SENSUS
a xylem brand

PolluCom® F/S C
Installation and operating instructions

Radio data decryption

The data that is transmitted by radio is encrypted to prevent unauthorized access. To decrypt the radio data, the appropriate radio key (KEY) is required.

How to obtain the radio key

There is a visible QR code on the bonnet of the meter. This code contains an Internet address and a so-called token (=process number with server connection). This token is not the actual radio key, but is used to provide the radio key to only authorized authenticated persons. The QR code can be scanned with any suitable device, e.g. a smartphone, using a QR app. The internet link leads to the website with the token. If you do not have a customer account yet, please create one.
The actual key will be accessible via this website after successful authentication. If no meter to add is displayed after registering the customer account or logging in to the account, please scan the QR code and open the included link again.
The radio key is only available to the authenticated user and is blocked against further access by third parties.

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Example of a token

If the token cannot be assigned or if the meter has already been registered elsewhere, a new activation can only be achieved by a corresponding request to the Sensus Service Team (recoverkey@xylem.com).
To avoid this, it is recommended to keep the bonnet surface clean to ensure further protection of the data and to enable secure radio reading.

Note: Radio key and QR code are different for each meter!

The PolluCom® F/S C coaxial meter is used to measure energy consumption in systems in which water is used as heating or cooling fluid. The use of water with anti-freeze additive is possible with PolluCom® F/S C in this case the meter is not MID compliant and a correction factor will need to be programmed.
These installation and operating instructions describe the installation and operation of all variants. These instructions are an integral part of the items supplied and must be given to the end user.

Contents

Items delivered

- PolluCom® F/S C
- 2 seals
- Sealing material
- Half-shell mounting set and a mounting aid for the installation of the temperature sensor
- Additionally for the versions with removable calculator: 1 wall adapter, cable ties, 1 adhesive foil
- These installation instructions

1. General information

Purpose of this document

These instructions contain the information necessary for commissioning and using the device. Read these instructions carefully before mounting and commissioning. For correct use of the device, first familiarize yourself with its method of operation. The instructions are intended for persons who physically install the device, connect it electrically, configure and commission it, as well as for service and maintenance personnel.

Qualified personnel

The product/system described in this documentation should only be operated by qualified personnel, and in accordance with the relevant documentation Qualified personnel are persons who, based on their training and experience, are able to recognize risks and avoid potential hazards whilst working with these products and ensure appropriate assembly and use of the product/system.

Trademarks

All names marked with ® (e.g. PolluCom®) are registered trademarks of Sensus Spectrum LLC, Raleigh. The other trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Notes on warranty

The contents of this manual shall not become part of, nor modify, any prior or existing agreement, commitment or legal relationship. All obligations of Sensus GmbH Ludwigshafen (and its affiliated companies) arise from the respective purchase contract, which also contains the complete and solely valid warranty provision. These existing warranty provisions are neither extended nor limited by the information regarding the device versions described in these instructions. The content reflects the technical status at the time of printing. We reserve the right to make technical changes in the course of further development without prior notice.

Recycling

The devices described in this manual can be recycled. For environmentally sound recycling and disposal, please contact a certified waste management company. This device contains a lithium battery. In the interests of environmental protection, this battery must not be disposed of with normal household waste. The respective national environmental regulations must be complied with.

2. Technical Data

Counter size	**q_p 0.6**	**q_p 1.5**	**q_p 2.5**
Rated flow q_p in m³/h	0.6	1.5	2.5
Minimum flow q_i in m³/h	0.006	0.015	0.025
Accuracy class	3 or 2 in accordance with EN 1434		
Ratio q_i/q_p	1:100, 1:50, 1:25		
Maximum flow q_s in m³/h (short-term)	1.2	3	5
Starting flow in m³/h (Average values)	0.0015	0.0025	0.003
Temperature measurement range	5 ... 105°C (-20 ... 105 °C for water/anti-freeze mixtures, not calibrated)		
Temperature difference range	3 ... 100 K		
Switch-off threshold	0.15 K		
Measurement cycles	Temperature: 4 sec. Flow and performance: 4 sec. Energy and volume: 4 sec.		
permissible temperature in the flow sensor	5 ... 90°C		
Flow at 0.1 bar pressure loss in m³/h	0.5	1.2	1.7
Pressure loss at q_p in bar	0.15	0.17	0.21
k_{vs} value (Flow at 1 bar pressure loss in m³/h)	1.53	3.65	5.45
Permissible operating pressure in bar	16		
Length of connection cable	PolluCom® F/S C, F/S CX: approx. 0.3 m		
Permissible ambient temperature	5 ... 55°C		
electromagnetic class	Class E 1		
Mechanical class	Class M 2		
Protection class	IP 54		
Battery life for PolluCom® F/S C, F/S CX,	8 years (with standard device without communication)*		

*High ambient temperatures generally have a negative effect on the service life

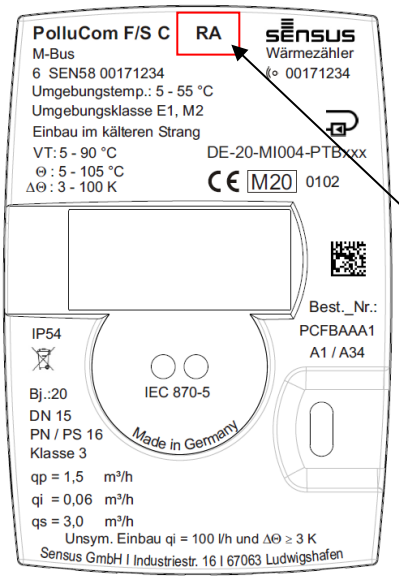
Various designs are directly compatible with third-party products:

PolluCom F/S C **RA**: directly compatible with the coaxial meter (A1/A34)
- Integral-MK MaXX
- CF Compact MK
- CF Sensor MK

PolluCom F/S C **RI**: directly compatible with the coaxial meter (IST)
- Sensonic II

PolluCom F/S C **RT:** directly compatible with the coaxial meter (TE1)
- Vario S

The compatibility with third-party products is clearly marked on each variant of meters.



