



# **Commercial and Domestic Ultrasonic Heat Meter Range**

## **Instructions for Installation and Operation**

# Contents

1	General information .....	4
1.1	About this Installation and User Guide .....	4
1.2	Validity .....	4
1.3	Safety .....	4
1.4	Warranty .....	4
1.5	Symbols .....	4
2	Technical data .....	5
2.1	Product description.....	5
2.1.1	Product characteristics.....	5
2.1.2	Specification .....	5
2.1.3	Product structure .....	5
2.1.4	Communications .....	5
2.1.5	Scope of delivery .....	6
2.2	Flow sensor accuracy .....	8
2.3	Domestic Meters: RC 15-40 .....	8
2.3.1	Product structure .....	8
2.3.2	Dimensions.....	9
2.3.3	Technical details.....	10
2.3.4	Pressure loss .....	11
2.4	Commercial Meters: RC 50-100 .....	11
2.4.1	Product structure .....	11
2.4.2	Dimensions.....	12
2.4.3	Technical Details .....	12
2.4.4	Pressure Loss.....	13
2.5	Commercial Meters: RC 125-600 .....	14
2.5.1	Product structure .....	14
2.5.2	Dimensions.....	15
2.5.3	Technical Details .....	15
2.5.4	Pressure Loss.....	16
3	Installation .....	17
3.1	Installation precautions .....	17
3.1.1	Installation position .....	17
3.2	Installing the flow sensor and calculator with LCD display.....	19
3.2.1	Domestic Meters: RC 15-40 with threaded connections.....	19

3.2.2	Commercial Meters: RC 50-600 with flanged connections .....	20
3.3	Installing the temperature sensors.....	20
3.3.1	Domestic Meters: RC 15-40 .....	22
3.3.2	Commercial Meters: RC 50-100 .....	22
3.3.3	Commercial Meters: RC 125-600.....	22
4	Operation .....	23
4.1	Beginning flow through the meter.....	23
4.2	LCD display operating instructions .....	23
4.2.1	Display Instructions.....	24
5	Troubleshooting.....	26
Appendix 1	Meter Interface Board (MIB) Installation Instructions.....	27

# 1 General information

## 1.1 About this Installation and User Guide

The information contained in this Installation and User Guide refers to Evinox Energy's range of domestic class 2 Measuring Instruments Directive (MID) approved and commercial ultrasonic heat meters. This guide describes the installation and operation of Evinox Energy's heat meter range.

## 1.2 Validity

The information contained in this version of the Installation and User Guide is valid at the time of its release which is shown at the beginning of the guide.

Evinox reserves the right to modify any characteristics of its equipment without prior notice as part of continuing product development.

## 1.3 Safety

Failure to read and follow the instructions provided within this document may cause potential injury or failure of the equipment.

## 1.4 Warranty

Any modifications or adjustments carried out without official confirmation from Evinox Energy will invalidate the warranty and absolve Evinox Energy of any liability.

## 1.5 Symbols

The following symbols are used in this manual:



**IMPORTANT NOTE REGARDING CORRECT INSTALLATION**



**IMPORTANT NOTE REGARDING PERSONAL SAFETY AND CARE**

---

## 2 Technical data

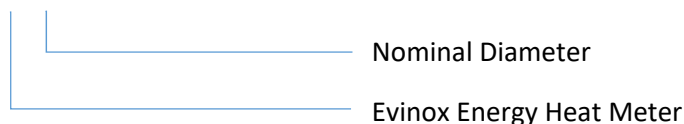
### 2.1 Product description

#### 2.1.1 Product characteristics

The Evinox Energy ultrasonic heat meter is used for recording billing data for communal and district heating and cooling systems. The Evinox Energy heat meter measures the volume of communal or district heating or cooling water circulating through the system and the difference between input and output temperatures, calculating the consumed energy.

#### 2.1.2 Specification

RC ☐



#### 2.1.3 Product structure

Evinox Energy heat meters comprise the following major components;

- Flow sensor with arrow indicating direction of flow
- Calculator with LCD display
- Paired probe temperature sensors
- Temperature sensor pocket(s) and fittings (depending upon model)

#### 2.1.4 Communications

Evinox Energy heat meters are standalone systems able to collect consumptions and show them on the display.

Each meter is also available with remote reading functionality by either RS485 or M-Bus serial interfaces.

#### **RS485**

Cable: 4 x 0.75mm<sup>2</sup> shielded

Wire colours: Black = GND  
Red = 5 V  
Green = A+  
White = B-

#### **M-Bus**

Cable: 2 x 0.75 mm<sup>2</sup> shielded pair with each bus distance no greater than 1500m.







Wire Colours: Green = A+  
White = B-

M-Bus concentrator conforms to GB/T26831.2 standards and communication baud rate is 600-4800bps.

### 2.1.5 Scope of delivery

The scope of delivery table below outlines the components supplied as standard with order of Evinox Energy heat meters.

Please refer to section 3 Installation for full installation instructions.

	<i>For installation of flow sensor and flow sensor's temperature sensor</i>			<i>Additional components for installation of system pipework's temperature sensor</i>			
Evinox Energy Heat Meter	<ul style="list-style-type: none"> <li>Flow sensor (connections)</li> <li>Calculator with LCD display</li> <li>Paired probe temperature sensors ¾" BSP M connection</li> <li>2 x plastic ratchet security seal</li> </ul>	2 x flow sensor reducing couplings (connections)	Pockets supplied for paired probe temperature sensor	Isolation valve with G¾" BSP wet sensor pocket (connections)	G½" x G¾" BSP M/F wet pocket bush <sup>1</sup>	½" dry pocket for welding into pipe	G½" BSP M dry sensor pocket with G½" BCP F half socket for welding into pipework
Photos							
RC-15	✓ G¾" BSP M/M	✓ G¾" x G½" BSP F/M	✓ wet	✓ G¾" BSP F/F	✓	×	×
RC-20	✓ G1" BSP M/M	✓ G1" x G¾" BSP F/M	✓ wet	✓ G1" BSP F/F	✓	×	×
RC-25	✓ G1¼" BSP M/M	✓ G1¼" x G1" BSP F/M	✓ wet	✓ G1¼" BSP F/F	✓	×	×
RC-32	✓ G1½" BSP M/M	✓ G1½" x G1¼" BSP F/M	✓ wet	✓ G1½" BSP F/F	✓	×	×
RC-40	✓ G2" BSP M/M	✓ G2" x G1½" BSP F/M	✓ wet	×	✓	×	×
RC-50	✓ 4-M16	×	✓ wet	×	optional	optional	✓
RC-65	✓ 4-M16	×	✓ wet	×	optional	optional	✓
RC-80	✓ 8-M16	×	✓ wet	×	optional	optional	✓
RC-100	✓ 8-M16	×	✓ dry	×	×	×	✓
RC-125	✓ 8-M16	×	✓ dry	×	×	×	✓
RC-150	✓ 8-M20	×	✓ dry	×	×	×	✓
RC-200	✓ 12-M20	×	✓ dry	×	×	×	✓
RC-250	✓ 12-M24	×	✓ dry	×	×	×	✓

For installation of flow sensor and flow sensor temperature sensor				Additional components for installation of temperature sensor in system pipework			
Evinox Energy Heat Meter	<ul style="list-style-type: none"> <li>• Flow sensor (connections)</li> <li>• Calculator with LCD display</li> <li>• Paired probe temperature sensors ¼" BSP M connection</li> <li>• 2 x plastic ratchet security seal</li> </ul>	2 x flow sensor reducing couplings (connections)	Pockets supplied for paired probe temperature sensor	Isolation valve with G¼" BSP wet sensor pocket (connections)	G½" x G¼" BSP M/F wet pocket bush <sup>1</sup>	½" dry pocket for welding into pipe	G½" BSP M dry sensor pocket with G½" BCP F half socket for welding into pipework
RC-300	✓ 12-M24	×	✓ dry	×	×	×	✓
RC-350	✓ 16-M24	×	✓ dry	×	×	×	✓
RC-400	✓ 16-M27	×	✓ dry	×	×	×	✓
RC-450	✓ 20-M27	×	✓ dry	×	×	×	✓
RC-500	✓ 20-M30	×	✓ dry	×	×	×	✓
RC-600	✓ 20-M33	×	✓ dry	×	×	×	✓

✓ Included with Evinox Energy heat meter

×

Not included with Evinox Energy heat meter

<sup>1</sup> G¾" x G¼" BSP M/F wet pocket bush available upon request

## 2.2 Flow sensor accuracy

In accordance with the Measuring Instruments Directive (MID) (2004/2/EC) and BS EN 1434-1:2007 “Heat Meters – Part 1: General Requirements”, flow sensors of heat meters and complete heat meters belong to one of the following three accuracy classes: Class 1, Class 2 and Class 3.

