

Data sheet F22

F22 for heating or cooling applications.



Application area

F22 is a flexible calculator designed for measuring and monitoring of small to medium-sized heating or cooling installations. It is dedicated for billing applications and protected with several tampering seals.

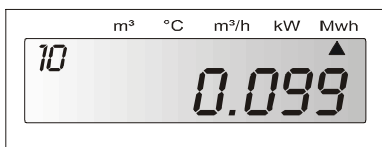
Measurement

F22 measures the volume and the difference between the supply and return temperatures. Measurements are normally done at each flow sensor pulse. F22 accumulates the volume from the flow sensor into a volume register.

Display and data access

F22 is equipped with a 7+2 digit LCD (Liquid Crystal Display). Measured and historical values, calculator settings and messages, can be read from the display.

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



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)

Basic calculator can be equipped with an M-Bus (option board).

Extended version (E)

More advanced calculator with Alarm output, pulse inputs and outputs, and the possibility to add additional functions through factory mounted option boards.

Communication

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

Pulse inputs or outputs**

F22, E version is equipped with two pulse inputs. The pulses are accumulated into two pulse registers. The pulse input rate is selectable at ordering. The data can be retrieved both on the display and by using M-Bus communication.

F22, E version is equipped with two pulse outputs, representing energy and volume. The outputs are of the type "open-collector". At every time the last significant digit on the display is incremented one pulse is emitted (heating energy on pulse output 1 and volume on pulse output 2).

Galvanic separation available as an option board.

M-BUS output (as option board)

F22 can be equipped with an M-Bus galvanic separated communication board. The M-Bus protocol is in accordance with international European standard EN1434-3, EN60870-5. The data can be accessed using a two-wire or an RS232 connection and an optical interface. The standard baud rate is 300 baud, but the calculator can also be ordered for 2400 baud on request. The board has a galvanic separation from the M-Bus loop.

Displayed data

Accumulated values

- Accumulated heat energy
- Accumulated (total) volume
- Accumulated volume according energy calculation
- 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
- 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 heating energy
- Accumulated volume
- Accumulated volume according energy calculation
- Accumulated pulses "pulse input 1" **
- Accumulated pulses "pulse input 2" **
- Error code at saving
- Error time at saving

Service / Installation

F22 has a built-in service/Installation function that enables the user to change the calculator settings using the push-button. Following settings can be modified by the push-button:

- 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

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

Option boards

The F22 can be equipped with option boards. Two option boards can be mounted after delivery.

- M-Bus (galvanic separated)
- Relay** (galvanic separated)

All other option boards must be factory mounted. Example:

- SIOX communication board

**** Only in the E version of F22**

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	3.6V – 2.75 Ah ¹
Mains	230 V ± 10%, 45-65 Hz
Battery as spare	

¹ Operation time max. 10 years.

