Kipp & Zonen

INSTRUCTION MANUAL

RECORDER TEMPERATURE MODULES

0317 252

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IMPORTANT USER INFORMATION

Reading this entire manual is recommended for full understanding of the use of this product.

The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the instrument.

Should you have any comments on this manual we will be pleased to receive them at:

Kipp & Zonen B.V.
Röntgenweg 1 2624 BD Delft
P.O. Box 507 2600 AM Delft
Holland
Phone +31 (0)15 2698000
Fax +31 (0)15 2620351
Email info.holland@kippzonen.com

Kipp & Zonen reserve the right to make changes to the specifications without prior notice.

WARRANTY AND LIABILITY

Kipp & Zonen guarantees that the product delivered has been thoroughly tested to ensure that it meets its published specifications. The warranty included in the conditions of delivery is valid only if the product has been installed and used according to the instructions supplied by Kipp & Zonen.

Kipp & Zonen shall in no event be liable for incidental or consequential damages, including without limitation, lost profits, loss of income, loss of business opportunities, loss of use and other related exposures, however caused, arising from the faulty and incorrect use of the product.
User made modifications can affect the validity of the CE declaration.

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CE

DECLARATION OF CONFORMITY

According to EC guideline 89/336/EEC

We **Kipp & Zonen B.V.**
Röntgenweg 1
2624 BD Delft

Declare under our sole responsibility that the product

Type: **Type J, Type K, Type Pt100**
Name: **Temperature Modules**

To which this declaration relates is in conformity with the following standards

Imissions	EN 50082-1	Group standard
Emissions	EN 50081-1	Group standard
	EN 55022	
Safety standard	IEC 1010-1	

Following the provisions of the directive

R.E. Ringoir
Product management
KIPP & ZONEN B.V.

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1. INTRODUCTION

The temperature modules type J and type K are active temperature measuring units, providing linearization and automatic cold junction compensation.
The temperature module type Pt 100 is an active measuring unit, suitable for the measurement of temperatures with the use of an external Pt 100 element based on DIN 43760. The unit comprises it's own current source.

The units can be directly powered from the majority of KIPP Recorders and Philips Multimeters, or from a mains outlet with the supplied adapter. The output voltage (1mV/°C) can be measured with a recorder or multimeter.

WARNING: Never insert the unit into a mains outlet!

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2 TECHNICAL DATA

Output voltage	1 mV/°C
Power supply voltage	3…9 V dc (Absolute max. value 15 V)
Power consumption	< 40 mW
Max. voltage between power supply and input/output terminals	42 V dc or 30 V ac.
Environmental conditions	Acc. to IE359
Reference conditions	Ambient temperature +21…25 °C relative humidity 45…75% power supply voltage 6 V
Rated range of use	Ambient temperature +5…40 °C relative humidity 20…80% power supply voltage 3…9 V
Safety	Acc. to IEC348, class 2
Measuring range K	-50…+600 °C
Measuring range J	-50…+1200 °C
Measuring range Pt100	-100…+850 °C
Linearization J and K	According to IPTS 68
Linearization Pt100	Based on DIN 43760
Measurement current Pt100	220 μA
Overall accuracy at reference conditions (thermocouple excluded)	± 1 °C ± 0,25 % of reading
Overall accuracy at reference conditions (Pt100 element excluded)	± 0.3 °C ± 0.1% of reading
Additional error over rated temperature range (cold junction error + temperature drift) J and K	± 0,05 °C ± 0,02 % of reading per °C deviation from T_{ref}
Additional error at an ambient	Reading –100…+400 °C:

temperature T_{amb} outside the reference temperature Tref (Tref = 21…25 °C, see also figure 1	±(0.01 °C + 0.005% of reading) x (Tamb – Tref) Reading +400…850 °C: ±{0.03 °C + 0.03% of (reading - 400)} x (Tamb – Tref)
Additional error due to Pt100 lead resistance (only for the current wires, pins 1 and 4)	4-wire measurement: -0.12% of reading/Ohm 3-wire measurement: -0.13% of reading + 2.56 °C/Ohm 2-wire measurement: -1.87% of reading+ 5.15 °C/Ohm