PolluCom F/S C compatible with Allmess measuring capsule meter

Example of a PolluCom F/S C RA

3. Important information

Applied standard: EN 1434, parts 1, 3 and 6

- Heat and cold meters are measuring instruments that must be handled with extreme care. To protect them from damage and contamination, do not remove them from the packaging until immediately before assembly. The meter must not be carried by the cable. Clean only with a cloth moistened with water.

- Where different meter types are installed as part of a system, they must be replaced on a like for like basis to ensure consistent measurement of consumption.
- Make sure that the PolluCom® F/S C and the ball valve are installed correctly, otherwise there is a risk of scalding due to escaping heating fluid. Always close the shut-off valves before disassembly.
- Due to production methods, the connection threads may have sharp edges Therefore, we recommend the use of protective gloves.
- The meter contains a lithium battery. This battery must not be opened by force, short-circuited, exposed to water, or to temperatures above 80 °C. Used batteries, electronic instruments or components are hazardous waste and must be disposed of at appropriate collection points.

4. Required tool

- Commercial hook wrench (PolluCom® F/S C measuring capsule)
- Open-end wrench SW 22 (for overflow cap of the EAS)
- Open-end wrench SW 24 (for ball valve)
- Side cutter (sealing wire)
- Tap grease for thread

5. Mounting the counter

5.1 PolluCom® F/S C Installation instructions for all types

The PolluCom® F/S C can be used both as a heat meter and a cold meter. Therefore, the following terms are used in the text below:

Return flow of heating systems: **colder pipe**
Pre-run of heating systems: **warmer pipe (device designation with addition "X")**

Return flow of cooling systems: **warmer pipe (device designation with addition "X")**
Flow of cooling systems**:** **colder pipe**

PolluCom® F/S C is installed in the colder pipe. For installation points in the warmer pipe, the PolluCom F/S X version is available.
We distinguish four different measuring capsule connections:

Table measuring capsule connection

Typen	Kompatibilität	Anschlussgewinde	Anschluss-bezeichnung	Kapitel
PolluCom F/S	Fa. Sensus	M60 x 2 mm	PCC	5.2
PolluCom F/S RT	Fa. Techem	M62 x 2 mm	TE1	5.3
PolluCom F/S RI	Fa. Ista	G 2" Zoll	IST	5.4
PolluCom F/S RA	Fa. Allmess	M77 x 1,5 mm	A1 / A34	5.5

Split version: The calculator is removable and can be mounted in a suitable location using the enclosed wall adapter. The cable length to the coaxial meter is 30 cm.
In refrigeration systems, the versions PolluCom® F/S C or PolluCom® F/S X with removable calculator must be used due to possible condensation. The calculator is removed from the flow sensor (pull it upwards) and mounted separately at a suitable location using the wall adapter supplied. Depending on the version, PolluCom® F/S C can also be used as a combined heat and cold meter (hybrid meter): PolluCom® F/S C H or PolluCom® F/S X H. The switchover point between heat and cold metering is preset and can be changed with the MiniCom 3 service software.
The single pipe fitting (EAS) with the flow sensor and the two temperature sensors must be installed in the same circuit of the heating or cooling system.
PolluCom® F/S C can be installed from the horizontal and inclined, by max. 90 degrees or installed vertically. Inverted mounting is not permitted.
Care must be taken to ensure the correct alignment of the calculator. (Fig. 5.1.1)

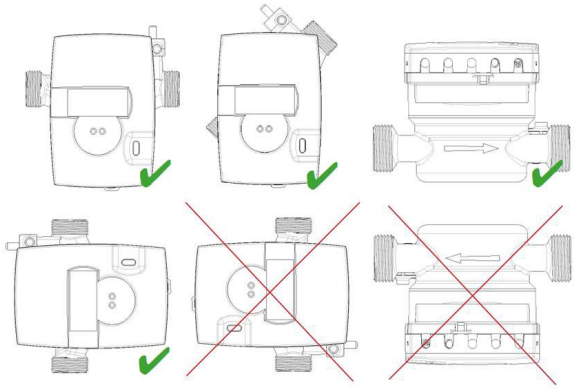


Fig. 5.1.1 F PolluCom® F/S C X alignment and installation position

5.2 PolluCom® F/S C (Type Sensus)

1. Check installation for completeness. Installation of the Sensus MID EAS OEM Set PolluCom® F/S C with single pipe fitting (EAS) and 3 pieces special ball valve as shut-off and assembly of the temperature sensors, see Chapter 6 Fig. 6.1.1. Thoroughly flush the pipeline before installing the meter.
2. Turn off heating/cooling or its circulation pump.
3. Close the shut-off valves located upstream and downstream of the single-pipe adapter (EAS).

4. Check installation point again for correct flow direction (arrow on the EAS), correct installation of the EAS if necessary.
5. Unscrew the overflow cap (B) from the single-pipe connector (A), remove the profile seal (C1) from the EAS and clean both sealing surfaces of the EAS (A1 and A2). (Fig. 5.2.1)

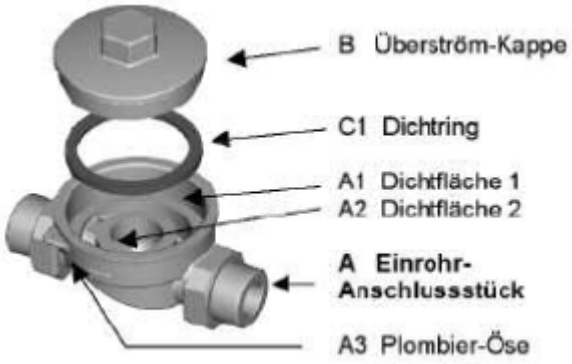


Fig. 5.2.1 Installation of F PolluCom® F/S C X connector

6. Remove the protective cap from the threaded connection (D1) of the PolluCom® F/S C coaxial meter (D) and insert the supplied new profile seal (C2) onto the sealing surfaces (A1 and A2) of the EAS. Do not use any additional sealants under any circumstances! (Fig. 5.2.2)

