SVM F4 Calculator

DATA SHEET

- 5 option card slots
- 2 extra puls inputs
- 2 pulse outputs for energy and volume
- 2- or 4-wire connection of temperature sensors
- Spacious screw terminal blocks
- Robust cable glands

A powerful heat meter calculator for district heating and cooling applications

The F4 calculator is designed for heat and cooling applications, where the customer requires more advanced features of the calculator.

F4 offers five slots for option modules, that can be used for multiple parallel communication outputs, expanded data logger, tariff, and peak values. There are also option modules for analogue input/output and relay board.

F4 has a built-in M-Bus output for remote readout, and can also be supplemented by three additional communication modules, such as SIOX, LON and additional M-Bus.

The F4 also offers a range of log option modules, e.g. straight log, tariff log and peak value log. The straight log stores values according to the users' specifications with a time base from 6 minutes up to a yerly log. The tariff option module divides the measured consumption into two tariff registers, controlled either by time (calendar) or by the power or flow. The peak values option module provides valuable information for monitoring and control of district heating networks through the storage of flow/volume, energy/power and temperatures.

All log option modules are delivered pre-configured or may be configured by the user.

F4 may be mains supplied with 230 VAC, including a battery backup for full functionality, or battery supplied with up to 15 years battery life.

F4 can be selected for installation with Pt100 or Pt500 temperature sensors, and supports both 2 wire and 4 wire connection.

F4 is compatible with most flow sensors available on the market, that offers standard pulses. This includes mechanical flow sensors with reed relay pulse output, and static flow sensors with open collector pulse outputs. The pulse value can easily be altered even on site in order to match the pulse value of the flow sensor. This is especially useful when the flow meter is being replaced for re-verification.

The spacious terminal block, superior cable glands and strain-reliefs, will, together with the enclosed documentation make the installation a true pleasure!

Kamstrup

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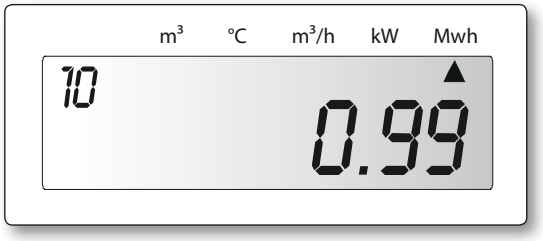
Measurement

For each volume pulse from the flow meter the F4 measures the flow and return line temperatures, and uses the volume flow and the temperature difference to calculate the energy. If the flow rate is high and the volume pulses are recieved more often than every 5 seconds, the volume will accumulate and an energy calculation will be done every five seconds. If the flow rate is low and no pulses are received in 60 seconds, the temperatures will be measured and updated every 60 seconds. As soon as a volume pulse is received, an energy calculation will take place. If no volume pulse is received in 24 hours a “low flow alarm” will appear. This will go away as soon as a volume pulse is received again.

Display

F4 is equipped with an LCD (Liquid Crystal Display). The LCD can be equipped with backlight as an option.



Display showing accumulated energy.

Pulse outputs/pulse inputs

F4 is equipped with pulse outputs of the type ”open collector” for energy and volume. Relay outputs are also availabe when an option board for this purpose is installed.

F4 is also equipped with two pulse inputs. 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

F4 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. The F4 may also be equipped with an option board for SIOX-bus communication.

Option boards

F4 has 5 slots for different option boards, e.g.:

- Relay output board
- SIOX option board
- Analogue input or output board
- Tariff option board
- Max values option board
- Log option board
- LON-FTT10

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Data

In addition to accumulated energy, the following (among others) values are accessible in F4:

- ☐ Accumulated volume for the extra pulse inputs
- ☐ 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

F4 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 sensors (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 3.6V, 8.5 Ah, operation time 10 years
- Battery 3.6V, 18.5 Ah for flow meter supply, operation time 10 years
- Mains 230 V ± 10%, 45-65 Hz, battery back up 8.5 Ah

Data output
- M-Bus (EN1434-3) OPTO-interface (EN60870-5) and 2-wire bus connection (terminal)
- SIOX, with option board
- LON/FTT10, with option board

Ambient temperature
- Operation +5°C to +55°C
- Storage/transport -20° C till +70° C

