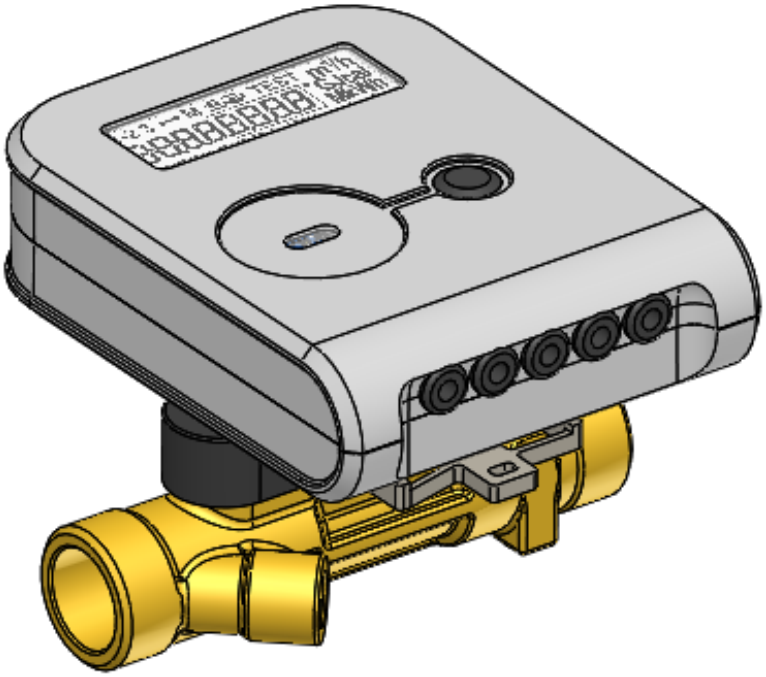
DATA SHEET



IFX-M4-E3

CE

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SAFETY REQUIREMENTS

Before operating the meter, this Technical Description and the User Manual must be read and their instructions must be observed.

- When the meter is powered from a battery (3.6 V), the risk to safe operation is posed only by the heat carrier, which may have a pressure of up to 2.5 MPa and a temperature of up to 130 °C.

- When the meter is powered from the mains (230 V), an additional risk is posed by life-threatening alternating current. The meter must be installed and maintained in accordance with the requirements of the Safety Regulations related to the Operation of Electrical Installations.

- Meters can be installed and maintained only by specialists who have required qualifications (to work with electrical installations of up to 1000 V) and permits, are familiar with the technical documentation for the heat meter, and have received instruction briefing on work safety.

- No protective grounding is provided for because the housing of the electronic unit complies with the requirements of Protection Class II.

- Unauthorised dismantling or repair of the device is prohibited.

- Safety guarantees at installation and service of meter is:
  - Reliable insulation of electrical circuits,
  - Hermetic fitting of primary flow and temperature sensors into the pipeline,
  - Reliable fastening of sub-assemblies of heat meter at installation.

- The repair, replacement, connection, and disconnection of the sub-assemblies of the meter may only be possible **after disconnecting from the mains** (when the electronic unit is powered from 230 V mains) **and having made sure that there is neither pressure nor heat carrier in the pipeline**.

- **When the meter is powered from 230 V mains:**

  - Meter is connected to 230 V mains by a double-wire copper cable with a diameter of 2 × 0.25 mm^2 (a non-detachable cable is included in the supply package of the meter).
  - Meter should be connected to 230 V mains through a single-pole automatic 1A alternating current switch.
  - Automatic switch should be a part of the installation of the building. The automatic switch should be marked as a meter disconnecting device and should be installed near the meter in a position easily accessible by the meter servicing operator.

  The meter and its parts should be installed so that not to hinder the use of the automatic switch.

  It is recommended that the switches for disconnecting power supply be installed in the same cabinet and adapted to the power used by the device.

- Operating conditions:
  – ambient temperature from +5 °C to +55 °C;
  – humidity up to 93%.

<u>Caution</u>: If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired!

1 APPLICATION FIELD

The ultrasonic heating and cooling energy meter IFX-M4-E3 (hereinafter referred to as “the meter”) is designed to measure the consumption of heating and cooling energy and record data in two separate registers. It is used in individual or district heating facilities (residential buildings, enterprises, organisations, or supply facilities, etc.) for the commercial metering of consumed energy where water is the heat carrier.

This is a compact microprocessor meter for mounting optionally either at the supply or return heat exchange circulation system with permanently connected temperature sensors.

The meter complies with the requirements of Annex 1, Annex MI004 to the Technical Regulation on Measuring Instruments and harmonised standards LST EN 1434 – Heat meters (LST EN 1434-1:2016, LST EN 1434-2:2016, LST EN 1434-3:2016, LST EN 1434-4:2016, LST EN 1434-5:2016).

The meter meets the requirements of Environmental Class C according to LST EN1434-1:2016.

Climatic environmental conditions: Temperature range: from 5 °C to 55 °C;
Humidity: condensing,
Location: closed,

Mechanical environment class: M1

Electromagnetic environment class: E2

1.1 Meter order code structure (underlined the ISOIL’s standard):

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
IFX	-	M4	-	E3	-	MR	-	3	-	DN	-	D	-	T	-	2	-	N	-	1	-	HY	-	1	-	T	-	1	-	W	-	2	-	N	-	0	-	0

A) FAMILY NAME
- a. IFX

B) MID OPTION
- a. M4= mid approval
- b. M0= without mid approval

C) COMMERCIAL NAME
- a. E3 (unique selection available)

D) PURPOSE & INSTALLATION SITE
- a. HEATING-T1-SUPP. PIPE= HS
- b. HEATING-T2-RET. PIPE= HR
- c. MIXED-T1-SUPP. PIPE= MS
- d. MIXED-T2-RET. PIPE= MR

E) RATIO & TEMPERATURE DIFFERENCE LIMIT
- a. R 100 / 2 K = 1
- b. R 250 / 2 K * = 2
- c. R 100 / 3 K STANDARD = 3
- d. R 250 / 3 K STANDARD * = 4

F) SIZE
- a. G3/4” - 110 – 0,6 – 11 = 11
- b. G3/4” - 110 – 1 – 12 = 12
- c. G3/4” - 110 – 1,5 – 13 = 15
- d. G1” 130 – 1,5 – 21 = 21
- e. G1” - 130 – 2,5 -22 = 20
- f. G 1” - 190 - 0.6 – 31 = 31
- g. G1 – 190 – 1,5 – 33 = 33
- h. DN20 – 190 – 0,6 – 35 = 17
- i. DN20 – 190 – 1,5 – 37 = 22
- j. G1 1/4” - 260 – 3,5 – 41 = 25
- k. G1 1/4” - 260 – 6 – 45 = 32
- l. G1 1/2” - 260 – 3,5 – 42 = 42
- m. G1 1/2” - 260 – 6 – 46 = 46
- n. G2” - 10 – 300 – 51 = 40
- o. DN20 – 190 – 1 – 34 = 34

p. DN20 – 190 – 2,5 – 38 = 38
q. DN25 – 260 – 3,5 – 43 = 43
r. DN25 – 260 – 6 – 47 = 47
s. DN40 – 300 – 10 – 52 = 41
t. DN50 – 270 – 15 – 61 = 50
u. DN65 - 300 - 25 – 71 (Brass Body) = 65
v. DN80BB – 300 - 40 – 81 (Brass Body) = 80
w. DN100BB - 360 - 60 – 92 (Brass body) = 100

G) COMMUNICATION INTERFACE

a. NONE = N
b. M-BUS = M
c. RF MODULE 868MHZ = F
d. M-BUS AND RF 868MHZ = D

H) POWER SUPPLY

a. INTERNAL BATTERY (ONE) = I
b. EXTERNAL POWER SUPPLY 24Vac = E
c. MAINS SUPPLY 230VAC = M
d. INTERNAL BATTERIES (TWO) = T

I) CABLE LENGTH

a. 1,2m = 1
b. 2,5m = 2
c. 5,0m = 3

J) EXTRA COMMUNICATION INTERFACE

a. NONE = N
b. MBUS = M
c. MODBUS = B

K) IP CLASS/NOMINAL PRESSURE

a. IP65/PN16 = 1
b. IP67/PN16 = 2
c. IP68/PN16 = 3
d. IP65/PN25 = 4
e. IP67/PN25 = 5
f. IP68/PN25 = 6

L) TEMPERATURE AND EXTRA INPUTS/OUTPUTS

a. 0….90°C WITHOUT EXTRA INPUTS/OUTPUTS = NN
b. 0….90°C WITH EXTRA INPUTS/OUTPUTS = NY
c. 0…130°C WITHOUT EXTRA INPUTS/OUTPUTS = HN
d. 0…130°C WITH EXTRA INPUTS/OUTPUTS = HY

M) TEMPERATURES CABLES

a. 1,5m (if DN<40 or G1 1/4 standard) = 1
b. 2m = 2
c. 2,5m =25
d. 3m (if DN>40 or G11/4 standard) =3
e. 5m = 5
f. 10m =10

N) CONFIGURATION PROFILE

a. STANDARD = S
b. WITH TURNED OFF TRANSPORT MODE = T

O) ENERGY MEASUREMENT UNIT

a. 0,001MWh = 1
b. 0,001GJ = 2
c. 0,001Gcal = 3
d. 1kWh = 4

P) HEAT CARRIER

a. WATER = W

Q) TEMPERATURE SENSOR TYPE

a. DS with plastic nut (standard, up to DN25 qp 3.5) = 1
b. PL (from DN25 qp 6.0) = 2

R) MOUNTING SET FOR TEMPERATURE

a. NOT INCLUDED = N
b. BALL VALVE (FOR DS TYPE SENSORS) = B

c. PROTECTIVE SOCKETS (FOR PL TYPE SENSORS) = P

S) MOUNTING SET FOR FLOW SENSOR

a. NOT INCLUDED = 0
b. THREADED WITH GASKET = 1
c. FOR WELDING WITH GASKET = 2
d. FLANGES WITH GASKET = 3
e. ONLY GASKET = 4

T) FREE

a. FREE = 0

2 TECHNICAL SPECIFICATIONS

2.1. Energy measurement

Accuracy class:	2 according to LST EN1434-1:2016.
Energy measurement units:	kWh; MWh; GJ; Gcal
Maximum value of thermal power:	5.28 MW

2.2. Flow measurement

Ratio of the permanent flow rate to the lower limit of the flowrate (selectable by the user):

$q_p/q_i = 100$,

or $q_p/q_i = 250$ (only for sensors with $q_p = 1.5$ m³/h; 2.5 m³/h; 6.0 m³/h; 15 m³/h; 25 m³/h; 40 m³/h; 60 m³/h)

The technical data of the flow sensor are provided in Table 1.1.