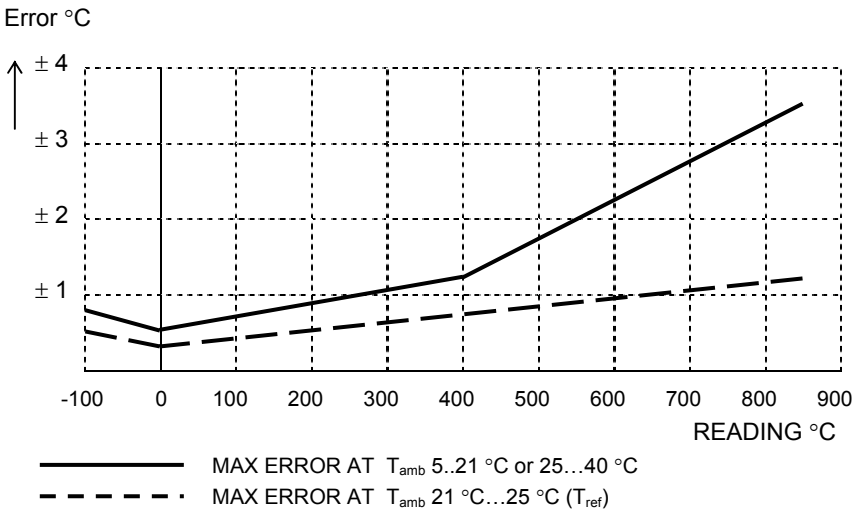


Figure 1. Accuracy graph for the Pt-100

3 PREPARATIONS FOR USE

3.1 POWER SUPPLY

The power is supplied by a European adapter (figure 3a), a universal adapter (figure 3b and 3c) or is powered by the recorder, for which the cable in figure 3d is needed. The supply input is galvanically separated from the measuring circuit.

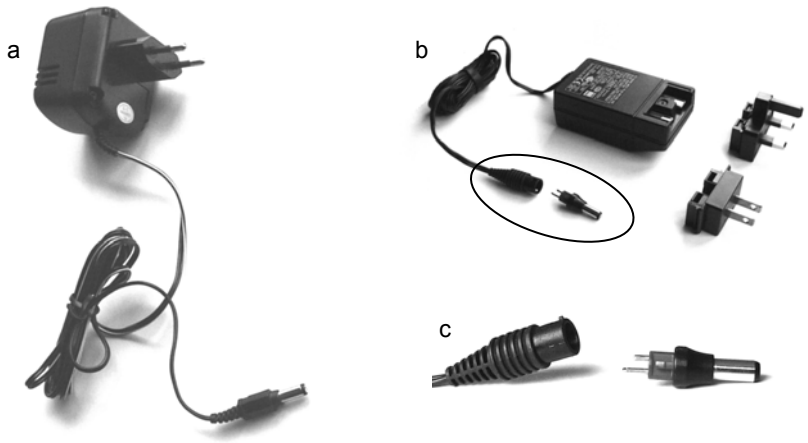


Figure 3a. European adapter
3b. Universal adapter
3c. Detail of the universal adapter

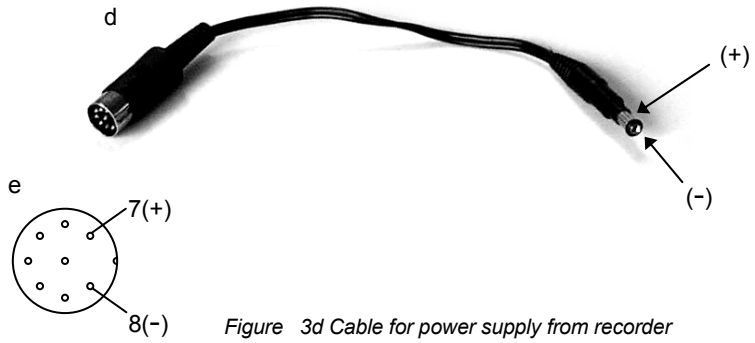


Figure 3d Cable for power supply from recorder
3e Pin 7 and 8 of the cable

This cable can be used if the measuring instrument provides an 8-pole DIN connector with the correct supply voltage between pin 7(+) and pin 8(-), see figure 3e. The KIPP Duonorm recorders and Philips Multimeters are equipped with this connector. Please consult the relevant operating manual to see whether an instrument provides the above-mentioned connector.

In case the connector of the universal adapter is not fitted yet, see figure 3f for instructions.

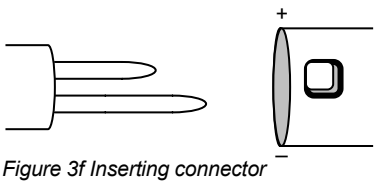


Figure 3f Inserting connector

Make sure that the shortest pin is inserted on the plus-site and the longer pin on the minus-site. Once the connector is inserted it is no longer detachable.

3.2 THERMOCOUPLES

In the color code table below can be found how the wires of the thermocouples should be connected.

3.2.1 Type J

Type J has a positive wire of magnetic iron (Fe) and a negative wire of constantan-copper-nickel (Cu-Ni).

Where		Outside	Plus	Minus
Canada and USA	Thermocouple Grade	brown	white	red
Canada and USA	Extension Grade	black	white	red
International	IEC 584-3	black	black	white
International	IEC 584-3 Intrinsically safe	bleu	black	white
Czech British	BS 1843	black	yellow	blue
Netherlands German	DIN 43710	blue	red	blue
Japanese	JIS C1610-1981	yellow	red	white
French	NFE-18001	black	yellow	black

3.2.2 Type K

Type K has a positive wire of chromega, which is an alloy of nickel and chromium (Ni-Cr). The negative wire consists of magnetic alomega, which is an alloy of nickel and aluminium (Ni-Al).