The Evinox Energy domestic heat meter range belong to **Class 2 accuracy**. Whereby,

$$E_f = \pm (2 + 0.02 q_p/q), \text{ but not more than } \pm 5\%$$

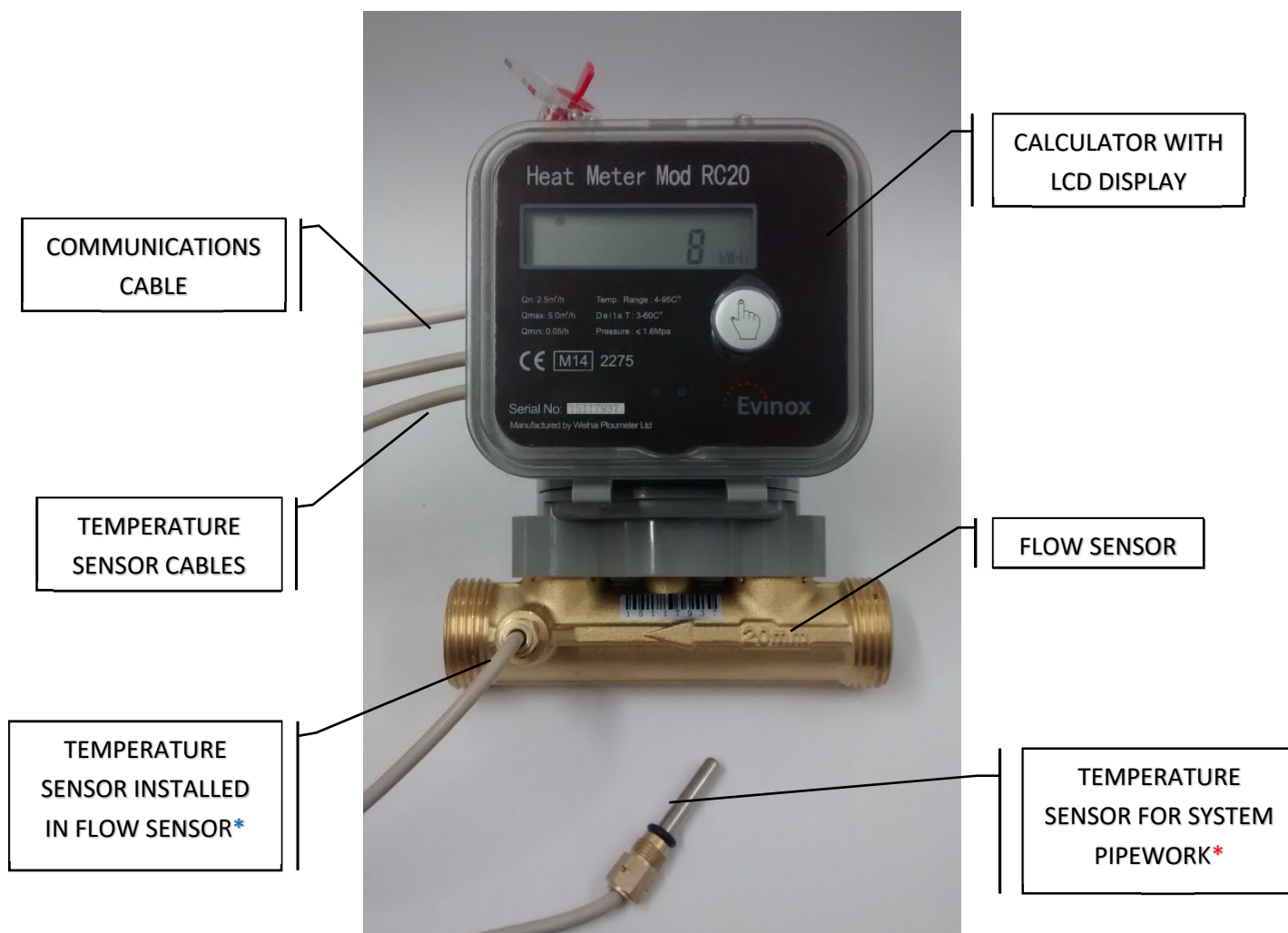
Where the flow sensor error,  $E_f$ , relates the indicated volume of the flow sensor output signal of mass or volume,  $q_p$ , to the conventional true value,  $q$ .

## 2.3 Domestic Meters: RC 15-40

### 2.3.1 Product structure

Evinox Energy MID approved Class 2 domestic heat meter range are available in fixed head and remote head models.

#### Fixed Head Model



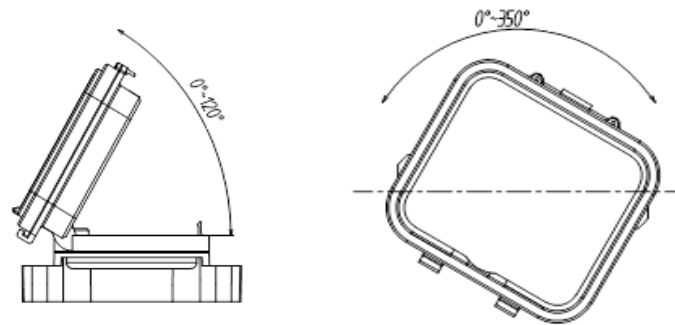
Temperature sensor cables length: 1.5m / Communications cable length: 1.5m

