

EU-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI004-046

Issued by FORCE Certification A/S, Denmark
EU-notified body number 0200

In accordance with Annex II Module B of the Directive 2014/32/EU of the of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of measuring instruments (MID).

Issued to: **Kamstrup A/S**
Industrivej 28, Stilling
DK-8660 Skanderborg
Denmark

Type of instrument: Thermal energy meter, temperature sensor pair

Type designation: Kamstrup TemperatureSensor 63 and Kamstrup TemperatureSensor 83

Valid until: 2031-02-03

Number of pages: 14, including appendix

Date of issue: 2023-03-01

Version: 1
This new version of DK-0200-MI004-046 is issued due to a new EN 1434 edition, OIML R 75, fast response meter, pocket 65-57-349 and minor editorial changes. The previous certificate is withdrawn.

Approved by



Michael Møller Nielsen
Certification Manager

Processed by



Lars Poder
Examiner

The conformity markings may only be affixed to the above type approved equipment. The manufacturer's Declaration of Conformity may only be issued and the notified body identification number may only be affixed on the instrument when the production/product assessment module (D or F) of the directive is fully complied with and controlled by a written inspection agreement with a notified body.

This EU-type examination certificate may not be reproduced except in full, without written permission by FORCE Certification A/S.

FORCE Certification references: TASK No.: 120-36087.02 and ID No.: 0200-MID-09852-2

Appendix to

EU-Type Examination Certificate Measuring Instrument Directive

Number: DK-0200-MI004-046

Issued by FORCE Certification A/S, Denmark
EU-notified body number 0200

Revision	Issue date	Changes
DK-0200-MI004-046	2021-02-03	Original certificate
DK-0200-MI004-046 ver 1	2023-03-01	OIML R 75:2002, EN 1434:2007/AC:2007, EN 1434:2022, fast response meter, pocket 65-57-349 for \varnothing 5.2 mm temperature sensor and minor editorials added

Applied standards and documents:

- EN 1434:2007/AC:2007
- EN 1434:2015+A1:2018
- EN 1434:2022
- OIML R 75:2002

The instruments/measuring systems shall correspond with the following specifications:

Type designation:

Kamstrup TemperatureSensor 63 and Kamstrup TemperatureSensor 83

Description:

Kamstrup TemperatureSensor 63

The temperature sensor set consists of 2 or 3 physically Pt500 sensors with fixed cable and identical serial numbers that is paired. The fixed cable is a 2-wire silicone cable. The approved cable length is up to 10 m. The cable is terminated with ferrules. On the cable is attached a flexible label that shows inlet or outlet marking, respectively. For temperature sensor sets with 3 temperature sensors, then the temperature sensor that is not inlet or outlet is marked with "t3" and has only black colour on the type label. The inlet sensor can also be distinguished from the outlet sensor by a white ring on the cable placed both near the sensor body and near the end of the cable.



Direct Short temperature sensor set – Approval type 50

Direct short sensor according to the requirements in EN 1434-2:2022 for direct sensor type DS. The sensor body has a total length of 27.5 mm incl. flange to sealing ring. Attached is a brass union for mounting of the sensor that is fixed using a composite part that also protects the cable. For use as direct sensor and fulfils requirements for fast response meter.



Ø5.0 mm temperature sensor set – Approval type 60

Temperature sensor with a nominal diameter of Ø5.0 mm. The length of the sensor body is 45 mm. One dot is embossed at the end of the sensor body. For use as direct sensor with an attached composite or brass union.



Ø5.2 mm temperature sensor set – Approval type 70

Temperature sensor with a nominal diameter of Ø5.2 mm. The length of the sensor body is 45 mm. Two dots are embossed at the end of the sensor body. For use as a direct sensor with an attached composite or brass union or as a pocket sensor in corresponding approved pockets.



Ø5.8 mm temperature sensor set – Approval type 80

Temperature sensor with a nominal diameter of Ø5.8 mm. The length of the sensor body is 46 mm. Three dots are embossed at the end of the sensor body. For use as pocket sensor in corresponding approved pockets.



Ø6.0 mm temperature sensor set – Approval type 90

Temperature sensor with a diameter of Ø5.9 mm (+0.03/-0.04 mm) according to the requirements in EN1434-2 for pocket sensor type PL. The length of the sensor body is 50 mm. Four dots are embossed at the end of the sensor body. For use as pocket sensor in pockets marked with "EN1434".

