

Data sheet Calculator F4HC

F4HC a powerful calculator for district heating/cooling applications.



Application field

The calculator F4HC is designed for metering and monitoring of larger heating/cooling customers. F4HC is a calculator that can very easily be expanded via optional cards for various purposes. The calculator is a debiting calculator and several seals protect it from tampering.

Measurement

F4HC 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.

F4HC automatically switches between heating or cooling depending on the positive or negative temperature difference.

Display

F4HC is equipped with a LCD (Liquid Crystal Display). As optional feature the LCD can be equipped with background light.

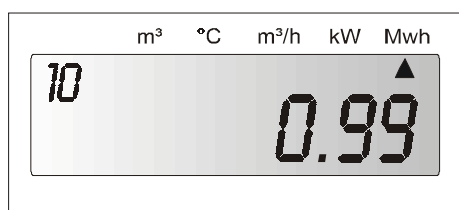


Fig.1, F4HC display showing accumulated energy.

Pulse outputs and one pulse input

F4HC 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.

F4HC is equipped with one pulse input as a standard. The input can be used to read-off other meters with pulse outputs, e.g. cold and hot water meters. The meters then can be read out via M-Bus.

Communication

F4HC 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.

Option cards

F4HC is prepared for up to five places for different options. Today we have two different option boards to offer (no other option board may be installed in F4HC):

- Relay output board
- Log option board (logging of values)

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 (supply or return)
- Accumulated volume according to flow sensor, divided in on heating and one cooling register
- 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 input
 - Possible error code at the time of saving and accumulated time for the relevant error.

Service

F4HC 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
- Account days (1 or 2)

- Communication address (primary)
- Flow sensor placing (supply or return side)
- Recommended date for battery replacement.

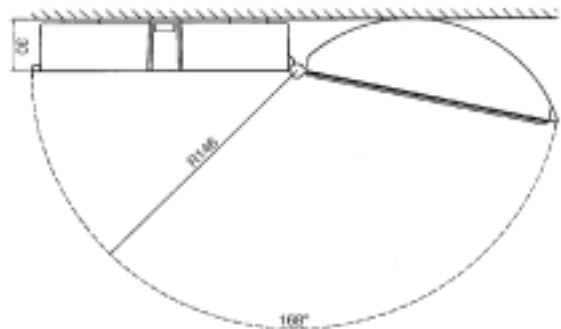
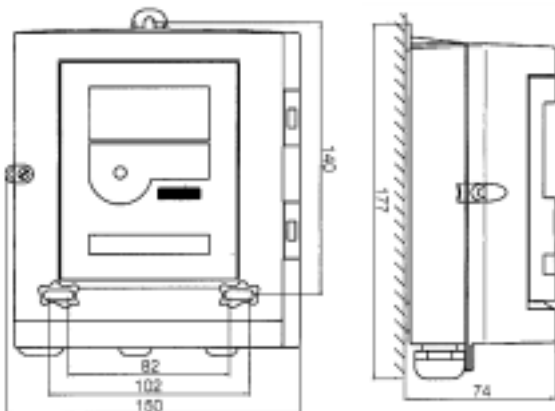
The total error time can be reset. Using a PC-program all the parameters can be altered.

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 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 3V -- 2.2Ah alt. 2 x 2.2, Operation time max. 10 years Mains 230 V ± 10%, 45-65 Hz, battery 2.2 Ah, as a spare	Display 7 +2 digit LCD (back light as an option) Temperature Range 0 -- 120° C Difference 2 --120 K
Data output M-Bus (EN1434-3) OPTO-interface (EN60870-5) and 2-wire bus connection (terminal)	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 input 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

F4HC has to be mounted on a wall.

Delivery

F4HC is delivered in the transport mode, only the built-in real time clock is active. In this mode, power consumption is at a minimum.

Article number key

Combine the right combination to order the calculator

H4 ABCDEFGHIJ KLM

Pos	No	Description
A	3	Pt100 2/4-wire measurement, flow in the low temp. (return) ¹⁾ (**
A	4	Pt100 2/4-wire measurement, flow in the high temp. (supply) 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 110-115VAC (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
D	4	MBTU (different unit setting [kUSG - kW - USG/min])
E	-	Standard order (**
E	S	Special, extra information at the order, e.g. customer information
E	A	Option Board according to order, extra information on order
F	A	Extra pulse input, 2.5 l/p (+ pulse outputs) for Energy and Volume
F	B	Extra pulse input, 25 l/p (+ pulse outputs) for Energy and Volume
F	C	Extra pulse input, 250 l/p (+ pulse outputs) for Energy and Volume
F	D	Extra pulse input, 2500 l/p (+ pulse outputs) for Energy and Volume
F	E	Extra pulse input, 1 l/p (+ pulse outputs) for Energy and Volume
F	F	Extra pulse input, 10 l/p (+ pulse outputs) for Energy and Volume
F	G	Extra pulse input, 100 l/p (+ pulse outputs) for Energy and Volume
F	H	Extra pulse input, 1000 l/p (+ pulse outputs) for Energy and Volume
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 0-9 or A-Z)
L	X	Display label (X = a variable letter from 0-9 or A-Z)
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 "S" in position "E" 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

H4	A	B	C	D	E	F	G	H	I	J	K	L	M
									1	1			0

F4HC / 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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