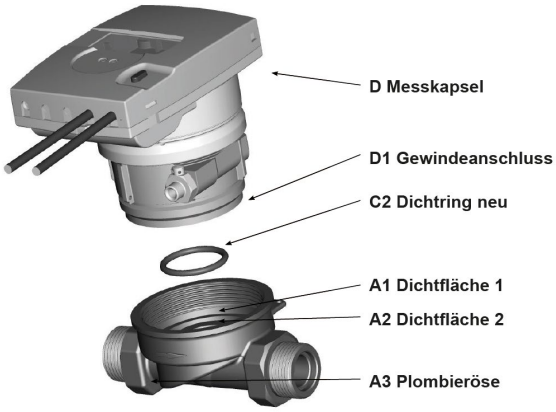


Fig. 5.2.2 Installation of F PolluCom® F/S C X measuring capsule

7. Grease the thread of the coaxial meter (D) and screw it into the EAS until it comes to a firm stop on the EAS. Only use a hook wrench for this purpose.
8. Seal the coaxial meter together with the single-tube connector by pulling the enclosed sealing wire in one piece through the sealing eyelets on the measuring capsule (D2) and the EAS (D3), tighten it and secure it with the enclosed self-lock seal. Fig. 5.2.3

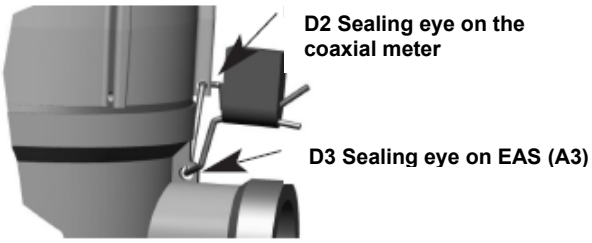


Fig. 5.2.3: Sealing example

9. Install and seal temperature sensor(s) according to Chapter 6.
10. Then open the shut-off valves and check the entire installation site for leaks.
11. Then put the heating/cooling system back into operation.

5.3 PolluCom® F/S C RI (Typ Ista)

1. Check installation for completeness. An original Ista-EAS must be installed in the return and a corresponding immersion sleeve or ball valve in the flow. Caution: In refrigeration systems, the supply is the colder pipe and the return is the warmer pipe. The counter to be installed must then be in the PolluCom® F/S C X RI version with appropriate adjustment. Please check. In refrigeration systems, the supply is the colder pipe and the return is the warmer pipe. It is simply pulled off upwards and mounted separately in a suitable place by means of the supplied wall adapter. (Cable length approx. 30 cm.) Switch off the heating or its circulation pump.
2. Close the shut-off valves located upstream and downstream of the single-pipe adapter (EAS).
3. Check installation point again for correct flow direction (arrow on the EAS), correct installation of the EAS if necessary.
4. Unscrew the overflow cap (B) from the single-pipe connector (A) (SW 22 mm), remove the seal (C1) from the EAS and clean both sealing surfaces (A1 and A2) of the EAS. (Fig. 5.3.1)

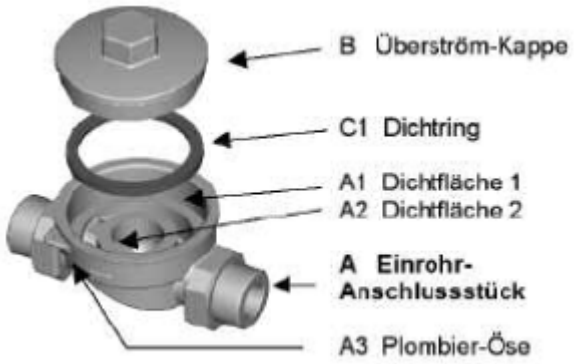


Fig. 5.3.1 Installation of F PolluCom® F/S C RI connector

5. Remove the protective cap from the threaded connection (D1) of the PolluCom® F/S C RI coaxial meter (D), insert the supplied new sealing ring (C2) onto the sealing surfaces (A1 and A2) of the EAS instead of the old seal.
6. Grease the thread of the coaxial meter (D) and screw it into the EAS and tighten it to the fixed stop on the housing. Only use a hook wrench for this purpose! Do not use any additional sealants under any circumstances! Fig. 5.3.2

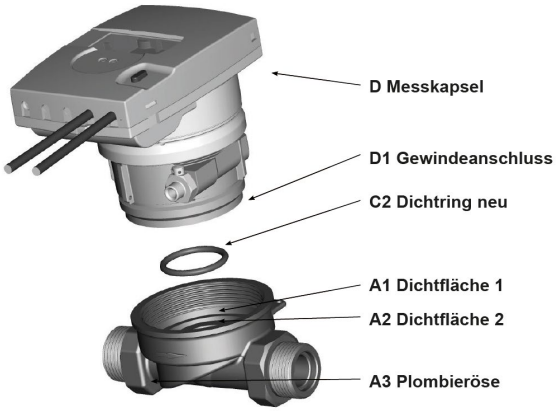


Fig. 5.3.2 Installation of F PolluCom® F/S C X measuring capsule

7. Seal the coaxial meter together with the single-tube connector by pulling the enclosed sealing wire in one piece through the sealing eyelets on the measuring capsule (D2) and the EAS (D3), tighten it and secure it with the enclosed self-lock seal. (See Fig. 3)
8. Install and seal flow sensor according to Chapter 6. Then open the shut-off valves and check the entire installation site for leaks. Then put the heating/cooling system back into operation.

5.4 PolluCom® F/S C RT (Techem type)

1. Check installation for completeness. There must be a Techem single-pipe housing in the return and the original installation location(s) for the temperature sensor(s). Caution: In refrigeration systems, the supply is the colder pipe and the return is the warmer pipe. The meter to be installed must then be of the PolluCom® F/S C X RT type with appropriate adjustment. Please check.
2. Switch off the heating system or its circulation pump.
3. Close the shut-off valves located upstream and downstream of the single-pipe adapter (EAS).
4. Check the installation point again for correct flow direction (arrow on the housing), correct its installation if necessary. (Fig. 5.4.1)
5. Unscrew the overflow cap or existing measuring capsule from the single-tube housing.
6. Clean the sealing surfaces of the housing.

