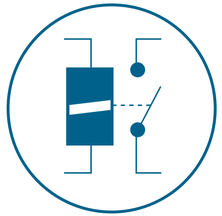
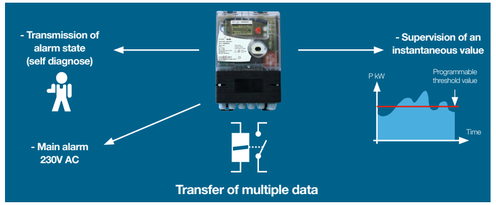
RELAY OUTPUT

Dry contact output, normally open or closed, activated through:

- Exceeding of a given threshold value over a magnitude measured or calculated by the calculator (supply temperature, return temperature, DT, flow rate, power)
- Alarm as recognized by the integrator (e.g. temperatures sensor broken)
- Missing mains supply



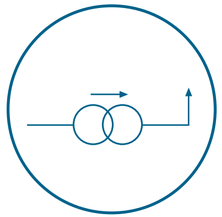
Electrical characteristics	
Isolated contact protected through a 100 O, 0.1 mF RC module	
Maximum voltage	50 V
Maximum switched current	200 mA
Hysteresis	±0.5% ± last digit
Type of contact	open or closed when idle
Mains supply failure	shut down when idle



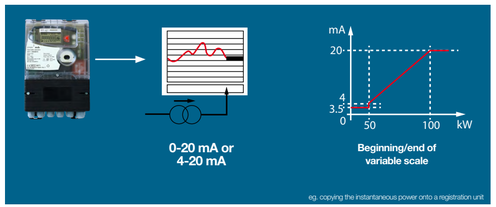
ANALOG OUTPUT

This output provides a current proportional to the physical magnitude measured or calculated by the integrator and selected among the following magnitudes: supply temperature, return temperature, ΔT, flow rate, power.

The output dynamics may be set according to requirements (beginning and end of programmable scales).



Electrical characteristics	
Type of output current	0-20 mA or 4-20 mA
Maximum output load	300 Ω
Precision	2% of scale
Resolution	0.5% in 0-20 mA
Resolution	0.65% in 4-20 mA



Electrical characteristics	
Pulse input	active, characteristics according to EN1434-2
Maximum voltage	6 V
Maximum current	0,1 mA
Maximum pulse frequency	5 Hz
Minimum pulse length	100 ms
Maximum resistance	100 kΩ
Pulse input value	1; 2.5; 10; 25; 100; 250 l/pulse

ADVANCED FUNCTION

Peak

Three different base units are traced for its peak values in this tool. The integration time is adaptable to the different needs going from 1 minute to 24 hours for fixed window time sets. All values are time stamped for further comprehension and analysis and stored throughout the 13 fixed date reading months for permanent follow up.

- Power (W)
- Flow (m^3/h)
- Supply Temperature (°C)

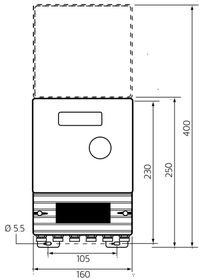
Tariffication

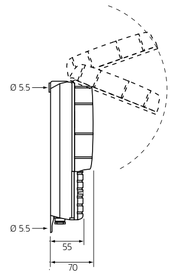
The double tariffication is an advanced tool giving the possibility to utilities and clients set high performance network management indicators. It traces both the quality of supply as well the quality of consumption giving both parties a major advantage in the cost effective heat usage.

- Power (W)
- Flow (m^3/h)
- Supply Temperature (°C)
- Return Temperature (°C)

Data Logging

This is the exploitations tool by excellence. Studies of the network performance, analysis of determined consumptions or simply the trace of a seasons pattern are possible with this powerful tool. Select up to 6 registers from a list containing above 20 available and log them through 1008 steps programmable from a minute by minute up to weekly or monthly registration.





Dimensions

CF 800

Heat Meter Calculator

The CF800 is the consequent extension of the CF-Family range for high-end applications. The metrological performance, concept and components, basic functionality and the user interface are well known and proven by current CF-Family. Extended to a various offer of different communication options for remote reading, controlling and monitoring and integrated in a new housing for easiest handling and wiring this calculator is optimized for applications with highest requirements.

