

EU-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI004-036

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

In accordance with The Danish Safety Technology Authority's statutory order no. 1382 of November 25, 2016 with later amendments which implements the Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measuring instruments (MID) and later amendments.

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

Type of instrument: Temperature sensor pair

Type designation: Pt500 DS-cable, Pt500 PL-cable with pockets,
Pt500 PL with pockets (with connection head)

Valid until: 2025-05-26

Number of pages: 9, including appendix

Date of issue: 2019-06-21

Version: 2
This new version of DK-0200-MI004-036 is issued due to addition of new pocket variants. The previous certificate is withdrawn.

Approved by



Michael Møller Nielsen
Certification Manager

Processed by



Lars Pøder
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.
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FORCE Certification references:
TASK No. 119-29031.01 and 0200-MID-06816

Appendix to

EU-Type Examination Certificate Measuring Instrument Directive

Number: DK-0200-MI004-036

Issued by FORCE Certification A/S, Denmark

EU-notified body number 0200

Revision	Issue date	Changes
DK-0200-MI004-036	2015-05-26	Original certificate
DK-0200-MI004-036 ver 1	2018-01-15	Addition to DS-cable regarding diameter and allowed PN Changes to PL-cable regarding diameter Addition of laser marking on pockets for PL-cable Approval of $\varnothing 6$ mm EN 1434 pockets for use with $\varnothing 5.8$ mm PL-cable sensor
DK-0200-MI004-036 ver 2	2019-06-21	Approval of $\varnothing 6$ mm EN 1434 reinforced pockets for use with $\varnothing 5.8$ mm PL-cable sensor

Applied standards and documents:

EN 1434:2015

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

Type designation:

Pt500 temperature sensor pair type DS-cable

Pt500 temperature sensor pair type PL-cable with pockets

Pt500 temperature sensor pair type PL with pockets (with connection head)

Description:

Pt500 temperature sensor pair type DS-cable

The sensor pair consists of two physically Pt500 sensors with fixed cable and identical series numbers. The sensor body has a total length of 27.5 mm incl. flange to sealing ring. The fixed cable is a 2-wire silicone cable. The cable is terminated with clip bushings. The return sensor is equipped with a blue type sign, the forward sensor with a red one. The sensor is intended for direct mounting.

Pt500 temperature sensor pair type PL-cable with pockets

The sensor pair consists of two physically Pt500 sensors with fixed cable.

The sensor body has a total length of 47 mm and an outside diameter of 5.75 mm/+0.03/- 0.03 at the bottom. The fixed cable is the silicone type with two conductors. The cable is terminated with clip bushings. The sensors are marked red or blue for forward and return sensor respectively.

The corresponding submersible pockets are of stainless steel.

All types have R $\frac{1}{2}$ or G $\frac{1}{2}$ thread. The length can vary between 65 and 210 mm.

Pt500 temperature sensor pair type PL with pockets (with connecting head)

The temperature sensor pair consists of Pt500 temperature sensor pair type PL with connecting terminals (insert) and temperature sensor pockets with connection head.

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The sensor insert is a PL-cable mounted with 4 connection terminals. The two- wire sensor pair type PL-cable which is connected to the part with four terminals has been shortened to nominal 370 mm.

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 available in 90, 140 or 180 mm. The connection head in plastic is mounted on the top of the sensor pocket tube.

The sensor insert is fastened in the head with a snap. The sensor cable is lead through the lower site of the head in a PG-bushing. The sensor head is terminated at the top by a sealable cover. Types with 3 sensors consist of a sensor pair with red / blue type sign and an extra sensor with grey type sign.

Technical documentation:

FORCE Certification A/S reference no.:

- 119-29031.01
- 117-37839.01
- 114-33017.04.11

Technical data:

Instrument type: Temperature sensor set

Type numbers

Temperature sensor type DS-Cable

66-00-0F0/1-XXX¹⁾, Pt500 direct short, temperature sensor set (2 pcs) with 1.5 m silicone cable
66-00-0G0/1-XXX¹⁾, Pt500 direct short, temperature sensor set (2 pcs) with 3 m silicone cable
66-00-0Q3-XXX¹⁾, Pt500 direct short, temperature sensor set (3 pcs) with 1.5 m silicone cable
66-00-0Q4-XXX¹⁾, Pt500 direct short, temperature sensor set (3 pcs) with 3 m silicone cable

Temperature sensor set type PL-Cable

65-00-0A0-XXX¹⁾, Pt500 pocket temperature sensor set (2 pcs) with 1.5 m silicone cable
65-00-0B0-XXX¹⁾, Pt500 pocket temperature sensor set (2 pcs) with 3.0 m silicone cable
65-00-0C0-XXX¹⁾, Pt500 pocket temperature sensor set (2 pcs) with 5.0 m silicone cable
65-00-0D0-XXX¹⁾, Pt500 pocket temperature sensor set (2 pcs) with 10 m silicone cable
65-00-0L0-XXX¹⁾, Pt500 pocket temperature sensor set (3 pcs) with 1.5 m silicone cable
65-00-0M0-XXX¹⁾, Pt500 pocket temperature sensor set (3 pcs) with 3.0 m silicone cable
65-00-0N0-XXX¹⁾, Pt500 pocket temperature sensor set (3 pcs) with 5.0 m silicone cable
65-00-0P0-XXX¹⁾, Pt500 pocket temperature sensor set (3 pcs) with 10 m silicone cable

