

Data sheet Calculator F2HC

F2HC for heating/cooling applications.



Application field

F2HC is a flexible calculator designed for measuring and monitoring of small to medium-sized heating and cooling installations. It is dedicated for billing applications and protected with several tampering seals.

Measurement

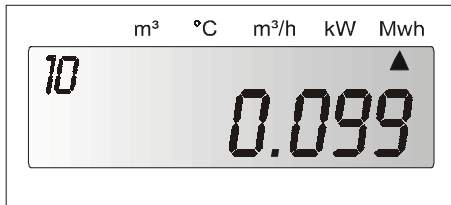
F2HC measures the flow and the difference between the supply and return temperatures. Measurements are normally done for each flow sensor pulse. F2HC accumulates the volume from the flow sensor into a volume register.

F2HC has two energy registers, one for heating energy and one for cooling energy. The calculator switches automatically between these registers depending on the temperature difference. Whenever the temperature difference is positive the energy is added into the heating register whereas at negative temperature difference the energy is added into the cooling register.

Display and data access

F2HC is equipped with a 7+2 digit LCD (Liquid Crystal Display). From the display measured and historical values, calculator settings and messages, can be read.

The data is easily accessed through a push-button on the front of the calculator.



Example of a display image, showing accumulated energy.

Communication

The calculator is ready for system integration, with several different ways to communicate electronically.

Pulse inputs or outputs

Alternative 1

F2HC can be equipped with two pulse inputs and the pulses are accumulated into two pulse registers. The pulse input rate is selectable upon ordering. The data can be retrieved either on the display or using M-Bus communication.

Alternative 2

F2HC can be equipped with two pulse outputs, heating and cooling energy. The outputs are of the type "open-collector". Every time the last significant digit on the display is incremented then one pulse is emitted (heating energy, pulse output 1 and cooling energy, pulse output 2).

M-BUS output

F2HC is equipped with an M-Bus communication protocol as standard. This protocol is in accordance with international European standard EN1434-3, EN60870-5. The data can be accessed using two-wire connection or/and optical interface. The standard baud rate is 2400 baud, but the calculator can also be ordered in 300 baud on request.

Displayed data

Accumulated values

- Accumulated heat energy
- Accumulated cooling energy
- Accumulated (total) volume
- Accumulated pulses "pulse input 1"*
- Accumulated pulses "pulse input 2" *

Momentary values

- Momentary power
- Momentary flow
- Supply (High) temperature
- Return (Low) temperature
- Temperature difference

Calculator settings

- Total operating time
- Time
- Date
- Selected pulse value
- Flow sensor placing (H/L)
- Calculator S/N number
- Communication, primary address
- Communication, secondary address (S/N)

Calculator messages

- Error code
- Total error time
- Accumulated time for this error
- 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 heating energy
- Accumulated cooling energy
- Accumulated volume
- Accumulated pulses "pulse input 1" *
- Accumulated pulses "pulse input 2" *
- Error code at saving

* Only if the calculator is ordered with pulse inputs.

Service / Installation

F2HC has a built-in service/Installation function that enables the user to change calculator settings using the push-button. Following settings can be modified:

- Time
- Date
- Account day 1
- Account day 2
- Communication, primary address
- Flow sensor placing, high or low temperature
- Recommended date for battery replacement
- Reset error time
- Exit service menu

F2HC can also be parameterized using a special PC-program "HCServ".

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 matching pairs type Pt100 or Pt500 are to be used.	
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
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	3V – 2.2 Ah*
Mains	230 V ± 10%, 45-65 Hz
Battery as spare	

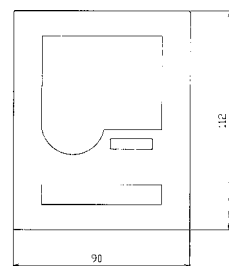
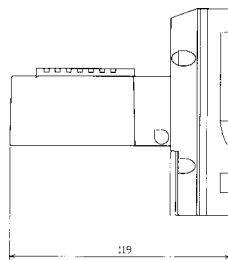
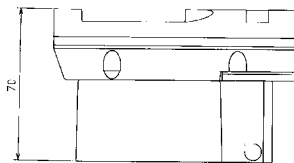
* Operation time max. 10 years.

Display	
7 + 2 digits LCD (backlight as option)	
Pulse Outputs	
Type	Open collector
Pulse length	250 ms
Voltage	Max. 30 V
Current	Max. 20 mA
Pulse inputs	
Frequency	Max. 12Hz
Pulse length	Min. 40 ms
Voltage	Max. 3V
Alarm output	
One pulse every hour as long as a mains power is cut (only mains supplied calculators).	
Type	Open collector
Pulse length	250 ms

M-Bus	
Complies with EN1434-3 and EN60870-5	
Two-wire connection	Standard
Optical interface	Enabled

Dimensions

All dimensions are in mm



F2HC Article number key

By combining the correct letters in the table below the correct article number is acquired for F2HC.

H2 ABCDEFGHIJ KLM

A	1	Pt100 2-wire measurement, flow in return (low) temperature
A	2	Pt100 2-wire measurement, flow in supply (high) temperature
A	5	Pt500 2-wire measurement, flow in return (low) temperature
A	6	Pt500 2-wire measurement, flow in supply (high) temperature
B	1	Battery supply
B	2	Bus supply
B	3	Mains supply 230VAC
B	5	24 VAC
C	1	Kt Input 2.5 l/p
C	2	Kt Input 25 l/p
C	3	Kt Input 250 l/p
C	4	Kt Input 2500 l/p
C	5	Kt Input 1 l/p
C	6	Kt Input 10 l/p
C	7	Kt Input 100 l/p
C	8	Kt Input 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	1	Pulse Input, 2.5 l/p, dec. 2
F	2	Pulse Input, 25 l/p, dec. 1
F	3	Pulse Input, 250 l/p, dec. 0
F	5	Pulse Input, 1 l/p, dec. 3
F	6	Pulse Input, 10 l/p, dec. 2
F	7	Pulse Input, 100 l/p, dec. 1
F	8	Pulse Input, 1000 l/p, dec. 0
F	9	Pulse Outputs
G	0	Backlight on display (not recommended on battery supplied meters)
G	1	No Backlight
H	0	For wall mounting, with adapter incl.
H	4	With out adapter
I	-	Standard
J	1	Standard
K	1	Country code, 300 = Standard English
L	0	Standard
M	0	Standard

Article number key for F2HC

To acquire the article number just fill up the blanks

H2	A	B	C	D	E	F	G	H	I	J	K	L	M
									-	1		0	0

F2HC / 03/2006



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

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