

USER INSTRUCTIONS

MINI PAQ® R230

Universal, non-isolated, 2-wire DIN Rail temperature transmitter



This user instruction must be read prior to adjustment and/or installation.
All information subject to change without notice.

MEASURE OF SUCCESS



INOR

INOR Process AB, PO Box 9125, SE-200 39 Malmö, Sweden,
Phone: +46 40 312 560, Fax: +46 40 312 570, E-mail: support@inor.se

INOR Transmitter OY, Unikkotie 13, FI-01300 Vantaa, Finland,
Phone: +358 10 421 7900, Fax: +358 10 421 7901, E-mail: myntil@inor.fi

INOR Transmitter GmbH, Am See 24, D-47279 Duisburg, Germany,
Phone: +49-203 7382 762 0, Fax: +49-203 7382 762 2, E-mail: info@inor-gmbh.de

KROHNE Temperature Division INOR, 55 Cherry Hill Drive,
Beverly, MA 01915, United States
Phone: +1 978 826 6900, Fax: +1 978 535 1720, E-mail: inor-info@krohne.com

www.inor.com, www.krohne-inor.se
www.krohne-inor.fi, www.inor-gmbh.de

INTRODUCTION

MinIPAQ R230 is a universal, non-isolated, 2-wire DIN Rail temperature transmitter intended to be used in industrial environments. The transmitter accepts inputs from resistance thermometers (RTDs) like e.g. Pt10...Pt1000 and 10 types of standardized thermocouples, with additional voltage and resistance inputs. MinIPAQ R230 is designed to fit on a standard DIN-Rail 35 mm according to EN IEC 60715.

The Transmitter is either wirelessly configured from a smartphone via built-in NFC or a Bluetooth modem, or from a Windows PC via a USB-Interface.

GENERAL INFORMATION

MinIPAQ R230 is mainly used to convert signals from a temperature sensor to a standard analog 4-20 mA signal. The transmitter's input side is connected to some sort of temperature sensor and the output side is connected in a 2-wire loop (totally two leads are used in common for power supply and output signal) to generate 4-20 mA.

BEFORE START UP



CAUTION!

Observe without fail the local occupational health and safety regulations. Installation, assembly, start-up and maintenance may only be performed by appropriately trained personnel.



DANGER!

All work on the electrical connections may only be carried out with the power disconnected. Take note of the voltage data in the technical data specification. Observe the national regulations for electrical installations.



DANGER!

This instrument complies with requirements of Low Voltage Directive. Instruments must not be connected to power supply before reading instructions described in the manual.



DANGER!

This device cannot be used in Hazardous Locations or Explosive Gas Atmospheres!

ELECTRICAL CONNECTIONS, INPUT

The Input signal must be connected in accordance with the following data and illustrations:



DANGER!

All work on the electrical connections may only be carried out with the power disconnected. Observe the national regulations for electrical installations.

Terminals	Keyed Plug-In terminals
Connection method	Screw connection with tension sleeve
Conductor cross section flexible	0.2 mm ² ... 1.5 mm ²
Conductor cross section rigid	0.2 mm ² ... 1.5 mm ²
Conductor cross section AWG	24 ... 16
Stripping length	7 mm
Drive form screw head	Slotted
Tightening torque	0.22 Nm ... 0.25 Nm

DATA (short form)

