CONTECA ULTRA ultrasonic heat meter – MID directive compliant – Bus RS485 transmission

7557 series

01208/14 GB

Function

CONTECA ULTRA is an **ultrasonic direct heat meter** especially suited to measuring thermal consumption in residential buildings; thanks to a double memory register it can meter energy consumption in both **heating** and **refrigeration** mode (option 755810).

The device consist of an electronic calculation unit, an ultrasonic flow meter and two temperature probes. The CONTECA ULTRA is extremely easy to install and requires no special maintenance.

The system is made up of two ultrasonic transducers: the time difference between two sound signals is converted into a speed value and then, given the cross section of the pipe, into the volume flow rate of the medium which has passed through.

The CONTECA ULTRA ultrasonic heat meter is equipped with an **8-digits liquid crystal display** that can be turned on by means of a button. The display allows easy reading of consumption values as well as technical data, useful to evaluate the device operating status and to retrieve logged data.

The CONTECA ULTRA meter is able to acquire three additional pulse inputs and two additional digital status/alarm inputs and is fitted for centralised remote transmission by means of the RS485 datalogger (code 755010, max 250 users).

Product range

7557 series	heat meter: - from 1/2"–1 1/2" threaded connections; - from DN 50–DN 100 flanged connections;
code 755010	CONTECA TOUCH datalogger
code 755810	cooling consumption metering
code 755881	pulse output for heating units
code 755882	dual pulse output for heating/refrigeration units
code 755890	remote totalizer
code 755825	generic pulse input

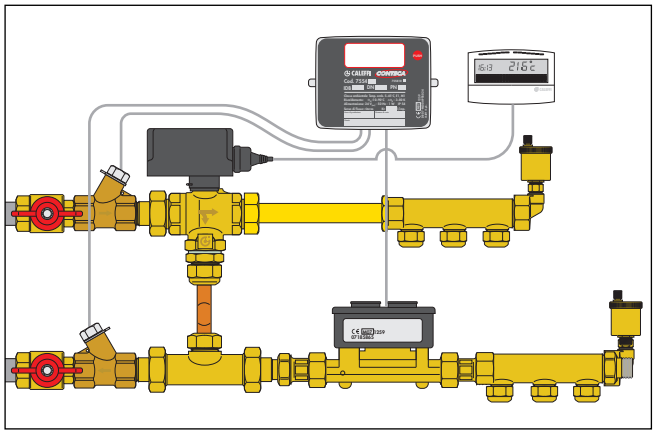
Technical specifications

Electronic panel electric supply:	24 V (ac) – 50 Hz – 1 W
Data transmission:	Bus RS485
Tamper-proof protection	
Error diagnostics	
Conformity:	EN 1434 2004/22/EC directive

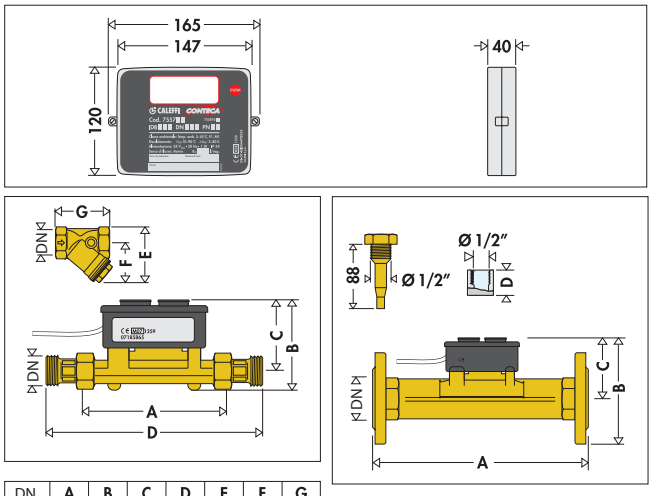
Ultrasonic flow meter

Range Q_P/Q_i:	100/250
Power supply:	3V (dc) lithium battery – 12 years life
Output frequency:	≤ 20 Hz