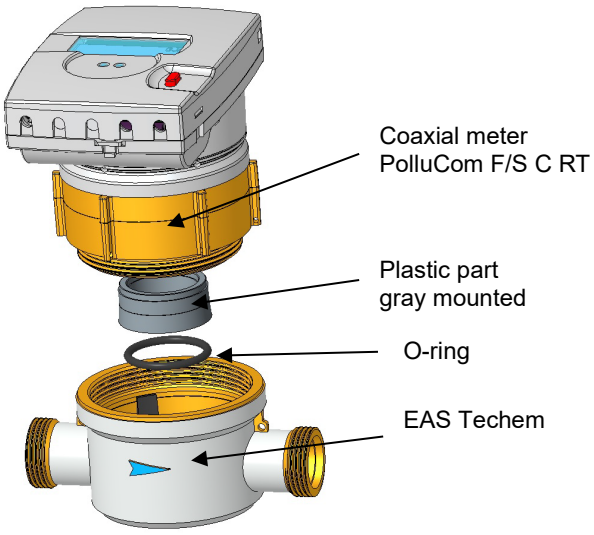


Fig. 5.4.1: Mounting the coaxial meter in the EAS

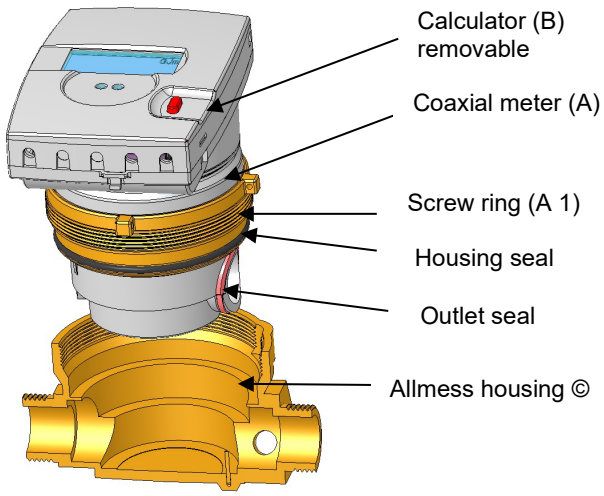
7. Gray plastic part with the O-ring is already mounted on the PolluCom® F/S C RT (Fig. 2). The PolluCom® F/S C RT can be screwed into the Techem EAS without additional mounting parts. (Fig. 5.4.2)

Fig. 5.4.2: PolluCom F/S C RT with gray plastic part and O-ring mounted

8. Grease the threaded ring of the coaxial meter and screw it into the EAS until it comes to a firm stop on the housing. Only use a hook wrench for this purpose! Do not use any additional sealants under any circumstances!
9. Seal the coaxial meter with the enclosed sealing wire through the nearest sealing lug on the measuring capsule and on the EAS and, if necessary, together with the temperature sensor in the housing.
10. Open the shut-off devices and check the installation site for leaks. Then put the heating system back into operation.

5.5 PolluCom® F/S C RA (Allmess type)

1. Check installation location for completeness. There must be an all-measurement single-pipe housing in the return and the original installation location(s) for the temperature sensor(s). Caution: In refrigeration systems, the supply is the colder pipe and the return is the warmer pipe. The meter to be installed must then be of the PolluCom® F/S C X RA type with appropriate adjustment. Please check.
2. Switch off the heating system or its circulation pump.
3. Close the shut-off valves located upstream and downstream of the single-pipe adapter (EAS).
4. Check the installation point again for correct flow direction (arrow on the housing), correct its installation if necessary.
5. Unscrew the overflow cap or existing measuring capsule from the single-tube housing (C) and remove the O-ring seal inside.
6. Clean the sealing surfaces of the housing
7. Align PolluCom® F/S C RA – measuring capsule (A) in flow direction (arrows on bottom of capsule and on single-tube housing, recess for locking pin).
8. Check pre-assembled seals (body seal and outlet seal) for correct seating and correct if necessary.
9. Now insert the coaxial meter straight into the monotube housing from above and press it in as far as the bottom. (Fig. 5.5.1)
10. Grease the thread of the screw ring (A 1), position it straight and screw it into the thread on the housing; tighten lightly with the enclosed assembly wrench. Do not use any other sealants.
11. Screw the temperature sensors into the corresponding immersion sleeves on the housing or in the pipe network and seal them.
12. Seal the coaxial meter with the enclosed sealing wire through the nearest sealing lug (A2) and, if necessary, together with the temperature sensor in the housing.
13. Open the shut-off devices and check the installation site for leaks. Then put the heating system back into operation.



6. Mounting the temperature sensor

Depending on the version, PolluCom® F/S C has one or two external temperature sensors. The standard cable length is approx. 1.5 m (special version: approx. 5 m and approx. 10 m). If possible, a cable duct or empty conduit should be used for laying the cable.
Joint installation in cable ducts or on cable trays with power supply lines is not permitted. The minimum distance for low-voltage lines according to EN 1434, part 6, of 50 mm must be complied with.
After installing the temperature sensors, seal them to prevent tampering.

6.1 Installation directly into the heating or Cooling medium

For new installations, the temperature sensors must be installed directly immersed in accordance with legal regulations. The Sensus MID EAS OEM set with 3 special ball valves must be used for this, order number:

- 68505064 (R 3/4“ / 110) for Qp 0,6 – 1,5

The temperature sensors are installed directly in the heating or cooling medium. The ball valve also serves to shut off the pipe so that the temperature sensor can be removed without interrupting the operation of the plant.
For old systems with thermowells, the corresponding transitional regulations must be observed.

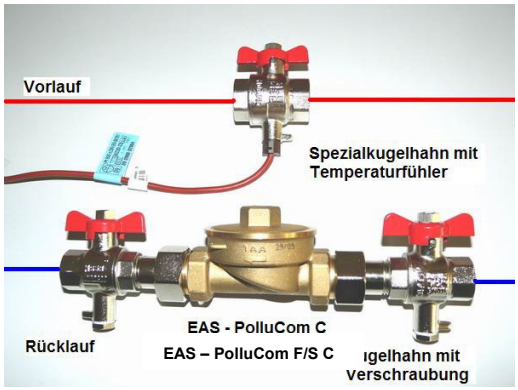


Fig. 4: Installation example MID EAS

7. Display Options

The numerous display options of our PolluCom® F/S C are divided into six levels. Depending on the version of the delivered meter or the display appearance, some menu items marked with an asterisk (*) may be hidden. If required, the appearance can be changed with the MiniCom 3 service software via the optical interface of the meter. Under normal conditions, the display turns on at 4-second intervals and shows the cumulative heat consumption for one second. Press the red key to activate the first display element of the user menu (cumulative heat consumption). To select the other five levels, press and hold the red button for 5 seconds. The selection menu L1 to L6 appears.

