ISOIL INDUSTRIA

DATA SHEET

TEMPERATURE PROBES

Sommario

This manual contains information that must be observed in the interest of your own safety and to avoid material damage. This information is supported by symbols which are used in this manual as indicated. Please read this manual before starting up the device. Store this manual in a place that is accessible to all users at all times.
If difficulties occur during startup, please do not intervene in any way that could jeopardize your warranty rights!

The following standards and directives apply to the use of pairs of temperature probes for measuring the inflow and outflow temperature in a heat exchanger system:
• Product standard DIN EN 1434
• Product standard DIN EN 60751
• Directive 2014/32/EU, Annex I and MI-004
• German Weights and Measures Act (MessEG)
• German Weights and Measures Directive (MessEV)
Specifications for electrical installations must be observed.
All installation and maintenance work must be performed by specialist staff trained for this task.
All notes listed in the installation instructions must be observed.
Identification markings and metrology-relevant safety markings/main stamps must not be damaged or removed – otherwise the temperature probe is no longer admissible for use!
Route the measurement signal lines so that they are at least 50 mm away from other lines, such as grid supply lines and data transmission lines. We recommend installing lines and computer units 300 mm away from strong electromagnetic fields, e.g. from frequency-controlled pumps and high-voltage power lines.
To protect against damage and pollutants, the temperature probes must not be removed from their packaging until immediately before installation.
Do not wind, bend, extend, or shorten the temperature probe lines.
When connecting to a computer unit, always connect the temperature probe first before connecting the volume measuring unit.

Warning symbols

CAUTION!

Risk of burns!

The installation process must be carried out by trained personnel.

When using water additives (corrosion protection, etc.), the operator must make sure there is sufficient corrosion resistance before installing the temperature probe.

With direct mounting, the temperature probe is immersed in the pipeline without any additional immersion sleeve. During dismounting, always make sure that hot medium does not escape from the pipeline.

Drain the pipeline system or seal off the temperature probe's installation location to relieve pressure.

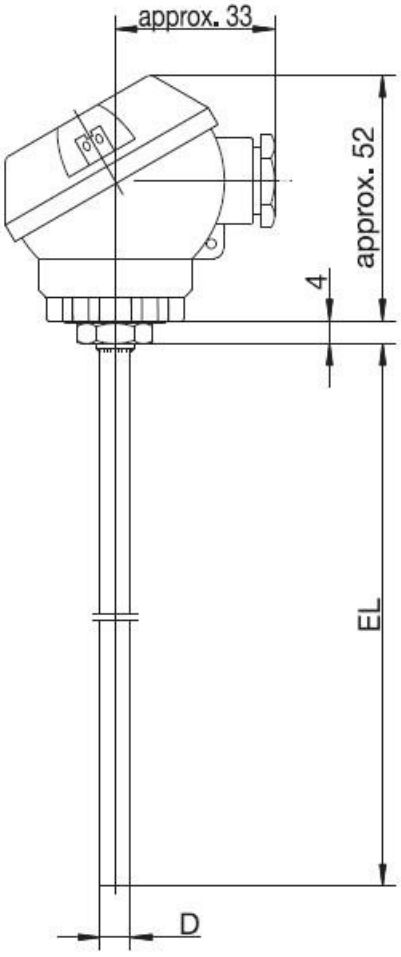
PLH PROBES

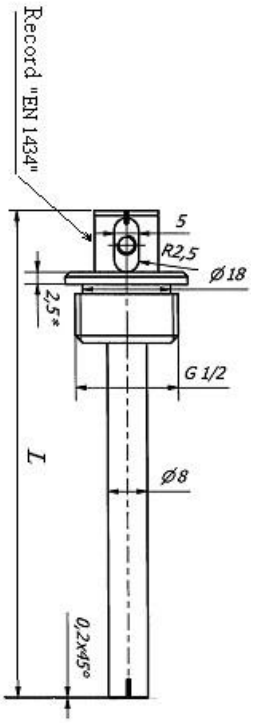
These days, the latest heat meters use various nominal values on the computer unit side (resistance value at 0 °C). The nominal values are normally 100 Ω (Pt100), 500 Ω (Pt500) and 1000 Ω (Pt1000). The RTD temperature probes from the type series 902437/10 for installation in immersion sleeves are type-tested according to the European Measuring Instruments Directive 2014/32/EU (MID) including Annexes I and MI-004. The paired temperature probes are suitable for being connected to a computer unit for a heat meter and measuring the difference between the inflow and outflow temperature in a heat exchanger system.

The temperature probes are made up of a corrosion-resistant protection fitting.

In order to meet the metrological requirements of the European Measuring Instruments Directive 2014/32/EU (MID) and the Annex MI-004, the temperature probes are calibrated at three temperatures and paired according to a special mathematical process in order to comply with the tolerances for temperature differences. The lower limit for temperature differences is 3 K.

PLH, and pocket drawing:





Pocket and probes 'drawing can change without any notification.

MID VERSION

ISOIL Industria Spa is using two different PLH probes with MID approval, PT100 (67PL0001) and PT500 (67PL0018). Both probes are Class A accordingly to DIN EN 60751.