Installation example (with diverting valve)



Dimensions



DN	A	B	C	D	E	F	G
1/2"	110	71	57	190	59	44	59
3/4"	130	78	61	226	69	51	69
1"	260	84	61	358	82	60	87
1 1/4"	260	108	85	378	100	73	99
1 1/2"	300	123	90	438	112	80	109

DN	A	B	C	D
DN 50	270	165	82	36
DN 65	300	185	75	36
DN 80	300	200	80	36
DN 100	360	235	85	25

Technical specifications

Temperature probes				
Flow probe length		m	1.9	
Return probe length		m	1.9	
Probe type			NTC	
Temperature range limits		°C	10–90 (Heating mode) - 2–25 (Refrigeration mode)	
Temperature difference limits		°C	3÷80 (Heating mode) - 3–20 (Refrigeration mode)	
Measurement sensitivity		°C	≤ 0,05	
Flow metering portion				
Dimensions/Connection			1/2"–1 1/2"	DN 50–DN 100
Body			Brass	Steel FE510
Type of hydraulic connection			**Male union ISO 228**	**Flanged PN 16 ISO 1092-1**
Nominal pressure	PN	bar	Threaded PN 16	Flanged PN 16
Max. temperature of the medium		°C	90	
Mounting			normally horizontal	
Pulse output			class OA-OC according to EN1434-2	
Nominal flow rate	Q_p	l/h	see table 1 and 2	
Minimum flow rate	Q_i	l/h	see table 1 and 2	
Electric supply			lithium battery, life 12 years	
Microprocessor calculation unit				
Metrological specifications			**in compliance with EN 1434-1 - MID 2004/22/EC**	
Centralised transmission			Bus RS485	
Ambient temperature range limits		°C	5–45	
Ambient classification			MID 2004/22/EC E1-M1	
Heating/refrigeration unit of measurement			kWh	
Electric supply:			24 V (ac) - 1 W - 50/60 Hz	
Protection class			according to DIN 40050: IP 54	
Pulse inputs			class IB according to EN 1434-2	

The CONTECA® ULTRA heat meter is supplied with all the accessories needed for the installation, the probe positioning and the subsequent lead sealing.

TAB 1 – Flow rate limits – Connections from 1/2" to 1 1/2":
2 Y-pockets (the flow pocket is equipped with a strainer mesh)

Code	Connections	Q_i (l/h)	Q_p(mc/h)	Q_p/Q_i
755704	1/2"	6	1,5	250
755705	3/4"	10	2,5	250
755706	1"	35	3,5	100
755707	1 1/4"	24	6	250
755708	1 1/2"	40/100 *	10	250/100*

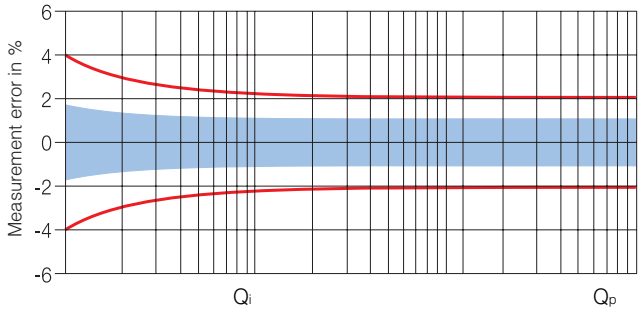
* vertical installation

TAB 2 – Flow rate limits – Connections from DN 50 to DN 100:
2 weld sleeves with brass pocket