L 1	**User Level**
L2	**Effective date level ***
L3	**Archive level ***
L4	**Service Level**
L5 CtrL	**Tariff function level ***
L6	**Parameter level ***

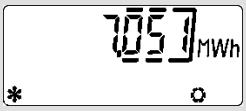
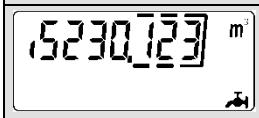
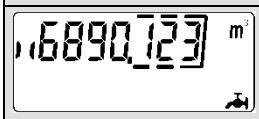
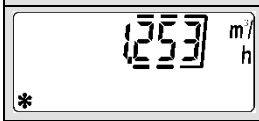
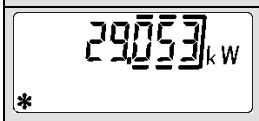
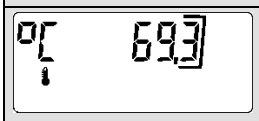
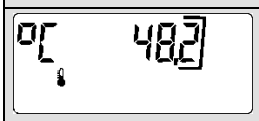
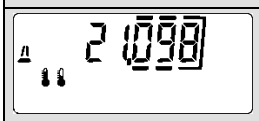
Fig. 4: Selection of display levels

other by briefly pressing the red key. Once the desired level is displayed, press and hold the red button for 2 seconds to enter that level. The individual display elements of the levels are called up one after the other by briefly pressing the red key. If the key is not pressed within 4 minutes, the display returns to the home screen.

In all levels, a flashing impeller symbol (display bottom left corner) indicates that volume pulses are being received.
The number values shown are sample values.

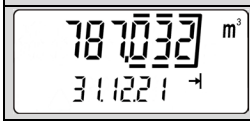
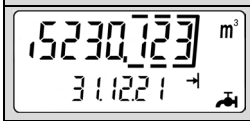
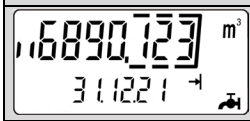
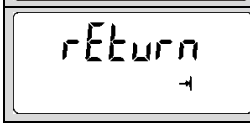
7.1 User level (L 1)

Err 40 10	Error message (only in case of an error)
28.053 MWh	Cumulative heat and/or cooling energy
14.823 MWh 31.08.18	Key date consumption incl. associated date
895.923 m³	Cumulative volume
88888.888 GJ m³ MWh	Segment test
33.958 IMP/L	Pulse value of the connected flow sensor *
2.813 MWh	Rate consumption 1 * (if activated)

	Cooling energy (only for hybrid meter version)
	External pulse counter consumption 1* (optional)
	External pulse counter consumption 2* (optional)
	Current flow of heating or cooling medium
	current heat or cooling capacity
	Temperature in the warmer pipe *
	Temperature in the colder pipe *
	Temperature difference *
	Customer reference number *
	Primary M-Bus address (default setting: 0) *
	Secondary M-Bus address (factory default to: counter serial number) *

7.2 Reference date level (L 2)

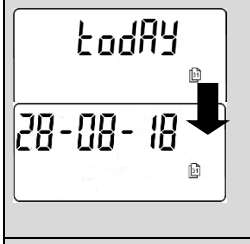
All display elements are marked with an arrow symbol. Display of all consumption data up until a specified date.

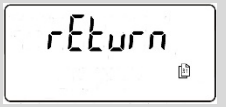
	Error message (only in case of an error)
	Cut-off date consumption for heat and/or cooling energy *
	Effective date consumption for volume *
	Reference date consumption for rate 1 (if activated) *
	Reference date consumption of cooling energy (only for hybrid meter version)
	Effective date consumption for external pulse counter 1 (optional) *
	Effective date consumption for external pulse counter 2 (optional) *
	Back to selection menu Press and hold (2 seconds)

7.3 Archive level (L 3)

All display elements are marked with a calendar page icon. Starting with the current date, the consumption of the previous 16 month changes is displayed (six-digit date in DD.MM.YY format under the main display).

In addition, the maximum values for flow and energy are displayed for the current month (incl. date and time); the word "today" appears below the main display.

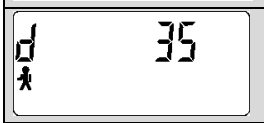
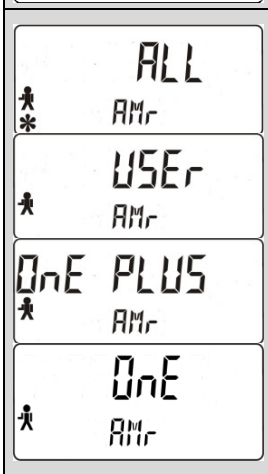
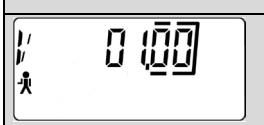
	Selection of the desired month beginning with "today" through short pressing the button once for each of the preceding 16 months, then press the back button for 2 seconds *
	Monthly value energy *
	Monthly value volume*
	Monthly value tariff energy (if activated) *
	Monthly value cooling energy (if activated) *

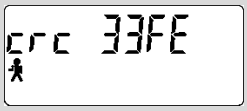
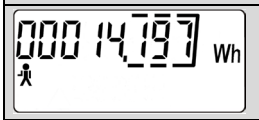
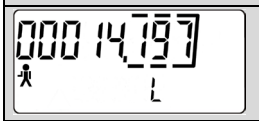
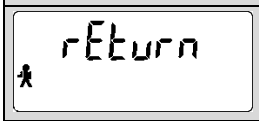
	Monthly value consumption of external pulse counter 1 (optional) *
	Monthly value consumption of external pulse counter 2 (optional) *
	Maximum flow in the selected month incl. date (average) *
	Maximum flow in the selected month incl. time (average) *
	Maximum efficiency in the selected month incl. date (average) *
	Maximum efficiency in the selected month incl. time (average) *
	Hours in error state *
	Back to the month selection (2 seconds hold down)

7.4 Service level (L 4)

All display elements are marked with a human symbol. The service level shows maximum values and settings.

