

Data sheet Calculator F4

A powerful heat meter calculator for district heating and cooling applications.



Application field

The calculator F4 is designed for metering and monitoring of larger heating and cooling customers, wishing more advanced functions of their calculator. F4 is a calculator that can very easily be expanded via optional cards for various purposes, e.g. communication cards for different bus systems. The calculator is a debiting calculator and several seals protects it from tampering.

Measurement

F4 measures the difference between flow temperature and return temperature, for each pulse, provided the time between pulses is longer than or equal to 5 seconds. When the time between the pulses is less than 5 seconds, the measurements of the temperature difference are made every 5th second. The energy content in the volume measured by the flow meter is calculated from the measured temperature difference. If the time between the flow meter pulses exceeds 60 seconds, a measurement will be made every 60th second. The measurement only updates temperatures that can be read off at the calculator.

Display

F4 is equipped with a LCD (Liquid Crystal Display). As optional feature the LCD can be equipped with background light.

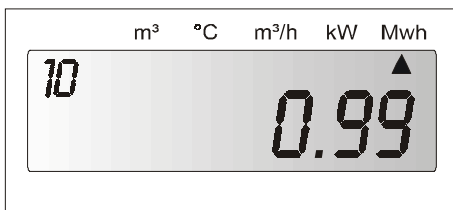


Fig.1, F4 display showing accumulated energy.

Pulse outputs/pulse inputs

F4 has as a standard pulse outputs for energy and volume of the type "open collector". If you wish to use relay outputs, option card for this purpose has to be installed.

F4 is equipped with two pulse inputs as a standard. The inputs can be used to read-off other meters with pulse outputs, e.g. cold and hot water meters, the meters can then be read off via M-Bus.

Communication

F4 is, as standard, equipped with an M-Bus data output in accordance with EN1434-3. Read-off is possible either via an OPTO-interface or a bus connection. F4 can, as an option, be equipped with an SIOX-card for communication on an SIOX-bus. The SIOX-protocol is compatible with SVM820, that is all superior systems that, today, communicate with SVM820, can also communicate with F4.

Option cards

F4 is prepared for up to five places for different option cards, for example:

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

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 with date function
- 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.

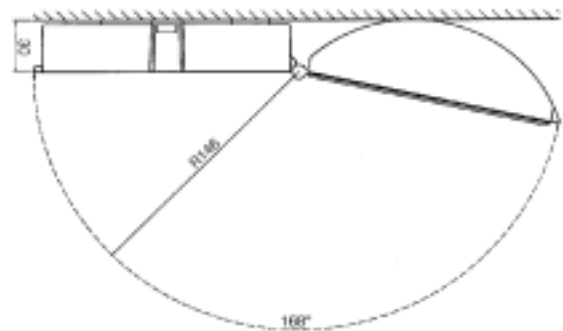
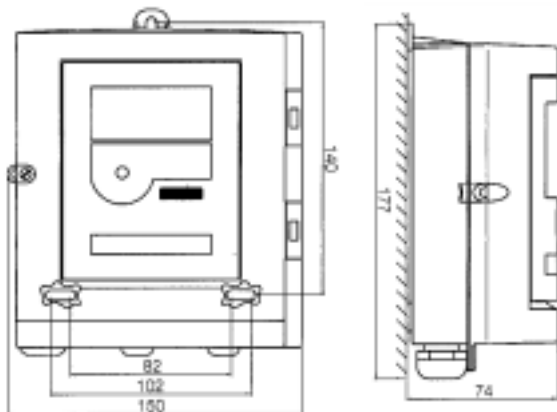
The total error time can be reset. Using a PC-program all the parameters can be altered.