\*Temperature sensor with the **Red Label** must be fitted on the **Flow**

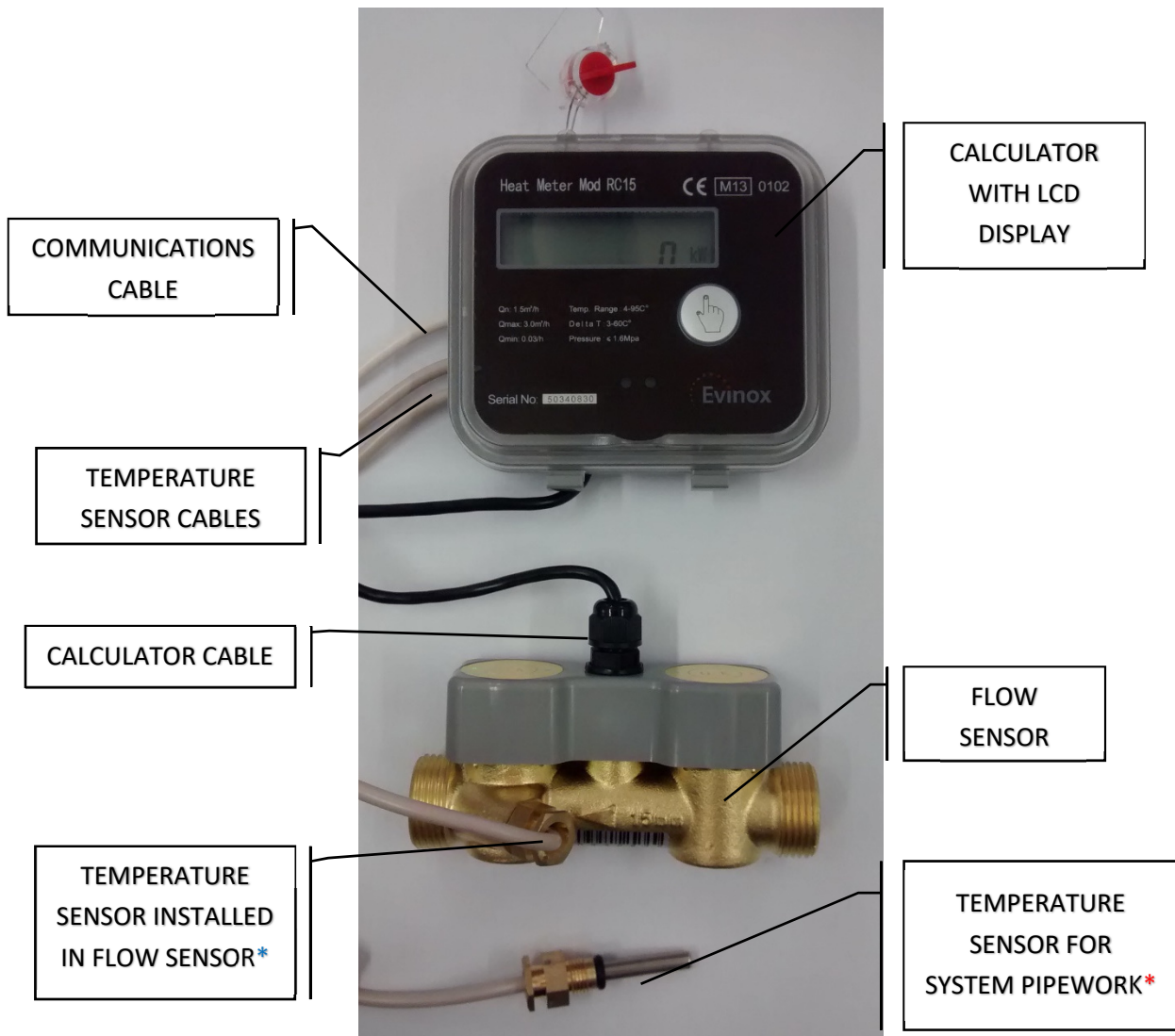
\*Temperature sensor with the **Blue Label** must be fitted on the **Return**



The fixed head meter display is rotatable on two axis, as shown below.



### Remote head Model

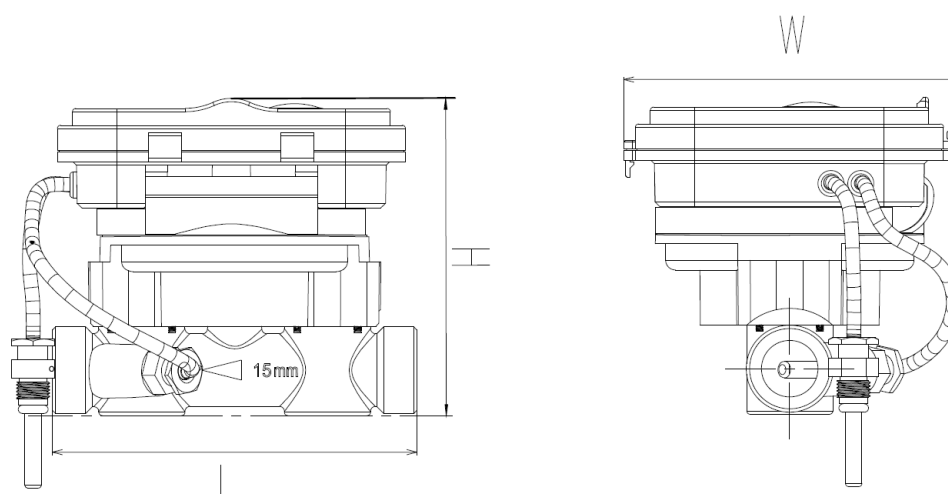


Temperature sensor cables length: 1.5m / Communications cable length: 1.5m / Calculator cable length: 1.3m

\*Temperature sensor with the **Red Label** must be fitted on the **Flow**

\*Temperature sensor with the **Blue Label** must be fitted on the **Return**

### 2.3.2 Dimensions

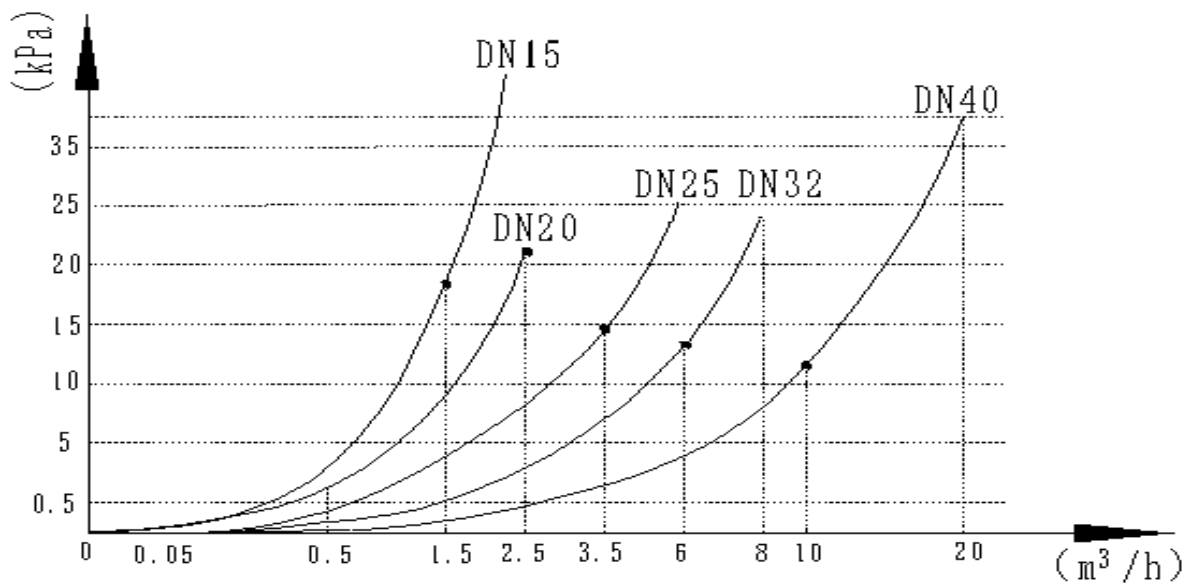


Evinox Energy Heat Meter	RC-15	RC-20	RC-25	RC-32	RC-40
L (mm)	110	130	160	180	200
W (mm)	101	101	101	101	101
H (mm)	75	78	81	84	88
connections	G ¾" M BSP	G1" M BSP	G1 ¼" M BSP	G1 ½" M BSP	G2" M BSP