1.1 Table

Permanent flow rate q_p, m³/h	Upper flowrate q_s, m³/h	Lower flow-rate q_i, m³/h	Threshold value of flow rate, m³/h	Length of the flow sensor L, mm	Pressure losses at q_p, kPa	Joining to the pipeline (Thread – G, flange–DN)
0.6	1.2	0.006	0.003	110	7	G3/4“
0.6	1.2	0.006	0.003	190	0.9	G1“or DN20
1	2	0.01	0.005	110	11.3	G3/4“
1	2	0.01	0.005	190	2.5	G1“or DN20
1.5	3	0.006	0.003	110; 165	17.1	G3/4“
1.5	3	0.006	0.003	190	5.8	G1“or DN20
1.5	3	0.015	0.003	110; 165	17.1	G3/4“
1.5	3	0.015	0.003	190	5.8	G1“or DN20
1.5	3	0.015	0.005	130	7.2	G1“
2.5	5	0.01	0.005	130	19.8	G1“
2.5	5	0.01	0.005	190	9.4	G1“or DN20
2.5	5	0.025	0.005	130	19.8	G1“
2.5	5	0.025	0.005	190	9.4	G1“or DN20
3.5	7	0.035	0.017	260	4	G1 1/4“, G1 1/2“, DN25 or DN32
6	12	0.024	0.012	260	10	G1 1/4“, G1 1/2“, DN25 or DN32
6	12	0.06	0.012	260	10	G1 1/4“, G1 1/2“, DN25 or DN32
10	20	0.04	0.02	300	18	G2“or DN40
10	20	0.1	0.02	300	18	G2“or DN40
15	30	0.06	0.03	270	12	DN50
15	30	0.15	0.03	270	12	DN50
25	50	0.1	0.05	300	20	DN65
25	50	0.25	0.05	300	20	DN65
40	80	0.16	0.08	300	18	DN80
40	80	0.4	0.08	300	18	DN80
60	120	0.24	0.12	360	18	DN100
60	120	0.6	0.12	360	18	DN100

Temperature limits of heat conveying liquid: 0.1 °C – 90 °C
(Custom-made, wall-mounted electronic unit: 0.1 °C – 130 °C)
Length of the connecting cable between the flow sensor and electronic unit: 1.2 m
(Custom-made: 2.5 m or 5.0 m)
Maximum admissible working pressure (nominal pressure PN): 16 bar or 25 bar

If the flow-rate exceeds the maximum value q_s:
– when the flow-rate < $1.2 \cdot q_s$, the flow-rate measurement and calculations are continued;
– when the flow-rate > $1.2 \cdot q_s$, calculations are performed using flow-rate value $1.2 \cdot q_s$, the error "exceeded maximum flow-rate" is recorded and the duration of that error is calculated.

2.3. Pulse inputs (additional)
– the number of pulse inputs: 2
– indicated units: m^3
– pulse value: programmable
– input pulse types: IB according to LST EN1434-2
– maximum permissible frequency of input pulses: 3 Hz
– maximum permissible voltage of input pulses: 3.6 V
– condition of maintenance of high level: 3.6 V through 3.3 MΩ resistor
– if the meter is ordered with the pulse input-output function, then a permanently connected 1.5m long cable is fitted in the meter for connecting the inputs-outputs.

2.4. Temperature measurement
Temperature measuring range: 0 °C – 90°C.
(Custom-made: 0 °C – 130°C)
Temperature difference measuring range: 2 – 70 K or 3 – 70 K
(Custom-made: 2– 110 K or 3 – 110 K)

Temperature sensor design:
DS type according to LST EN1434-2 (when the flow sensor connection type is G3/4, G1 or G11/4),
PL type according to LST EN1434-2 (for other flow sensor connection types).
Connected cable length: up to 10 m.

2.5. Display
A liquid crystal, 8-digit display for the representation of the values of the indicated parameter and for the representation of parameters, units of measurement, and operating modes with special symbols.
Integral and instantaneous measured parameters as well as data read from the meter archive and configuration information specified in Paragraph 6.3 are displayed.
Energy measurement units (selectable by the user when installing): kWh, MWh, Gcal, or GJ
Resolution of energy indicators (selectable by the user when installing): 0000000.1 kWh,
00000001 kWh,
00000.001 MWh (Gcal or GJ)
000000.01 MWh (Gcal or GJ)

Resolution of flow-rate indicators: 00000.001 m^3
In the case of battery discharge or disconnection, all integral readings and archive data shall be saved for at least 15 years and can be accessed by connecting a power battery in the operating condition.

2.6. Data recording and storage
Archive capacity, minimum:
Hours for archive records: 1480 h
Days for archive records: 1130 days
Months for archive records: 36 months
Archive data storage time: at least 36 months
Time of storage of all measured integral data, also without power supply to the electronic unit: at least 15 years

2.7. External communication interfaces
Optical interface (always included, irrespective of the order)

Ordered interface (to be specified when ordering the meter; both options can be selected):

Mbus interface
RF 868MHz interface

Additional interface (depending on the order; only one option from the list is possible):
M-Bus interface
CL (current loop) interface
MODBUS RS485 interface
MiniBus interface

The interfaces are intended for data reading and meter parametrisation. When the meter is configured for being powered only from the internal battery, the time of communication through the additional interfaces is automatically limited to save the battery – 16 hour per month on an average. Unused communication limit is summed up. If the limit is used out, the interface is locked, and the summing-up of a new limit will start only after the change of the hour (80 seconds each hour).
For wired interfaces, a permanently connected 1.5 m length cable is included in the meter.

The optical interface is integrated in the front panel of the electronic unit and is intended for data reading in Mbus protocol, meter parametrisation, and output of optical pulses in the test mode. It is activated by pressing the button (5 minutes after the end of communication or is automatically disabled after pressing the button).

2.8. Pulse outputs

Number of pulse outputs:	2 or no (to be specified when ordering)
Class:	OB – in the operating mode OD – in the test mode
Type:	open collector
Permissible current:	up to 20 mA
Voltage:	up to 24 V
Pulse duration:	125 ms – in the operating mode 1.2 ms – in the test mode

Pulse value in the operating mode:
– When the output is configured for energy, the value of its pulses can be selected from the list (depending on the rated flow qp and energy measurement units):

Permanent flow rate, q_p, m^3/h	0.6 – 6	10 – 60
Energy pulse value, when units are “kWh” or “MWh”	0.001; 0.01; 0.1; 1; 10 MWh/imp	0.01; 0.1; 1; 10 MWh/imp
Energy pulse value, when units are “GJ”	0.001; 0.01; 0.1; 1; 10 GJ/imp	0.01; 0.1; 1; 10 GJ/imp
Energy pulse value, when units are “Gcal”	0.001; 0.01; 0.1; 1; 10 Gcal/imp	0.01; 0.1; 1; 10 Gcal/imp

– When the output is configured for water quantity, the value of its pulses can be selected from the list (depending on the permanent flow qp):

Permament flow rate, q_p, m^3/h	0.6 – 6	10 – 60
Water volume pulse value, m3/imp	0.001; 0.01; 0.1; 1; 10	0.01, 0.1, 1; 10

– if the meter is ordered with the pulse input-output device, then a permanently connected 1.5 m length cable is fitted in the meter for connecting the inputs-outputs.

2.9. Meter power supply
(one of the options, depending on the meter configuration):
- one or two internal AA-size 3.6 V lithium (Li-$SOCl_2$) batteries with a service life of at least 15+1 years,
- or an external 12–42 V DC or 12–36 V 50/60 Hz AC voltage; consumption current not more than 20 mA,
- or an external 230 V +10% -15% 50/60 Hz AC voltage; consumption current not more than 5 mA.

