

SonoSensor 30

Ultrasonic flow meter for heating and cooling applications





Danfoss A/S

DK-6430 Nordborg
Denmark
CVR nr. 20 16 57 15

Telephone: +45 7488 2222
Fax: +45 7449 0949

EU DECLARATION OF CONFORMITY

Danfoss A/S
Danfoss Energy Metering

declares under our sole responsibility that the product(s) Energy meters

Type(s): **SonoSensor 30**

EC type-examination certificate no.: LT-1621-MI004-030 (LEI Lithuanian energy institute)

is in conformity with the relevant Union harmonisation legislation acts, as far as these apply to the product:

- MID Directive 2014/32/EU
- EMC Directive 2014/30/EU
- LVD Directive 2014/35/EU
- RoHS Directive 2011/65/EU

The product complies with the following used harmonised standards and normative documents, rules and technical guidelines (level as indicated):

- | | |
|--------------------------|---------------|
| EN 1434:2007 | EN-61000-4-3 |
| WELMEC 7.2:2009 | EN-61000-4-4 |
| EN 61010-1:2010 | EN-61000-4-5 |
| EN 55022:2010 | EN-61000-4-6 |
| EN 300 220-2 v2.4.1:2012 | EN-61000-4-8 |
| EN-61000-4-2 | EN-61000-4-11 |

The notified body LEI Lithuanian energy institute, number 1621, controls the quality system according module D / MID certificate no.: Module D: KS-1621-MP-002.16

Date 31.3.2017	Issued by Signature Name Title	 Siniša Bogar Product Manager	Date 31.3.2017	Approved by Signature Name Title	 Bjørn Sig Haldrup Product Portfolio Director
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Note! To ensure latest version of declaration, please visit danfoss.com.

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1. Safety notes and product information

Following instructions refer to the ultrasonic flow sensor. The regulations on the use of energy meters must be observed! The flow sensor installation is only to be performed by an installation and/or electrical contractor using personnel trained in the installation and use of electrical equipment and familiar with the Low Voltage Directive. The relevant ESD regulations (electrostatic discharge) must be observed. No liability is accepted for damage (especially to electronic circuits) resulting from failure to comply with the ESD regulations. This installation guide is intended for trained personnel and does not contain any basic working steps. The seal on the flow sensor must not be damaged! A damaged seal will result in immediate invalidation of the factory warranty and verification.

2. Installation

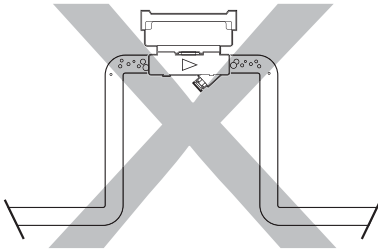
2.1 Preparation

Only qualified personnel may install the equipment, following the requirements listed in this document. More detailed instruction can be found on www.heating.danfoss.com. Note! This product is approved for ambient temperature between 5-55° C. Avoid installation stress from pipes and fittings. Flush the system.

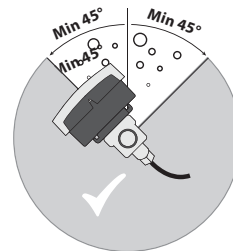
2.2 Installation of flow sensor

Depending on the application the flow sensor is installed in the supply or return pipe of the system. The flow sensor must be installed so that the direction of flow corresponds to the direction of the arrow on the flow sensor. Calming sections are not needed before or after the flow sensor for sizes from DN15 to DN50, calming sections of 5xDN before and 3xDN after the flow sensor are needed for sizes from DN65 to DN100. Flow sensor can be mounted both vertically and horizontally in pipelines. Vertically mounting of the flow sensor is allowed only if flow direction in the pipeline is from down to up.

The flange gaskets must match with the pipe diameter. During the installation gasket must be exactly centered with the center of the pipe cross-section to avoid sticking out gaskets inside the pipe. The flow sensor must always be filled with water. Avoid frost on the sensor. We recommend installing the flow sensor in a tilted position. The minimum system pressure must be 1 bar to avoid cavitation. Avoid the flow sensor installation near after the pumps which can also cause cavitation. Make sure the flow sensor is installed sufficiently far away from possible sources of electromagnetic interference (switches, electric motors, fluorescent lamps, etc...). The flow sensor should be installed in an accessible position for service and operating personnel.