Where		Outside	Plus	Minus
Canada and USA	Thermocouple Grade	brown	yellow	red
Canada and USA	Extension Grade	yellow	yellow	red
International	IEC 584-3	green	green	white
International	IEC 584-3 Intrinsically safe	bleu	green	white
Czech British	BS 1843	red	brown	blue
Netherlands German	DIN 43710	green	red	green
Japanese	JIS C1610-1981	blue	red	white
French	NFE-18001	yellow	yellow	purple

3.3 PT100

The Pt100 RTD should be connected as indicated in the figure below.

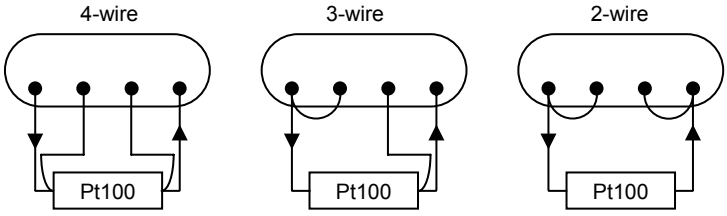


Figure 4 Connection of the Pt100

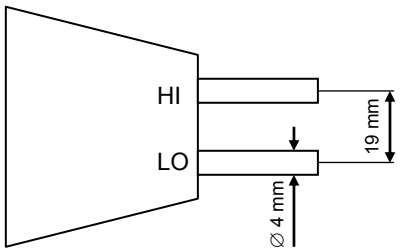
3.4 INSERTING WIRES

The leads can be inserted into the self-gripping input terminal block:

- Insert a round metal object with a diameter of approx. 1.2 mm (e.g. a screw driver) into the upper hole to gain access to the corresponding lower hole.
- Insert the lead in the corresponding lower hole.
- Remove the metal object.

3.5 OUTPUT

The HI and LO output terminal have to be connected to the HI and LO terminal of the measuring instrument. The unit can be plugged directly on the KIPP Duonorm Recorders and Philips Multimeters.



WARNING: Never insert the unit into a mains outlet!

APPENDIX A ORDERING INFORMATION

Temperature modules:	with adapter:	Ordernr.
Type J,	Euro, 230 V	0350712
Type K	Euro, 230 V	0350711
Type Pt 100	Euro, 230 V	0350710
Type J	Universal, 90-240 V	0350722
Type K	Universal, 90-240 V	0350721
Type Pt 100	Universal, 90-240 V	0350720

a b

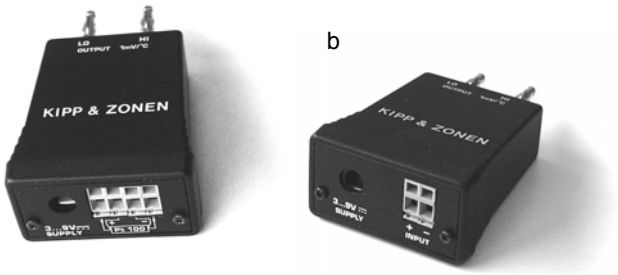


Figure 1a. Temperature module Pt100
b. Temperature module type K or J

Customer Support

Our customer support remains at your disposal for any maintenance or repair, calibration, supplies and spares. The address is as follows:

Für Servicearbeiten und Kalibrierung, Verbrauchs-material und Ersatzteile steht Ihnen unsere Customer Support Abteilung unter folgender Adresse zur Verfügung:

Notre service 'Support Clientèle' reste à votre entière disposition pour tout problème de maintenance, réparation ou d'étalonnage ainsi que pour les accessoires et pièces de rechange. Leur adresse est la suivante :

Holland
Kipp & Zonen B.V.
Röntgenweg 1
2624 BD DELFT
T +31 15 269 8000
F +31 15 262 0351
E kipp.holland@kippzonen.com

UK
Kipp & Zonen Ltd.
P.O. Box 819,
LINCOLN, Lincolnshire LN6 0WY
T +44 1522 695 403
F +44 1522 696 598
E kipp.uk@kippzonen.com

Germany
Gengenbach Messtechnik
Heinrich-Otto-Strasse 3
D-73262 REICHENBACH/FILS
T +49 7153 9258 0
F +49 7153 9258 160
E info@rg-messtechnik.de

USA
Kipp & Zonen USA Inc.
125, Wilbur Place
BOHEMIA/NY 11716
T +1 631 589 2065
F +1 631 589 2068
E kipp.usa@kippzonen.com

France
Kipp & Zonen S.A.R.L.
7, avenue Clément Ader
ZA Ponroy - Bât. M
F-94420 LE PLESSIS TREVISE
T +33 1 49 62 4104
F +33 1 49 62 4102
E kipp.france@kippzonen.com

Kipp & Zonen

WWW.KIPPZONEN.COM