We can supply the same probes with a test report for CAR use, these probes have the following codes 67PL1001 (PT100) and 67PL1018 (PT500).

The MID versions indicated below have a Basic type #902437/10, with the „B" module as per MID, and an approval number DE-06-MI004-PTB015.

On the probes a label is reporting the code of the single pair. For decoding the probes 'code read the code meaning below.

Code Meaning

Basic Type
- 902437/10 ○ Screw-in RTD temperature probe with continuous sheath, design PL as per DIN EN1434 (2003)

Operating Temperature
- 824 ○ 0 to 150°C
- 830 ○ 0 to 180°C

Measuring Insert
- 1003
  - ○ 1 x PT100 in 2-wire circuit
- 1004
  - ○ 1 x PT500 in 2-wire circuit

Tolerance class as per DIN EN 60751
- 2
  - ○ Class A

Sheath Diameter D in mm
- 6
  - ○ Ø 6mm (Tolerances as per DIN EN 1434-2)

Fitting Length EL in mm
- 140 ○ 140mm

Extra Code
- 761
  - ○ Version paired with CE and metrology sign (first calibration)

The pocket used for the MID version has a length of 120mm.

Our standard codes are:

67PL0001(67PL1001)	902137/10 – 830 – 1003 – 2 – 6 – 140/761
67PL0018(67PL1018)	902137/10 – 830 – 1004 – 2 – 6 – 140/761

NON-MID VERSION

For the NON-MID version, we can supply different probes with different solutions.
The probe has an AISI316 shaft with 6mm of external diameter, the length depends on the request. Precision class accordingly to IEC751, maximum pression acceptable 4.000kPa. The probe's case is IP66.

Here below the list of options available:

Sensing element (-200 … +400°C)

- RTD100
- RTD500
- RTD1000

Tolerance Class

A. A
B. 1/3 DIN
C. 1/5 DIN
D. 1/10 DIN

Connection

2 2 CONNECTORS
3 3 CONNECTORS
4 4 CONNECTORS
5 2+2 CONNECTORS (DOUBLE ELEMENT)
6 3+3 CONNECTORS (DOUBLE ELEMENT)

Case B DIN B

J J
AD ATEX with ADPE CASE
Ex ATEX EeXia
M Mignon
P PVC

Process connection

0 Without tread
1 Fixed ½" GM
2 Fixed ½" NPT
3 Sliding ½" with brass cone
4 Sliding ½" with inox cone and inox pawl
5 Sliding ½" with inox cone and Teflon pawl

Output signal

A. Ohm
B. 4-20mA
C. 4-20mA Atex EeXia certified
D. 4-20mA + HART Atex EeXia certified

Pocket

0 None
1 From pipe 8mm, L=100mm, ½", 40bar
2 From pipe 8mm, L=100mm. ½", 350bar

Reports/Certifications

A. None
B. Test report with Accredia reference (2 points) used for CAR application.
C. Pair selection
D. Pair selection + Test report
E. Accredia Certificate on 3 points
F. Accredia Certificate on 5 points

Execution

0 Standard closed for liquids.
1 Perforated for air application

EXAMPLE OF CODE

Code:	RTD500	-	A	-	4	-	B	-	0	-	A	-	1	-	C	-	0	-	L=240-LP=220
Description:																			

Probe:	500ohm a 0°C
Class:	A
Connection:	4 connectors
Case:	B
Process connection:	Without threaded
Output:	Ohm
Pocket/s:	dn8mm from pipe L=100mm 1/2" - 40 bar
Reports:	Paired
Probe's type:	Standard probe closed for liquid
Probe's length/pocket:	Probe=240mm-Pocket=220mm

OLD CODE DESCRIPTION

PLH-1-4-Pxxx-Poxxx
PLH= **P**ocket needed; type „**L**"; with **H**ead
1= Pt100 thermistor
4= Number of wires connectable
Pxxx= Probe 'shaft length (mm)
Poxxx= Pocket immersion (mm)

PLH-2-4-Pxxx-Poxxx
PLH= **P**ocket needed; type „**L**"; with **H**ead
2= Pt500 thermistor
4= Number of wires connectable
Pxxx= Probe 'shaft length (mm)
Poxxx= Pocket immersion (mm)

All the PLH probes are paired for energy calculation and class „B" as per IEC751 The probe' shaft is usually at least 20mm longer than the value of pocket immersion.

Examples:
PLH-2-4-P220-PO200
PLH probes (paired) with Pt500 thermistor, probe 'shaft 220mm and pocket immersion 200mm

EXCEPTIONS

- 67PL0020 PLH-2-4-P100-PO100 Coppia sonde PT500 classe B 4 fili con pozzetti
  - ✦ PLH-2-4-P100-PO100 Paired probes PT500 class B 4 wires with pocket
- 67PL1073 PLH-2-4-P70-PO50 Coppia sonde PT500 classe A-4 fili con pozzetti
  - ✦ PLH-2-4-P70-PO50 Paired probes PT500 class A 4 wires with pocket ○

Are both using a thermoelemt Pt500 class „A" as per IEC751.