2.10. Overall dimensions:

electronic unit: maximum 115 mm x 30 mm x 90 mm,

flow sensors**:** according to Annex B

Weight of the meter:

Connection type (and length) of the flow sensor	Weight of the meter, maximum, kg
G3/4“(110 mm)	0.7
G3/4“(165 mm)	0.8
G1“(110 mm)	0.7
G1“(130 mm)	0.8
G1“(190 mm)	0.9
DN20 (190 mm)	2.5
G1 ¼ “	3.2
G1 1/2“	3.3
DN25	5.6
DN32	6.0
G2“	3.7
DN40	6.8
DN50	8.5
DN65	13
DN80	15
DN100	18

2.11. Operation conditions

Electronic unit protection class: IP65 (IP67 or IP68, custom-made)

Flow sensor protection class: IP65 (IP67 or IP68, custom-made)

Temperature sensors protection class; IP68

Operating conditions:

– ambient temperature 5 ºC to 55 ºC;

– relative humidity up to 93 %,

– atmospheric pressure 86 kPa to 106.7 kPa

Mechanical environment class: M1

Electromagnetic environment class: E2.

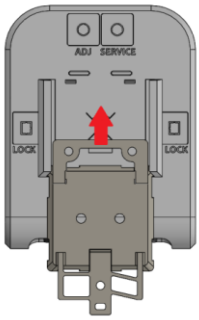
6.4. Installation

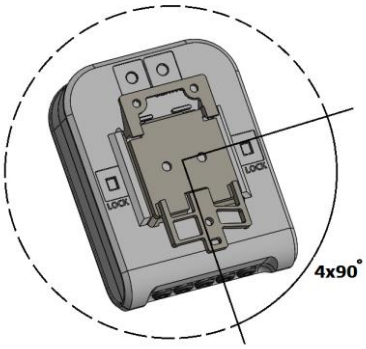
Mounting of the calculator

The electronic unit (calculator) of the meter is mounted in a heated room. The temperature of the working environment should not be higher than 55 °C. It may not be exposed to direct sunlight.

No special requirements are established for the free space around the meter. It is important that nearby installations or structures do not rest against the housing of the meter, do not hinder the laying of cables and reading of data on the display. The meter should be installed at a safe distance from other devices emitting heat or strong electromagnetic field (in order to prevent the disturbance of its working environment conditions).

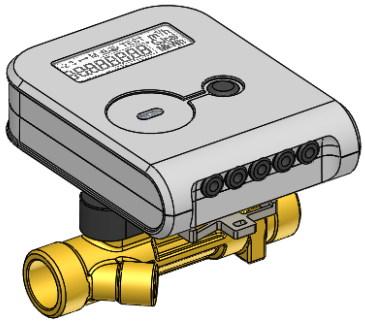
The electronic unit is mounted on an auxiliary holder (it can be oriented in the required direction at an angle of each 90 °:

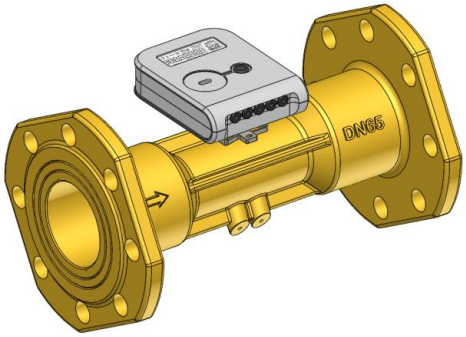




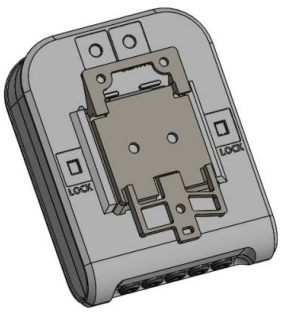
The possible ways of the mounting of the electronic unit (auxiliary holder):

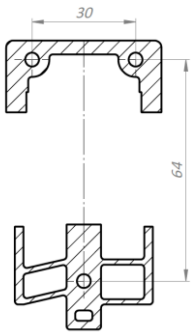
- Direct mounting on the housing of the flow sensor, by turning each 90° (only when the flow temperature does not exceed 90 °C):



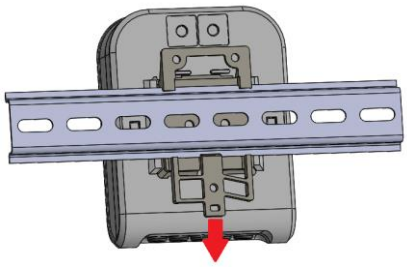


- On a wall:





- In the electrical equipment cabinet, on a standard DIN rail:



! ***Important:*** *It is prohibited to attach the electronic unit directly on the wall because there is a risk that moisture may condense on the walls of the room or the temperature of the surface of the wall may drop below 5 °C. In this case, it is recommended to mount the electronic unit so that to provide for an air space of at least 5 cm between the unit and the wall surface.*

Mounting of flow sensors

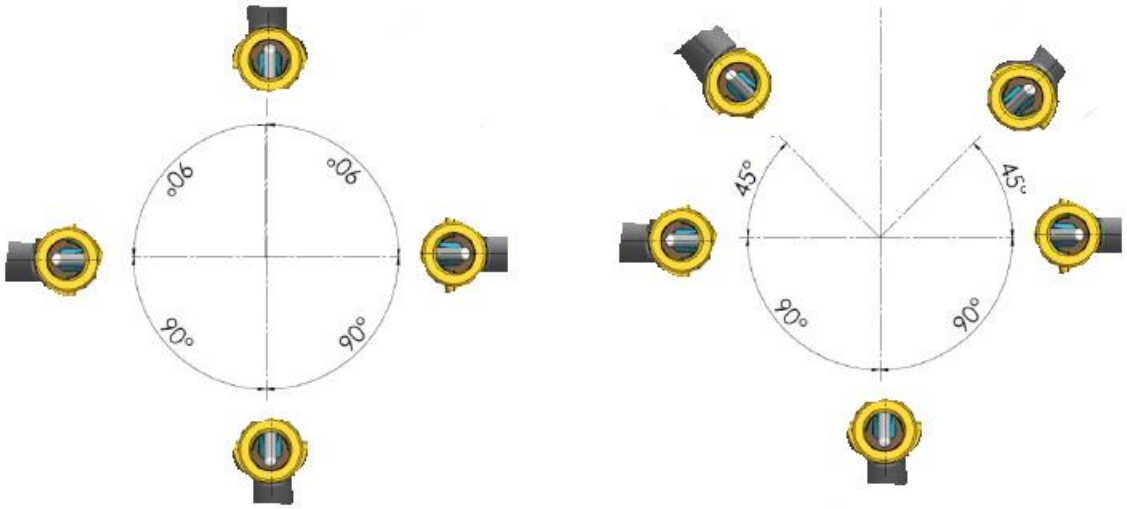
The installation and overall dimensions of the primary flow sensors are provided in Annex B.

When installing in a pipeline, the following lengths of straight sections are required for sensors connected by flanges DN65, DN80, and DN100: upstream the sensor – at least 5DN; downstream the sensor – at least 3DN. No straight sections are required for flow sensors of other connection types either upstream or downstream the meter.

It is recommended to install flow sensors in pipelines as far as possible from pumps, partitions, and elbows.

Flow sensors may be installed horizontally, vertically, or in a slope. Mandatory condition: in the operating mode, the pipe must have a pressure of not less than 30 kPa and the pipe must be fully filled with water.

In respect of the longitudinal axis of the pipe, flow sensors with the connection type G3/4, G1, or DN20 may be mounted at any angle (Fig. 5.1 a); flow sensors of other connection types can be mounted in the positions specified in Fig. 5.1b (it is not allowed when the flow sensor cover is oriented in a vertical position).



a) With connection type G3/4, G1, or DN20 b) for other connection options

Fig. 5.1 Allowed installation positions of the flow sensor

The flow direction and the direction of the arrow on the flow sensor must coincide.

The flow sensor can be installed either on the supply or return line, depending on the indication on the label of the meter.

Prior to installing the sensor, the pipeline of the heating system must be flushed at the place of the installation of the sensor.

In order to avoid stresses in the pipelines, the distance between the flanges at the flow sensor installation place shall correspond to the total length of the sensor with regard to the thickness of gaskets.

It is recommended to select the flow sensor installation place as far as possible from potential sources of vibration (for example, pumps).

When installing the sensors, attention should be paid to the gaskets in order to ensure that they do not protrude inward the pipeline.

It is prohibited to lay the wires of the flow sensor near (closer than 5 cm from) power cables or cables of other devices.

Installation of temperature sensors

Temperature sensors are installed with their placement heads upward, perpendicularly to the pipe axis or at an angle of 45° to the fluid flow direction so that the sensing element is immersed in the medium being measured at least to the pipe centreline (see in the figures in Annex C). When the meter is fitted with flow sensors with flanges G3/4“, G1“, and G1 ¼ “, one temperature sensor is installed in the housing of the flow sensor.

It is prohibited to lay the wires of the temperature sensors near (closer than 5 cm from) power cables or cables of other devices.

Check of installation and parameter setting

If the meter (calculator, flow and temperature sensors) is installed correctly, when there is flow, the display of the meter should represent the flow and temperature readings. In case the readings of the measured channels are not displayed, the installation of electrical circuits must be checked.

The values of energy and volume test pulses (through the optical interface and at pulse outputs), depending on the permanent flow rate value, are presented in Table 6.2.