### 2.3.3 Technical details

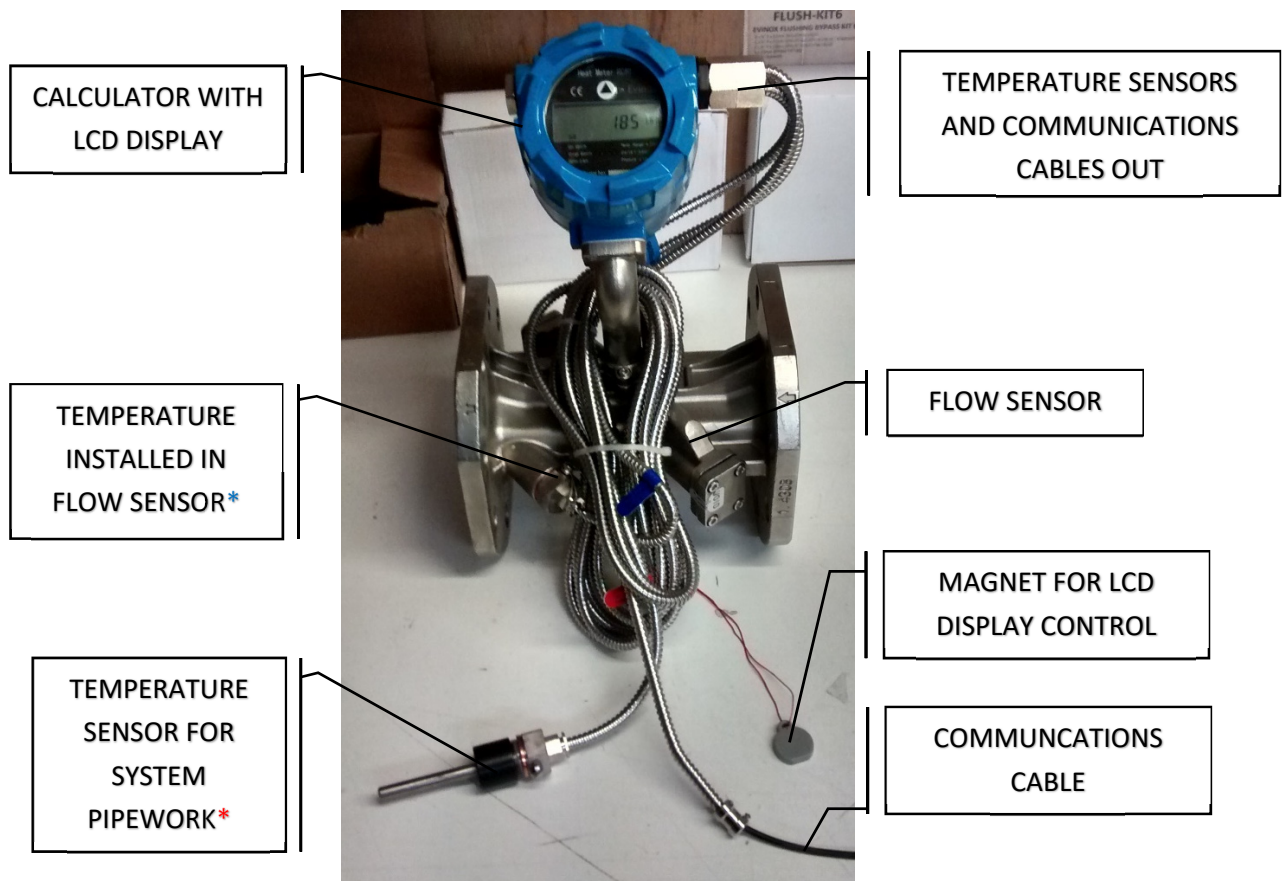
Evinox Energy Heat Meter	RC 15	RC 20	RC 25	RC 32	RC 40
nominal diameter (mm)	15	20	25	32	40
max. flow rate (m³/h)	3	5	7	12	20
nominal flow rate (m³/h)	1.5	2.5	3.5	6	10
min. flowrate (m³/h)	0.03	0.05	0.07	0.12	0.20
max. reading number (flow rate) (m³/h)	999999.99				
max. reading number (heating) (kWh)	99999999				
accuracy class	class 2 MID approved				
pressure loss	refer 2.3.4 Pressure loss				
max working pressure	1.6 MPa (PN16)				
starting temperature difference	0.25 K				
IP grade	IP65				
temperature range	4 – 95 °C				
temperature difference range	3 – 60 °C				
environment temperature	5 - 55 °C				
storage temperature	(-30) – 55 °C				
power supply	3.6 V lithium battery or external 5V DC RS485 ModBus (auto switching)				
battery life	10> years				
installed method	horizontal or vertical installation				
heating (cooling) medium	water				
temperature sensor	PT1000 platinum resistance				
max. temperature deviation of sensor pair	<0.1 °C				
reaction time of probe sensors	3 sec.				

### 2.3.4 Pressure loss



## 2.4 Commercial Meters: RC 50-100

### 2.4.1 Product structure



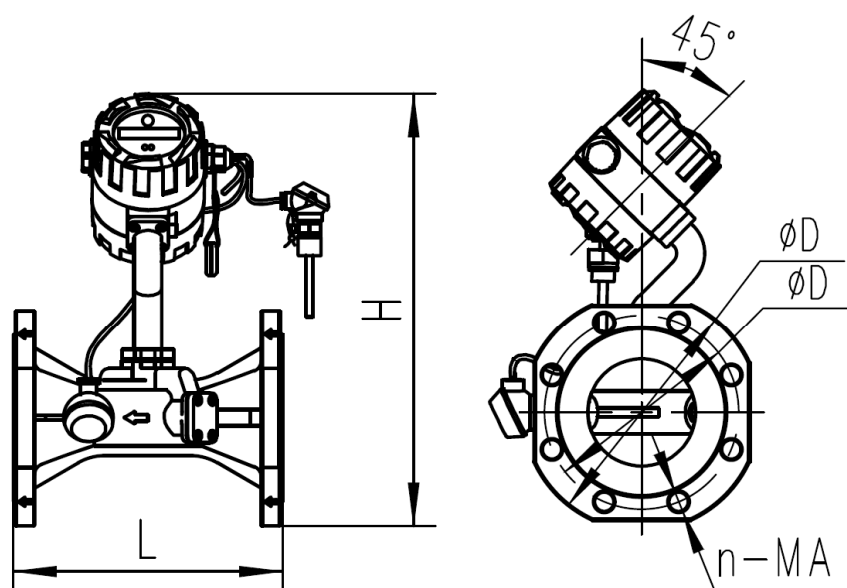
Temperature sensor cables length: 1.5m

Please Note: Flow and return sensor cables up to 10m are available on request. Both sensor cables must be the same length at all times to ensure accuracy of readings.

\* Temperature sensor with the **Red Label** must be fitted on the **Flow**

\* Temperature sensor with the **Blue Label** must be fitted on the **Return**

## 2.4.2 Dimensions

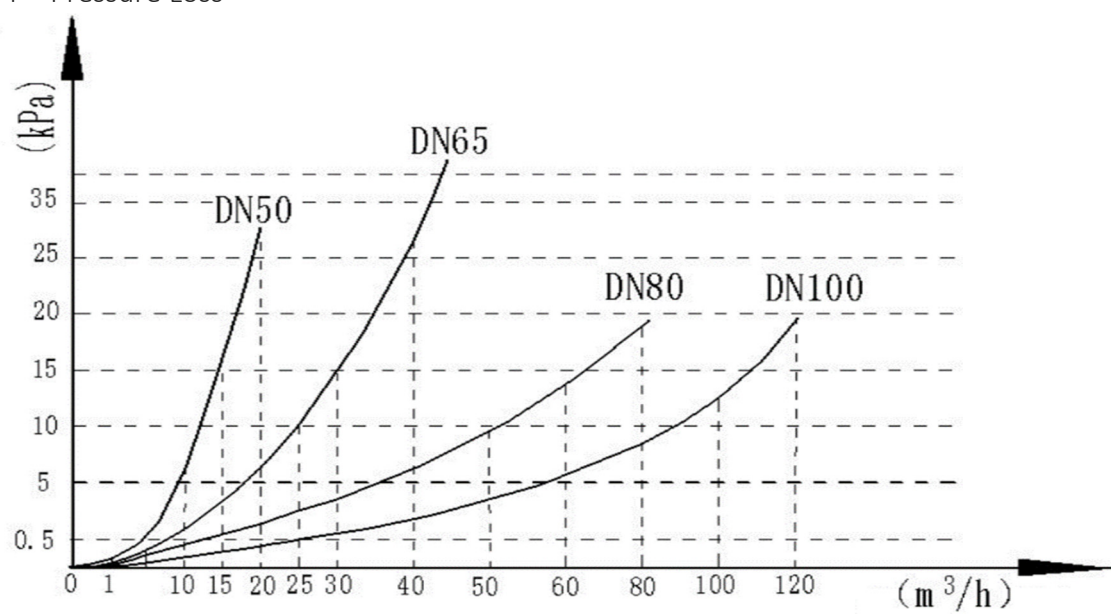


Evinox Energy Heat Meter	RC 50	RC 65	RC 80	RC 100
L (mm)	200	200	225	250
D (mm)	165	185	200	220
H (mm)	350	370	400	420
K (mm)	125	145	160	180
connections (n-MA)	4-M16	4-M16	8-M16	8-M16