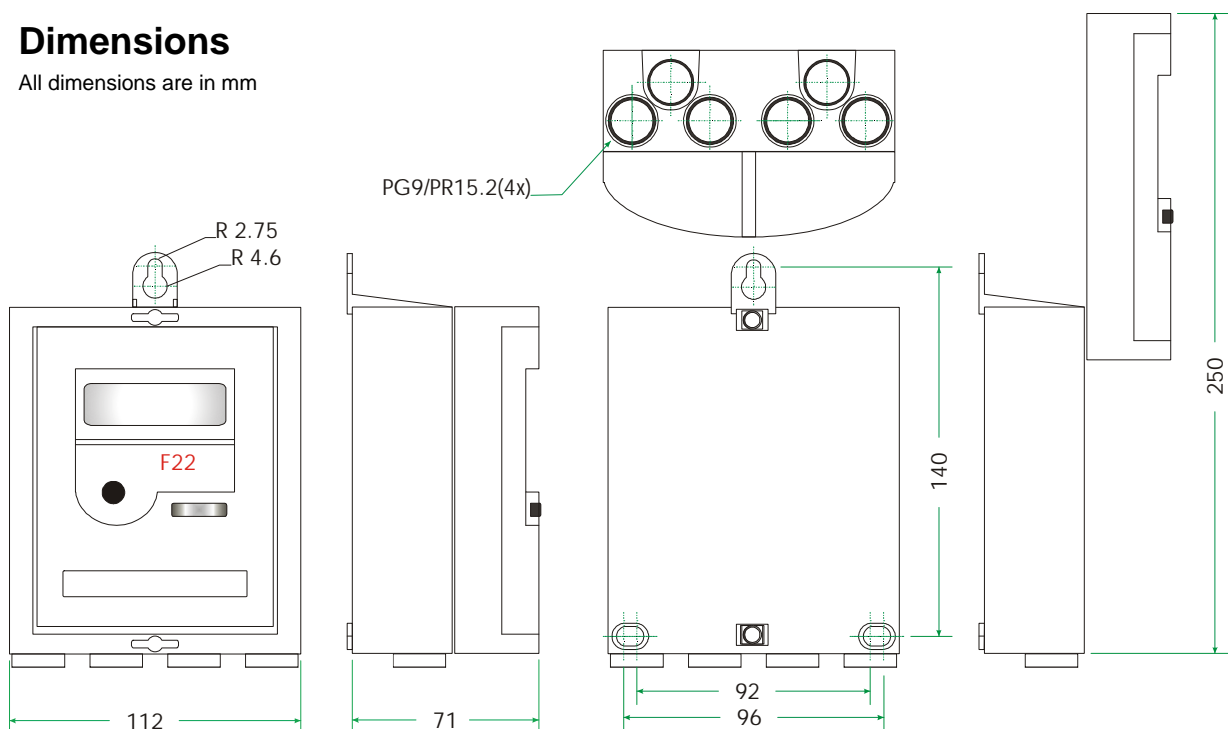
Display	
7 + 2 digits LCD (backlight as option)	
Pulse Outputs**	
Type	Open collector
Pulse length	250 ms
Voltage	Max. 30 V
Current	Max. 20 mA
Pulse inputs**	
Frequency	Max. 12Hz
Pulse length	Min. 40 ms
Voltage	Max. 3V
Alarm output**	
One pulse every hour as long as a mains power is cut (only mains supplied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

M-Bus as option board (Galvanic separation)	
Complies with EN1434-3 and EN60870-5	
Two-wire connection**	Option board
Optical interface	Enabled

** Only in E version of F22

Dimensions

All dimensions are in mm

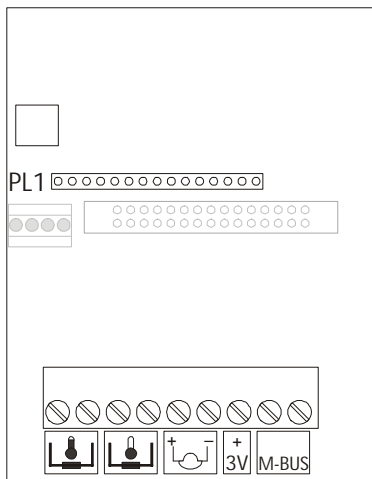


Basic version [B]

The basic version is optimized for small installations with limited functionality.

F22 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	3	Mains supply 230VAC
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
E	-	Standard order
E	S	Special, Extra information at the order, e.g. customer information
F	9	No Pulse inputs or pulse outputs
G	1	No Backlight
H	0	For wall mounting
I	B	Basic version
J	-	Standard
J	M	M-Bus0 two wire connection (option board)
KLM	X	Country code, 300 = Standard English



F22 Basic

- Mains supply or battery supply
- Robust design
- Powerful calculator
- Ample connection space

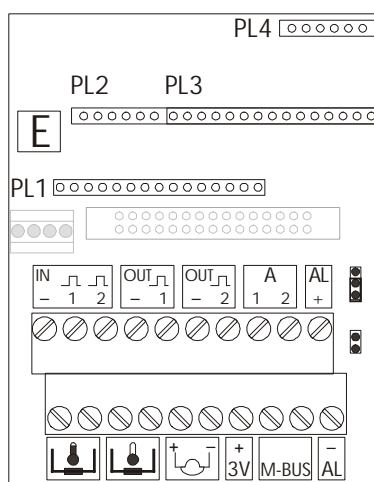
- M-Bus option board (with galvanic separation)

Extended version [E]

F22 extended version for more versatile usage.
A calculator with pulse inputs, outputs, alarm outputs and option board functionality.