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		Temperature sensors Approved and matching pairs type Pt100 or Pt500 are to be used. Max. cable length 2.5 m at 0.22 mm ² cable area 5.0 m at 0.50 mm ² cable area 7.5 m at 0.75 mm ² cable area 15.0 m at 1.50 mm ² cable area Max. sensor current 4 µA (RMS) for Pt 100	
Power supply Battery 3.6V -- 2 x 2.75, Operation time max. 10 years Mains 230 V ± 10%, 45-65 Hz, battery 2.75 Ah, as a spare		Display 7 +2 digit LCD (back light as an option) Temperature Range 0 -- 190° C Difference 2 --120 K	
Data output M-Bus (EN1434-3) OPTO-interface (EN60870-5) and 2-wire bus connection (terminal) SIOX Via a extra option board LonWorks Via external interface		Pulse outputs Open collector Pulse length 250 ms Max voltage 30 V Max current 20 mA	
Ambient temperature Operation +5°C to +55°C Storage/transport -20° C till +70° C		Pulse inputs Max. frequency 12 Hz Min. pulse length 40 ms Max. voltage 3 V	
Protection class IP54 Environmental class C according to EN1434.		Alarm output Open collector Pulse length 250 ms	

Dimensions

All dimensions are in mm.



Mounting

F4 has to be mounted on a wall.

Delivery

F4 is delivered in the transport mode, only the built-in real time clock is active. In this mode, power consumption is at its minimum.

Article number

Combine the right combination to order the calculator

F4 ABCDEFGHIJ KLM

Pos	No	Description
A	3	Pt100 2/4-wire measurement, flow in the low temp. ¹⁾ (**
A	4	Pt100 2/4-wire measurement, flow in the high temp. ¹⁾
A	7	Pt500 2/4-wire measurement, flow in the low temp. ¹⁾
A	8	Pt500 2/4-wire measurement, flow in the high temp. ¹⁾
B	1	Battery supply (with backup battery)
B	3	Mains supply 230VAC (with backup battery)
B	5	Mains supply 24VAC (with backup battery)
B	6	Mains supply 115VAC (with backup battery)
B	8	Mains supply for extra power 230VAC (with backup battery)
C	0	The pulse value below will be specified in plain text (*
C	1	Pulse value, 2.5 l/p
C	2	Pulse value, 25 l/p
C	3	Pulse value, 250 l/p
C	4	Pulse value, 2500 l/p
C	5	Pulse value, 1 l/p
C	6	Pulse value, 10 l/p
C	7	Pulse value, 100 l/p
C	8	Pulse value, 1000 l/p
D	0	kWh
D	1	MWh
D	2	GJ
D	3	MBTU
E	-	Standard order (**
E	S	Special, extra information at the order, e.g. customer information
F	A	Extra pulse inputs, 2.5 l/p (+ pulse outputs)
F	B	Extra pulse inputs, 25 l/p (+ pulse outputs)
F	C	Extra pulse inputs, 250 l/p (+ pulse outputs)
F	D	Extra pulse inputs, 2500 l/p (+ pulse outputs)
F	E	Extra pulse inputs, 1 l/p (+ pulse outputs)
F	F	Extra pulse inputs, 10 l/p (+ pulse outputs)
F	G	Extra pulse inputs, 100 l/p (+ pulse outputs)
F	H	Extra pulse inputs, 1000 l/p (+ pulse outputs)
G	0	Back-light on the display ²⁾ (+M-Bus 300baud, +OPTO) ²⁾ (**
G	1	No back-light on the display, (+M-Bus 300baud, +OPTO) ²⁾
G	4	Back-light on the display ²⁾ (+M-Bus 300baud, no OPTO) ²⁾
H	0	Wall mounting (**
I	1	Booth connection terminals mounted (**
J	1	Standard (**
K	X	Country code (X = a variable letter from 069 or A-Z)
L	X	Display label (X = a variable letter from 0-9 or AñZ)
M	0	Standard (**

1) All calculators are delivered with jumpers mounted for 2-wire measurement.
The jumpers must be de-mounted for 4-wire measurement

2) All calculators are delivered with M-Bus baud rate set to 300 baud. When other baud rate is required it must be specified with an iSi in position iEi and extra 2400 baud must be specified on the order as extra ordering information.

*) To specify a different pulse value: When ordering write the letter S in position E (article number key) and specify the pulse value as extra ordering information.

**) Standard value for the position.

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
									1	1			0

F4 / 12/2005



A causa del continuo sviluppo del prodotto la ELSTER Contatori si riserva di modificare la presente pubblicazione senza preavviso.

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