Table 6.2

Permanent flow value, qp, m^3/h	Volume pulse value, l/pulse	Energy pulse value, when energy measurement units are selected as:		
		kWh, MWh	GJ	Gcal
0.6	0.002	0.1 Wh/pulse	0.5 kJ/pulse	0.1 kcal/pulse
1.0	0.002	0.2 Wh/pulse	1 kJ/pulse	0.2 kcal/pulse
1.5	0.004	0.2 Wh/pulse	1 kJ/pulse	0.2 kcal/pulse
2.5	0.005	0.5 Wh/pulse	2 kJ/pulse	0.5 kcal/pulse
3.5	0.02	1 Wh/pulse	5 kJ/pulse	1 kcal/pulse
6.0	0.02	1 Wh/pulse	5 kJ/pulse	1 kcal/pulse
10.0	0.05	2 Wh/pulse	10 kJ/pulse	2 kcal/pulse
15.0	0.05	5 Wh/pulse	20 kJ/pulse	5 kcal/pulse
25	0.05	5 Wh/pulse	20 kJ/pulse	5 kcal/pulse
40	0.2	10 Wh/pulse	50 kJ/pulse	10 kcal/pulse
60	0.2	10 Wh/pulse	50 kJ/pulse	10 kcal/pulse

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3 TRANSPORTATION AND STORAGE

The packaged meters can be transported by any covered vehicles. During transportation, the meters must be reliably secured in order to prevent shocks or risk of movement inside the vehicle.

Protect the meters against mechanical damage and shocks.

The rooms where the meters are kept must be free from aggressive, corrosive materials.

Transportation and storage conditions:

– temperature: -25 – +35 C

– humidity: max. 60%.

Annex A

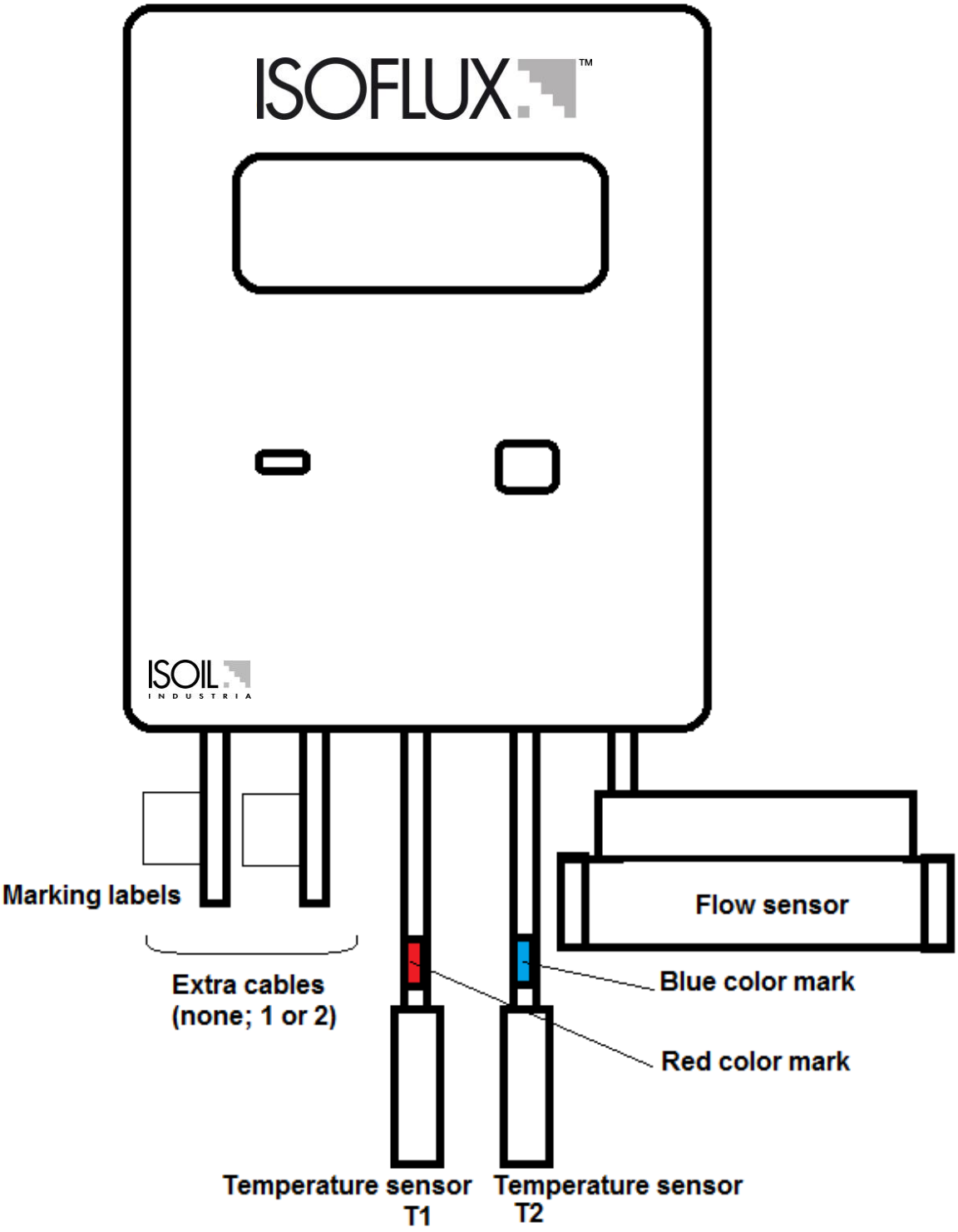


Fig. A1. Meter connection diagram

Annex A (continued)

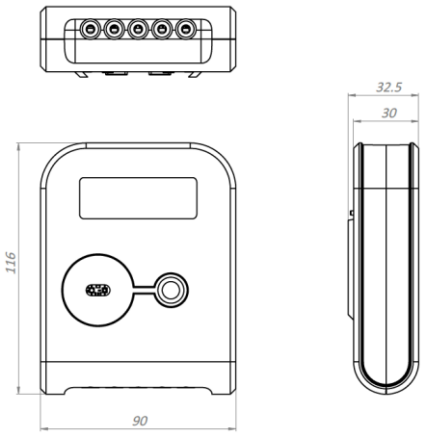
Table A1 Destination and marking of the extra cables of the heat meter

Destination of the cable	Marking of the cable***	Destination of the wire	Colour of the wire
Mbus 1 interface	MBUS1	Line	brown
		Line	white
Mbus 2 interface	MBUS2	Line	brown
		Line	white
Mbus interfaces (two) *	MBUS	Mbus1 Line	brown
		Mbus1 Line	white
		Mbus2 Line	yellow
		Mbus2 Line	green
1st pulse input/output	PULS1	Pulses (+)	brown
		Common (-)	white
2nd pulse input/output	PULS2	Pulses (+)	brown
		Common (-)	white
Pulse inputs/outputs (two) *	PULS	Pulses1 (+)	yellow
		Common1 (-)	green
		Pulses2 (+)	brown
		Common2 (-)	white
MODBUS interface	MODBUS	Line A	brown
		Line B	white
		24 V AC/DC**	yellow
		24 V AC/DC**	green
CL interface	CL	CL+	brown
		CL-	white
MiniBus interface	MINIBUS	Line+	brown
		Line-	white
For external power supply from 230V AC mains	230V AC	230V L	brown
		230V N	white
For external power supply from 24V AC/DC source	24 V AC/DC	24 V AC/DC	brown
		24 V AC/DC	white

*The option for the case when two extra cables are included at a time.
**To be used when the meter is powered from an external power supply source.
***When a second extra cable is not included, the MBUS1 cable is not marked additionally.

Annex B

B1. The overall dimensions of calculator of heat meter IFX-M4-E3



B2. Sizes and dimensions of heat meter IFX-M4-E3

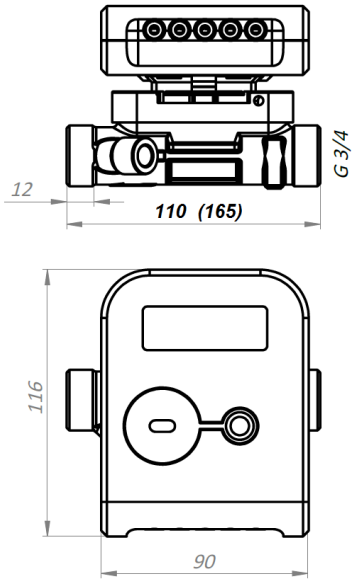


Fig. B2.1 Flow sensor q_p= 0.6/1.0/1.5 m³/h Length L=110 mm (L=165 mm); connection type: thread G3/4“