## 2.4.3 Technical Details

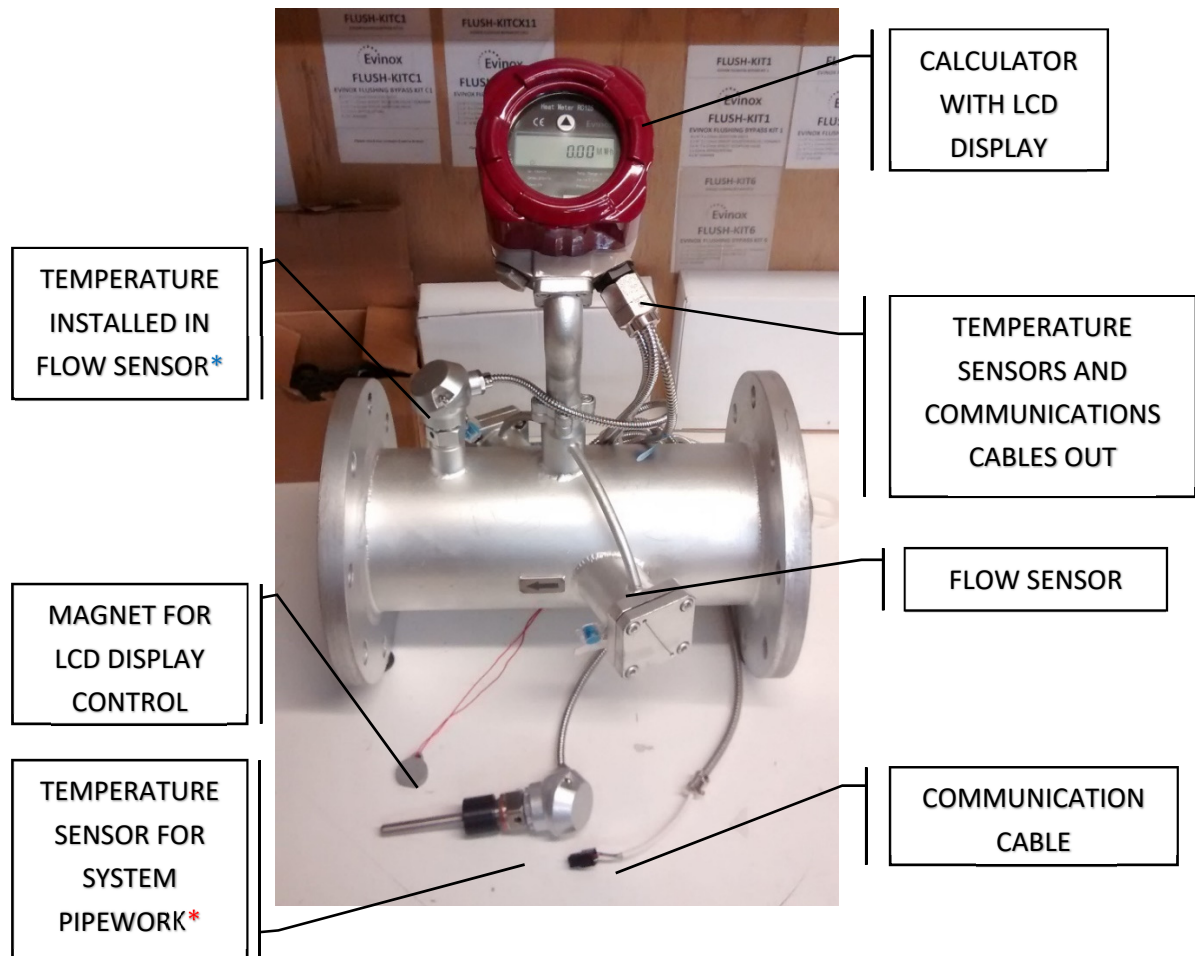
Evinox Energy Heat Meter	RC 50	RC 65	RC 80	RC 100
nominal diameter (mm)	50	65	80	100
max. flow rate (m <sup>3</sup> /h)	30	50	80	120
nominal flow rate (m <sup>3</sup> /h)	15	25	40	60
min. flowrate (m <sup>3</sup> /h)	0.3	0.5	0.8	1.2
weight (kg)	7	8	11	14
max. reading number (flow rate) (m <sup>3</sup> /h)	9999999.9			
max. reading number (heating) (kWh)	99999999			
accuracy class	class 2			
pressure loss	Refer 2.4.4 Pressure Loss			
max working pressure	1.6 MPa (PN16)			
starting temperature difference	0.25 K			
IP grade	IP68			
temperature range	4 – 130 °C			
temperature difference range	3 – 60 °C			
environment temperature	5-55 °C			
storage temperature	(-30) – 55 °C			
power supply	3.6 V lithium battery or external 5V DC RS485 ModBus (auto switching)			
battery life	10> years			
installed method	horizontal or vertical installation			
heating (cooling) medium	water			
temperature sensor	PT1000 platinum resistance			
max. temperature deviation of sensor pair	<0.1 °C			
reaction time of probe sensors	3 sec.			

#### 2.4.4 Pressure Loss



## 2.5 Commercial Meters: RC 125-600

### 2.5.1 Product structure



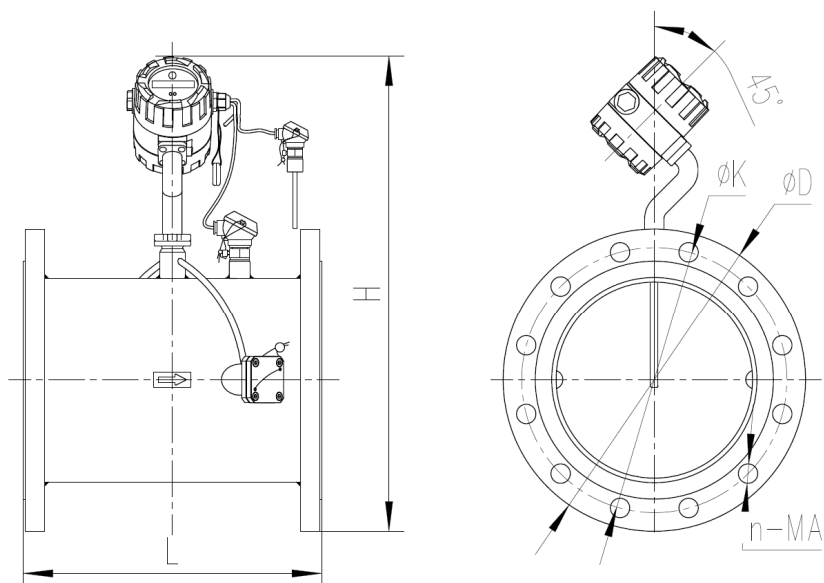
*Temperature sensor cables length: 1.5m*

*Please Note: Flow and return sensor cables up to 10m are available on request. Both sensor cables must be the same length at all times to ensure accuracy of readings.*