Kamstrup TemperatureSensor 83

The temperature sensor set consists of two paired Pt500 temperature sensors that are mounted in inserts with 4 connection terminals. Both inserts are mounted in matching temperature sensor pockets with connection head.

4-wire temperature sensor set mounted in pocket with connection head – Approval type C0:

The temperature sensor insert is a $\varnothing 5.8$ mm temperature sensor (approval type 80) mounted with 4 connection terminals. The two-wire sensor pair approval type 80 which is connected to the part with four terminals has a cable length of 60 cm. This sensor insert is placed, in a sensor pocket with connection head with the possibility of 2 or 4-wire connection. On the sensor pocket there is welded a R $\frac{1}{2}$, NV22 nipple. The sensor pocket is made of stainless steel and has a length of 65-180 mm. The connection head in plastic is mounted on the top of the sensor pocket tube. The sensor insert is fastened in the connection head with a snap. The 2- or 4-wire cable to the calculator is lead through the side of the head in a PG-bushing. The connection head is terminated at the top by a sealable cover.

Technical documentation:

Reference no.:

- 120-36087.02
- 120-36087.01

Technical data

Legal measuring data according to	: EN 1434:2007/AC:2007 : EN 1434:2015+A1:2018 : EN 1434:2022 : OIML R 75:2002
Instrument type	: Temperature sensor set

Type numbers

Kamstrup TemperatureSensor 63

Direct Short temperature sensor set, approval type 50: 61-63-D0-05X-YYY
ø5.0 mm temperature sensor set, approval type 60: 61-63-D0-06X-YYY
ø5.2 mm temperature sensor set, approval type 70: 61-63-D0-07X-YYY
ø5.8 mm temperature sensor set, approval type 80: 61-63-D0-08X-YYY
ø6.0 mm temperature sensor set, approval type 90: 61-63-D0-09X-YYY

YYY = Delivery code

Approved sensor pocket for ø5.2 mm temperature sensor set, approval type 70:
65-57-349, Brass pocket, 50 mm with G $\frac{1}{2}$ B connection

Approved sensor pockets for ø5.8 mm temperature sensor set, approval type 80:
65-57-340, Stainless steel pocket, 65 mm with R $\frac{1}{2}$ connection
65-57-341, Stainless steel pocket, 90 mm with R $\frac{1}{2}$ connection
65-57-342, Stainless steel pocket, 140 mm with R $\frac{1}{2}$ connection
65-57-324¹⁾, Stainless steel pocket, 65 mm with R $\frac{1}{2}$ connection
65-57-325¹⁾, Stainless steel pocket, 65 mm with G $\frac{1}{2}$ B connection
65-57-327¹⁾, Stainless steel pocket, 90 mm with R $\frac{1}{2}$ connection
65-57-328¹⁾, Stainless steel pocket, 90 mm with G $\frac{1}{2}$ B connection
65-57-309¹⁾, Stainless steel pocket, 90 mm with R $\frac{1}{2}$ connection
65-57-314¹⁾, Stainless steel pocket, 140 mm with R $\frac{1}{2}$ connection

¹⁾Previous product generation

Approved sensor pockets for ø5.8 mm/ø6.0 mm temperature sensor set, approval type 80/90:
65-57-355, Stainless steel EN 1434 pocket, 65 mm with G $\frac{1}{2}$ B connection
65-57-343, Stainless steel EN 1434 pocket, 85 mm with G $\frac{1}{2}$ B connection
65-57-344, Stainless steel EN 1434 pocket, 120 mm with G $\frac{1}{2}$ B connection
65-57-345, Stainless steel EN 1434 pocket, 210 mm with G $\frac{1}{2}$ B connection
65-57-350, Stainless steel reinforced EN 1434 pocket, 120 mm with R $\frac{1}{2}$ connection
65-57-352, Stainless steel reinforced EN 1434 pocket, 120 mm with G $\frac{1}{2}$ B connection
65-57-351, Stainless steel reinforced EN 1434 pocket, 210 mm with R $\frac{1}{2}$ connection
65-57-353, Stainless steel reinforced EN 1434 pocket, 210 mm with G $\frac{1}{2}$ B connection

Kamstrup TemperatureSensor 83

4-wire temperature sensor set with connection head mounted in pocket, approval type C0:
61-83-D0-0CX-YYY

YYY = Delivery code

Technical data

(TemperatureSensor 63 & 83)