Input RTD	2-, 3-, 4-wire connection
Pt100 (IEC 60751, $\alpha=0.00385$)	-200 to +850 °C / -328 to +1562 °F
Pt X (10 \times X \times 1000), (IEC 60751, $\alpha=0.00385$)	-200 to +850 °C / -328 to +1562 °F
Ni100 (DIN 43760)	-60 to +250 °C / -76 to +482 °F
Ni120 (Edison Curve No. 7)	-60 to +250 °C / -76 to +482 °F
Ni1000 (DIN 43760)	-50 to +180 °C / -58 to +356 °F
Input Thermocouple	Type B, C, D, E, J, K, N, R, S, T
Additional inputs	Plain resistance [0 to 4 kΩ], Plain mV [-10 to +1000 mV]
Output	4-20 mA, in 2-wire loop connection
Operating temperature	-40 to +85 °C / -40 to +185 °F
Galvanic isolation	None
Power supply	8.0 to 36.0 VDC
Typical accuracy (RTD)	Max. of ± 0.15 K or $\pm 0.15\%$ of span
EMC standards	EN 61326-1 and EN 61326-2-3
RoHS Directive	2011/65/EU + (EU) 2015/863
EU Declaration of Conformity	In accordance with EN ISO/IEC 17050-1
Terminals	Keyed Plug-In terminals
Connection method	Screw connection with tension sleeve
Nominal cross section	1.5 mm ²
Mounting	DIN-Rail 35 mm according to EN IEC 60715
Factory default settings	
Input	Pt100 3W, 0 to 100 °C
Output	4 to 20 mA
Sensor error indication	Upscale

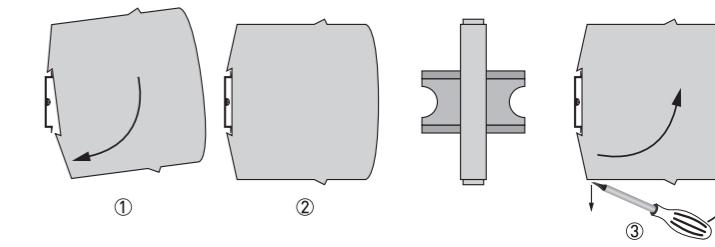


INFORMATION!

For more data, consult the technical data sheet for MinIPAQ R230

MOUNTING

The transmitter is intended for installation on a standard DIN-Rail 35 mm according to EN IEC 60715.



Rail installation

- Fix the upper part of the transmitter onto the rail.
- Press the lower part of the transmitter against the rail.
- To remove the transmitter, bend the locking device using a small screwdriver. Carefully pull the transmitter in the forward direction.

DISPOSAL



LEGAL NOTICE!

Disposal must be carried out in accordance with legislation applicable in your country.

Separate collection of WEEE (Waste Electrical and Electronic Equipment):

According to the directive 2012/19/EU or UK Regulation 2013 No. 3113, the monitoring and control instruments marked with the WEEE symbol and reaching their end-of-life must not be disposed of with other waste.

The user must dispose of the WEEE to a designated collection point for the recycling of WEEE or send them back to our local organisation or authorised representative.

ELECTRICAL CONNECTIONS, OUTPUT

The Output signal / Power Supply must be connected in accordance with the following data and illustrations:



DANGER!

All work on the electrical connections may only be carried out with the power disconnected. Take note of the voltage data in the technical data specification. Observe the national regulations for electrical installations.

Output

Power Supply / 4 ... 20 mA loop

8 ... 36 V DC over the transmitter

21 22 23 24

Power Supply (Nominally 24 V DC)

21 22 23 24

Power Supply (Nominally 24 V DC)

21 22 23 24

Power Supply (Nominally 24 V DC)

21 22 23 24

Power Supply (Nominally 24 V DC)

21 22 23 24

Power Supply (Nominally 24 V DC)

21 22 23 24

Power Supply (Nominally 24 V DC)

21 22 23 24

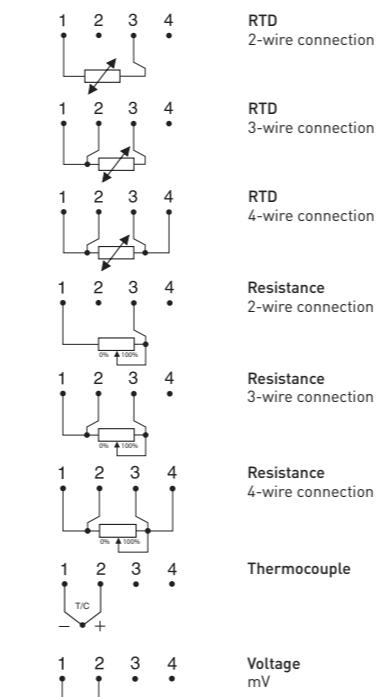
Power Supply (Nominally 24 V DC)

21 22 23 24

Power Supply (Nominally 24 V DC)

21 22 23 24

Input



Input

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

1 2 3 4

CONFIGURATION

Configuration of the transmitter is possible in three different ways.