FEATURES AND BENEFITS

- Powerful communication features
- 4 analog outputs, and 2 relay outputs
- Integrated data logger and tariff manager
- High accuracy and reliability

Powerful communication features

- Multi functional communication board offering free programmable analog- and relay outputs, pulse inputs and serial link.
- Serial communication using different types of hardware connection (e.g. Mbus, RS485) and protocol to assure simple and fast connection to building and process control systems.
- Optically isolated and non polarized repetition output for energy and volume
- Optical interface providing simple communication access for local AMR Integrated data logger and double tariff manager
- Integrated data logger which offers simple tracking of 6 selectable data field
- Tariff manager offering two independent tariff registers controlled by free programmable threshold values
- Setup and data access through Mbus or optical interface

High accuracy and reliability

- CF800 corresponds to EN1434 standard and recommendations of OIML R75
- Approvals: LNE F-04-G-1279, MID DE-06-MI004-PTB001
- Secure saving of data in non volatile backup memory

Easy Handling

- New large housing with separate covers for cable terminals, option boards and metrological unit
- The metrological unit can be exchanged for re-verification
- Big size display for easy reading
- 1 year backup battery which ensures energy measurement and AMR even during mains supply failure

Loop 1

Billing Data
Energy
Cooling energy*
Volume
LCD test
External water meter 1 + 2*
Thresholds

*optional

Loop 2

Additional Information
Flow rate
Power
Supply temperature
Return temperature
Temperature difference
Operating time
Power peak date + time*
Flow peak date + time*
Temperature peak date + time*
Instantaneous bonus*
Cumulative bonus*
Time in alarm
Temperature alarm
Flow alarm
Overflow alarm
Power supply alarm
Current time + date*
M-Bus primary address
M-Bus secondary address
M-Bus baud rate
Pulse value water meter 1 + 2*

*optional

Loop 3

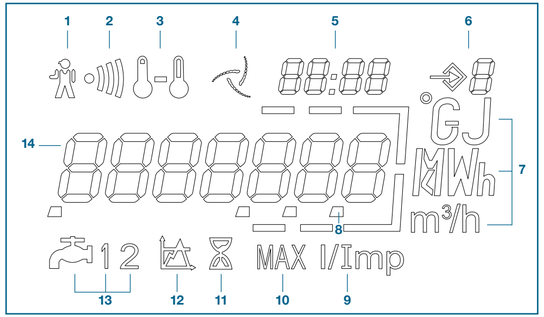
Fixed Date Reading
Fixed date energy 1...24
Fixed date cooling energy 1...24*
Fixed date volume 1...24
Fixed date water meter 1 + 2 1...24*
Software version

*optional

MULTIFUNCTIONAL DISPLAY

The multifunctional display facilitates easy reading, providing fast and clear access to the most important billing data. The display enables the diagnosis of failures alarms.

The LCD has a long life time and through a push button you get easily access to each level of data.



1	Alarm Icon	6	Loop Indicator	11	Elapsed Time Indicator
2	Dirty Warning	7	Units	12	Thresholds
3	Temperatures	8	Decimal Indication	13	External Water Meters
4	Flow Indicator	9	Pulse Input Value	14	Main Digits
5	Date & Time Digits	10	Peaks		

Technical Characteristics

Metrology exceeds	PTB, DRIRE, OIML, EN 1434
Temperature range	0 ..... 180°C
Temperature difference	3... 160 K
Maximum flow	4500 m³/h
Temperature sensor type	Pt100 or Pt500, 4 wire shielded
Display	LCD - 7 digits
Back-up memory	EEPROM
Power supply	230 VAC +10% -15%
Interchangeable backup battery	3 V 2.5 Ah
Protection class	IP54
Environmental class	Class C acc. EN 1434
Ambient temperature	5 … 55 °C
Optical interface	According to EN 62056-21/EN +60870-5
Standard output	Energy/Volume Repetition
Communication capacity Option 1 Option 2 (COMIO)	LON WORK, M-Bus, Modbus or Modem 4 Analogic Outputs and 2 Relay Outputs or 2 water meters input and Communication Bus (MBus IEC 870 or MBus RS 485 C)
Combined heating/cooling metering interface	Optional

CF 800 AS A COMMUNICATIONS EXPERT

In order to optimize energy consumption and its administration, the CF 800 is fitted with outputs adapted to industrial standards. This flexibility of application gives the CF 800 all the advantages of modern telecommunications systems, assuring total compatibility with the peripherals for building and process control systems.