- Approved temperature and differential temperature ranges:
 θ : 2...150 °C or narrower range
 $\Delta\theta$: 3...140K or narrower range

- Maximum permissible working pressures, temperatures and flow velocity:

	Maximum permissible working pressure		Maximum permissible working temperature	Maximum permissible flow velocity
Temperature sensors Approval type 50/60/70	PN16/PN25	PS25	150 °C	3 m/s
Pockets type number: 65-57-350/351/352/353	PN16/PN25/PN40	PS40	180 °C	10 m/s
All other pockets	PN16/PN25	PS25	150 °C	3 m/s

- Cables:

TemperatureSensor 63: 2-wire, cross section area 0.22 mm²

TemperatureSensor 83: 2-wire or 4-wire mounted in connection head

- Sensor type:

Pt500, with five times resistance value of Pt100 according to EN 60751

- Maximum sensor current and power:

Current: 500 μ A RMS

Power: 0.2 mW RMS

- Durability specification:

10 years

- Mechanical class:

M1, M2

- IP class:

IP68

- Installation demands:

According to EN 1434-2, Direct Short temperature sensor, approval type 50

-Qualifying immersion depth:

Direct short temperature sensor, approval type 50: 15 mm

Ø5.0 mm and Ø5.2 mm temperature sensors, approval types 60 & 70: 17 mm

Ø5.8 mm and Ø6.0 mm temperature sensors, approval types 80 & 90: 18 mm

-Fast response meter

Direct short temperature sensor, approval type 50: Response time $\tau_{0.5} \leq 2.5$ s

Verification

Verification procedure:

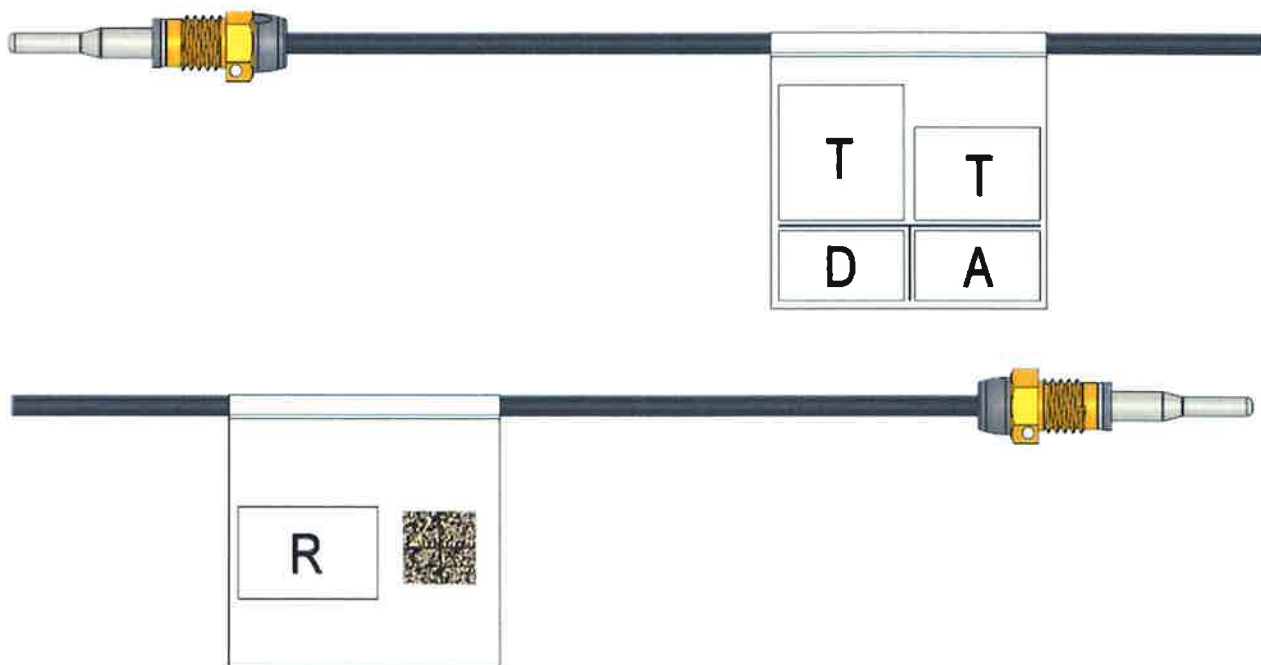
According to EN 1434-5

Security measures

Sealing

- S** Security seals
- D** Module D marking (printed on or separate label)
- T** Type marking
- I** Installation seals, if required
- A** Alternative approval marking
- R** Re-verification marking, if required