Protection class IP54

Environmental class C according to EN1434

Temperature sensors
- Approved and matched pairs type Pt100 or Pt500 may be used.
- Max. cable length

	Pt100	Pt500
2-wire, 0,22mm² cross section	2,5m	7,5m
2- wire, 0,5mm² cross section	5m	25m
2- wire, 0,75mm² cross section	7,5m	37,5m
2- wire, 1,5mm² cross section	15m	75m
4- wire, min. 0,5mm² cross section	100m	100m

- Max. sensor current 4 µA (RMS) for Pt 100

Display 7 +2 digit LCD (back light as an option)

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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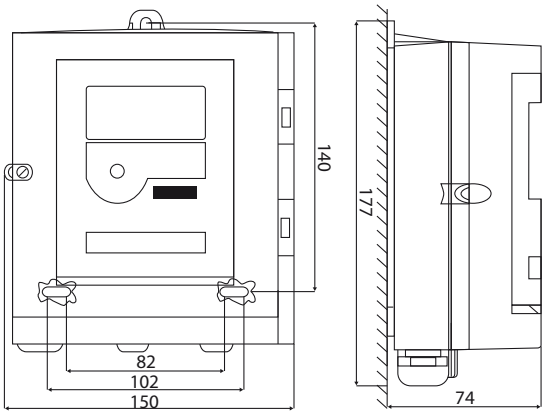
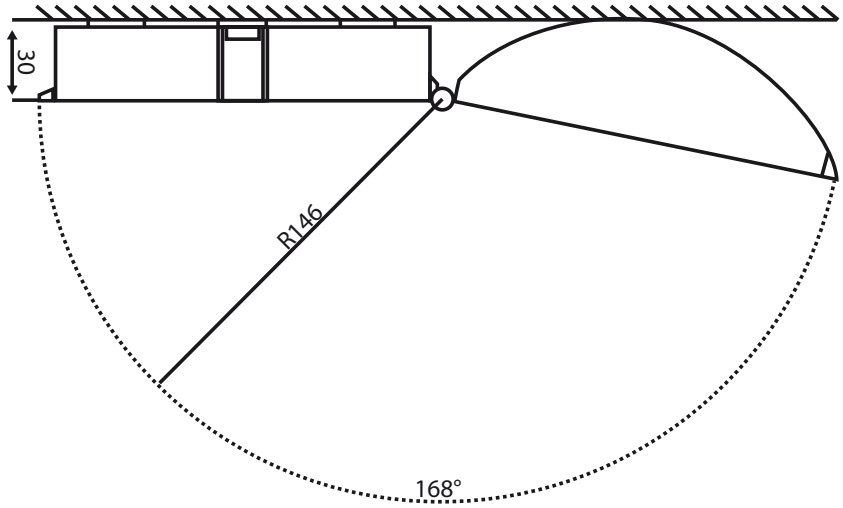
Dimensions



All dimensions are in mm.

Mounting

F4 is designed for wall mounting.



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Article number ABCDEFG

Combine the right combination to order the calculator

SVM F4	A	B	C	D	E	F	G
Sensor type							
Pt100 2/4-wired. Flow meter in low temperature	3						
Pt100 2/4-wired. Flow meter in high temperature	4						
Pt500 2/4-wired. Flow meter in low temperature	7						
Pt500 2/4-wired. Flow meter in high temperature	8						
Power supply							
None		0					
Battery std. C-cell		1					
Mains 230 VAC (w. backup battery C-cell)		4					
Battery (D-cell) 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 [m³ m³/h °C]				3			
MBTU [kUSG USG/m °F]				4			
Configuration							
Standard					–		
Customer number - Separate specification needed					E		
Special - Separate specification needed					S		
In/Outlets							
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							
Backlight with Opto and M-Bus							0
No backlight. With Opto and M-Bus							1

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Article number HIJKLM

SVM F4	H	I	J	K L M
Montage				
For wall mounting	0			
Connections				
Both connectors mounted		1		
Communication				
M-Bus, 300 baud			1	
M-Bus, 2400 baud			2	
Country				
English standard				300

Article number key

To acquire the correct article number, just fill in the blanks

F4	A	B	C	D	E	F	G	H	I	J	K	L	M

Delivery

F4 is delivered in transport mode where only the real time clock is active. The power consumption is kept at a minimum in transport mode. This enables storage for many months without affecting the battery life.