

# SVM F2 Calculator

## DATA SHEET

- Battery, mains 230VAC or M-Bus supply
- Use any type of flow meter; mechanical or ultrasonic
- Built-in M-Bus
- Wall mounted or compact mounted
- 2 additional pulse inlets or pulse outlets



## Application

F2 is a small and compact calculator with high flexibility, and designed to be used for billing purposes in both heating and cooling applications. F2 can be used in combination with virtually any type of flow sensor, mechanical or ultrasonic, as long as they offer a standard pulse output.

The calculator can be wall mounted by using the enclosed adapter, or mounted directly on top of the flow sensor as a compact heat meter.

F2 offers great flexibility in terms of power supply, and may be delivered with battery supply or 230VAC mains supply. F2 is also available in a version with power supply from the M-Bus loop. Each F2 with M-Bus supply uses two bus loads (2x1,5mA).

Any F2, also with battery supply, can supply a UF54 flow sensor if connected. The battery life exceeds 10 years. F2 with mains supply or M-Bus supply also includes a super-cap to ensure operation during short term power cuts.

F2 can be supplied with two pulse outputs for energy and volume, or with two extra pulse inputs e.g. for connection to domestic water meters for cold-and hot-water

These two extra volume registers are available when the meter is read remotely via M-bus or on the LCD of the meter.

F2 may be selected for installation with Pt100 or Pt500 temperature sensors, using 2-wire connection.

The built-in service function makes it easy to change several operating parameters, such as the real time clock, date and pulse value.

With the possibility to change the pulse value the choice of flow sensor can be made at any time, and it simplifies the replacement of the flow meter, at e.g. meter revision.



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## Measurement

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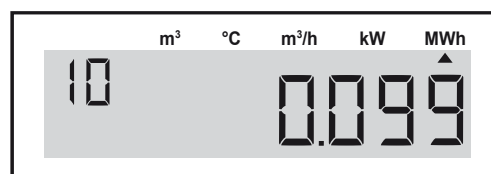
F2 measures the temperature difference between the hot and cold lines after each volume pulse received from the flow sensor. The recorded temperature difference and the pulse value are necessary parameters for the energy calculation.

The temperatures are measured and updated with every energy calculation. If no energy calculation takes place in 60 seconds, the temperatures are updated anyway. Power and flow rate are updated with every volume pulse, but not more frequently than every five seconds. If volume pulses are received more frequent than every five seconds, the pulses are added before the energy calculation takes place.

## Display

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F2 is equipped with an LCD.



*The F2 LCD, showing accumulated energy*

## Pulse outputs / pulse inputs

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F2 is equipped with pulse outputs for energy and volume of the type “open collector”, as a standard. As an option, the F2 can be ordered with pulse inputs instead of pulse outputs. The inputs can be used to collect pulses from other meters, e.g. cold and hot water meters. These extra pulse registers may also be read via M-Bus.

## Communication

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F2 is equipped with a built in M-Bus data output in accordance with EN1434-3. The meter can be read through the OPTO-interface or the 2-wire bus connection.

As an option, the M-Bus can be replaced with a SIOX-bus output.

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## Data

The following data (among others) are accessible on the LCD and over the M-Bus in F2 calculators:

- Accumulated energy
- Accumulated volume for the extra pulse inputs (optional)
- Error code and accumulated time for the relevant error
- Momentary power
- Momentary flow
- Flow temperature
- Return temperature
- Temperature difference
- Total operating time
- Meter number
- Manufacturing number
- Real time clock and date
- Pulse value
- Flow sensor placing (high or low temp.)
- Accumulated volume according to flow sensor
- Accumulated volume registered in conjunction with energy calculation
- Total error time
- Preceding error code and accumulated time for this error
- Up to 37 monthly registers ( same values as for account days, see below)
- Recommended date for battery replacement.
- Two account days. On each account day the following values are stored:
  - Date
  - Accumulated energy
  - Accumulated volume according to the flow sensor
  - Accumulated volume registered during energy calculation
  - Accumulated volume for the extra pulse inputs
  - Possible error code at the time of saving and accumulated time for the relevant error

## Service

F2 has a built-in service function that facilitates alteration of certain parameters in the field without a special service tool.

The following parameters can be altered:

- Time and date
- Pulse value
- Account days
- Communication address
- Flow sensor placing, high or low temperature
- Recommended date for battery replacement.

The total error time can be reset. Using a PC-program all the parameters can be altered.