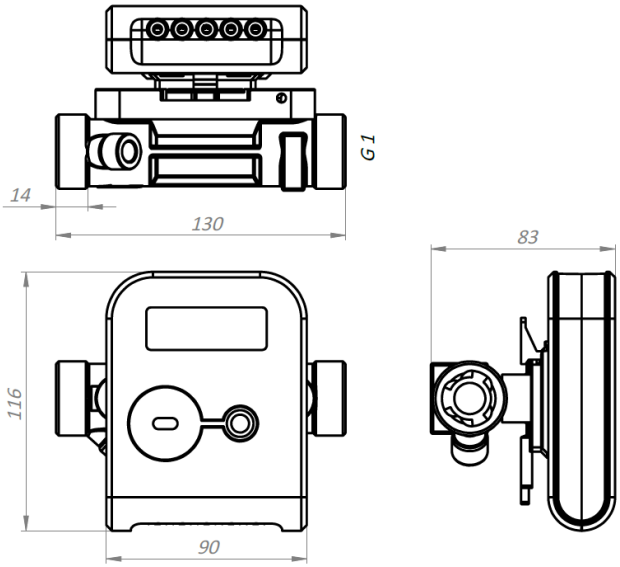
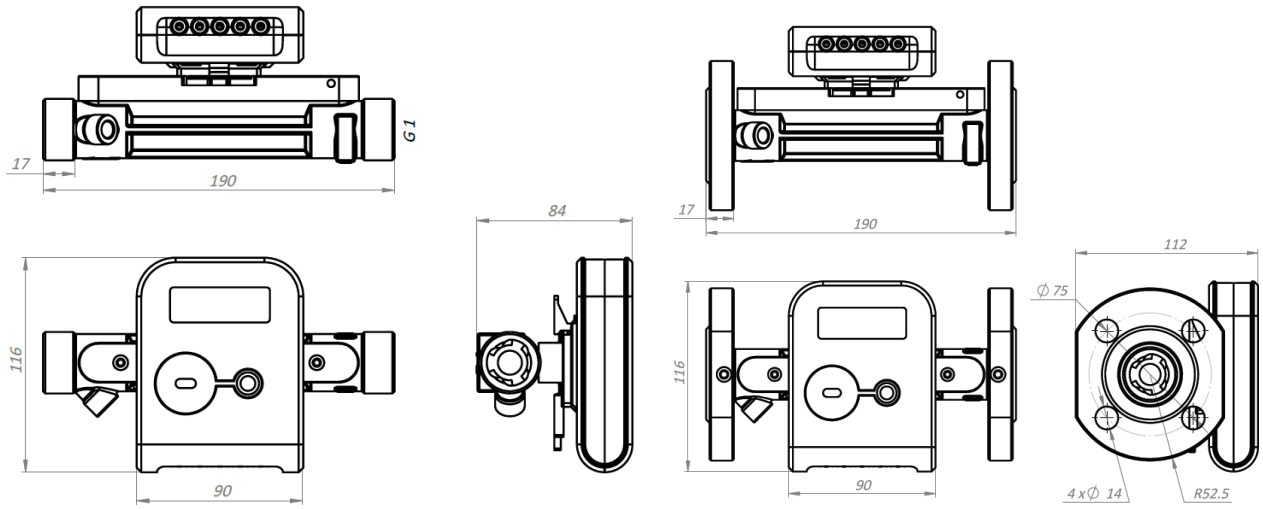
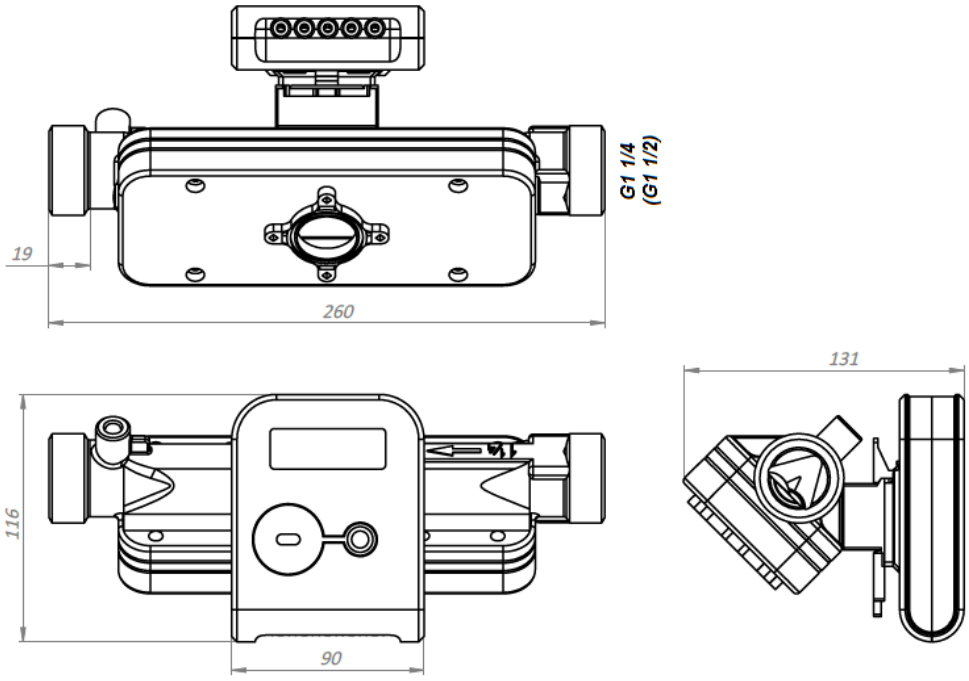


Fig. B2.2 Flow sensor q_p= 2.5/1.5 m³/h Length L=130 mm; connection type: thread G1“

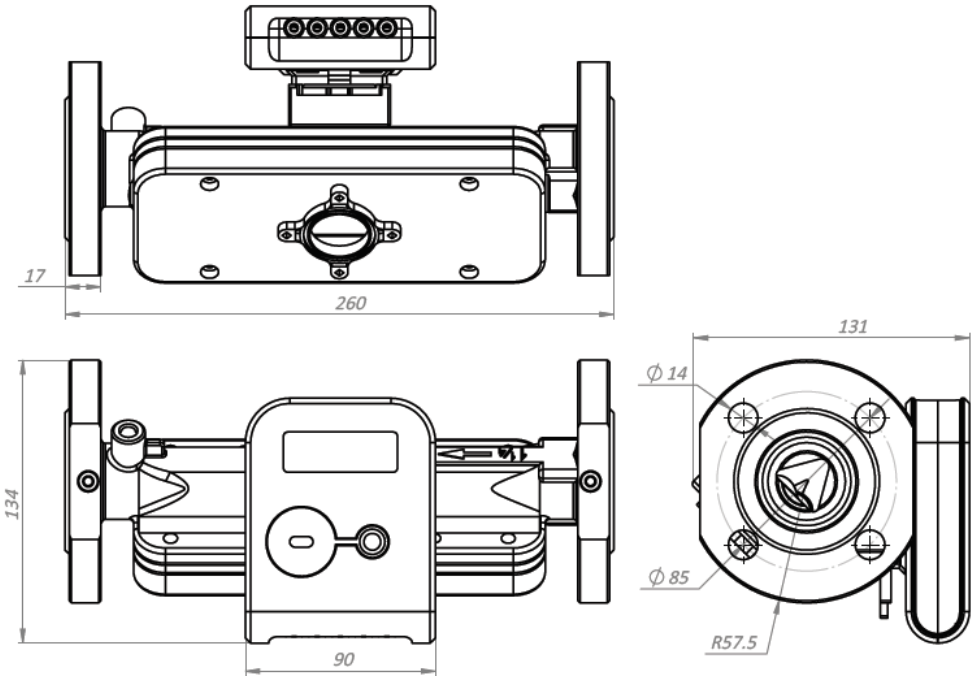


a) b)

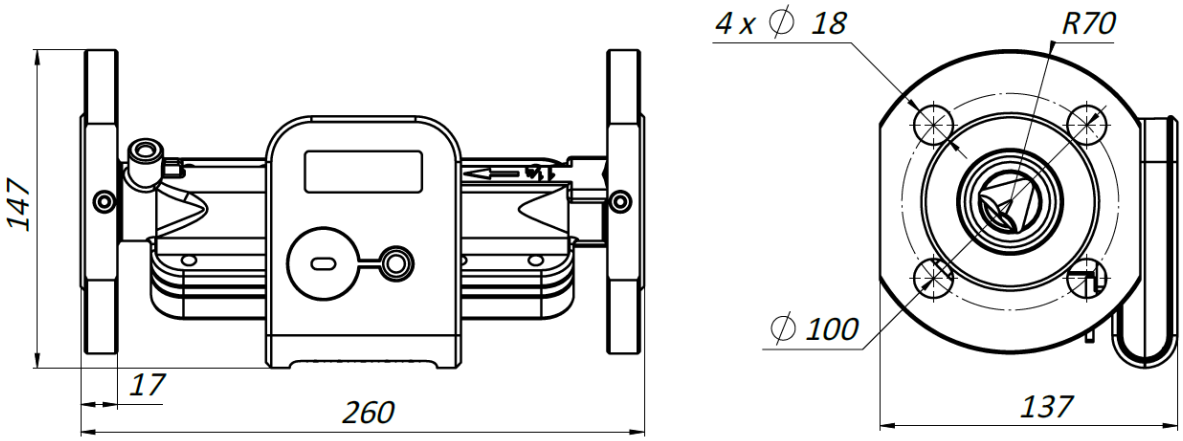
Fig. B2.3 Flow sensor q_p= 0.6/1.0/1.5/2.5 m³/h; L=190 mm
a) connection type: thread G1“; b) connection type: flanges DN20



a)

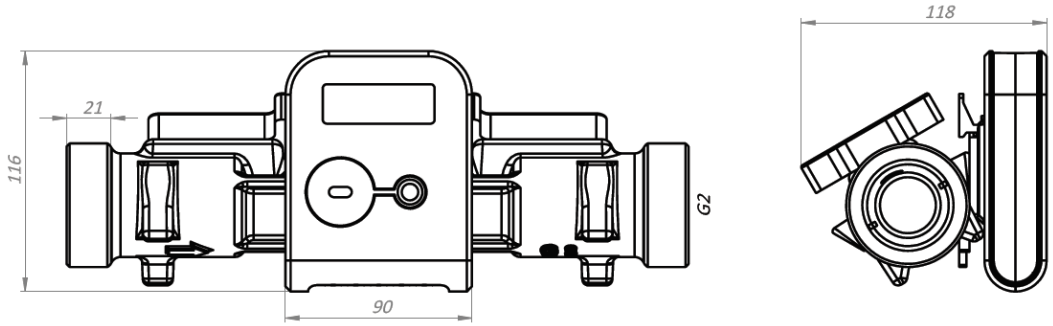


b)