Approved sensor pockets for temperature sensor type PL-Cable

65-57-324, RF sensor pocket, 65 mm with R1/2 connection
65-57-325, RF sensor pocket, 65 mm with G1/2 connection
65-57-327, RF sensor pocket, 90 mm with R1/2 connection
65-57-328, RF sensor pocket, 90 mm with G1/2 connection
65-57-309, RF sensor pocket, 90 mm with R1/2 connection
65-57-314, RF sensor pocket, 140 mm with R1/2 connection
65-57-343, RF sensor EN 1434 pocket, 85 mm with G½ connection
65-57-344, RF sensor EN 1434 pocket, 120 mm with G½ connection
65-57-345, RF sensor EN 1434 pocket, 210 mm with G½ connection
65-57-350, RF sensor EN 1434 reinforced pocket, 120 mm with R½ connection
65-57-351, RF sensor EN 1434 reinforced pocket, 210 mm with R½ connection
65-57-352, RF sensor EN 1434 reinforced pocket, 120 mm with G½ connection
65-57-353, RF sensor EN 1434 reinforced pocket, 210 mm with G½ connection

Insert temperature sensor type PL-Head

65-56-40-XXX¹⁾, Pt500 sensor insert (2 pcs) for sensor pocket with connecting head.
Is used for sensor pockets PL-head with a length of 90, 140 and 180 mm.

Sensor pockets PL-Head

65-56-02-XXX¹⁾, Sensor pocket with connection head, 90 mm with R1/2 connection
65-56-03-XXX¹⁾, Sensor pocket with connection head, 140 mm with R1/2 connection
65-56-04-XXX¹⁾, Sensor pocket with connection head, 180 mm with R1/2 connection

¹⁾ XXX = Delivery code. Temperature sensor set type PL and DS-Cable also available as type no. 67-0000-0YY-XXX. YY=A0/B0/C0/D0/L0/M0/N0/P0/F0/G0/Q3/Q4.

- Limits for temperature ranges and differential temperatures on temperature sensors:
 θ : 2...150 °C, $\Delta\theta$: 3...140K or narrower range
- Maximum permissible working pressures and temperatures:

	Maximum permissible working pressure			Maximum permissible working temperature	
	PN16	PN25	PN40	150 °C	180 °C
DS-cable sensor	X	X		X	
Pockets type: 65-57-343/344/345 65-57-350/351/352/353	X	X	X	X	X
All other pockets	X	X		X	

- Number of wires:
2 wire connection
Conductor cross section, cable type PL = 0.25 mm²
Conductor cross section, cable type DS = 0.25 mm²
Conductor cross section, insert PL-head = 0.25 mm² (2 or 4 wire connection in head)
- Sensor type:
Pt500, with five times resistance value of Pt100 according to EN60751
- Maximum sensor current:
0.1 mW RMS
- Durability specification:
10 years,
- Mechanical class:
M1, M2
- IP class:
IP65
- Installation demands:
According to EN 1434-2:2015, temperature sensor type DS
- Qualifying immersion depth:
Temperature sensor type PL-Cable
(Insert temperature sensor type PL-head) 25 mm
Temperature sensor type DS-Cable 17 mm

Verification

Verification procedure

According to EN 1434-5:2015 and EN 1434-1:2015

Seals and markings

Temperature sensor pair

Seals and markings

S

Security seals

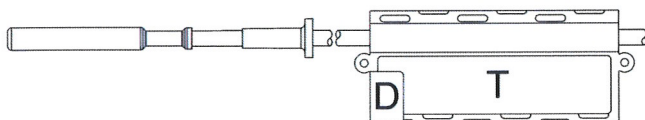
D

Security seals or module D/F label (Depending on type label)

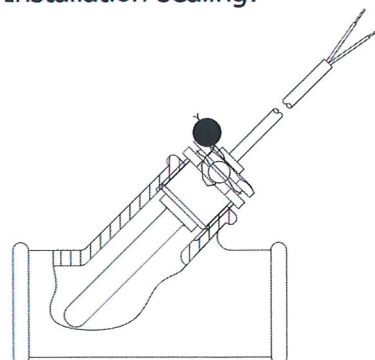
T

Type label

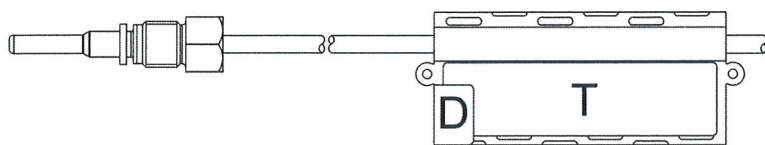
Temperature sensor, PL:



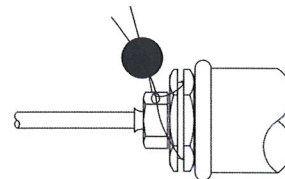
Installation sealing:



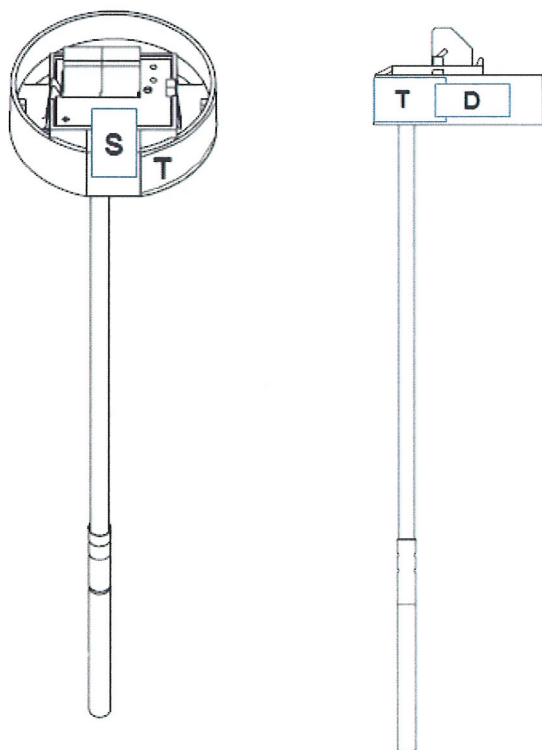
Temperature sensor, DS:



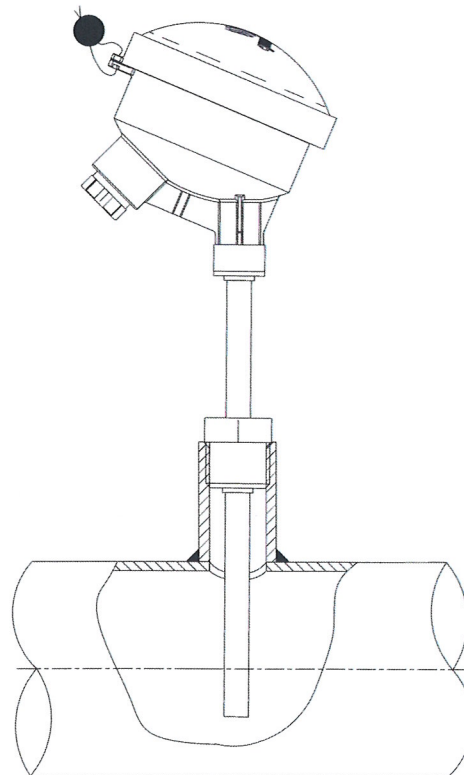
Installation sealing:



Temperature sensor with integral pocket:



Installation sealing:



Labelling and inscriptions

Type label on temperature sensors

Examination certificate number
Manufacturer designation or logo and postal address
Type, production year and serial number
Temperature limits ($\theta_{\min}$ - $\theta_{\max}$)
Differential temperature limits ($\Delta\theta_{\min}$ - $\Delta\theta_{\max}$)
Temperature sensor type
Mounting in inlet or outlet pipe
DS-cable: Maximum working pressure
PL-cable: D: 5.8

Marking on pockets for type PL-cable and pockets with connection head

Manufacturer designation or logo and postal address
Maximum working pressure
Maximum working temperature
Pocket length
Type number
Inner diameter: $\varnothing$
EN 1434 (only type 6557-343/344/345/350/351/352/353)

Examples of type labels

Temperature sensor with cable:

PL-cable

DK-0200 Type: 65-00-0A0-XXX
MI004-036 S/N:
Pt 500 θ : 2°C...150°C kamstrup
D: $\varnothing$ 5.8 $\Delta\theta$: 3K...140K DK-8660

DS-cable

DK-0200 Type: 65-00-0F0-XXX
MI004-036 S/N:
PN25 θ : 2°C...150°C kamstrup
Pt500 $\Delta\theta$: 3K...140K DK-8660

Pocket sensor with connection head:

PL-head (insert)

DK-0200 Type: 65-56-40-XXX
MI004-036 No.:
Pt 500 θ : 2°C...150°C kamstrup
INLET $\Delta\theta$: 3K...140K DK-8660

DK-0200 Type: 65-56-40-XXX
MI004-036 No.:
Pt 500 θ : 2°C...150°C kamstrup
OUTLET $\Delta\theta$: 3K...140K DK-8660

PL-head (pocket)

DK-0200 Type: 65-56-02-XXX
MI004-036 90 mm
D: $\varnothing$ 5.8 PN25 kamstrup
150 °C DK-8660

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 temperature sensors according to EN 1434-4:2015.

On this basis, the temperature sensors are national type approved for Cooling according to the Danish law¹, System designation TS 27.02 004.

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

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