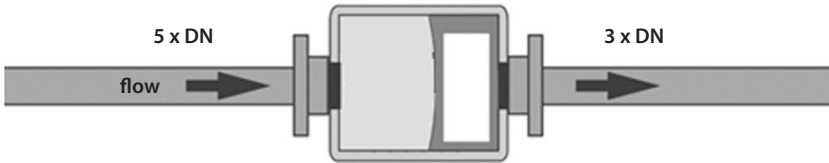
Pipe position: No limitations but avoid positions where air can be collected.



Rotation in pipe axis: Flow sensor should be angled in 45 to 315° to avoid air collection in flow sensor.

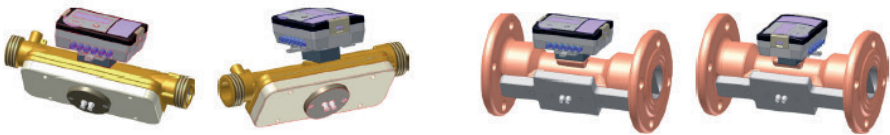
Inlet/outlet conditions

SonoSensor 30 sizes from DN15 to DN50 don't need any calming sections before and after the flow sensor. In order to maximize performance for sizes DN65, DN80 and DN100 it is necessary to have straight inlet and outlet flow conditions 5xDN before and 3xDN after the flow sensor.



2.3 Mounting of electronic unit

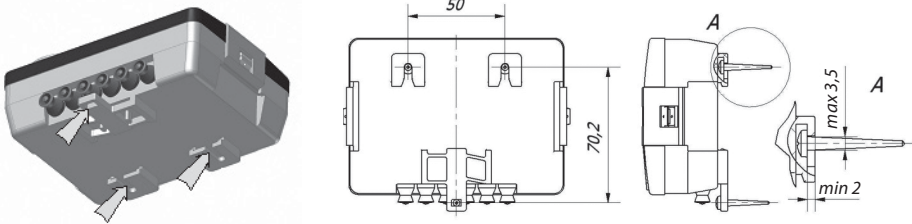
Direct mounting on ultrasonic flow sensor housing, turning every 90 ° C (only when the temperature of the flow does not exceed 90 ° C)



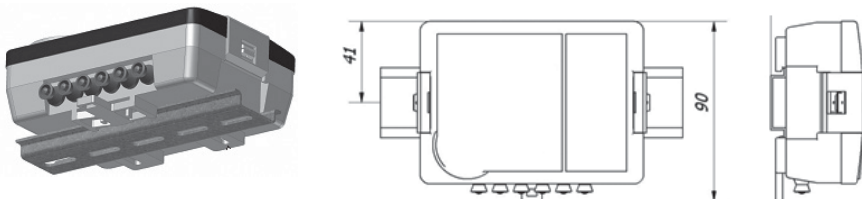
a) On the flow sensor with a thread connection

b) On the flow sensor with flange connection

Wall mounting:



Mounting on standard DIN-rail:



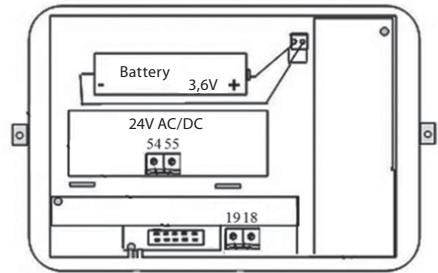
Important: It is forbidden to attach the electronic unit directly to the wall if there is a risk that on the wall can be condensed humidity or temperature of a surface of a wall can fall lower than 5°C. In this case, it is recommended to mount the calculator on the wall with an air gap not less than 5 cm.