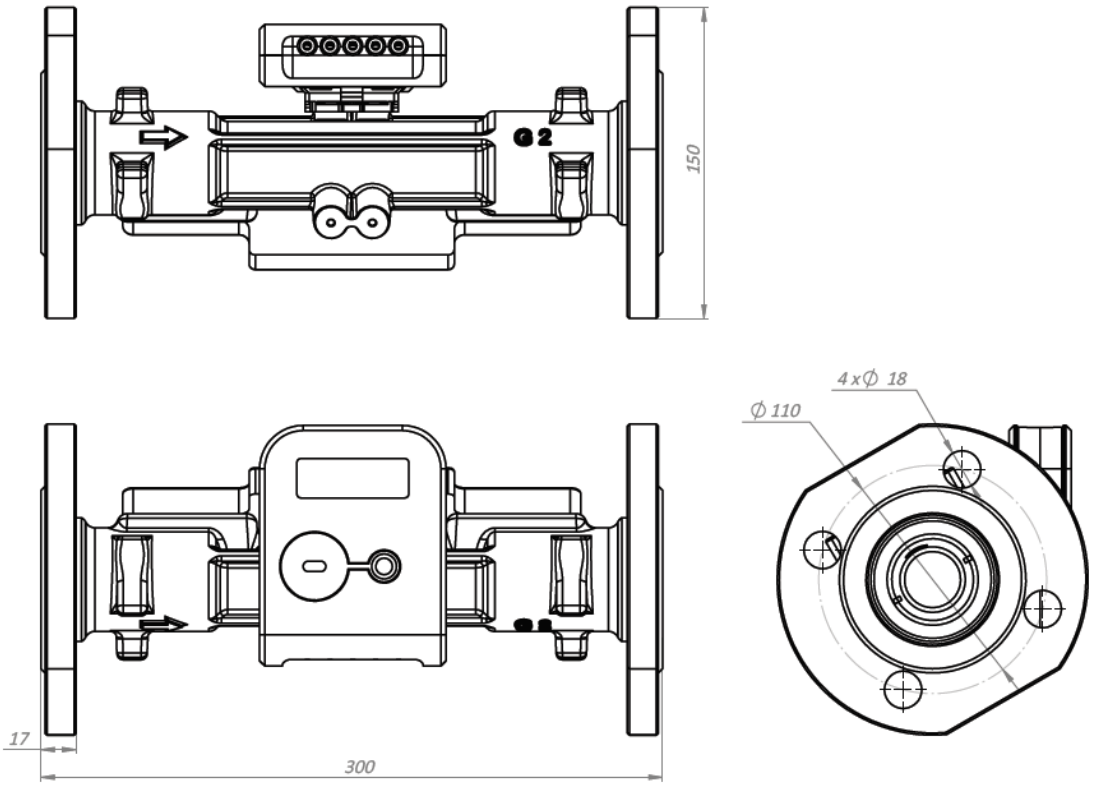


c)

Fig. B2.4 Flow sensor q_p= 3.5/6.0 m³/h; L=260 mm
a) connection type: thread G11/4“ (G1 1/2“); b) connection type: flanges DN25;
c) connection type: flanges DN32



a)



b)

Fig. B2.5 Flow sensor q_p= 10.0 m^3/h; L=300 mm
a) connection type: thread G2“; b) connection type: flanges DN40

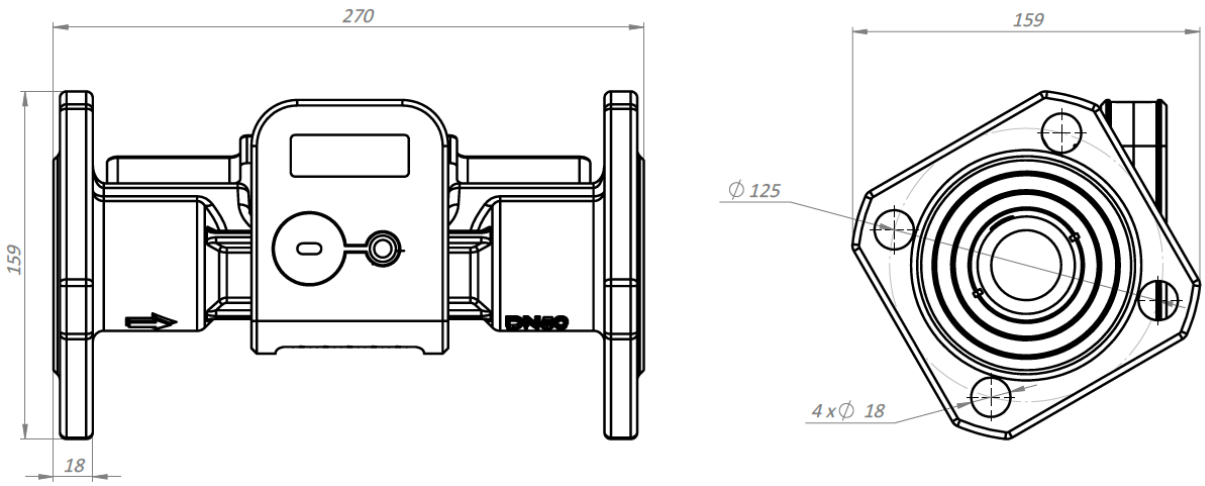


Fig. B2.6 Flow sensor q_p= 15 m^3/h; L=270 mm; connection type: flanges DN50

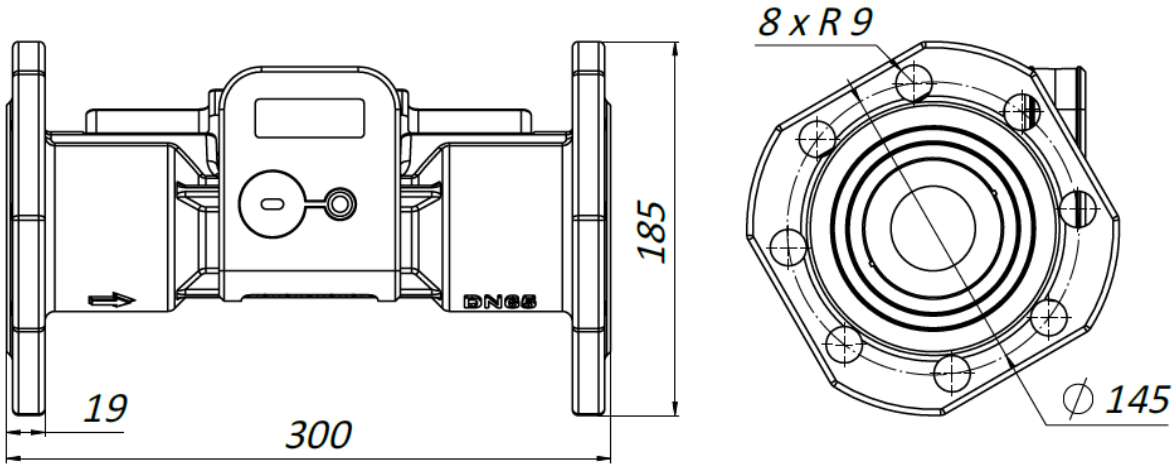


Fig. B2.7 Flow sensor q_p= 25 m³/h; L=300 mm; connection type: flanges DN65

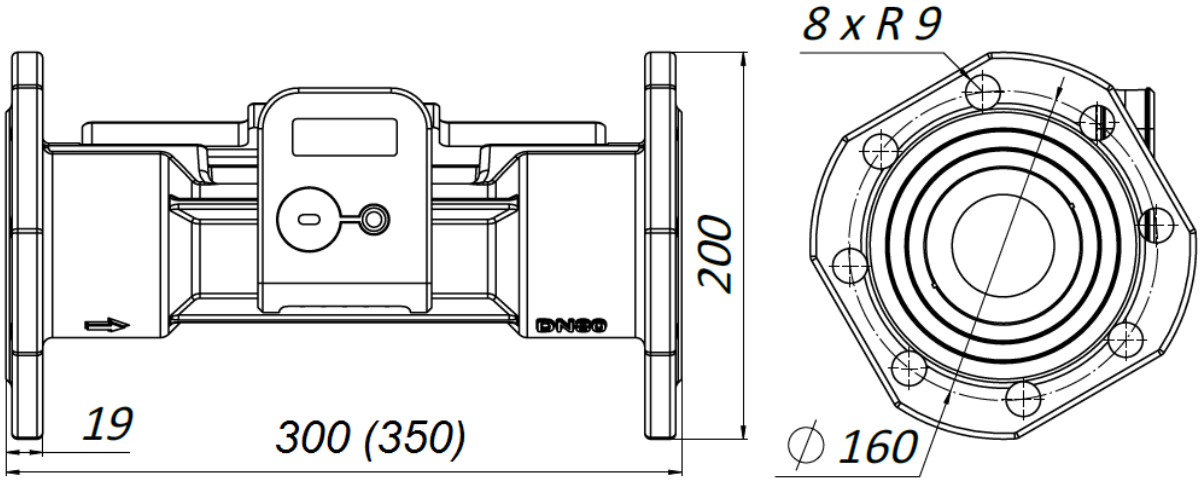


Fig. B2.8 Flow sensor q_p= 40 m³/h; L=300 mm and L=350 mm; connection type: flanges DN80

