

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



## 7557 series



### 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 consists 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

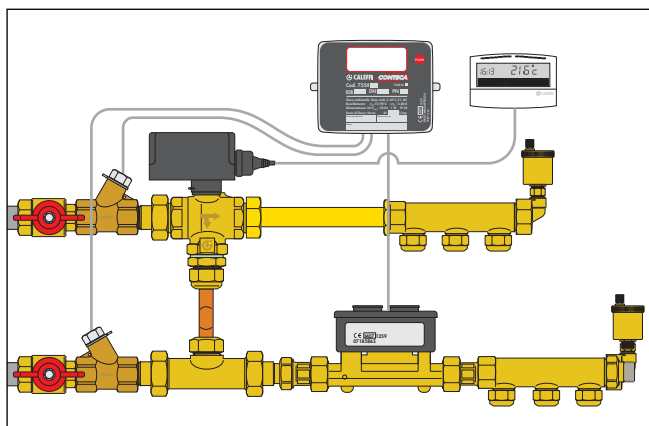
### Technical specifications

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

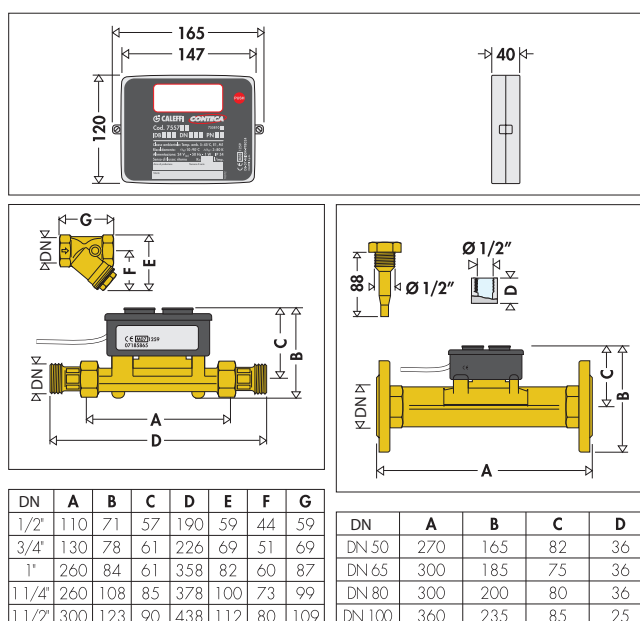
### Ultrasonic flow meter

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



## Technical specifications

<b>Temperature probes</b>				
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
<b>Flow metering portion</b>				
Dimensions/Connection			1/2"–1 1/2"	DN 50–DN 100
Body			Brass	Steel FE510
Type of hydraulic connection			<b>Male union ISO 228</b>	<b>Flanged PN 16 ISO 1092-1</b>
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 <sub>p</sub>	l/h		see table 1 and 2
Minimum flow rate	Q <sub>i</sub>	l/h		see table 1 and 2
Electric supply				lithium battery, life 12 years
<b>Microprocessor calculation unit</b>				
Metrological specifications				<b>in compliance with EN 1434-1 - MID 2004/22/EC</b>
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 <sub>i</sub> (l/h)	Q <sub>p</sub> (mc/h)	Q <sub>p</sub> /Q <sub>i</sub>
<b>755704</b>	1/2"	6	1,5	250
<b>755705</b>	3/4"	10	2,5	250
<b>755706</b>	1"	35	3,5	100
<b>755707</b>	1 1/4"	24	6	250
<b>755708</b>	1 1/2"	40/100 *	10	250/100 *

\* vertical installation

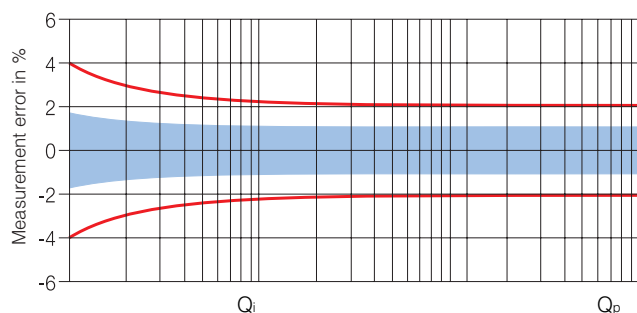
**TAB 2 – Flow rate limits – Connections from DN 50 to DN 100:**

2 weld sleeves with brass pocket

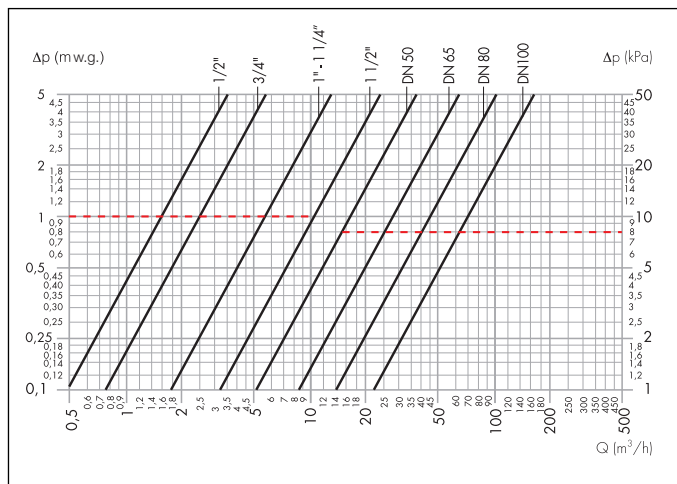
Code	Connections	Q <sub>i</sub> (l/h)	Q <sub>p</sub> (mc/h)	Q <sub>p</sub> /Q <sub>i</sub>
<b>755709</b>	DN 50	60*/150	15	100*/250
<b>755710</b>	DN 65	250	25	100
<b>755711</b>	DN 80	400	40	100
<b>755712</b>	DN 100	600	60	100