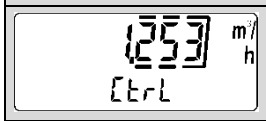
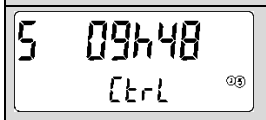
	Error message (only in case of an error)
	Absolute maximum flow rate incl. date *
	Absolute maximum flow rate incl. time *
	Absolute maximum efficiency incl. date *
	Absolute maximum efficiency incl. time *
	Absolute maximum value temperature in the warmer pipe incl. date *

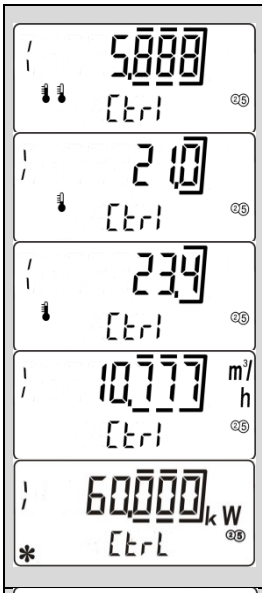
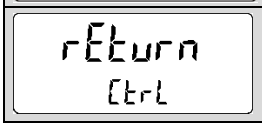
	Absolute lowest value temperature in the warmer pipe incl. date *
	Absolute maximum value temperature in the colder pipe incl. date *
	Absolute lowest value temperature in the colder pipe incl. date *
	Current date *
	Current time *
	Next cut-off date *
	Days of operation *
	Regulated battery voltage
	Cumulative error hours *
	Primary M-Bus address (default setting: 0) *
	Secondary M-Bus address (factory default to: meter serial number) *
	Data transmission mode (different length and structure of the M-Bus protocol) *
	Firmware version

	Checksum
	High-resolution energy display *
	High-resolution volume display *
	Back to the selection menu (press and hold for 2 seconds)

7.5 Rate function level (L 5)

All display elements are marked with the letters "CTRL". The rate functions can be set and controlled here.

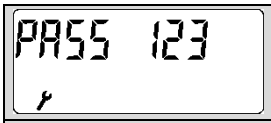
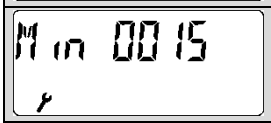
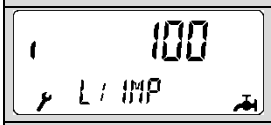
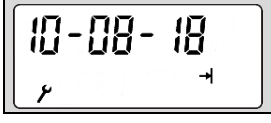
	Error message (only in case of an error)
	Set message interval for flow and energy *
	Efficiency in the current notification interval *
	Flow in the current notification interval *
	Setting of rate 1 start time (if activated, for rate with start and end time) *
	Setting of rate 1 end time (if activated, for rate with start and end time) *

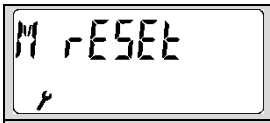
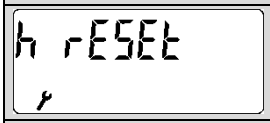
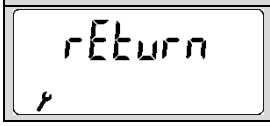
	- Set temperature difference - Set temperature limit in the colder pipe - Set temperature limit in the warmer pipe - Set flow limiter - Limit of thermal output (if enabled, for limited value rate) *
	If rate is not used, "off" is displayed *
	Switchover temperature for cold metering (if enabled) *
	Changeover point for negative temperature difference cold metering (if activated) *
	Correction factor for anti-freeze mixtures *
	Back to the selection menu (press and hold for 2 seconds)

7.6 Parameter level (L 6)

Each display element is marked with a tool symbol. This level is password protected. The password corresponds to the last three digits of the eight-digit serial number on the meter housing. "000" appears first. Then press and hold the key for approx. 2 seconds; the left digit starts flashing. Change the value of the flashing digit by pressing the key continuously. As soon as the required value is displayed, release the key. A short keystroke confirms the set value and advances to the next digit. Set this value in the same way. After setting the last digit, the level is unlocked.

Now the required menu items can be selected by briefly pressing the key; the values are set in the same way as the password entry.

	Enter password *
	Set primary M-Bus address *
	Set the secondary M-Bus address *
	Set customer reference number *
	Set message interval for flow and efficiency *
   	Set the data transfer mode (One, All, One plus, User) *
 	Switch radio transmission on or off (if the meter is equipped with radio module).
	Pulse value of the first external counter (0.25 to 10,000 L/imp.) *
	Pulse value of the second external counter (0.25 to 10,000 L/imp.) *
	Set date *
	Set time *
	Set cut-off date *

	Reset absolute maximum values *
	Reset error hours *
	Back to the selection menu (press and hold for 2 seconds)

8. Function test, sealing

Open the stopcocks and check the installed units for leaks.

The current values for flow rate, energy as well as flow and return temperature can be called up for testing purposes in accordance with Chapter 6.1.

In order to protect the meter against tampering, the supplied sealing materials must be applied at the following locations:

- Screw connection of the flow sensor
- Entry point of the separately mounted temperature sensor (see also Chapter 5)

9. Possible error situations

Our PolluCom® F/S C is equipped with an automatic self-monitoring function. In the event of an error, the display shows a four-digit information code in the format **"Err XYZW",** which can be decrypted as follows:

X: Temperature sensor monitoring

Y: Monitoring of the computer electronics and communication

Z: Error statistics

W: Error in measuring electronics

Example infocode:

Code	Decryption
Err 2010	One or both temperature sensors are short-circuited
Err 4010	Cable break of the temperature sensor in the return pipe
Err 8010	Cable break of the temperature sensor in the supply pipe
Err 0022	Impeller scanning error
Err 0200	Battery life less than 6 months

With all listed errors except "Err 0200", the device is defective and must be replaced.
In case of error "Err 0200", the device continues to measure for max. 6 months and must be replaced promptly.