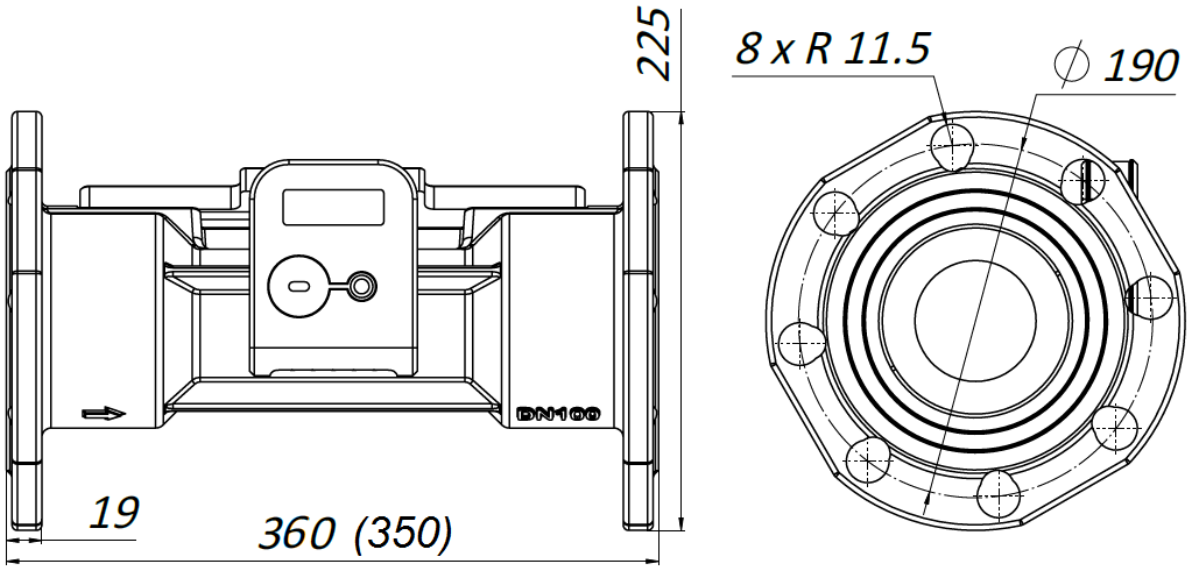


Fig. B2.9 Flow sensor q_p= 60 m³/h; L=350 mm and L=360 mm; connection type: flanges DN100

B3. Overall dimensions of temperature sensors

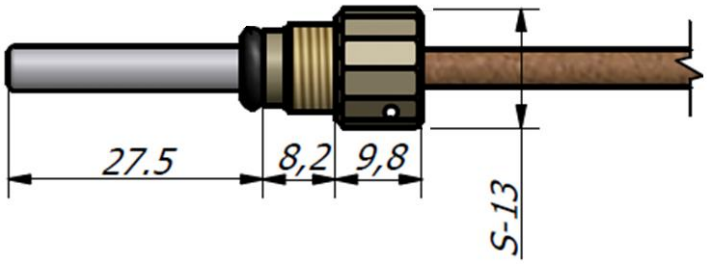


Fig. B3.1 Overall dimensions of the DS type temperature sensor

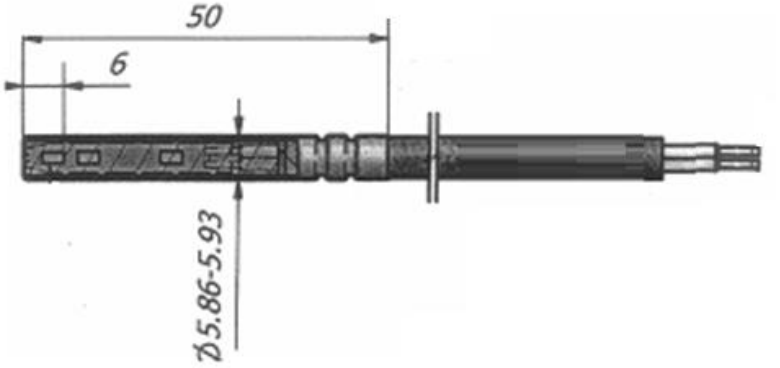
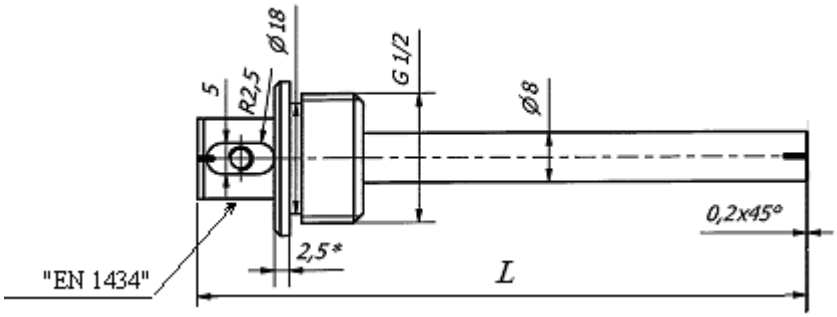
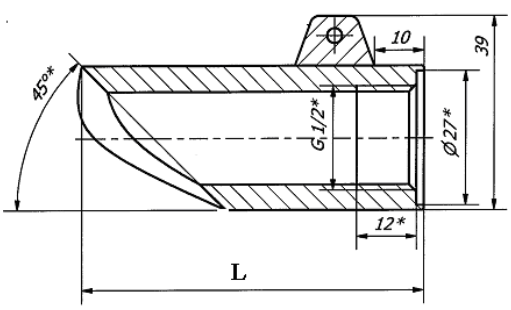


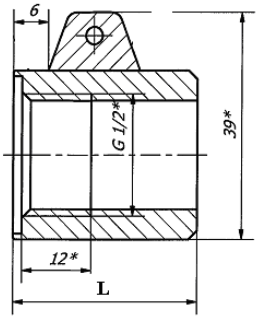
Fig. B3.2 Overall dimensions of the PL type temperature sensor



Nominal pipe diameter, mm	Total length of pocket L, mm
DN20...DN100	100
DN125...DN150	135
DN200	225

a) Dimensions of the PL type temperature sensor protective pocket





Nominal pipe diameter, mm	L, mm
DN20	79.3
DN25	69
DN32, DN40	59
DN50	49

when pipe DN < 65 mm

Nominal pipe diameter, mm	L, mm
DN65, DN80, DN125, DN150	32
DN100	18
DN200	90

when pipe DN ≥ 65 mm

b) Dimensions of the fastening bushing of the PL type temperature sensor protective pocket

Fig. B3.3 The dimensions of the fastening bushing of the PL type temperature sensor protective pocket

Annex C

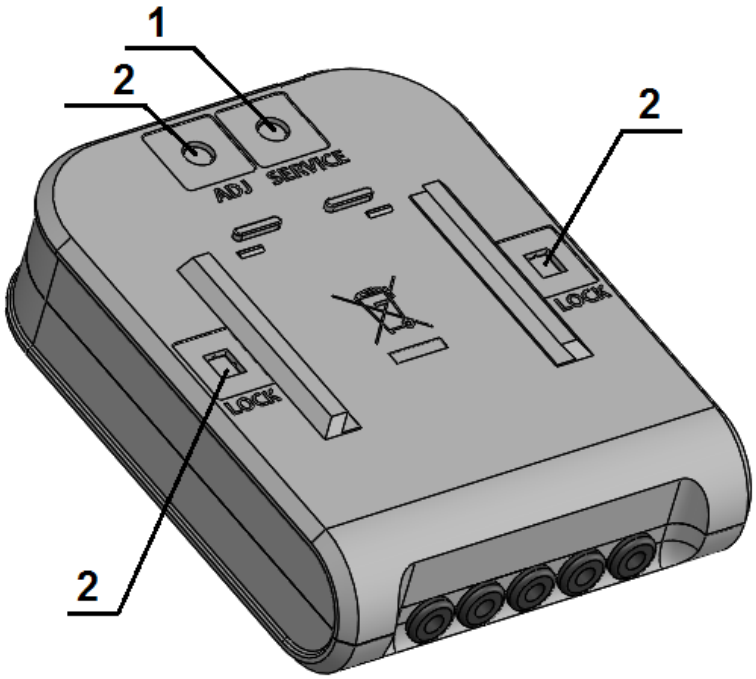
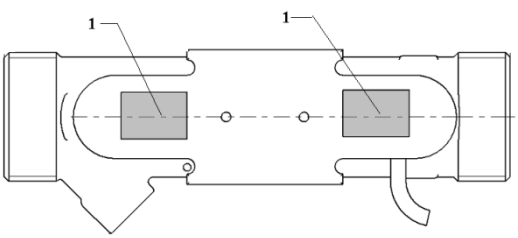
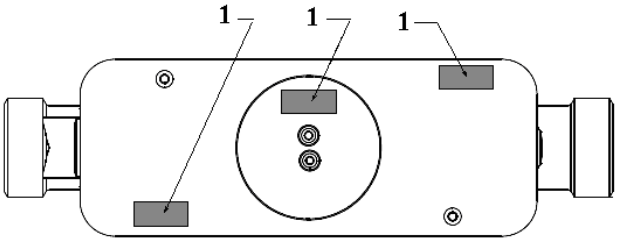


