero (GND)
n.a.	IN 1	Pulse inlet 1 (signal)
n.a.	IN 2	Pulse inlet 2 (signal)
17	OUT -	Pulse outlet 1 (GND)
16	OUT 1	Pulse outlet 1 for energy (signal)
19	OUT -	Pulse outlet 2 (GND)
18	OUT 2	Pulse outlet 2 for volume (signal)
n.a.	A1	Reserved for built-in options
n.a.	A2	Reserved for built-in options
50	AL +	Alarm outlet (signal)

Table 2, Screw terminals in F22/F29

Mains supplied calculators have separate screw terminals for connecting the mains cable.

Flow sensors

Mechanical flow sensors with a minimum pulse duration of 40ms and a maximum pulse frequency of 12Hz can be connected to F22. Also the ultrasonic flow sensor SVM ULTRAFLOW® 54 may be used together with F22. Connect the flow sensor signal leads according to Tabel 3 below.

Connections

Note! Battery supplied F22 calculators with an A-cell battery are not fully compatible with SVM ULTRAFLOW® 54. Battery life may be affected if connected to a ULTRAFLOW® 54 flow sensor.

Temperature sensors

Temperature sensors of the type Pt100 with 2-wire connection may be used.

Pulse outlets and pulse inlets

F22 and F29 are delivered with 2 pulse outlets for energy and volume, and with 2 pulse inlets. All inlets and outlets, including the alarm outlet, can be galvanically isolated if an option board FCRC is installed for this purpose. Cf. the datasheet for ”Relay options board FCRC” for further information.

Note! When F22/F29 is connected to flow sensor ULTRAFLOW® 54, no inlets or outlets may be connected to ground, due to the risk of ground loops.

Data output

F22 and F29 are delivered with an option board either for 2-wire M-Bus or M-Bus radio for wireless communication. If M-Bus radio is selected, the terminals 24 and 25 are inactive.

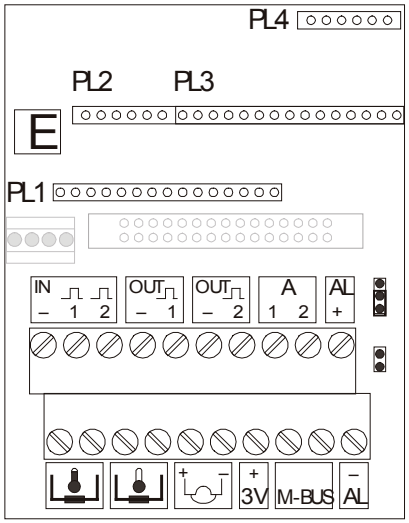


Fig.1, F22/F29 terminal blocks

Combined heat meter F29

SVM F22 may also be delivered in a compact mounted version called F29 including flow sensor ULTRAFLOW® 54 and temperature sensors. The combined heat meter is delivered fully assembled.

ULTRAFLOW® 54 , wire	Function	F22/F29 marking on terminal
Red	Supply	+3V
Yellow	Signal	+
Blue	GND	-

Table 3, Connecting ULTRAFLOW® 54 to F22/F29

ULTRAFLOW® 54

F29 screw terminal

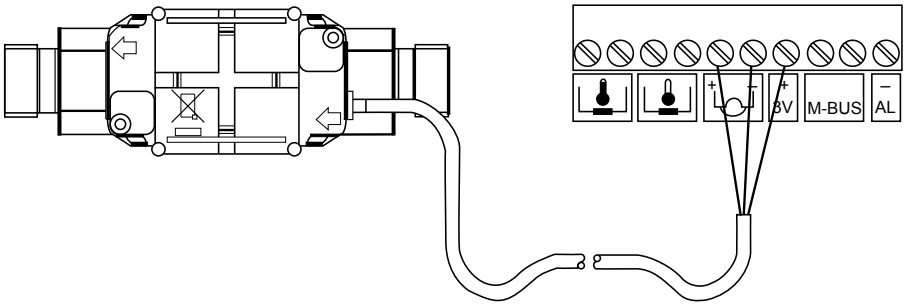


Fig. 2, Electrical connection of ULTRAFLOW® 54 in F22/F29

Installation

Installation angle for ULTRAFLOW® 54 ≤DN100

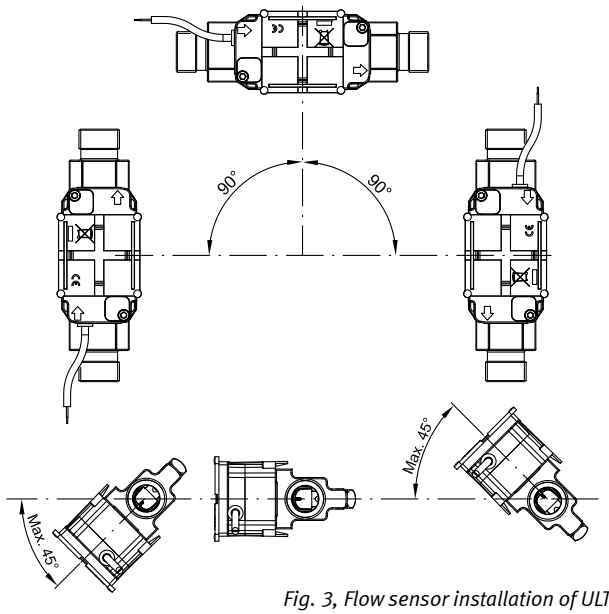


Fig. 3, Flow sensor installation of ULTRAFLOW® 54

ULTRAFLOW® 54 may be installed horizontally, vertically or at an angle.