\* Temperature sensor with the **Red Label** must be fitted on the **Flow**

\* Temperature sensor with the **Blue Label** must be fitted on the **Return**

## 2.5.2 Dimensions



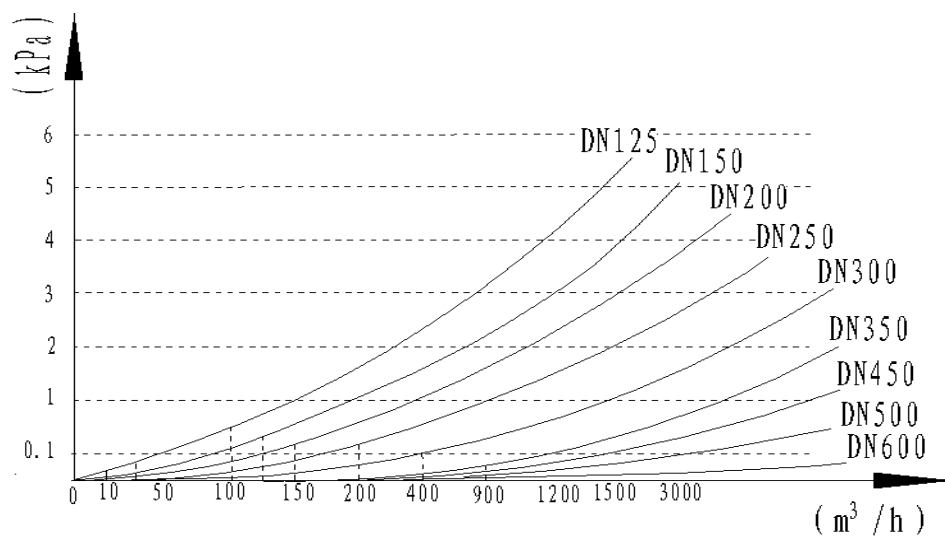
Evinox Energy Heat Meter	RC 125	RC 150	RC 200	RC 250	RC 300	RC 350	RC 400	RC 450	RC 500	RC 600
L (mm)	350	30	350	400	450	500	550	600	650	650
D (mm)	250	285	340	405	460	520	580	640	715	840
H (mm)	500	530	580	650	700	755	810	870	930	1070
K (mm)	210	240	295	355	410	470	525	585	650	770
connections (n-MA)	8-M16	8-M20	12-M20	12-M24	12-M24	16-M24	16-M27	20-M27	20-M30	20-M33

## 2.5.3 Technical Details

Evinox Energy Heat Meter	RC 125	RC 150	RC 200	RC 250	RC 300	RC 350	RC 400	RC 450	RC 500	RC 600
nominal diameter (mm)	125	150	200	250	300	350	400	450	500	600
max. flow rate (m³/h)	200	300	500	800	1200	1600	2000	2600	3200	4600
nominal flow rate (m³/h) (q <sub>p</sub> )	100	150	250	400	600	800	1000	1300	1600	2300
min. flowrate (m³/h)	2	3	5	8	12	16	20	26	32	46
weight (kg)	17	20	30	45	75	100	130	150	190	270
max. reading number (flow rate) (m³/h)	99999999									
max. reading number (heating) (kWh)	999999.99									
accuracy class	class 2									
pressure loss	Refer 2.5.4 Pressure Loss									
max working pressure	1.6 MPa (PN16)									
starting temperature difference	0.25 K									
IP grade	IP68									
temperature range	4 – 130 °C									
temperature difference range	3 – 60 °C									
environment temperature	5 - 55 °C									

storage temperature	(-30) – 55 °C
power supply	3.6 V lithium battery or external 5V DC RS485 ModBus (auto switching)
battery life	10> years
installed method	horizontal or vertical installation
heating (cooling) medium	water
temperature sensor	PT1000 platinum resistance
max. temperature deviation of sensor pair	<0.1 °C
reaction time of probe sensors	3 sec.

#### 2.5.4 Pressure Loss





## 3 Installation

### 3.1 Installation precautions



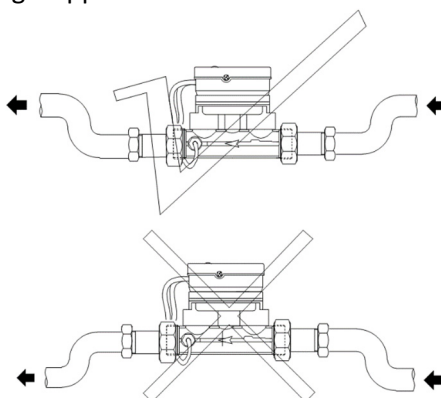
- **This installation guide is intended for trained personal. If uncertainties in instruction exist, contact Evinox Energy or an appropriately trained contractor.**
- **All instructions in the installation guide must be observed.**
- **Heat meters have sensitive electrical and mechanical components and must be handled with care.**
  - Handle calculator gently
  - Do not pull on calculator and sensor cables
- **Heat meters must be calibrated regularly in accordance with national standards**

#### 3.1.1 Installation position



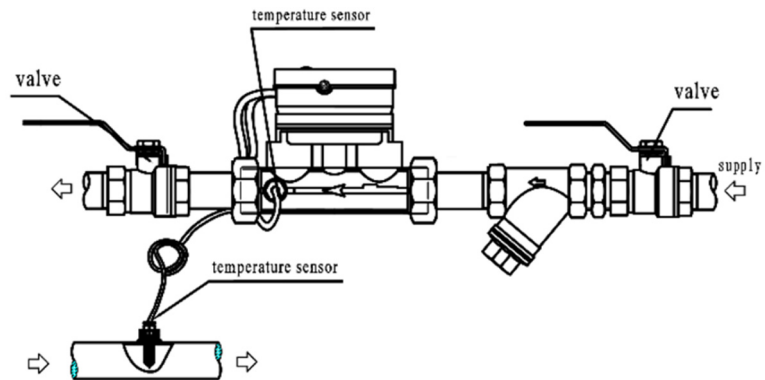
**The information presented in this section is for all models of Evinox Energy heat meters (domestic and commercial models, RC 15-600).**

- The meter should be installed in a location accessible for operation and servicing.
- The flow direction through the flow sensor must be in the direction indicated by an arrow on the side of the flow sensor.
- When the heat meter is installed on a U-shaped pipe section, it must be installed at the low point. Installation at the highpoint of the U-shaped pipe section may impact measuring accuracy due to air becoming trapped in the meter.

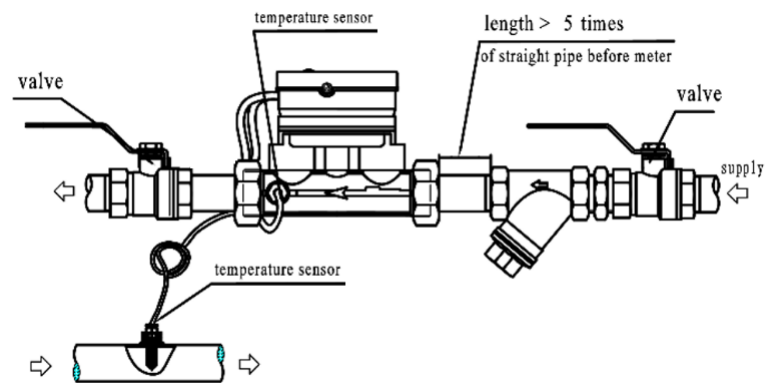


- Heat meter should be fitted with filter before heat meter to protect the meter from debris and impurities. Isolation valves should be fitted on either side of the heat meter and filter, for heat meter and filter maintenance.

**RC 15-40:** There is no requirement for straight pipe before or after the meter.



**RC 50-600:** Pipe before the heat meter should be straight with a length greater than 5 times the pipe's diameter. This section of pipe should also not contain confluence between two streams (such as a T-joint). There is no requirement for straight pipe after the meter.