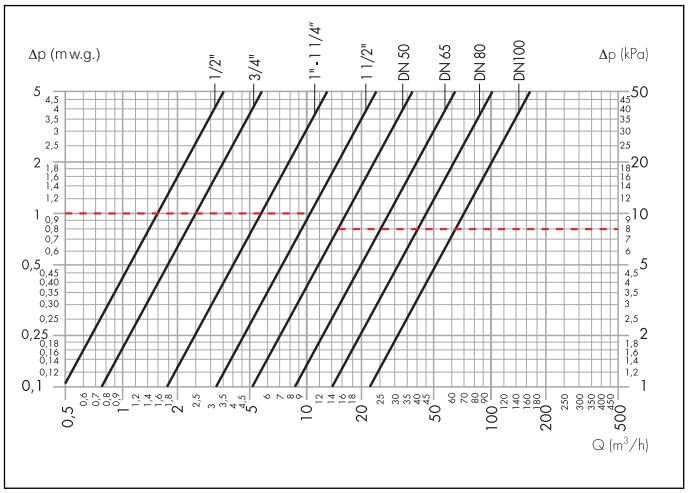
Code	Connections	Q_i (l/h)	Q_p (mc/h)	Q_p/Q_i
755709	DN 50	60*/150	15	100*/250
755710	DN 65	250	25	100
755711	DN 80	400	40	100
755712	DN 100	600	60	100

* vertical installation

Measurement error curve



Pressure loss – 7557 series



	1/2"	3/4"	1"	1 1/4"	1 1/2"	DN 50	DN 65	DN 80	DN 100
Kv	5,0	7,9	17,8	17,8	33,0	53,0	89,0	142,0	223,0

• Data centralization

In case of centralised data transmission via bus, the following connections must necessarily be carried out:

N It indicates the terminal on the CONTECA PCB

1 - 2 Centralised electric supply 24 V (ac)

3 - 5 Polarised transmission bus **3 Tx** (Transmission) **5 Rx** (Reception)

For the transmission bus, use an unshielded 2 x 1 mm² FROR 450/750 2x1 CEI 20-2211 IMQ cable (**code 755855 LSC**).

Note: The transmission polarity must be fully observed.

• Energy pulse outputs, code 755881/755882

21 - 23 Remote heating units totalizer output (kWh) (OC Type)

21 - 22 Remote refrigeration units tot. output (kWh) (OC Type)

These outputs can be connected to our code 755890 (remote energy totalizer) or to a generic supervisor.

Output specifications:
1 PULSE = 1 kWh – open collector contact
Pulse duration: 120 ms
Max. frequency = 1Hz

Note:

- if centralised data transmission is used, the 24 V (ac) electricity supply line should be used solely for that purpose and not directly by the user.
- Each 7557 series device is supplied with an anti-tamper lead sealing kit for the temperature probes and for the plastic electronic box.

Operating information

The energy consumption is recorded in a non-volatile memory device (EEPROM) each time the unit of measurement is completed (1 kWh) and, at the same time, this increase determines the update of the display (see User information cycle).

- When the electricity mains is connected (24 V (ac)), the following occurs:
  - Display always on
  - Metering always enabled

- If the electricity mains is not connected, the following occurs:
  - Display off, it can be activated for 20 seconds by pressing the "PUSH" button
  - Metering always enabled

Maintenance work

Strainer cleaning

Sometimes it is necessary **to clean the filter that protects the flow rate meter.**
By observing the instantaneous values of the flow rate and temperature difference between flow and return (low flow rates and increased ΔT) it is easy to detect whether the filter is clogged and then proceed with the cleaning.

User information cycle

The heat meter is equipped with a liquid crystal display. The display is activated by pressing the button on the front side PUSH.
By repeatedly pressing the button briefly it is possible to scroll through the various information windows.
In order to extend the life of the battery, the display is switched off 30 s after the button was last pressed.