Via NFC

Equipments:

- Smartphone or tablet with Android or iOS and NFC (Near Field Communication) function
- Smartphone-App INOR Connect

Via Bluetooth

Equipments:

- Smartphone or tablet with Android or iOS and Bluetooth function
- Smartphone-App INOR Connect
- INOR Bluetooth Configuration Kit, ICON-BT

Via PC

Equipments:

- PC with Windows OS
- PC Software INOR ConSoft
- INOR USB Configuration Kit, ICON-X

CONFIGURATION via NFC



CAUTION!
Configuration of the transmitter via NFC is only allowed when there are no Input/Output cables connected to the transmitter.

Preparations

1. Download the app INOR Connect to your mobile device, it is available for both Android and iOS and is free to download and use.
2. Make sure NFC communication is activated on your mobile device.



Scan the QR code to download and install the app INOR Connect

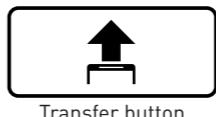


INOR Connect



Read Configuration

4. Once you have set the values for the transmitter in the app, you transfer it to the transmitter by clicking the transfer button and holding the mobile device against the transmitter's NFC-area until a green check box appears confirming that the transfer has been completed.



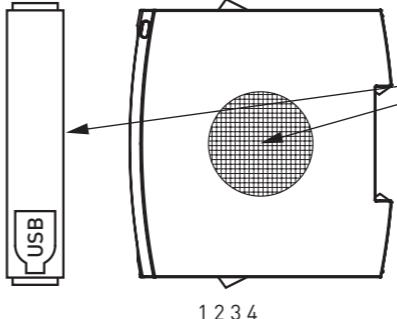
Transfer button



Data transfer completed ok



21 22 23 24



Note!
Communication via NFC is only possible from this side of the transmitter.
The Smartphone's NFC antenna may be located in different places depending on the brand and model you have.

Place the phone's NFC antenna close to the transmitter's NFC antenna.

Please consult the specific NFC Quick Start Guide for more guidance if needed.

LIMITED WARRANTY

INOR Process AB, or any other affiliated company within the Inor Group (hereinafter jointly referred to as "Inor"), hereby warrants that the Product will be free from defects in materials or workmanship for a period of five (5) years from the date of delivery ("Limited Warranty"). This Limited Warranty is limited to repair or replacement at Inor's option and is effective only for the first end-user of the Product. Upon receipt of a warranty claim, Inor shall respond within a reasonable time period as to its decision concerning:

- 1 Whether Inor acknowledges its responsibility for any asserted defect in materials or workmanship; and, if so,
- 2 the appropriate cause of action to be taken (i.e. whether a defective product should be replaced or repaired by Inor).

This Limited Warranty applies only if the Product:

- 1 is installed according to the instructions furnished by Inor;
- 2 is connected to a proper power supply;
- 3 is not misused or abused; and
- 4 there is no evidence of tampering, mishandling, neglect, accidental damage, modification or repair without the approval of Inor or damage done to the Product by anyone other than Inor.

This Limited Warranty is provided by Inor and contains the only express warranty provided.

INOR SPECIFICALLY DISCLAIMS ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTEE OR REPRESENTATION AS TO SUITABILITY FOR ANY PARTICULAR PURPOSE, PERFORMANCE, QUALITY AND ABSENCE OF ANY HIDDEN DEFECTS, AND ANY REMEDY FOR BREACH OF CONTRACT, WHICH BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. EXCEPT AS PROVIDED HEREIN, INOR FURTHER DISCLAIMS ANY RESPONSIBILITY FOR LOSSES, EXPENSES, INCONVENIENCES, SPECIAL, DIRECT, SECONDARY OR CONSEQUENTIAL DAMAGES ARISING FROM OWNERSHIP OR USE OF THE PRODUCT.

