

SVM F22 Calculator

DATA SHEET

- Battery or 230VAC mains supply
- Wall mounted or compact mounted
- Use any type of flow sensor
- 2 additional pulse inlets
- 2 pulse outlets for energy and volume
- Galvanic isolation for all inlets and outlets



Application

F22 is a flexible calculator used to measure and monitor small to large installations in both heating and cooling applications. F22 is approved according to the MID for metering and billing purposes, and is equipped with the necessary verification seals. It is also possible to apply user seals if required.

The connection board in the F22 offers screw terminals with plenty of space along with the possibility to insert option boards for added functionality, e.g. M-Bus communication. The F22 can be equipped with a module for 2-wire M-Bus with galvanic isolation, or a module for M-Bus radio for wireless communication.

F22 may also be delivered with a variety of built-in options, e.g. log, tariff and peak values.

Most flow sensors available on the market may be used together with F22, both mechanical and static flow sensors with a standard relay or open collector pulse outlet. The pulse value can easily be altered, even during operation in

order to match the pulse value of the flow sensor. This is a great advantage when the flow sensor is replaced, e.g. for re-verification.

F22 is ideal for connecting to UF54 flow sensor. UF54 will get the power supply from the F22 calculator, regardless if the F22 is battery or mains supplied.

The temperature sensors are connected with 2-wire technology, for Pt100 or Pt500.

F22 offers two extra pulse inlets e.g. for connection to domestic water meters for cold and hot water, along with two pulse outlets for energy and volume.

All inlets and outlets, including the alarm outlet, are galvanically isolated.

F22 stores historical values in a built-in monthly log, for up to 37 months. A more extensive log function may be factory fitted for customized intervals, e.g. an hourly log.



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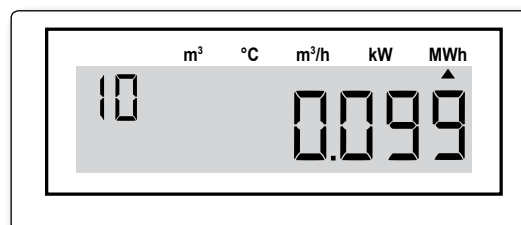
Measurement

F22 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

F22 is equipped with a 7+2 digit LCD. Measured and historical values, calculator settings and applicable error codes are easily accessed by using the display button.



Example of a display image showing accumulated energy

Different versions of F22

The F22 is delivered in a few versions to suit different applications and usage. The versions are:

Basic version (B)

A basic calculator with the possibility to fit an M-Bus option board for 2-wire M-Bus.

Extended version (E)

A calculator with extended functionality. Equipped with 3 pulse outlets for energy, volume and alarm, and 2 extra pulse inlets. F22 E also offers built-in options, such as log, tariff and peak values.

Radio version (R)

F22 R is basically an F22 E fitted with an M-Bus radio option board for wireless communication.

Pulse outlets / Pulse inlets

F22 E is equipped with two pulse inlets. The pulses are stored in two separate pulse registers used for e.g. domestic water meters for hot and cold water. These two pulse registers are available when the meter is read via M-Bus or via the LCD.

F22 E is also equipped with two pulse outlets for energy, outlet 1, and volume, outlet 2, of the type open collector. A pulse is emitted for each increment of the last digit, in the register for accumulated energy and the register for accumulated volume, respectively.

Further more, F22 E is equipped with an alarm output, activated whenever an error code occurs.

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Communication

F22 has an M-Bus data output according to EN1434-3, accessible with an OPTO interface.

A 2-wire M-Bus output with galvanic isolation is also available in the F22 when fitted with an option board for this purpose.

F22 E may also be fitted with an option board for wireless M-Bus communication (radio).

Option boards

The F22 can be equipped with option boards for added functionality.

- Relay board (galvanically isolated)
- M-Bus, 2-wire
- M-Bus, radio *

* Only in F22 E

Remote reading with M-Bus radio

F22 E can be equipped with an option board for wireless M-Bus communication, F22 R. F22 R can be used in fixed networks as well as in drive-by/walk-by networks. Any F22 R may also be used as a repeater, provided that it is mains supplied.

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Displayed data

Accumulated values

- Accumulated energy
- Accumulated total volume
- Accumulated volume according to energy calculation
- Accumulated pulses, pulse input 1*
- Accumulated pulses, pulse input 2*

Momentary values

- Power
- Flow
- Flow temperature
- Return temperature
- Temperature difference

Calculator settings

- Total operating time
- Real time clock
- Date
- Pulse value
- Flow sensor placing (high or low temperature)
- Calculator number, S/N
- Communication, primary address
- Communication, secondary address (S/N)

Calculator messages

- Error code
- Total error time
- Preceding error code
- Total time for preceding error code
- Recommended date for battery replacement

Historical values

Historical values are stored at the end of each month or period for account days. There are 37 monthly registers + 2 account days in the calculator.

