INSTALLATION GUIDE

SVM F2 Calculator
SVM F25 Heat Meter

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

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Content

Delivery

Calculator F2 and the combined heat meter F25 can be delivered in various power supply options.

Battery 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.

Calculators with mains supply or M-Bus supply are delivered without power and the display is blank. Also the RTC is inactive and must be set before the meter is put into operation. To put the meter in transport mode it must be power supplied. Mains supplied calculators start up immediately when connected to the mains. Calculators with M-Bus supply may need a few minutes to start up, especially when several meters in a loop are connected simultaneously. A capacitor (super-cap) must be charged which then provides the meter with power during short term power cuts.

Commissioning

After the meter has been powered it can be put into operation. 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 F2.

Connections

SVM F2 and F25 are equipped with terminal blocks located under the cover on the back 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
9	3V	Flow sensor power supply
10	Kt	Flow sensor pulse input (signal)
11	0	Flow sensor pulse input (GND)
5	F	Temperature sensor, high temperature
6	F	Temperature sensor, high temperature
7	R	Temperature sensor, low temperature
8	R	Temperature sensor, low temperature
16	P1	Pulse outlet 1 for energy (+) / Pulse inlet 1
17/19	0	Reference (-) for pulse outlets / pulse inlets
18	P2	Pulse outlet 2 for volume (+) / Pulse inlet 2
50	A	Pulse outlet for alarm (+)
60	A1	Data output SIOX (option)
61	B1	Data output SIOX (option)
24	MBUS	Data output M-Bus
25	MBUS	Data output M-Bus

Table 2

Mains supplied calculators have a fixed cable for connection to the mains.

Flow sensors
Mechanical flow sensors with a minimum pulse duration of 40ms and a maximum pulse frequency of 12Hz can be connected to F2. Also the ultrasonic flow sensor SVM ULTRAFLOW® 54 may be used together with F2. Connect the flow sensor signal leads according to Table 3 below.

Note! Older version of F2, delivered in 2010 and earlier, have a different type of power supply not fully compatible with SVM ULTRAFLOW® 54. Battery life and back-up supply may be affected when connected to a ULTRAFLOW® 54 flow sensor.

Temperature sensors
Temperature sensors with 2-wire connection may be used. Pt100 or Pt500 is indicated on

Connections

the meter label. F25 is delivered with Pt500 only.

Pulse outlets or pulse inlets
F2 and F25 are delivered with either 2 pulse outlets for energy and volume, or with 2 pulse inlets. A sticker on the inside of the back cover of the calculator indicates whether the calculator is equipped with outlets or inlets.

Note! When F4 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
F2 and F25 are delivered with M-Bus **or** SIOX output. M-Bus output is the default version and terminals 60 and 61 are inactive. If a SIOX output is chosen, terminals 24 and 25 are inactive instead.

Combined heat meter F25

SVM F2 is also delivered as a combined heat meter in a compact-mounted version with ULTRAFLOW® 54 flow sensors and temperature sensors. The combined meter is called F25 and is supplied with all signal leads installed, cf. Table 3.

ULTRAFLOW® 54, leads	Function	F2/F25 marking on terminal
Red	Supply	3V
Yellow	Signal	Kt
Blue	GND	0