- If the heat meter is installed outdoors it should be protected from environment damage and tampering and/or vandalism.

## 3.2 Installing the flow sensor and calculator with LCD display

---



If there is a risk of condensation e.g. in chilled water systems, insulation should be used to limit airflow around the heat meter.

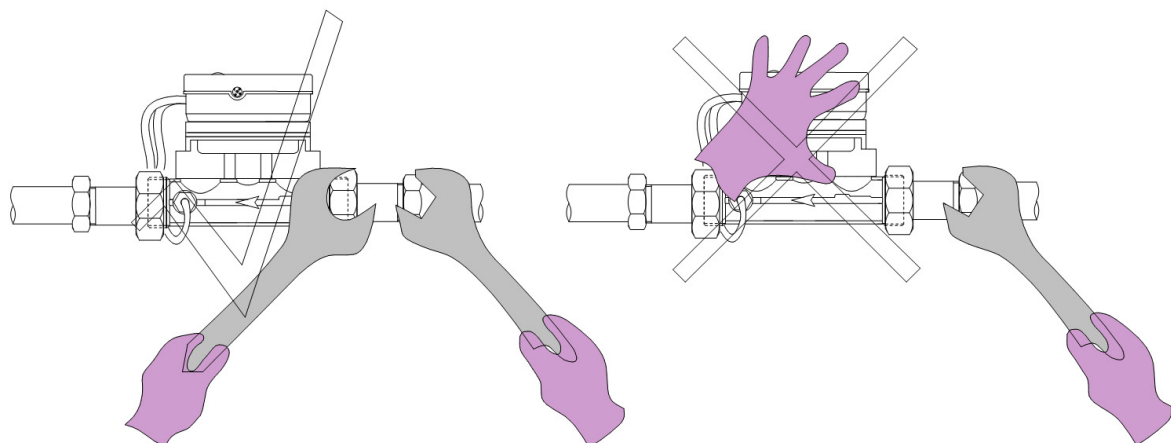
---

### 3.2.1 Domestic Meters: RC 15-40 with threaded connections

#### Fixed head meters

Install flow sensor, utilising supplied reducing couplings as required, using a wrench to tighten the nuts.

Do not lever the calculator while tightening as this may result in damage to the calculator.



#### Remote head heat meter

Install flow sensor, utilising supplied reducing couplings as required, using a wrench to tighten the nuts.

The calculator with LCD display can be mounted using the supplied mount or DIN rail.



### 3.2.2 Commercial Meters: RC 50-600 with flanged connections

---



**Installation may only be carried out by a qualified installer**

---

When removing heat meter from packaging, pay close attention to the following safety procedure:

- Use approved lifting chains / straps with safety hooks
- Make sure that the lifting chains / straps are tight before lifting the loads
- Do not stand under the load
- Make sure the heat meter can move freely

Qualified installer to install heat meter flow sensor in accordance with local standards and regulations.

The direction of the heat meter calculator with LCD display can be changed for improved accessibility for operation and servicing.

### 3.3 Installing the temperature sensors

Evinox Energy heat meters are supplied with paired temperature sensors to be installed in the following positions.

1. In flow sensor; and
2. In system pipework

The temperature sensor is installed in system pipework where required and may be installed using the supplied isolation valve or pocket depending upon the model of heat meter provided. To determine what components are supplied with each model please refer to 2.1.5.

Cable	2 x 0.75mm <sup>2</sup> shielded pair with each bus distance no greater than 1500m.
Wire Colours	Green = A+
	White = B-

M-Bus concentrator conforms to GB/T26831.2 standards and communication baud rate is 600-4800bps/

Each pair of temperature sensors has,

1. One temperature sensor with red label; and
2. One temperature sensor with blue label.

The position of installation of temperature sensors depends upon the application and location of flow sensor installation.

		Temperature sensor installation position	
Application	Flow sensor installation position	Red label	Blue label
Heating	Flow	Flow sensor	System pipework
Heating	Return	System pipework	Flow Sensor
Cooling	Flow	Flow sensor	System pipework
Cooling	Return	System pipework	Flow Sensor

Sensors are supplied with cables 1.5m in length, the length of these cables should not be altered. Sensors must be replaced in pairs. Replacing temperature sensors with those from different manufacturers or not replacing the sensors in pairs will impact the accuracy of the meter.

*(Please note: Flow and return sensor cables up to 10m are available on request. Both sensor cables must be the same length at all times to ensure accuracy of readings)*

Temperature sensor should be installed the position to most effectively measure the average water temperature within the pipe.

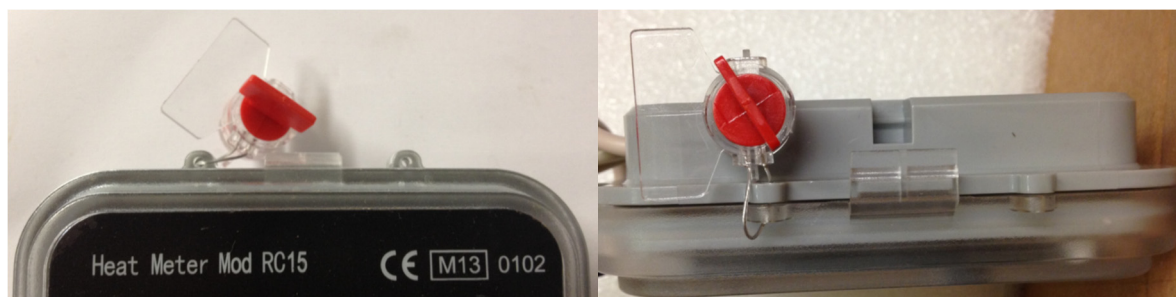
Always use Evinox supplied components.



**The accuracy of measurement is sensitive to the temperature sensor installation, including the temperature sensor size, pipeline diameter and sensor depth**

**To ensure heat meter accuracy only used original components supplied by Evinox Energy and according to instructions outlined here.**

Each temperature sensor is supplied with tamperproof plastic ratchet security seals to prevent the prohibited removal of the temperature sensors. If prohibited access is obtained, the seal will shatter leaving clear evidence of tampering.



### 3.3.1 Domestic Meters: RC 15-40

#### 1. In flow sensor

Installed directly into the flow sensor wet pocket.

#### 2. In system pipework

The temperature sensor has ¼" BSP thread and can be installed into pipework in the following ways,

1. G¾"-G1½" BSP F/F Isolation valve wet pocket



2. G½" x G ¼" BSP M/F wet pocket bush

### 3.3.2 Commercial Meters: RC 50-100

#### 1. In flow sensor

Installed directly into the flow sensor wet pocket.

#### 2. In system pipework

The temperature sensor has ¼" BSP thread and can be installed into pipework in the following ways,

1. ½" dry pocket welded into pipe
2. G½" x G ¼" BSP M/F wet pocket bush

To improve measurement accuracy Evinox recommend using the wet pocket option where practical in order to minimise difference in performance between paired sensors

### 3.3.3 Commercial Meters: RC 125-600

The temperature sensor is supplied fitted in G½ BSP M dry pocket.

#### 1. In flow sensor

Provided G½ BSP M dry pocket installed into flow sensor.

#### 2. In system pipework

Provided G½" BSP M dry pocket installed into provided G½" half socket welded into pipework.



**Before beginning flow through the meter, please refer to instructions in section 4.1 Beginning flow through the meter**

---

## 4 Operation

### 4.1 Beginning flow through the meter

---



**Prior to operation of the flow sensor the system must be flushed and clean from dirt and other contaminants. Filters in the system should be checked and cleaned regularly and replaced when necessary.**

---

Once the heat meter has been installed, to begin flow through the heat meter, open isolation valves in the following sequence:

1. Open isolation valve on inlet side to heat meter slowly
  2. Open isolation valve on outlet side of heat meter slowly
  3. Open isolation valves in back water pipelines
- 



**Isolation valves must be opened slowly and carefully. Opening the valves quickly may cause water hammer and result in damage to the heat meter and components.**

---

### 4.2 LCD display operating instructions

Evinox heat meters are supplied with two different models of calculator with LCD display depending on the model of heat meter supplied.