For other error situations, please contact Sensus.

10. Optical interface and optional data transfer

10.1 Optical interface

All meters are equipped with an optical interface in accordance with IEC 870-5. The baud rate is selectable between 300 and 9600. The parameters can be changed via an optical data interface (usable with the aid of data couplers) using the MiniCom 3 service software, or the meter can be read out via the SensusREAD readout system. The data interface is activated for one hour with a short keystroke. Each intermediate data transmission restarts this period, so that logger readouts at intervals of 15 minutes or one hour, for example, are also possible over a longer period.

10.2 M-Bus option in accordance with EN 13757-3

With this option the meter can be read out via its primary or secondary address with an M-Bus level converter (max. baud rate up to 38400. Baud rates 300 and 2400 with automatic detection). Both addresses can be set up in the parameter level (see Chapter 6.6) or with the help of the MiniCom 3 service software (note: the secondary address is preset in the factory according to the serial number on the meter housing). The primary address can be selected between 0 and 250 and is preset to 0 at the factory.

The optional two-core cable can be integrated into the M-Bus system at a suitable point. The polarity of the two wires does not need to be observed.

10.3 Optional remote reading for heat or cold consumption impulses

Pulse value:	1 kWh
Closing time:	125 ms
Bounce time:	none
Max. Voltage:	28V DC or AC
Max. Current:	0.1 A

Connect the two-wire cable to a suitable pulse meter or to a contact input of a house control system. The polarity of both wires does not need to be taken into account.

10.4 M-Bus option with two contact inputs

In addition to the module described in Chapter 9.2 or 9.3, two external consumption meters (e.g. cold water, hot water, electricity, gas) with passive remote metering contact can be connected (reed switch or open collector).

A total of two connection cables are used for this option (1 x two wires, 1 x four wires). The two-core cable (white and brown core) is integrated into the M-Bus system at a suitable point, the polarity need not be observed.

Connect the four-wire cable as follows:

White = external counter 1 / positive pole
Brown = external counter 1 / negative pole
Green = external counter 2 / positive pole
Yellow = external counter 2 / negative pole

Contact Input Specification

Required closing time:	> 125 ms
Input frequency:	≤ 3 Hz
Connection voltage:	3 V

Both contact inputs factory set to:

Input 1: cold water counter, pulse value 10 litres, initial counter value 0.00 m³

Input 2: Hot water meter, pulse value 10 liters, initial meter reading 0.00 m³

Other values can be set via the MiniCom 3 service software.

10.5 Integrated data logger

The integrated data logger stores the consumption values and current values. The logger can record values of 1200 hours, 120 days and 120 months. The logger data can be read out via an optical interface or M-Bus with the MiniCom 3 service software.

As part of the integrated data logger, the device also stores 500 events and 500 changes of error situations.

10.6 Wireless M-Bus, (wM-Bus)

If the meter is equipped with a wM bus, it has an internal antenna. Two modes, C1 and T1, can be selected.

The meter is certified in accordance with OMS Specification, Volume 2, Version 4.0.2 of OMS. This ensures optimum compatibility with all OMS-compatible readout systems.

Mode C1 is set to a transmission interval of 16 seconds by default. Individual 128-bit encryption is performed.

Mode T1 is set to a transmission interval of 900 seconds by default. Individual 128-bit AES encryption is performed.

With the Sensus readout software DIAVASO, the customer can read out the meter data with both T1 and C1 modes.

By default, wM-Bus data transmission is disabled. The wireless M-Bus data transmission can be switched on either in the LCD menu structure level 6 or with the MiniCom 3 software.

The configuration of the wM-Bus data transmission mode and the telegram packet types can be changed using the MiniCom 3 software.

The frequency of wireless transmission is 868.95 MHz, and the maximum transmission power is 25 mW (14 dBm).

11. Battery supply

Depending on the version, the PolluCom® F/S C is supplied with 1 or 2 lithium batteries (type AA). For optimum battery life, ensure that the battery temperature does not exceed the permissible ambient temperature, e. g. by split design with wall mounting.

The voltage of a lithium battery is almost constant over the entire battery life. In the service menu of level 4 of the LCD display, the currently battery voltage is displayed behind the voltage control circuit. It should be constant at approx. 3.0 V. If this voltage drops below 2.9 V, a warning code 0200 will appear in the LCD display and the meter should be replaced as soon as possible.

Note: The battery of the PolluCom® F/S C cannot be replaced or charged.

The typical service life of the PolluCom® F/S C is 8 years. Depending on the options selected and the configuration, a battery life of up to 15 years can be achieved. The duration of use is based on national guidelines.

12. CE declaration of conformity

EN

Date: 20.01.2021

EU Declaration of Conformity
No. CE / PolluCom F/S C / 0121

Herewith we,

Sensus GmbH Ludwigshafen
Industriestr.16
67063 Ludwigshafen

declare under our sole responsibility, that the thermal energy meter type **PolluCom F/S C,** to which this declaration relates, is in conformity with the following legal regulations: Directive 2014/32/EU of the European Parliament and the Council of the 26th of February 2014 (OJL 96, 29.03.2014 p.149-250), including

Annex I, Essential requirements
Annex VI, Thermal Energy Meters (MI-004)

Directive 2014/30/EU (EMC)
Directive 2014/53/EU (RED)
Directive 2011/65/EU (RoHS)

Further applied normative documents, harmonized standards or rules

- DIN EN 1434, Edition 2015+A1:2019
- OIML-R 75, Edition 2002/2006
- WELMEC Guideline 7.2, Edition 2019
- EN 60751, Edition 2009
- EN 13757-2, Edition 2018
- EN 13757-3, Edition 2018
- EN 13757-4, Edition 2019
- DIN EN ISO 4064, Edition 2017
- DIN EN 60529, Edition 2014
- DIN EN 60870, Edition 2006
- EN 301489-1 V2.2.0
- EN 301489-3 V2.2.1
- EN 300220-1 V3.1.1
- EN 300220-2 V3.1.1
- EN 62368-1:2014+AC:2015
- EN 62479:2010
- EN 50581:2012

The conformity assessment procedure was carried out under the supervision of the notified body PTB identification number 0102. The type-examination certificate DE-20-MI004-PTB009 was issued.