Heating units

Refrigeration units

Heat transfer medium volume

1st pulse consumption

2st pulse consumption

3st pulse consumption

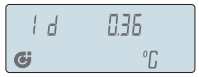
Flow rate

Power

Flow temperature

Return temperature

Temperature difference



Bus network address

Anti-tamper No. of openings

Programming parameters

CKSUM

Segment test

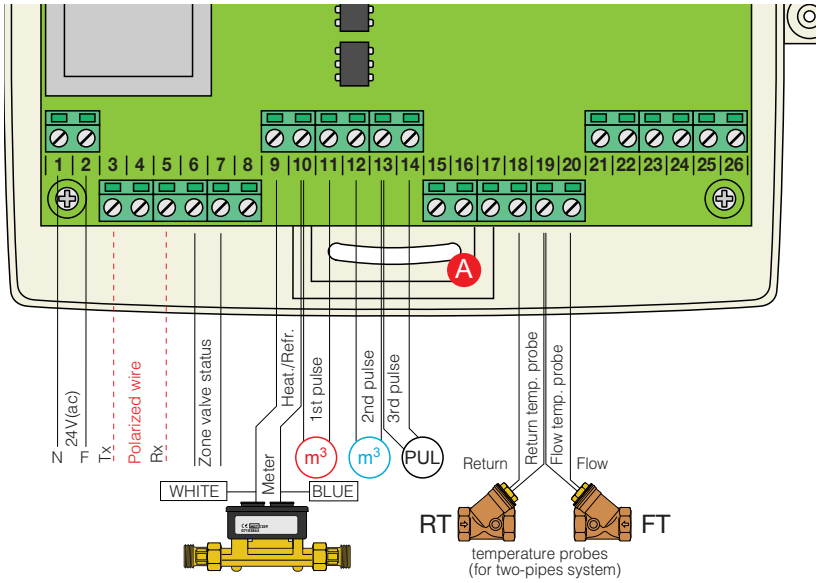
CONTECA meter electrical connections

Ultrasonic flow meter
DHW meter
DCW meter
Generic pulse, other meters:
Gas, electricity, technical water

FT	Flow temperature probe
RT	Return temperature probe
FT2	2nd flow temp. probe (16 – 17)
RT2	2nd return temp. probe (15 – 16)

When mounting in a box or directly on a wall, use the screws provided in the package, fixing them in the curved slots in order to level the device correctly (A)

N.B. It is mandatory to respect the color diagram when connecting the flow meter.



Pre-installation guidelines

It is a good practice to provide shut-off valves upstream and downstream of the meter in order to facilitate installation and maintenance.
Upstream from the flow rate gauge, it is necessary to provide **a filtering device** in order to protect the gauge.
For devices with threaded connections (from diameter 1/2" to 1 1/2"), this filter is already inside the flow temperature pocket.
It is recommended to provide a deaerator device; the presence of air bubbles may result in measurement errors.
After installation, it is a good practice to **wash the pipes and carry out a pressure test.**
After washing and before installing the temperature probes, **it is wise to check the mesh filter to avoid a possible clogging.**
After completing the hydraulic installation it is possible to install the electric/electronic parts.
When work has been completed, qualified technicians must lead seal the electronic module and the temperature probes.

Two pipe plumbing system

1) Heating and/or refrigeration unit metering

6 - 7	Zone valve status	
9 - 10	Ultrasonic flow meter	Terminal 9: **WHITE** wire
19 - 20	Flow temperature probe	Terminal 10: **BLUE** wire
18 - 19	Return temperature probe	

2) Pulse collection (Type OA-OC)

2.1) Single pulse meter

10 - 11	DHW or DCW	(1st pulse consumption)

2.2) Two pulse meters

10 - 11	DHW	(1st pulse consumption)
12 - 13	DCW	(2nd pulse consumption)

2.2) Three pulse meters

10 - 11	DHW	(1st pulse consumption)
12 - 13	DCW	(2nd pulse consumption)
13 - 14	Generic	(3rd pulse consumption)

SPECIFICATION SUMMARY

7557 series
CONTECA ULTRA ultrasonic heat meter compliant to 2004/22/EC (MID) directive for application in heating and cooling systems, with the following characteristics: ultrasonic flow meter suitable for hot water usage (maximum temperature 90°C) with pulse output, NTC temperature probe, data viewing on a 8-digit LCD display, temperature range 2÷90°C, protection class IP 54, **BI-DIRECTIONAL** Bus RS485 transmission, electric supply 24 V (ac) 50 Hz – 1 W. Fitted for **remote activation** of user services. **Options:** 3 additional pulse inputs – 2 voltage free digital inputs for status/alarms – 1 relay output.

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