- Accumulated energy
- Accumulated total volume
- Accumulated volume according to energy calculation
- Accumulated pulses, pulse input 1*
- Accumulated pulses, pulse input 2*
- Error code at date of storage
- Error time at date of storage

* Only in F22 E

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Service

F22 has a built-in service function that enables the user to change the calculator settings using the display button. The following settings can be modified:

- Time and date
- Pulse value
- Account days
- Communication. primary address
- Flow sensor placing, high or low temperature
- Reset error time
- Recommended date for battery replacement
- Exit service menu

F22 can also be parameterized by using a special PC-program "FlexServ".

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Technical data

Flow sensor	
– Frequency	Max. 12 Hz
– Pulse length	Min. 40 ms
– Voltage	Max. 3V
– Cable length	Max. 15m
– Pulse value acceptable	0.0001 – 9999 l/p
Temperature sensors	
Approved and matched pairs, Pt100 or Pt500	
– Max cable length	Min cable area
2.5 m	0.22 mm ²
5.0 m	0.50 mm ²
7.5 m	0.75 mm ²
15 m	1,5 mm ²
– For Pt500, 5 times the above lengths	
– Sensor current	4 µA (RMS) for Pt100
Temperature	
– Range	0 – 190°C
– Difference	2 – 120 K
Ambient temperature	
– Operation	5°C – 55°C
– Storage/transport	-20°C – 70°C
Protection	
– Class	IP54
– Environmental class C according to EN1434	
Power supply	
– Battery	3.6V – 2.75 Ah, 10 years battery life
– Battery	3.6V – 18.5 Ah for flow meter supply, 10 years battery life
– Mains	230VAC ± 10%, 45-65 Hz, battery back-up 2.75 Ah
Display	7 + 2 digits LCD
Pulse Outputs*	
– Type	Open collector
– Pulse length	125 ms
– Voltage	Max. 30 V
– Current	Max. 20 mA
Pulse inputs*	
– Frequency	Max. 12Hz
– Pulse length	Min. 40 ms
– Voltage	Max. 3V
Alarm output*	
– Type	Open collector
– Pulse length	125 ms
Data output	
– M-Bus (EN-1434-3) OPTO-interface (EN60870-5)	
– With option board also 2-wire M-Bus (screw terminals)	
* Only in F22 E	

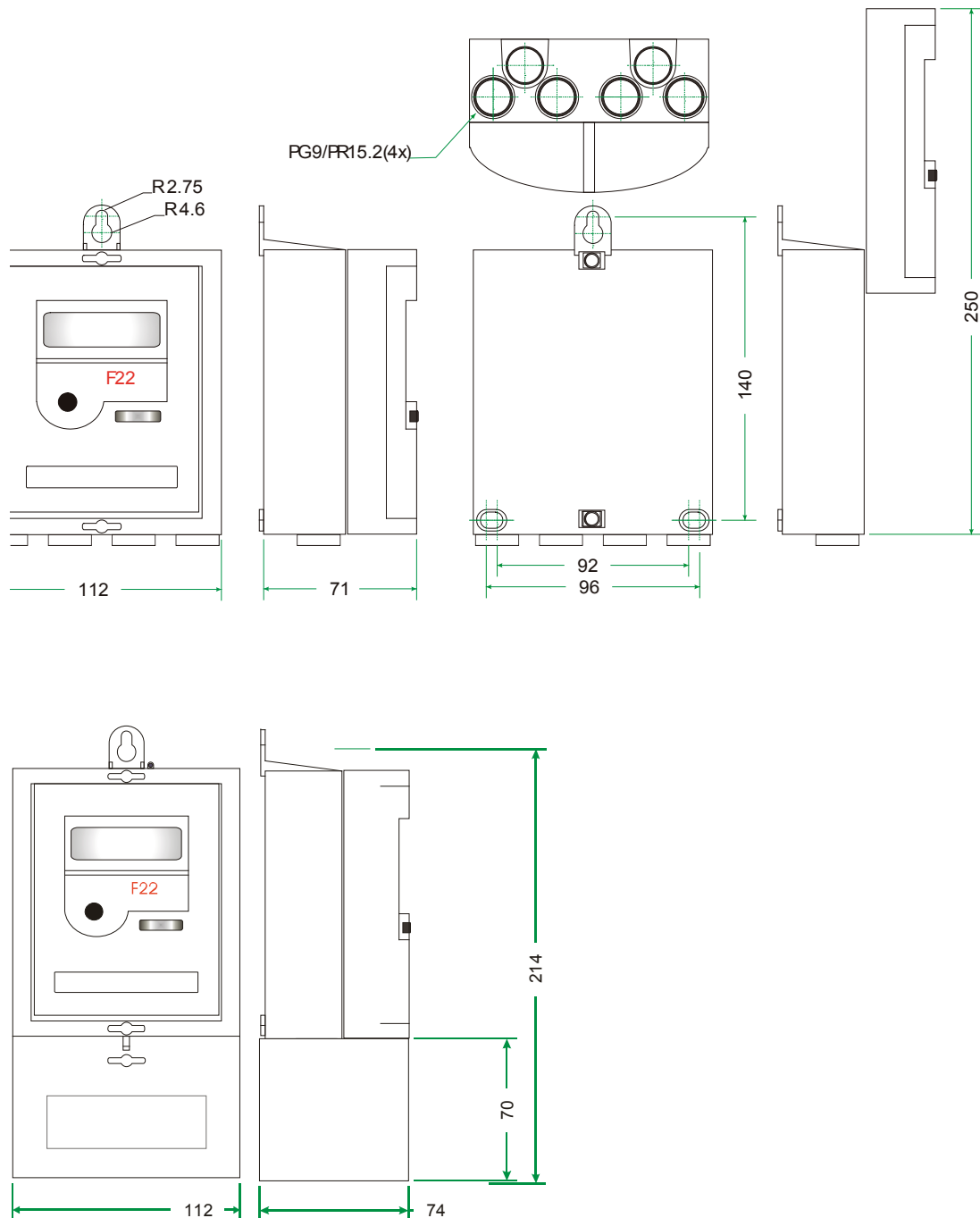
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Dimensions