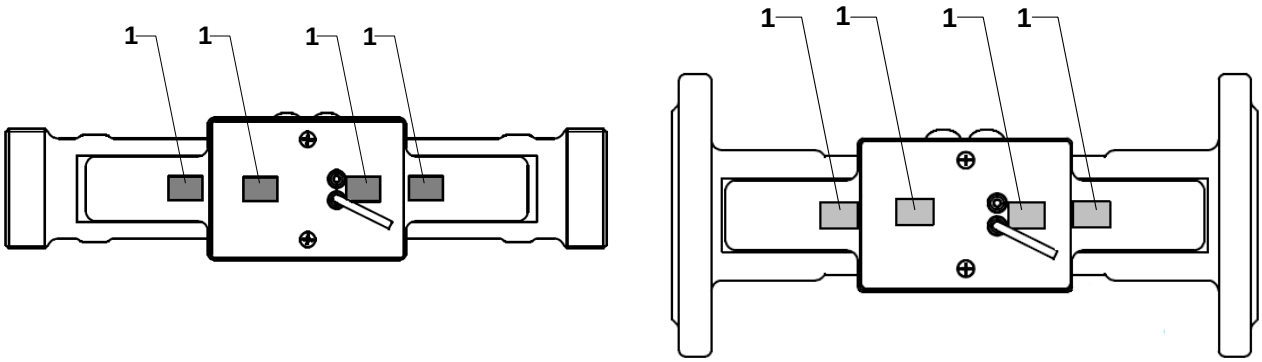
Fig. C1 The sealing diagram of calculator (at the back side of the box):
It shall be sealed additionally only if the breakable partitions are damaged (1 – the supplier's seal is attached after installation; 2 – verification seal stickers are attached)



a) Flow sensor qp = 0.6/1.0/1.5/2.5 m³/h sealing



b) Flow sensor qp = 3.5/6.0 m³/h sealing

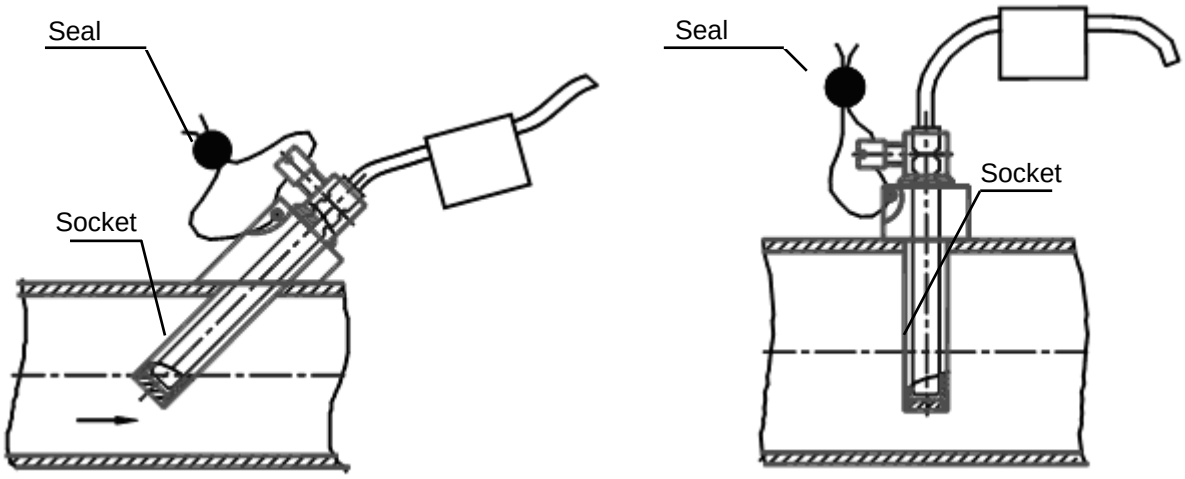


c) Flow sensor qp = 10.0 m³/h sealing

d) Flow sensor qp = 15.0 m³/h sealing

Fig. C2. The sealing diagram of flow sensors (1 – the manufacturer's warranty seal sticker is attached)

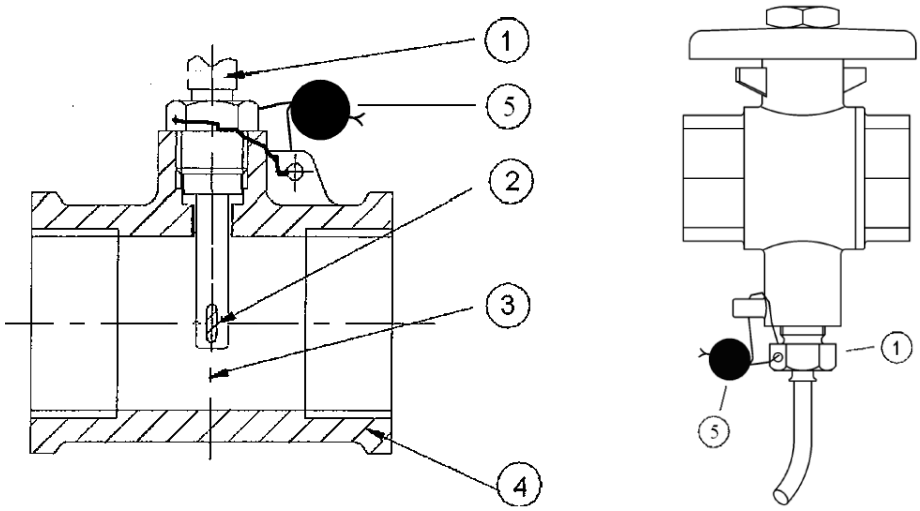
Annex C (end)



a) turned to an angle of 45°

b) perpendicular

a) Installation of the PL type temperature sensor in the pipeline and its sealing diagram.



when using a T-piece when using a valve T-piece

1 – temperature sensor; 2 – measuring element; 3 – sensor centreline; 4 – pipe; 5 – mounting seal

b) Installation of the DS type temperature sensor in the pipeline and its sealing diagram.

Fig. C3. The diagrams of the installation of temperature sensors in the pipeline and their sealing

MANUFACTURER'S WARRANTY

The manufacturing plant warrants the compliance of the parameters of the meter with the technical requirements specified in Section 2 of this document provided that the user observes the transportation, storage, and operation conditions.

The warranty time is 12 months from the start of the operation but not later than 18 months from the day of manufacture.

DoC Declaration of Conformity

EU Declaration of Conformity (DoC)

We/Noi

Company name/Azienda:	ISOIL Industria spa
Postal address/Indirizzo:	via f.lli Gracchi, 27
Postcode and City/CAP e città:	20092 Cinisello Balsamo (MI) - Italy
Telephone number/Telefono:	+39-02-660271
E-Mail address:	sales@isoil.it

declare that the DoC is issued under our sole responsibility and belongs to the following product lines/ dichiariamo che la presente dichiarazione di conformità è emessa sotto la nostra responsabilità relativamente alle seguenti linee di prodotti:

Product lines: ISOFLUX™

Object of the declaration/Oggetto della dichiarazione:

Isoflux product line, ultrasonic heat meter model:
Linea Isoflux, contabilizzatore di calore ultrasonoro:

IFX-M4-E3

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation/ L'oggetto della dichiarazione sopra descritto è conforme alle seguenti direttive europee:

2014/32/EU	Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the member states relating to the making available on the market of measuring instruments
2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility
2014/35/EU	Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits
2014/53/EU	Directive 2014/53/EU of the European Parliament and of the Council of 16 april 2014 on the harmonisation of the laws of the member states relating to the making available on the market of radio equipment and repealing directive 1999/5/EC

The following harmonised standards and technical specifications have been applied
Norme armonizzate dalle sopra indicate direttive europee:

I-ST EN 1434 (2007)	Heat meters
WELMEC 7.2	Software guide (Issue 6)
I-ST EN 61000-4-2	Electromagnetic compatibility (EMC) Part 4-2: Testing and measurement techniques .Electrostatic discharge immunity test
LST EN 61000-4-3	Electromagnetic compatibility (EMC) -- Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
I-ST EN 61000-4-4	Electromagnetic compatibility (EMC) -- Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
LST EN 61000-4-5	Electromagnetic compatibility (EMC) -- Part 4-5: Testing and measurement techniques - Surge immunity test
LST EN 61000-4-6	Electromagnetic compatibility (EMC) -- Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
LST EN 61000-4-8	Electromagnetic compatibility (EMC) -- Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test
LST EN 61000-4-11	Electromagnetic compatibility (EMC) -- Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests
I-ST EN 55022	Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
LST EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use -- Part 1: General requirements
EN 300 220-2 V2.4.1 :2012	Electromagnetic compatibility and Radio spectrum Matters (ERM), Short Range Devices (SRD), Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW,

Notified body/Organismo Notificato:	**Notified body number/Numero Organismo Notificato:**	**Notified body certificate reference number/Certificato emesso dall'Organismo Notificato:**
LEI Lietuvos Energetikos Institutas	1621	LEI-12-MP-087.19

Signed for and on behalf of/Firmato in nome e per conto di:

20-06-2019

Dr. R. Guazzoni
(Legal representative)

R_00

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If you want to find the complete list of our distributors access at the following link:
http://isoil.com/u_vendita.asp

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