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### Technical data

Flow sensor (with pulse output)	
– Max. frequency	12 Hz
– Min. pulse length	40 ms
– Max. voltage	3 V
– Max. cable length	15 m
– Pulse value	0.0001 – 9999 l/p
Power supply	
– Battery	3V, 2.2Ah, battery life 10 years
– Battery for flow sensor supply	3.6V, 3.6Ah, battery life 10 years
– Mains	230V $\pm$ 10%, 45-65 Hz, battery 20mAh for short term power cuts
– Mains for flow sensor supply	230V $\pm$ 10%, 45-65 Hz, super-cap for short term power cuts
– M-Bus supply	2 loads from Master, super-cap for short term power cuts
Data output	
– M-Bus (EN1434-3)	OPTO-interface (EN60870-5) and 2-wire bus connection (terminal)
– SIOX	Built-in option, 2-wire bus connection (terminal)
Ambient temperature	
– Operation	+5°C to +55°C
– Storage/transport	-20°C to +70°C
Protection class	IP54
Environmental class	C according to EN1434
Temperature sensors	
– Approved and matched pairs type	Pt 100 or Pt 500
– Max. cable length, Pt100:	2,5 m at 0,22 mm <sup>2</sup> cable cross section 5,0 m at 0,50 mm <sup>2</sup> cable cross section 7,5 m at 0,75 mm <sup>2</sup> cable cross section 15,0 m at 1,50 mm <sup>2</sup> cable cross section For Pt500, 5 times the above lengths
– Max. sensor current	4 $\mu$ A (RMS) for Pt 100
Display	7 + 2 digit LCD
Temperature	
– Range	0 ...190°C
– Difference	2...120 K
Pulse outputs Open collector	
– Pulse length	125 ms
– Max. voltage	30 V
– Max. current	20 mA
Pulse inputs	
– Max. frequency	12 Hz
– Min. pulse length	40 ms
– Max. voltage	3 V
Alarm output Open collector	
– Pulse length	125 ms

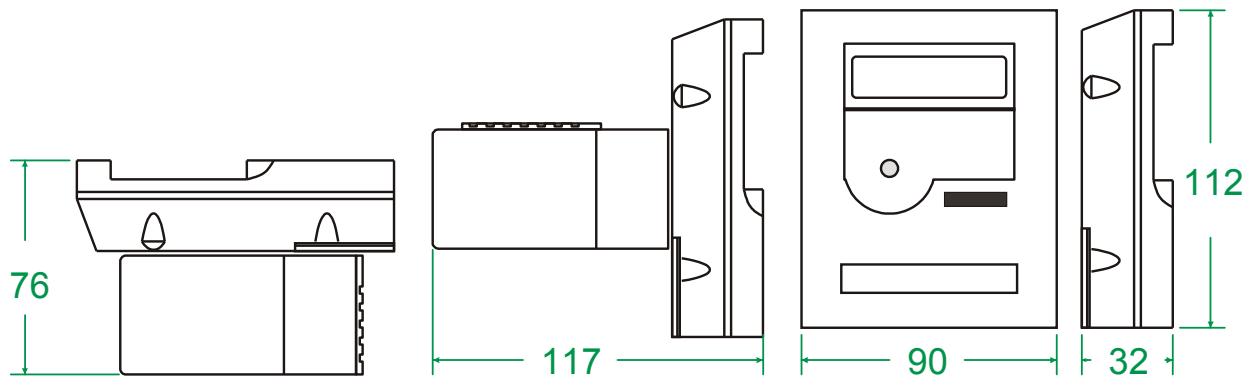
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## Dimensions

All dimensions are in mm



F2 mounted vertically on adapter for mechanical flow sensor

F2 mounted horizontally on adapter for mechanical flow sensor

F2 wall mounted

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### Article number ABCDEFG

#### SVM F2

A B C D E F G

#### Sensor type

Pt100 2-wired. Flow meter in low temperature	1
Pt100 2-wired. Flow meter in high temperature	2
Pt500 2-wired. Flow meter in low temperature	5
Pt500 2-wired. Flow meter in high temperature	6

#### Power supply

None	0
Battery std.	1
M-Bus powered (2 Bus loads)	2
Mains 230 VAC (w. backup batt.)	3
Mains 230 VAC for flow meter supply (w. Supercap)	4
Battery for flow meter supply	U

#### Pulse value

Kt: 2.5 l/p	1
Kt: 25 l/p	2
Kt: 250 l/p	3
Kt: 2500 l/p	4
Kt: 1 l/p	5
Kt: 10 l/p	6
Kt: 100 l/p	7
Kt: 1000 l/p	8

#### Energy unit

kWh	0
MWh	1
GJ	2
MBTU [m <sup>3</sup> m <sup>3</sup> /h °C]	3
MBTU [kUSG USG/m °F]	4
kWh [kUSG USG/m °F]	5

#### Configuration

Standard	-
Customer number - Separate specification needed	E
Special - Separate specification needed	S

#### In/Outlets

Pulse inlets: 2.5 l/p.	1
Pulse inlets: 25 l/p.	2
Pulse inlets: 250 l/p.	3
Pulse inlets: 1 l/p.	5
Pulse inlets: 10 l/p.	6
Pulse inlets: 100 l/p.	7
Pulse inlets: 1000 l/p.	8
Pulse outlets	9

#### Display

No backlight. With Opto and M-Bus	1
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### Article number HIJ KLM

SVM F2	H	I	J	K L M
<b>Montage</b>				
For wall mounting. Walladapter is included. Packaging: 1 pc.			0	
Compact adapter is included. Packaging: 1 pc.			2	
<b>Connections</b>				
Standard connector			-	
<b>Communication</b>				
M-Bus, 300 baud			1	
M-Bus, 2400 baud			2	
<b>Country code</b>				
English standard				300

### Article number key

To acquire the article number just fill in the blanks:

F2	A	B	C	D	E	F	G	H	I	J	KLM
											300

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