Products that are covered by the Limited Warranty will either be repaired or replaced at the option of Inor. Customer pays freight to Inor, and Inor will pay the return freight by post or other "normal" way of transport. If any other type of return freight is requested, customer pays the whole return cost.

CONFIGURATION via Bluetooth

Configuration via Bluetooth requires the Bluetooth-modem ICON-BT to be connected to the transmitter's USB-port. Modem and cables are included in the configuration kit ICON-BT.

Consult the ICON-BT Quick Start guide for description about installation and usage.

Here is a short form guide:

1. Insert two AAA batteries into the ICON-BT interface.
2. Install the Smartphone-app INOR Connect.
3. Set Bluetooth communication to ON in your smartphone.
4. Connect the ICON-BT Bluetooth modem to the transmitter using the supplied cable, see image below.
5. Start INOR Connect on your device.
6. When selecting Read Configuration or Monitoring, the app will scan for available Bluetooth devices and show them in a list. Click on the device you want to connect to. The name of your ICON-BT modem is the same as its serial number, which can be found on the product label on the ICON-BT modem.



ORDERING INFORMATION

Transmitter

MinIPAQ R230 70R2300011

Configuration tools

ICON-X, PC Configuration kit 70CFGUSX01

ICON-BT, Bluetooth® configuration kit 70CFGBT001

PC Software ConSoft www.inor.com

Smartphone-app INOR Connect Google Play

App Store

AppGallery

DISPOSAL



LEGAL NOTICE!

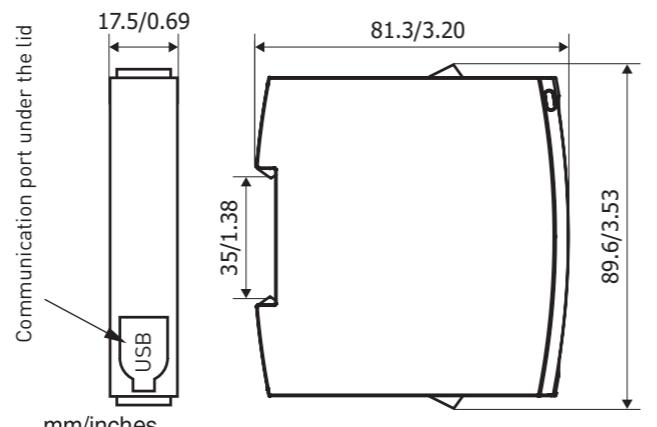
Disposal must be carried out in accordance with legislation applicable in your country.

Separate collection of WEEE (Waste Electrical and Electronic Equipment):

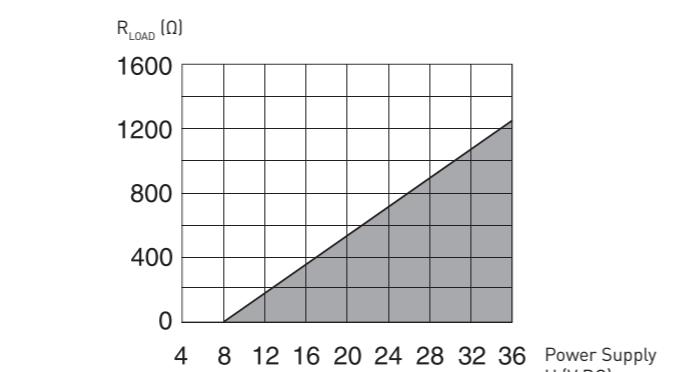
According to the directive 2012/19/EU or UK Regulation 2013 No. 3113, the monitoring and control instruments marked with the WEEE symbol and reaching their end-of-life must not be disposed of with other waste.

The user must dispose of the WEEE to a designated collection point for the recycling of WEEE or send them back to our local organisation or authorised representative.

DIMENSIONS



OUTPUT LOAD DIAGRAM



Maximum load is depending on power supply.
Formula for the max. permissible output load is: $R_{LOAD} (\Omega) = (U-8)/0.022$