- 67PL0020 PLH-2-4-P100-PO100 Coppia sonde PT500 classe B 4 fili con pozzetti

- PLH-2-4-P100-PO100 Paired probes PT500 class B 4 wires with pocket
  - **The probe 'shaft length is 120mm.**
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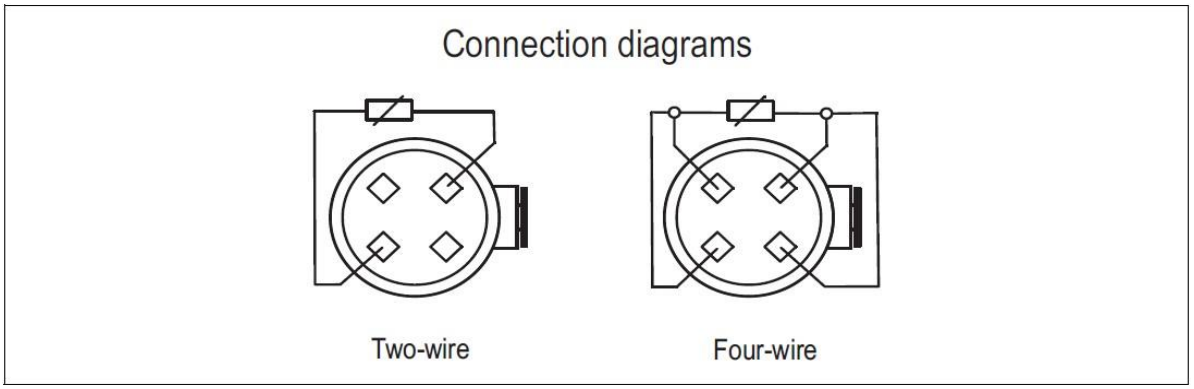
INSTALLATION RECOMMENDATIONS

If the pair of temperature probes is connected to a computer unit, make sure that the probe's nominal value matches that of the processing computer unit.
Furthermore, make sure that the installation location is deep enough to prevent damage to the tip of the probe or immersion sleeve when screwing in.
The temperature probe must be installed in the pipeline so that a enough immersion depth is guaranteed that is greater than the minimum immersion depth in all cases.
During installation, the connection cable must not be shortened or extended as this would impair compliance with the tolerances (for two-wire technology).
To avoid an inductive effect, the connecting cable should not be wound.
The connecting cable must not be laid alongside or wrapped around hot pipes because the line resistance and its temperature dependence are considered in the measurement result for temperature probes using two-wire technology.
Following successful mounting, the temperature probes must be secured against manipulation with a seal. For this, the seal holes in the fastening screw at the terminal head, or special sealing eyelets, are provided. The sealing set is available as part no. 00650727.
The maximum length for connecting cables in two-wire technology depends on the conductor cross section and the nominal value according to DIN EN 1434-2. If the maximum permissible length, which may be connected to the calculator, has a lower value, this value applies (to be taken from the type examination certificate).

Conductor cross section in mm^2	Maximum length for Pt100 in m	Maximum length for Pt500 in m	Maximum length for Pt1000 in m
0.22	2.5	12.5	25.0
0.50	5.0	25.0	50.0
0.75	7.5	37.5	78.0
1.50	15.0	75.0	150.0

When choosing a connecting cable, make sure that the sheath material is sufficiently age resistant. The connecting cable's outer diameter should be chosen so that there can be a secure seal for the cable entry to the terminal head (terminal head shape J: outer diameter 4 to 9 mm; terminal head shape B: outer diameter 5 to 12.5 mm).



In order to reduce additional installation-related measurement errors to a minimum, the temperature probes in the flow and return must be installed the same. This applies to the pipe diameters and installation fittings used, and the choice of the same immersion depth, which must be greater than the minimum immersion depth, and the external thermal insulation. This is intended to ensure that the possible measurement deviations depending on the installation location are cancelled out in the first approximation when determining the difference.

IN THREADED PIPE FITTING.
DN:15,20,25,32 and 40
USE BALL VALVE, PROBE AXIS PERPENDICULAR TO AXIS OF FITTING AND IN THE SAME PLANE.

IN BEND.
DN≤50
INSTALL IN BEND WITH 70mm TEMPERATURE BOSS, AGAINST FLOW, PROBE AXIS COINCIDENT WITH PIPE AXE

ANGLED PROBES.
DN≤50
INSTALL WITH 45° TEMPERATURE BOSS, AGAINST FLOW

PERPENDICULAR PROBE
Dn65≤DN≤DN250
INSTALL WITH 70mm TEMPERATURE BOSS, PROBE AXIS PERPENDICULAR TO AXIS AND IN THE SAME PLANE.

ISOIL INDUSTRIA S.p.A.

HEAD OFFICE	SERVICE
Via Fratelli Gracchi, 27 20092 Cinisello Balsamo (MI) Tel +39 02 66027.1 Fax 039 026123202 sales@isoil.it	isomagservice@isoil.it

If you want to find the complete list of our distributors access at the following link: https://www.isoil.it/en/

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