\* 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
<b>Kv</b>	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**

- |                     |                                       |   |
|---------------------|---------------------------------------|---|
| <b>1</b> - <b>2</b> | Centralised electric supply 24 V (ac) |   |
| <b>3</b> - <b>5</b> | Polarised transmission bus            | <b>3 Tx</b> (Transmission)<br><b>5 Rx</b> (Reception) |

For the transmission bus, use an unshielded 2 x 1 mm<sup>2</sup> 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

- |                       |  |
|-----------------------|--|
| <b>21</b> - <b>23</b> | Remote heating units totalizer output (kWh) (OC Type)  |
| <b>21</b> - <b>22</b> | Remote refrigeration units tot. output (kWh) (OC Type) |
| <b>□</b> - <b>□</b>   |  |

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  $\Delta T$ ) 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



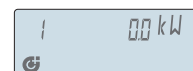
### 3st pulse consumption



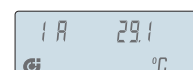
### Flow rate



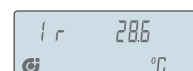
### Power



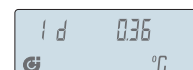
### Flow temperature



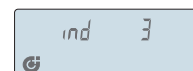
### Return temperature



### Temperature difference



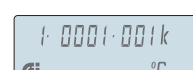
### Bus network address



### Anti-tamper No. of openings



### Programming parameters



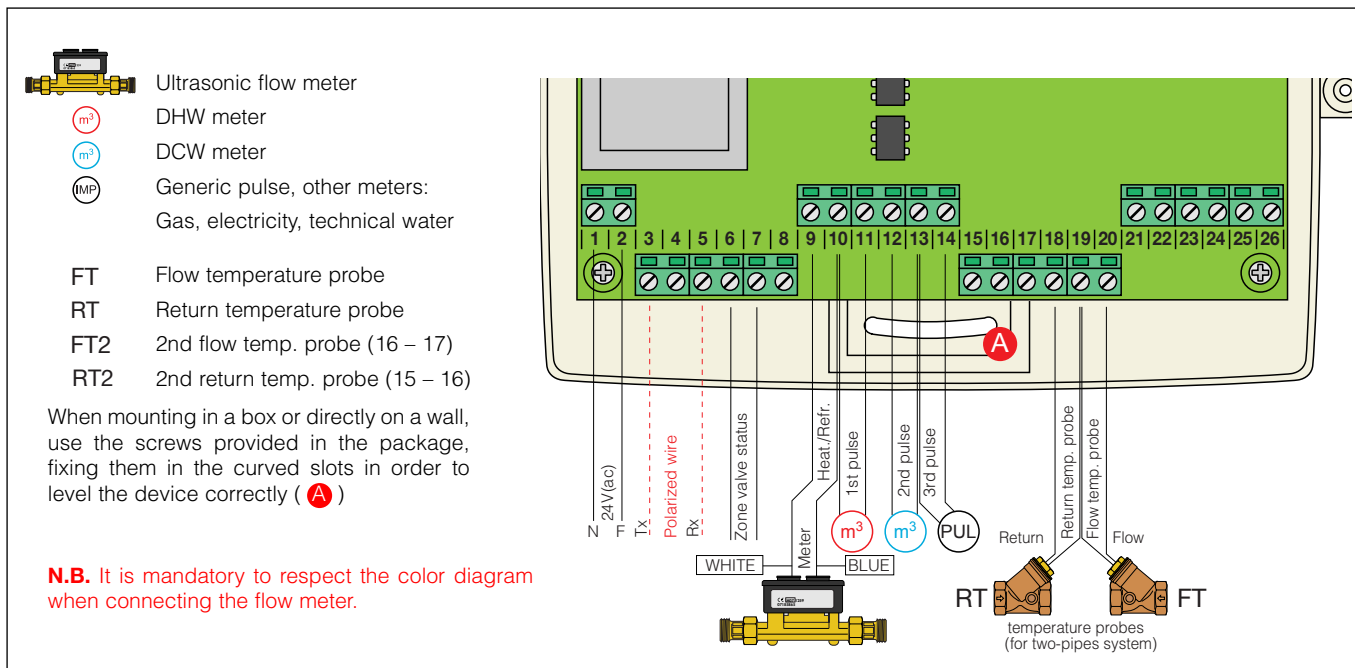
### CKSUM



### Segment test



## CONTECA meter electrical connections



### 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
19	20	Flow temperature probe
18	19	Return temperature probe

Terminal 9:  
**WHITE** wire  
 Terminal 10:  
**BLUE** wire

#### 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)

#### 2) Pulse collection (Type OA-OC)

##### 2.1) Single pulse meter

10	11	DHW or DCW	(1st pulse consumption)
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## 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.

We reserve the right to change our products and their relevant technical data, contained in this publication, at any time and without prior notice.