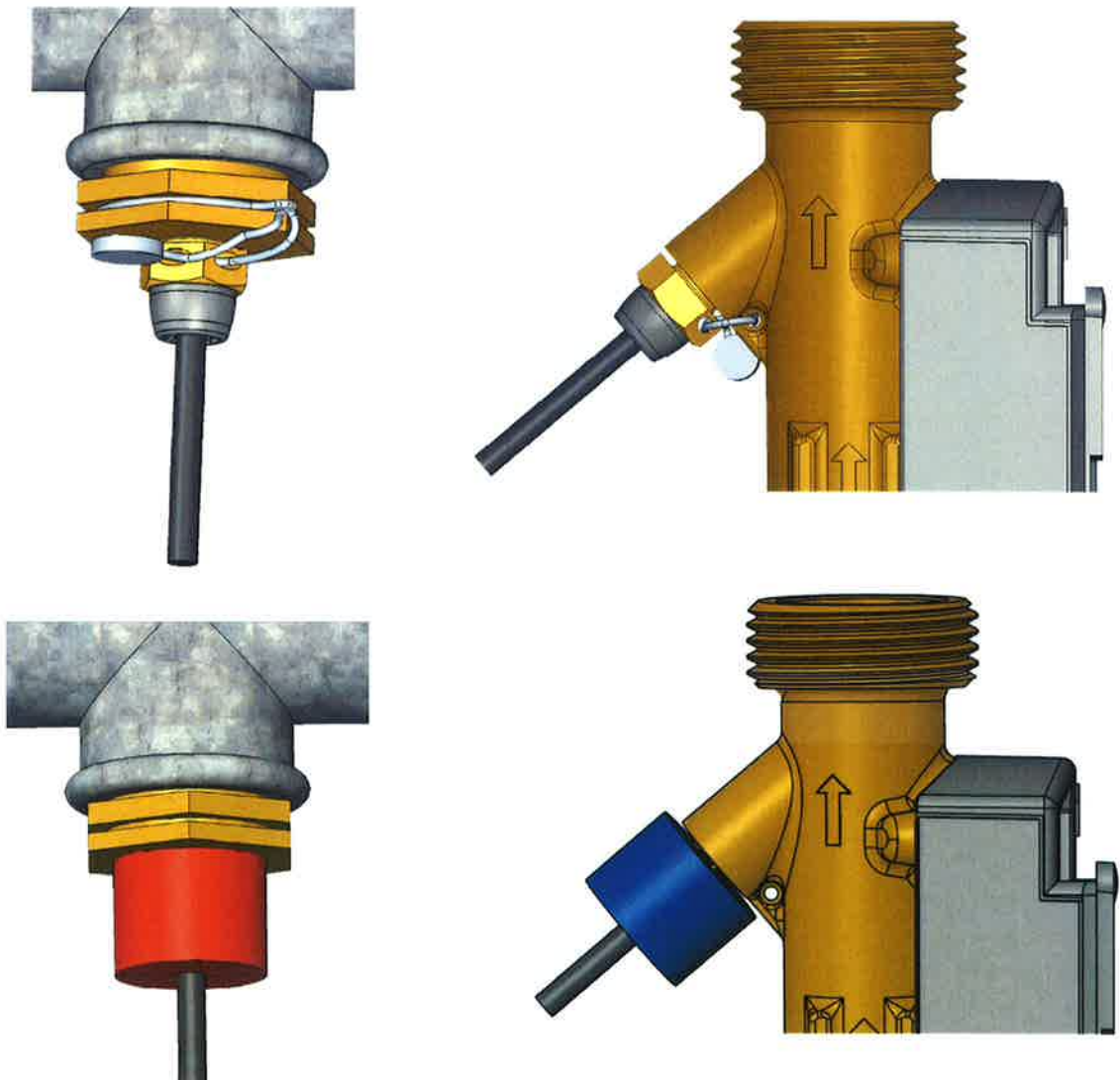
Kamstrup TemperatureSensor 63