Table 3

ULTRAFLOW® 54

F2/F25 screw terminal

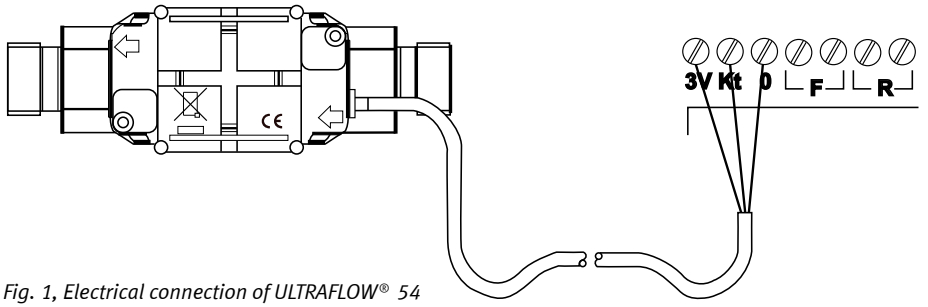

Fig. 1, Electrical connection of ULTRAFLOW® 54

Installation

Installation angle for ULTRAFLOW® 54 ≤DN100

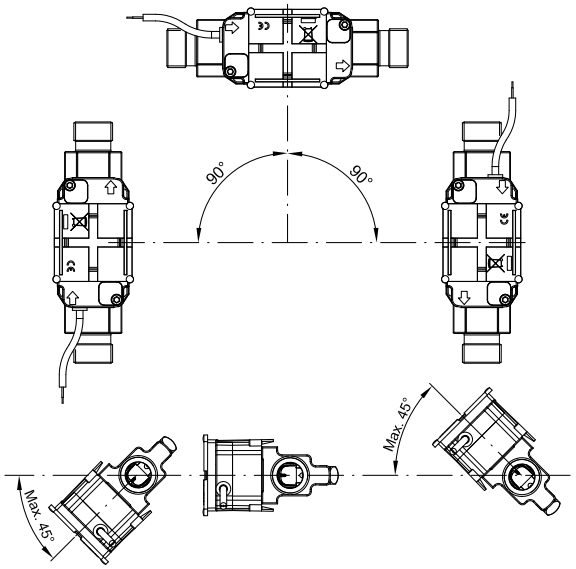

Fig. 2, Flow sensor installation of ULTRAFLOW® 54

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

F2 and F25 have 6 cable glands for signal leads. To obtain protection class IP54 it is important to use cables of the following diameters:

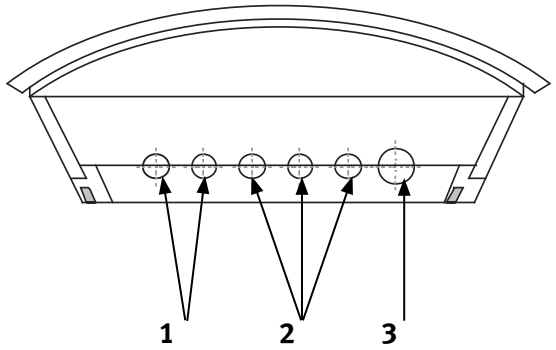

Fig.3, Cable glands

1: Flow sensor and temperature sensor cables. Ø 4.3 ± 0.2mm.

2: Communication, e.g. M-Bus. Ø 4.3 ± 0.2mm.

3: Mains supply, 230VAC. Ø 6.4 ± 0.2mm.

Dimensions

All dimensions are in [mm].

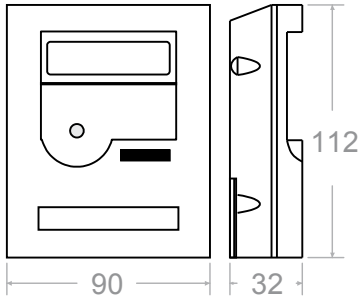

Fig. 4, Dimensions

Mounting

F2 can be wall mounted or compact monted.

Compact mounting, F25
F25 can be delivered compact mounted onto flow sensor ULTRAFLOW® 54, or delivered for wall mounting.

When F25 is ordered for compact mounting, it comes fully assembled with a compact mounting adapter, shown in Figure 5 below, between the flow sensor and calculator.

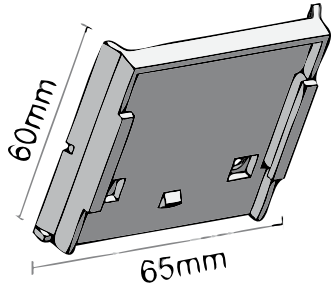

Fig. 5, Compact adapter for F25

Wall mounting, F2/F25

A wall adapter is enclosed with F2 and F25 when wall mounting is selected, cf. Fig. 6 below.

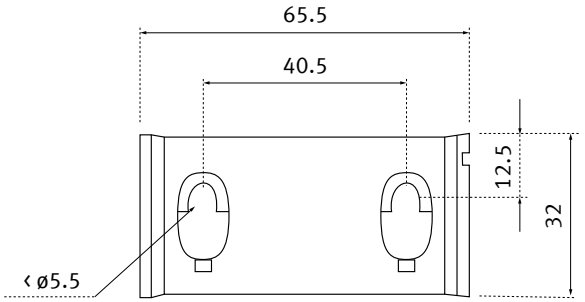

Fig. 6, Wall adapter for F2/F25

Fix the adapter to the wall and slide the calculator onto the rails. Fix the calculator with the mounting screw.

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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