All dimensions are in mm

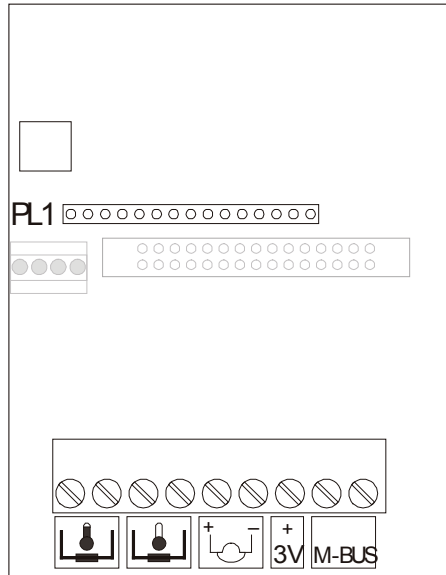


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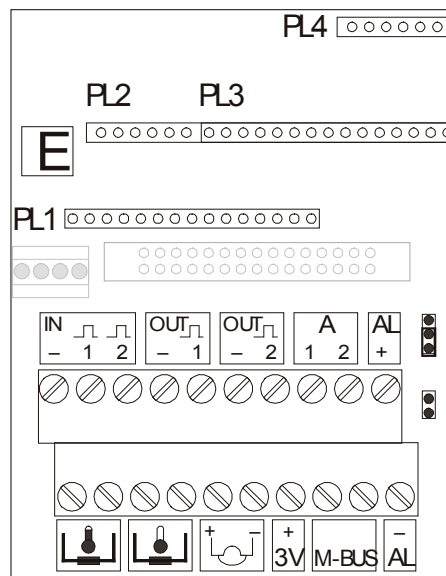


F22 Basic



F22 Basic

F22 Extended



F22 Extended

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Article number ABCDEFG

SVM F22

	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						
Mains 230 VAC (w. backup batt.)	3						
Mains 230 VAC (w. backup batt. for flow meter supply)	4						
Battery (D-cell) for flow meter / radio 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				3			
Configuration							
Standard						-	
Customer number - Separate specification needed						E	
Special - Separate specification needed						S	
Internal option – Separate specification needed						X	
In/Outlets							
No pulse inlets or outlets							0
Pulse inlets: 2,5 l/p + Pulse outlets							A
Pulse inlets: 25 l/p + Pulse outlets							B
Pulse inlets: 250 l/p + Pulse outlets							C
Pulse inlets: 2500 l/p + Pulse outlets							D
Pulse inlets: 1 l/p + Pulse outlets							E
Pulse inlets: 10 l/p + Pulse outlets							F
Pulse inlets: 100 l/p + Pulse outlets							G
Pulse inlets: 1000 l/p + Pulse outlets							H
Display							
No backlight, with Opto and M-Bus							1

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Article number HIJ KLM

SVM F22	H	I	J	K L M
Montage				
For wall mounting. Packaging: 1 pc.	0			
Adapter (Cover lid for cable protection).	A			
Connections				
Basic version. Lower connector mounted.		B		
Extended version. Both connectors mounted.		E		
Communication				
No Communication: module.			0	
M-Bus board mounted (300 Baud).			1	
M-Bus board mounted (2400 Baud).			2	
Prepared for Radio. Antenna housing mounted (M-Bus board mounted, 2400 Baud).			F	
Prepared for Radio with. ext. antenna. FME-connector mounted (M-bus board mounted, 2400 Baud).			G	
Radio board mounted. Antenna housing mounted.			H	
Radio board mounted. FME-connector for external antenna mounted.			J	
Country				
English standard				300

Article number key

To acquire the correct article number, fill out the blanks.

F22	A	B	C	D	E	F	G	H	I	J	KLM
							1				300