3. Electrical wiring

3.1 Flow pulse cable connection

It is recommended to use copper wire cable with the cross-section 0.3 ... 0.5 mm². By means of tweezers remove a protective knoll from 1 sealant hole of electronic unit. Run the cable through the hole and anchor with clamp. Use two wire connection methods – connect to the terminals 18 and 19 as shown in the picture.

Terminal Nr.	Description
18	Volume pulse output (+)
19	Ground (-)



3.2 External power supply module (if used)

Terminal Nr.	Description
54	Mains supply 24 V AC/DC (bipolar)
55	Mains supply 24 V AC/DC (bipolar)

3.3 Wiring SonoSensor 30 to energy calculator Infocal 9

SonoSensor 30 in return pipe	Infocal 9 terminal
18 (flow pulse)	52 (q2+)
19 (ground)	11 (q2-)

SonoSensor 30 in return pipe	Infocal 9 terminal
18 (flow pulse)	10 (q1+)
19 (ground)	11 (q1-)

Pulse output

Measured flow rate is converted into the volume pulses which are transferred through pulse output terminal. Pulse output class of flow output device: OD according to EN1434-2 + AC:2007. Maximum flow cable length from electronic box to energy calculator or pulse reading device is up to 100m.

Values of output pulses:

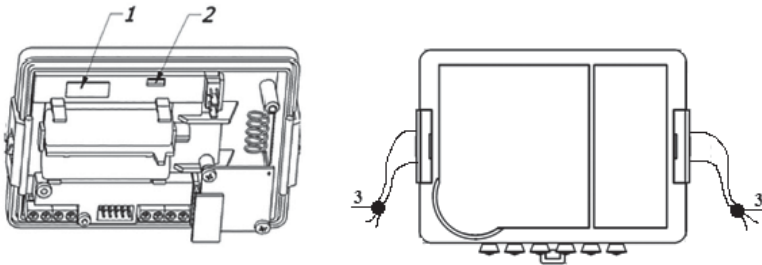
Nominal (permanent) flow rate q _p	Pulse value, litres/pulse
0.6, 1.5, 2.5, 3.5 and 6.0	1
10, 15, 25, 40 and 60	10

4. Commissioning

4.1 Bleeding

1. Bleed the system until the flow rate display is steady.
2. Make sure no error codes are displayed.
3. Check the display for a plausible indication of flow rate and temperatures.

4.2 Electronic unit sealing



- 1: Manufacturer adhesive seal sticker on the access to the adjustment activation jumper - verification seal.
 2: Manufacturer adhesive seal sticker on the cover protecting electronic module - manufacturer security seal.
 3: Mounting seal after installation

5. Power supply

SonoSensor 30 can be powered from lithium battery (12 years life time) or from external supply.

Battery

3,6V, 2,4Ah lithium battery with 12 years of battery lifetime is fitted in flow sensor. The battery is not to be charged, replaced or short-circuited. Ambient temperatures below 55°C ensure the typical life of the battery.

External supply

- power supply: 12V...42V DC or 12C...36V
- pulse current: 10mA

Caution

Used batteries must be disposed of at suitable waste collection points. There is risk of explosion if replaced battery is incorrect type.

6. Disposal



This symbol on the product indicates that it will not be treated as household waste. It must be handed over to the applicable take-back scheme for the recycling of electrical and electronic equipment. For more detailed information about the recycling of this product, please contact your local municipal office.

Item	Material	Disposal
Battery	AA-cell Lithium/thionyl chloride 620 mg Lithium	Approved deposit for lithium batteries
PCBA with display and communication module	Coppered epoxy laminate components soldered on, PC, TPE	Electronic waste
Cables	Copper with PUR or PVC jackets	Cable recovery
Flow sensor (including transducer and liner)	Brass, stainless steel, PPS	Metal recovery
Transducer	PZT, stainless steel, PEI	Approved deposit for PZT
Other plastic parts	PC, PPS, PEI, TPE	Plastic recovery

7. Local Importer name and address

For goods delivered to UK, importer name and address is:

Danfoss Ltd.
Oxford Road
UB9 4LH Denham
UK

Danfoss A/S

Heating Segment • danfoss.com • +45 7488 2222 • E-Mail: heating@danfoss.com

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