

# F2/F22 Calculators

Transparency for billing of heating and cooling systems



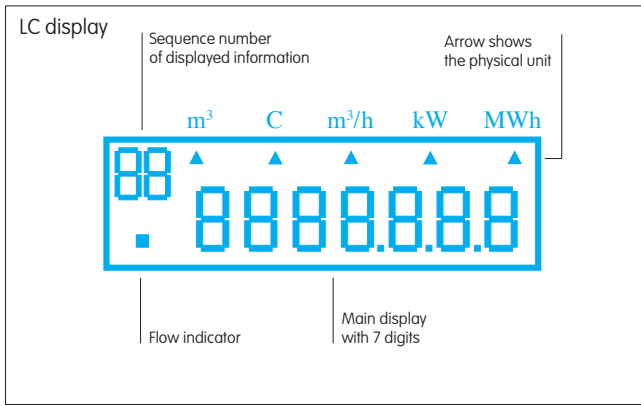
PTB approval	MID type examination certificate
22.55 98.03 F2	0402-MID-154217 F2
PTB approval	MID type examination certificate
22.55 03.01 F22	0402-MID-154219 F22

- Flexible calculators for various applications
- PTB type approval/MID type examination certificate
- Pulse inputs or pulse outputs
- M-Bus according to EN1434-3
- Optical interface
- Additional option cards



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#### Interfaces (depending on version)

Pulse outputs	Typ	Open collector
Pulse length	ms	250
Voltage	V	$\leq 30$
Current	mA	$\leq 20$

Pulse inputs		
Frequency	Hz	$\leq 12$
Pulse length	ms	$\geq 40$
Voltage	V	$\leq 3$
Current	$\mu A$	3

Alarm output	Typ	Open collector
Alarm at voltage breakdown		x
Pulse output	h	1
Pulse length	ms	250

Data outputs	M-Bus	acc. to EN 1434-3 two-wire optical EN 60870-5
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Type	F2e eco	F2 Basis	F2H/C combined heating/cooling measurement	F22-B Basis	F22-E extended
2 pulse outputs	x	x <sup>1)</sup>	x	—	—
2 pulse inputs	—	x <sup>1)</sup>	—	x	—
M-Bus	—	x	x	x	—
Radio	—	—	—	—	x*
Option card M-Bus	—	—	—	x	x**
Option card pulse outputs	—	—	—	—	x**
Option card Min/Max***	—	—	—	—	x**

\* F22-R (radio)

1) either/or

\*\* max. 2 cards

\*\*\* only possible ex works

#### Register F 2 / F 22

##### Flow sensor requirements

Frequency	Hz	$\leq 12$
Pulse length	ms	$\geq 40$
Voltage	V	$\leq 3$
Current	$\mu A$	3
Cable length	m	$\leq 15$
Pulse value	l/p	0.0001 ... 9999

Temperature measuring range	$^{\circ}C$	0 ... 190
Temperature difference range	K	3 ... 120

##### Ambient temperature

Operation	$^{\circ}C$	+ 5 ... + 55
Storage / Transport	$^{\circ}C$	- 20 ... + 70

Protection type	DIN 40 050	IP 54
Environment	EN 1434	Class C

Power supply		F2	F22
Battery	V / Ah	3.0 / 2.2	3.6 / 2.75
Operation period	years	$\leq 10$	$\leq 10$
Mains operation	V / Hz	—	230 $\pm$ 10% / 45 ... 65
Backup battery		—	x

#### Temperature sensor (2-wire system)

Requirement	Type	Pt 100 or Pt 500
Cable	Length / cross-section	
EN1434	m / mm <sup>2</sup>	$\leq 2.5 / \geq 0.22$
	m / mm <sup>2</sup>	$\leq 5.0 / \geq 0.50$
	m / mm <sup>2</sup>	$\leq 7.5 / \geq 0.75$
PTB F2	m	$\leq 3.0$
F22	m	$\leq 10.0$
Sensor currency for Pt 100	$\mu A$	4 (RMS)

#### Displays

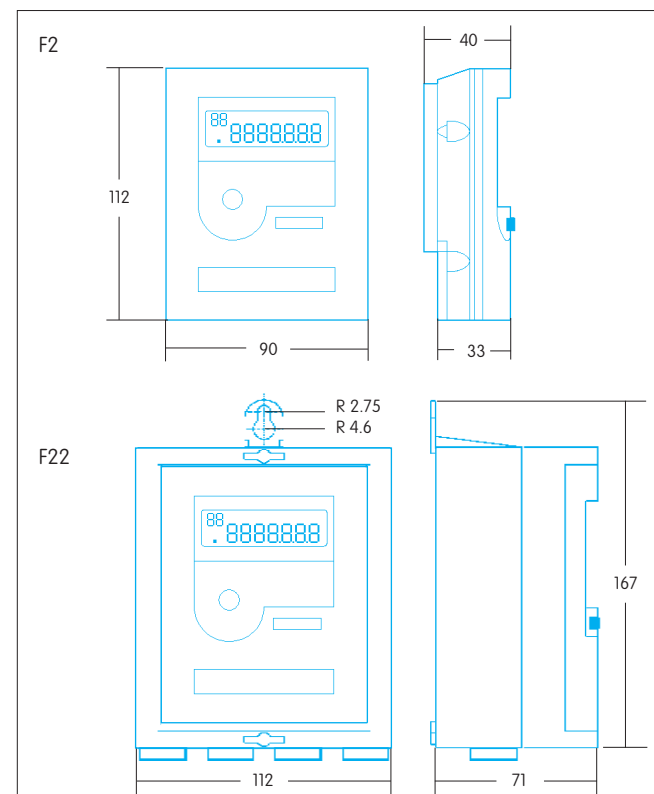
The powerful calculator offers a multiplicity of data.

- Energy.
  - Accumulated volume (from flow sensor).
  - Accumulated volume (calculation of energy).
  - Accumulated values. Of the pulse inputs (not for F2e).
  - Actual performance.\*
  - Actual flow rate.\*
  - Flow temperature.\*
  - Return temperature.\*
  - Temperature differency.\*
  - Overall operation period.
  - Time and date.
  - Meter ID.
  - Number of manufacturer.
  - Pulse value.
  - Installation position of flow sensor.
  - Error code with date of error.
  - Last error code with date of error.
  - Total time of error.
  - Accumulated volume (reference date).
  - Monthly index (37).
  - Target dates (2).
  - Storage:
    - Date.
    - Accumulated energy.
    - Accumulated volume (from flow sensor).
    - Accumulated volume (calculation of energy).
    - Accumulated values of the additional pulse inputs (not for F2e).
    - Error code with date of error.
- \* in case of factory fitted option card also MIN-MAX values possible (for F22 only)

#### Service

With the integrated service function specified parameters can be adjusted on-site.

- Time and date.
- Pulse value, one-time after calibration.
- Target date, one-time after calibration.
- Communication address.
- Reset of total error time.
- Battery change: recommended date.



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Contents subject to change without notice;  
errors excepted