- RC 15-40: Calculator LCD display with push button to switch the LCD display interface
- RC 50-600: Calculator LCD display which uses a magnet placed upon the display to switch the LCD display interface

For the purpose of the following instructions pushing of the push button or placing the magnet against the display are referred to as 'triggering' the display

#### 4.2.1 Display Instructions

1. Trigger the display for 3 seconds to switch between display menu A1-A2-A3.
2. Within each menu, scroll through menu content by short triggering of the display

##### Menu A1:

1. Consumed heating energy (RC 15-100: kWh, RC 125-600: MWh)
2. Consumed cooling energy ((RC 15-100: kWh, RC 125-600: MWh)
3. Instantaneous power (RC 15-100: kW, RC 125-600: MW)
4. Inlet water temperature (°C)
5. Outlet water temperature (°C)
6. Inlet and outlet water temperature differential (°C)
7. Total volume (m<sup>3</sup>)
8. Instantaneous flow rate (m<sup>3</sup>/h)
9. Total running time (h)
10. Total time in error (h)

##### Menu A2:

11. Current date
12. Serial number
13. Display testing










##### Menu A3:

14. Consumed heat and flow rate value of each month within the first 18 months

Failure alarm: battery lack of electricity and failure automatic diagnosis.





















### main display menu A1

	3682 kW·h	accumulation heat
	580 kW·h	accumulation cold
	528 kW	instant power
	56.2 °C	water temperature
	58.1 °C	temperature difference
	1008 m³	accumulation flow rate
	1009 m³/h	instant flow rate
	1720 h	accumulation running time
	0 h	accumulation error time

### main display menu A2

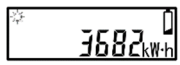

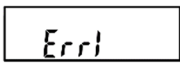
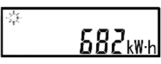
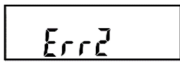
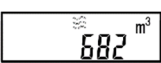
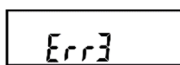
A2-1	↔	20080213	current date
A2-2	↔	24280221	serial number
A2-3	↔	88888888	display testing

### main display menu A3

08-02	↔	 731 kW·h	↔	 131 m³	this month accumulation heat    this month accumulation flow rate
08-01	↔	 1696 kW·h	↔	 696 m³	last month accumulation heat    last month accumulation flow rate
07-12	↔	 1255 kW·h	↔	 255 m³	
07-11	↔	 0 kW·h	↔	 0 m³	
07-10	↔	 0 kW·h	↔	 0 m³	
07-09	↔	 0 kW·h	↔	 0 m³	
07-08	↔	 0 kW·h	↔	 0 m³	
⋮		⋮		⋮	
06-10	↔	 0 kW·h	↔	 0.00 m³	
06-09	↔	 0 kW·h	↔	 0.00 m³	

## 5 Troubleshooting

The heat meter display alerts users to the following errors.

failure display	failure instruction	failure display	failure instruction
	lack of electricity		failure accumulation time
	calculation failure		recorded accumulation heat value before failure
	supply water temperature sensor failure		recorded accumulation flow rate value before failure
	back water temperature sensor failure		

In the case of further problems please consult the troubleshooting table below. If unable to solve problem, please contact Evinox Energy.

Fault	Cause	Remedy
No display	Lower battery power	Replace battery with battery of same specification.
	PCB damaged	Contact Evinox Energy for repairs/replacement.
Temperature range greater than actual testing range	Temperature sensor wire damaged	Find the broken position and connect and fasten it with waterproof tape
	Temperature sensor damaged	Replace temperature sensor pair.
No heat accumulation during heat supplying (cold valve accumulation)	Wrong position for supply and back water temperature sensor	Swap position of fixed and free temperature sensors.
	Supply water position heat meter installation on the back water pipeline	Please contact local distributor for treatment
Flow rate is too large	Water flow direction is not in accordance with direction arrow on flow sensor body.	Reinstall flow sensor in correct orientation.
Flow rate is zero	Closed isolation valve	Open the isolation valves
Flow rate is unstable	Ultrasonic detector is not on the horizontal plane during horizontal installation and air is trapped inside pipeline	Re-install heat meter and empty air inside of pipeline

## Appendix 1

### Meter Interface Board (MIB) Installation Instructions

The MIB is an interface to connect up to 2 meters to the Evinox ModuSat bus. All Meters connected to the board must have ModBus RS485 communication protocol and be approved by Evinox Energy Ltd.

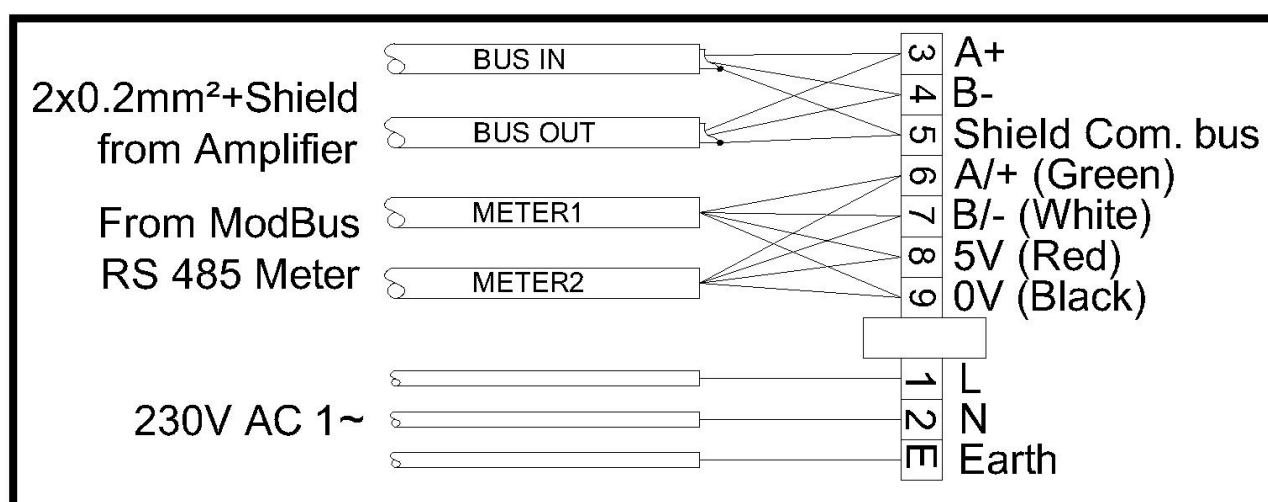
The cable from the Heat Meter should not exceed 10 metre length.



All wiring should conform to local codes and must be carried out by authorised personnel only.

- Keep high and low voltage wiring separated.
- When using multi-stranded wire apply a cable ferrule to the cable end.
- Make sure that the line power supply is in accordance with the power supply specified on the device.
- Check all wiring connections before applying power to the system.
- Contact with components carrying hazardous voltage can cause electric shock and may result in severe injury or death.
- Short-circuited or improperly connected wires may result in permanent damage to the equipment.
- Not adhering to these operational instructions could cause injury or damage the equipment.
- Retain this document

#### Wiring schematic:





Evinox reserves the right to make changes and improvements which may necessitate alteration to the specification without prior notice.

**Evinox Energy Ltd** T. +44 (0)1372 722277 E. [info@evinoxenergy.co.uk](mailto:info@evinoxenergy.co.uk) W. [www.evinoxenergy.co.uk](http://www.evinoxenergy.co.uk)

2551716D