F22 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	3	Mains supply 230VAC
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
E	-	Standard order
E	S	Special, Extra information at the order, e.g. customer information
F	A	Pulse outputs, 2.5 l/p (+ pulse inputs), dec. 2
F	B	Pulse outputs, 25 l/p (+ pulse inputs), dec. 1
F	C	Pulse outputs, 250 l/p (+ pulse inputs), dec. 0
F	D	Pulse outputs, 2500 l/p (+ pulse inputs)
F	E	Pulse outputs, 1 l/p (+ pulse inputs), dec. 3
F	F	Pulse outputs, 10 l/p (+ pulse inputs), dec. 2
F	G	Pulse outputs, 100 l/p (+ pulse inputs), dec. 1
F	H	Pulse outputs. 1000 l/p (+ pulse inputs), dec. 0
G	1	No Backlight
H	0	For wall mounting
I	E	Extended version
J	1	Standard
J	M	M-Bus, two wire connection (option board)
KLM	x	Country code, 300 = Standard English



F22 Extended

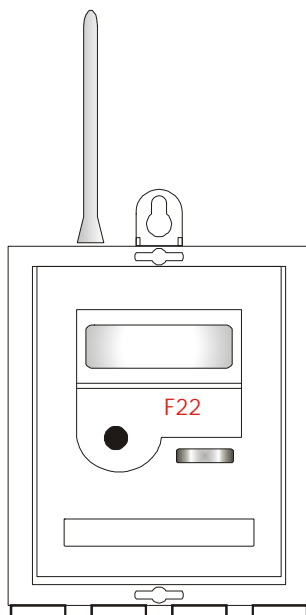
- Can be ordered with mains supply or battery
- Robust design
- Powerful calculator
- Connection box with room for future options
- Ample connection space
- **U2500 pulse adjustment selectable**
- **Two pulse inputs**
- **Two pulse outputs**
(out 1, energy and out 2, volume)
- **M-Bus option board galvanic separated**
- **Option board for pulse inputs / outputs with galvanic separation.** The pulse input and output will be galvanic separated from each other.

Radio version [R]

F22 radio version for more versatile usage and prepared for short distance radio communication. Calculator with pulse inputs, outputs, alarm outputs and option board functionality.

F22 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	3	Mains supply 230VAC
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
E	-	Standard order
E	S	Special, Extra information at the order, e.g. customer information
F	A	Pulse outputs, 2.5 l/p (+ pulse inputs), dec. 2
F	B	Pulse outputs, 25 l/p (+ pulse inputs), dec. 1
F	C	Pulse outputs, 250 l/p (+ pulse inputs), dec. 0
F	D	Pulse outputs, 2500 l/p (+ pulse inputs)
F	E	Pulse outputs, 1 l/p (+ pulse inputs), dec. 3
F	F	Pulse outputs, 10 l/p (+ pulse inputs), dec. 2
F	G	Pulse outputs, 100 l/p (+ pulse inputs), dec. 1
F	H	Pulse outputs. 1000 l/p (+ pulse inputs), dec. 0
G	1	No Backlight
H	0	For wall mounting
I	R	Radio version
J	1	Standard, radio board to be installed later
J	R	Radio board mounted in calculator
KLM	x	Country code, 300 = Standard English



F22 Radio

- Can be ordered with mains supply or battery
- Robust design
- Powerful calculator
- Connection box with room for future options
- Ample connection space
- **U2500 pulse adjustment selectable**
- **Two pulse inputs**
- **Two pulse outputs**
(out 1, energy and out 2, volume)
- **M-Bus option board galvanic separated**
- **Option board for pulse inputs / outputs with galvanic separation.** The pulse input and output will be galvanic separated from the pulse outputs will be separated from each other.
- **Radio communication as an option board function**
- **Antenna for radio communication fitted directly on the connection box.**

F22 Article number key

By combining the correct letters in the table below, the applicable article number for F22 will be obtained.

Article number key for F22

Fill in the blanks to obtain the applicable article number.

F22	A	B	C	D	E	F	G	H	I	J	K	L	M
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