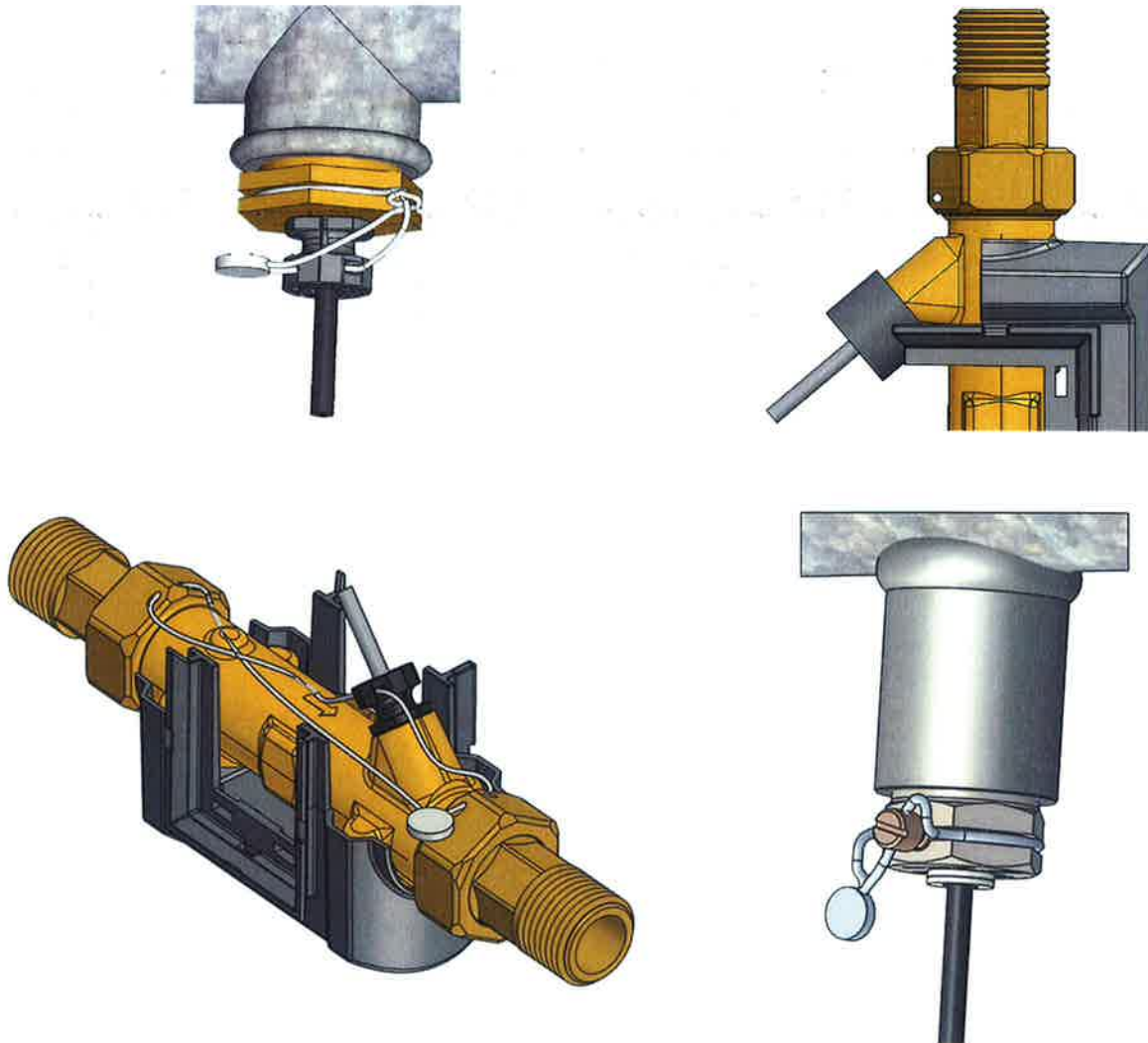


Kamstrup TemperatureSensor 83



I Installations seals (examples)