As a standard, CF 800 is fitted with repetition outputs for energy and volume.

Two additional slots for option board allow personalizing of communications through the CF 800:

» Option board 1 = one communication

» Option board 2 (COMIO) = 7 outputs, of which one for communications

Option board 1

- LON WORK board or
- M-Bus IEC 870-1 board or
- Modbus or Modem board

Option board 2 (COMIO)

- 4 analogic output
- 2 threshold or alarm relays or 2 water meter inputs
- 1 communication output
- M-Bus IEC 870
- M-Bus RS 485
- CF 150 current loop
- CF 150 RS 485

The cards may be configured and parameterized on site, making their application very flexible, allowing for their adaptation to system changes. The configuration of all communication boards is easy and simple using the CFCS-Software and the optical interface.

COMMUNICATIONS OPTIONS

The CFCS software allows reading and configuring the product on site. As a standard, CF 800 is fitted with an optical interface.

M-Bus	
Standard reference	EN 1434-3
Baud rate	300 to 2400 baud
Data in standard mode	Energy, Volume, Flow, Temperatures (supply, return, difference), Time in error, Operation time, Date and time, Volume of water meters 1&2, Firmware version
Protocol	variable protocol, low byte first
13 date records (selectable via M-BUS)	Energy, volume, performance, maximum value with time stamp, Maximum Flow value with time stamp, with maximum flow temperature Time stamp option volume of water meter 1 / 2, optional cooling energy (selectable via M-BUS)

OUTPUTS COMMON TO ALL MODELS

ENERGY AND VOLUME REPETITION OUTPUTS

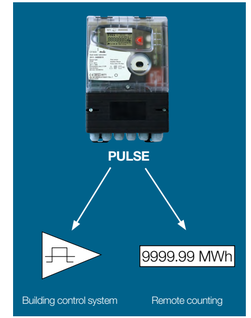
In order to optimize energy consumption and its administration, the CF 800 is fitted with outputs adapted to industrial standards. This flexibility of application gives the CF 800 all the advantages of modern telecommunications systems, assuring total compatibility with the peripherals for building and process control systems.

As a standard, CF 800 is fitted with repetition outputs for energy and volume.

Two additional slots for option board allow personalizing of communications through the CF 800:

Electrical characteristics	
Duration of pulse	250 ms +/- 8%
Non polarized output	optically isolated
Maximum current (closed state)	20 mA (Status ON)
Maximum voltage (open state)	30 V DC (Status OFF)
Maximum output frequency	0.5 Hz buffered
Ron	≤ 20 Ω (Status ON)
Roff	≥ 100 kΩ (Status OFF)
Maximum range	30 meter
Cable (non-supplied)	< 0.22 mm²

Pulse value meter (L)	Energy (MWh)	Volume (m³)
1 or 2.5	9999.999	99999.99
10 or 25	99999.99	999999.9
100 or 250	999999.9	9999999
1000 or 2500	9999999	99999999

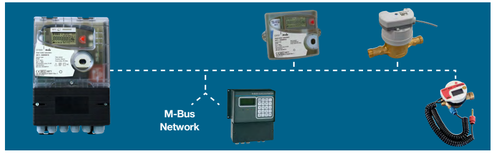


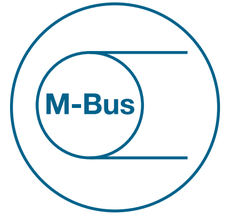
COMIO OPTIONS

M-BUS OUTPUT

This output allows transferring all information from the CF 800 over the standardized M-Bus protocol (EN 1434-3).

Electrical characteristics	
Protocol	M-Bus
Baud rate	Option board 1: 300, 1200, 2400 bauds COMIO option board: 300, 1200, 2400 bauds Optical interface: 300, 1200, 2400 bauds
Setup	by push-button or CFCS software





SERIAL LINK RS485

This output allows connecting several integrators to a peripheral for centralized technical administration.

This computerized connection allows for access to all information from CF 800 (energy, volume, flow rate, high temperature, low temperature, ΔT and power).

Electrical characteristics	
Protocol	M-Bus (alternative: CF150/NRZ protocol)
Baud rate	300, 1200, 2400 Bauds
Setup	CFCS software