IMPORTANT! With ULTRAFLOW® 54 ≤DN100 (100 m3/h), the electronics/plastic case must be placed to the side (with horizontal installation).

ULTRAFLOW® 54 may be turned up to ±45° in relation to the pipe axis.

Straight inlet

ULTRAFLOW® requires neither straight inlet nor outlet to meet the Measuring Instruments Directive (MID)
2004/22/EC, OIML R75:2002 and EN 1434:2007. Only in case of heavy flow disturbances before the meter will a straight inlet section be necessary. We recommend to follow the guidelines in CEN CR 13582.

Working Pressure

In order to prevent cavitation the back pressure at ULTRAFLOW® 54 must be min. 1.5 bar at qp and min. 2.5 bar at qs (4.5 bar for DN80 x 350). This applies to temperatures up to approx. 80°C.

ULTRAFLOW® 54 must not be exposed to lower pressure than the ambient pressure (vacuum).

Cable glands

F22 and F29 have 6 PG cable glands for signal leads. The protection class for the electronic casing comply withIP54.

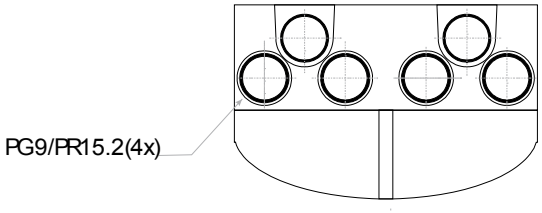


Fig. 4, Cable glands

Dimensions

All dimensions in [mm].

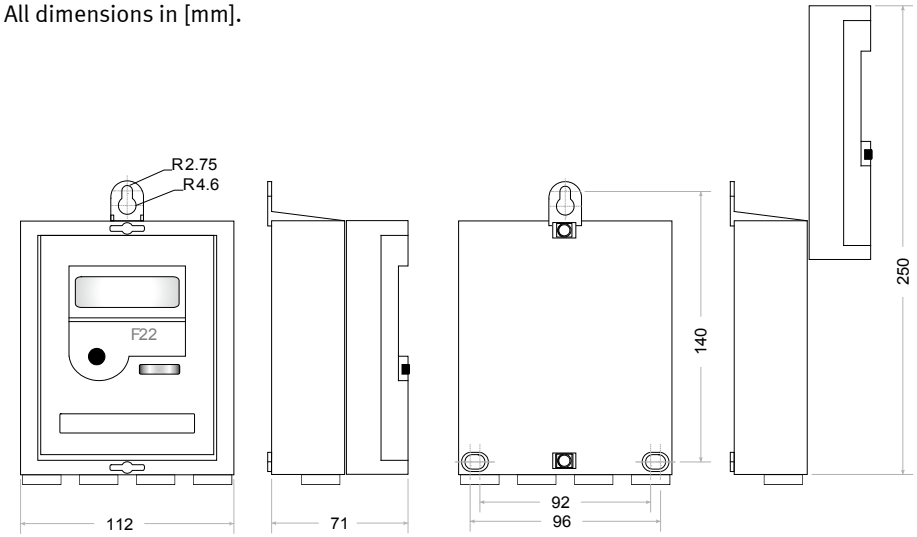


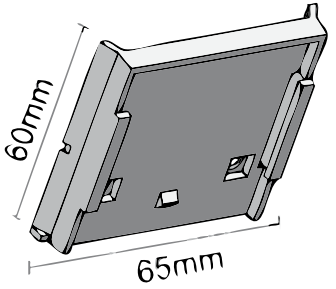
Fig. 5, Dimensions

Mounting

F22 is designed for wall mounting. F29 can be ordered for wall mounting or ordered fully assembled as a compact heat meter with the calculator mounted onto the ULTRAFLOW® 54 flow sensor.

Compact mounting, F29
F29 can be ordered either for compact mounting onto flow sensor ULTRAFLOW® 54, or for wall mounting. When F29 is ordered for compact mounting it is delivered fully assembled with a compact adapter according to Fig. 6 screwed to the calculator casing.

Fig. 6, F29 compact adapter



Wall mounting, F22/F29
The calculator F22/F29 can easily be wall mounted, cf. the pattern in Fig. 5.

Functional test

After installation, it is recommended to perform a simple test, to ensure that the calculator has been properly installed. Always check the following before the meter installation is considered finalized:

1. If there currently is a flow through flow sensor, check that the flow indicator (a square symbol) in the lower left corner of the LCD is flashing. Also check that the momentary flow rate in display sequence 21 is reasonable.
2. Check the error code in display sequence 15. If everything is OK the LCD will display ”0000000”. If error code 40 appears, this means ”low flow”. Wait until the flow sensor emits a pulse and check the error code again.
3. To ensure that the temperature sensors have been installed correctly, check the forward temperature, return temperature and the temperature difference in display sequences 22, 23 and 24.
4. Ensure that the pulse value in display sequence 63 corresponds to the pulse value on the flow sensor label.
5. Check the date, real time clock and the communication address.

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