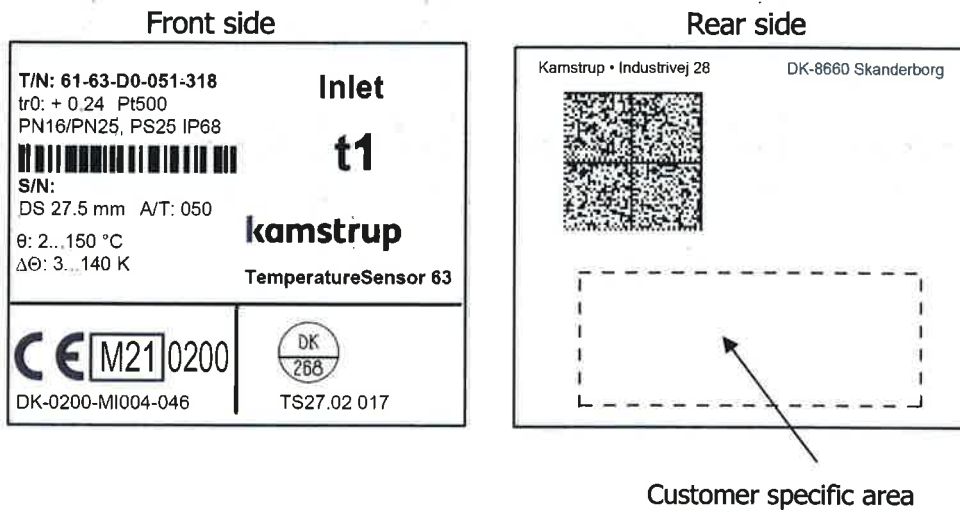


Inscriptions

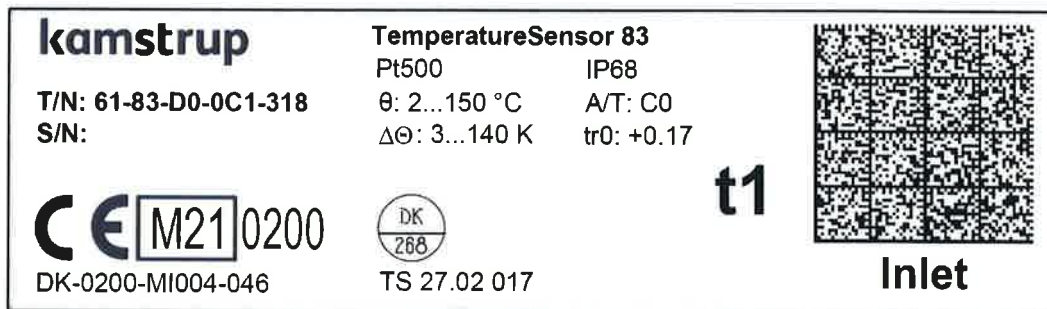
Type label on temperature sensors

CE marking and the supplementary metrology marking
Type Examination Certificate number
Manufacturer designation or logo and postal address
Type, production year and serial number
Temperature limits (θ_{\min} - θ_{\max})
Differential temperature limits ($\Delta\theta_{\min}$ - $\Delta\theta_{\max}$)
Approval type (A/T: X0)
Mounting in inlet or outlet pipe
Maximum working pressure (only approval type 50/60/70)

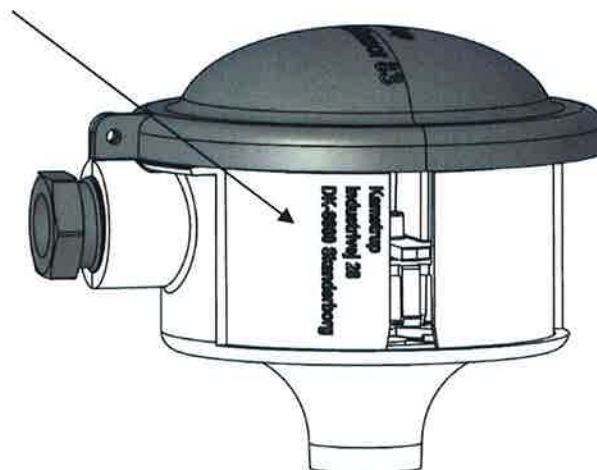
Example of type label for TemperatureSensor 63 – Heat/Cooling version