This declaration is made on behalf of the manufacturer by the Director Metrology.

Sensus GmbH Ludwigshafen

Thomas Helf
Managing Director

i.V.
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Ust-Id-Nr.: DE 160261426
Peter Karst, Thomas Helf
Borja Alcázar Pérez

13. Identification and labeling of immersion sleeves in existing systems

13.1 Legal background

For the new installation of heat meters with a type approval in accordance with the European Measuring Instruments Directive (MID) up to nominal size q_p 6 m³, the German calibration law stipulates that the temperature sensors may only be installed directly. For existing installations, the use of temperature sensors in thermowells is tolerated until 10/30/2026 when replacing meters in accordance with PTB communication issue 4-2009 "Use of MID-compliant temperature sensors for heat meters in existing thermowells" under the following conditions:

- The suitability of the temperature sensors in combination with the corresponding design of the immersion sleeve of the field inventory has been proven to the Physikalisch-Technische Bundesanstalt (PTB) to ensure compliance with the error limit for the measurement.
- The thermowell used must be clearly assignable to one of the type codes assigned by PTB.
- The immersion sleeve must be identified in the field.
- The immersion sleeve must be clearly marked.

13.2 Identification of the thermowell in the field

A stock list (toleration list) filed at PTB describes the immersion sleeves that are eligible for stock use with MID-marked probes. In this list, unique characteristics of the thermowells are defined to clearly identify the thermowells in the field.
Measuring device users or the fitters commissioned by them may only use MID-marked temperature sensors in conjunction with existing thermowells if these have been positively identified for the type of thermowell recognized as suitable.
The thermowell must be subsequently provided with a clear marking at the installation location and with a user protection for the temperature sensors. The marking must contain at least one key according to the PTB inventory list (e.g. "TH xxx") which determines the type of thermowell.

The following features of the installation location must be identified and logged:

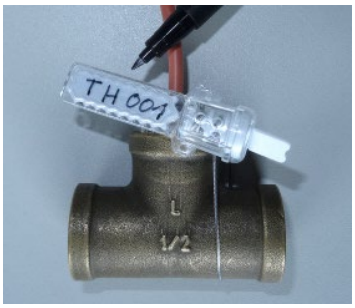
- Design / significant feature (e.g. M10 female thread, recirculating groove, cross screw, etc.)
- Identifiable identification (e.g. manufacturer identification, etc.)
- Internal diameter (di)
- Insertion length of the sensor
- Connection thread dimension
- Wrench size
- Height of the hexagon
- Material (e.g. brass, brass tinned, etc.)

13.3 Identification of the immersion sleeves

Two seals are included in the accessory kit for marking the thermowells.
After identification, the toleration mark (PTB TH No.:...) can be taken from the following table and applied to the plates with a document-proof pen. Then attach the seals to the thermowells as user protection. To do this, press the cap firmly together.

Type of seal depending on package leaflet:

Style 1



Style 2

Style 3

14. Tolerance list

Excerpt from the "pronounced acquiescence list of stockpile upsetting sleeves" see PTB: https://www.ptb.de

	Bauart-schlüssel	Sonstige Kennzeichen	Beschriftung	Baulänge [mm]	Einschublänge E [mm]	Gewindemaß [mm]	Schlüsselweite SW
Innendurchmesser 5,2 mm	TH 001	Umlaufnut	SPX/50/5,2 (oder SPX/150/5,2)	43	42	1/2	SW24
	TH 002					3/8	
	TH 003	Sechskant-Überwurfmutter		57	56	1/2	SW24 (SW22)
	TH 004	Umlaufende Nut		54	53		
	TH 005	Großer Sechskant-Kopf (SW 30)		52,5	52		SW 30
	TH 040		mit JUMO - Logo	47	46		SW24
	TH 046		IÆ5,2 90 °C			M10x1	SW17
	TH 048	Messing Innengewinde M10		50	49	1/4	
	TH 054					M10x1	
	TH 077		X innen	42	39		SW13
	TH 079					1/2	SW24
	TH 081					3/8	SW17
	TH 089	Umlaufende Nut für Plombierdraht	Umlaufnut	54	53		SW22
	TH091		JUMO II5,0 90 °C	47	46	M10x1	SW14
Innendurchmesser 5,0 mm	TH 015	messingfarben, ohne / "RKES-Logo 60"	Querschraube	61	60	3/8	SW17
	TH 017	messingfarben ohne / "RKES-Logo 60" / "Viterra 60"		57	56		SW22
	TH 018	messingfarben ohne / "RKES-Logo 60" / "Viterra 60"		61	60	1/2	
	TH 020	ohne / "ista 50" / "sensonic 50"	M10 innen	50	49	3/8	
	TH 029	M10x1 innen		48	47	M10x1	SW14
	TH 033			58	56		
	TH 035			48	47		
	TH 047		IÆ5,0 90 °C	47	46	M10x1	SW17
	TH 051			50	49	1/4	
	TH 055					M10x1	
	TH 083			42	39		SW13
	TH 084	Messing-TH mit Ringnut im Sechskant		41	40	1/4"	SW17
	TH 085					1/2"	SW27
	TH 086					3/8"	SW22
	TH 087					M10x1	SW17
	TH 088					1/4"	
	TH090		JUMO II5,0 90 °C	47	46	M10x1	SW14
Innendurchm. 6,0 mm	TH 009	Messing M12x1,5 Außengewinde zur Positionierung und	M12 aussen	52	50	M10	SW14
	TH 010					3/8	SW22
	TH 011					1/4	SW19
	TH 012					1/2	SW22
	TH 014	messingfarben, ohne / "RKES-Logo 60"	Querschraube	61	60	3/8	SW17
	TH 016			57	56	3/8	SW22
	TH 019			61	60	1/2	
	TH 027	Kabelquetsch-verschraubung	Kabelverquetschung	52	50	M10x1	SW14
	TH 028			62	60		
	TH 078		X aussen	51	50	M10x1	SW13

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As of: 0004 – March 22, 2023
Subject to change without notice

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