Example of type label for TemperatureSensor 83 – Heat/Cooling version



Marking of postal address on TemperatureSensor 83



Marking on TemperatureSensor 63 pockets

Manufacturer designation or logo

Maximum working pressure

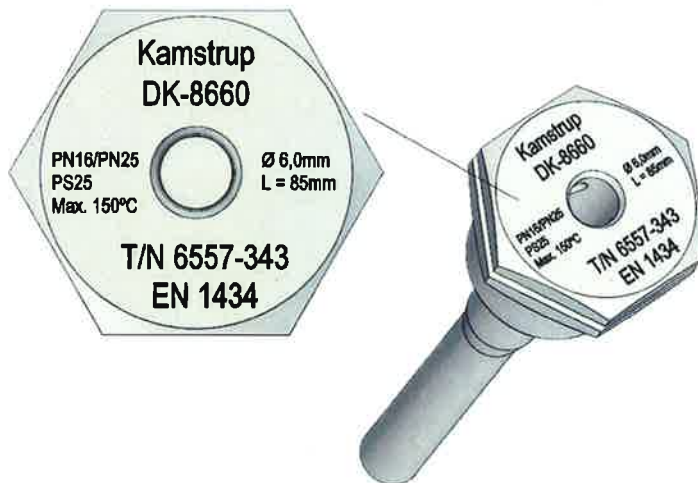
Maximum working temperature

Pocket length

Type number

Inner diameter: Ø

EN 1434 (only type 6557-343/344/345/350/351/352/353/355)



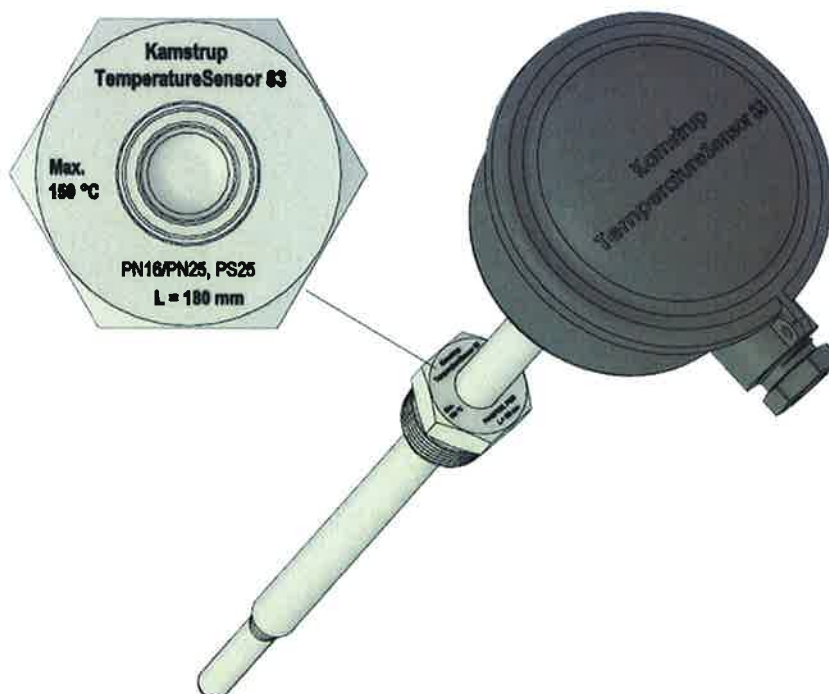
Marking on TemperatureSensor 83 pockets with connection head

Manufacturer designation or logo

Maximum working pressure

Maximum working temperature

Pocket length



Photos of TemperatureSensor 63 and TemperatureSensor 83

TemperatureSensor 63 – Heat version



TemperatureSensor 83 – Heat version



Informative annex

Integrated functions not subject to the Measuring Instruments Directive

Integrated bi-functional Heat/Cooling function

The Pt500 temperature sensors are type tested as Heating, Cooling and as bi-functional Heating/Cooling according to EN 1434-4:2015+A1:2018 and EN 1434:2022.

On this basis, the temperature sensors are national type approved for Cooling according to Danish law¹, System designation TS 27.02 017.









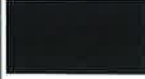
The Pt500 temperature sensors can therefore be utilized as bifunctional Heat/Cooling temperature sensors under the operating conditions as described in this certificate.



Re-verification

Re-verification of TemperatureSensor 63 & 83 may be performed according to EN 1434-5 as stated in this certificate for verification of TemperatureSensor 63 & 83, under consideration of national law.

Marking of inlet sensor, outlet sensor and optional sensor in Heat, Cooling and Heat/Cooling versions of TemperatureSensor 63

Version	Inlet – t1	Outlet – t2	Optional – t3
Heat			
Cooling			
Heat/Cooling			

¹ BEK No. 1178 of 06/11/2014, Ordinance on metrological control of meters for measuring consumption of cooling energy in district cooling systems and central cooling systems as amended by BEK No. 549 of 01/06/2016.