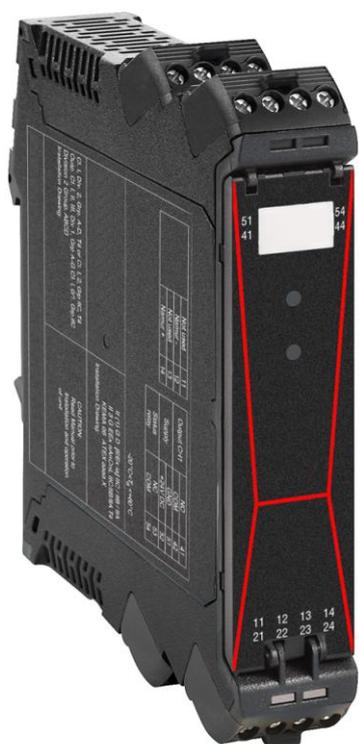


Operating Manual



DRMU-W

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● For information

Read these operating instructions before starting the RTD transmitter. Keep the operating instructions in a place that is accessible to all users at any time. The following installation and operating instructions have been compiled with great care but it is not feasible to take all possible applications into consideration. These installation and operation instructions should meet the needs of most temperature measurement applications. If questions remain regarding a specific application, please contact the supplier of the device.

With special models please note specifications in the delivery note.

If the serial number gets illegible (e. g. by mechanical damage), the retraceability of the instrument is not possible any more. The RTD transmitters, described in this operating manual, are carefully designed and manufactured using state-of-the-art technology. Every component undergoes strict quality inspection in all stages of manufacture.

Use the products in accordance with the intended use

Use the RTD transmitter to transform the temperature into an electrical signal.

Knowledge required

Install and start the transmitter only if you are familiar with the relevant regulations and directives of your country and if you have the qualification required. You have to be acquainted with the rules and regulations on measurement and control technology and electric circuits, since this transmitter is “electrical equipment” as defined by EN 50178. Depending on the operation conditions of your application you have to have the corresponding knowledge, e.g. of hazardous locations.

● Overview

The most important information on the product and for your safety you can get in chapters “Signs, abbreviations” (page 2), “For your safety” (page 3), “Starting, operation” (pages 4, 5) and “Storage, disposal” (page 2). **Read these chapters in any case.**

● Signs, abbreviations



Warning

Warning!

A non-observance can cause injuries to persons or lead to demolition of the device.



Attention!

A non-observance can cause a faulty operation of the device.



Information!

A non-observance can have influence on the operation of the device or cause unintentional reactions of the device.

● Maintenance, accessories



The temperature transmitters described here are maintenance-free. The electronics incorporate no components which could be repaired or replaced. Depending on operating conditions, it may be advisable to check the adjustment yearly (adjustment see page 7).

For necessary accessories please contact your supplier.

● Disposal



Disposal

Dispose instrument components and packaging materials in accordance with the respective waste treatment and disposal regulations of the region or country to which the sensor is supplied

● Function

The DRMU-W has a connection for 3-wire RTD Pt100. The temperature signal prevailing within the application is transformed into a standardised electrical signal through the measuring amplifier, which acts on the sensor element with the power supply fed to the transmitter. This electric signal changes in proportion to the temperature and can be evaluated correspondingly.

● For your safety



- Select the appropriate RTD transmitter with regard to scale range, performance and specific measurement conditions prior to installing and starting the instrument.
 - Observe the relevant national regulations (e. g. standards) and observe the applicable standards and directives for special applications (e. g. with hazardous locations).
- If you do not observe the appropriate regulation, serious injuries and/or damage can occur!**

- Make sure that the RTD transmitter is only used within the electrical limits all the time.
- Observe the ambient and working conditions outlined in chapter "Technical data" (page 6).
- Ensure that the transmitter is only operated in accordance with the provisions i. e. as described in the following instructions.
- Do not carry out changes or interferences with the RTD transmitter which are not describes in these operating instructions.
- Remove the RTD transmitter from service and mark it to prevent it from being used again accidentally, if it becomes damaged or unsafe for operation.
- Have repairs performed by the manufacturer only.
- Open circuit before removing connection / cover

● Before mounting



- Check if a completely assembled RTD transmitter is supplied.
- Inspect the RTD transmitter for possible damage during transportation. Should there be any obvious damage, inform the transport company and supplier without delay.
- Keep the packaging, as it offers optimal protection during transportation.
- Ensure that the connection contacts will not be damaged.

● Starting, operation

For your safety

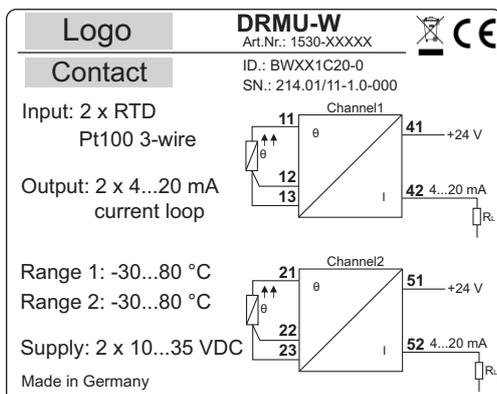


- Use the RTD transmitter only if it is in a faultless condition as far as the safety-relevant features are concerned.

Mechanical mounting

The transmitter is mounted on a standard DIN rail TS 35 (top hat rail) or equivalently.

Product label (example)



DRMU-W: Name of product
Art.Nr.: Part number
ID: Code of product
SN : Serial number
Range: Adjusted range

● Starting, operation (continued)

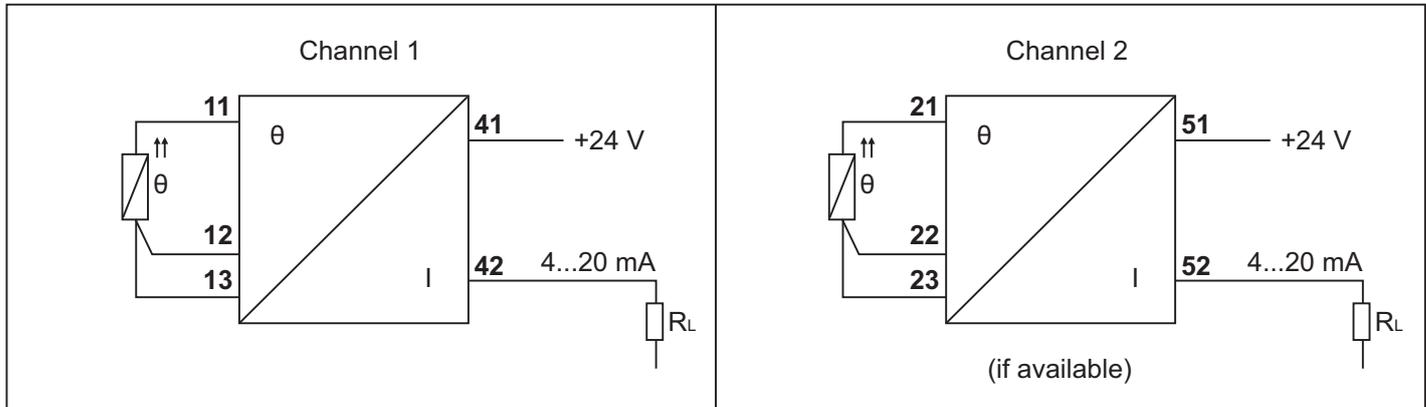
Electrical connection



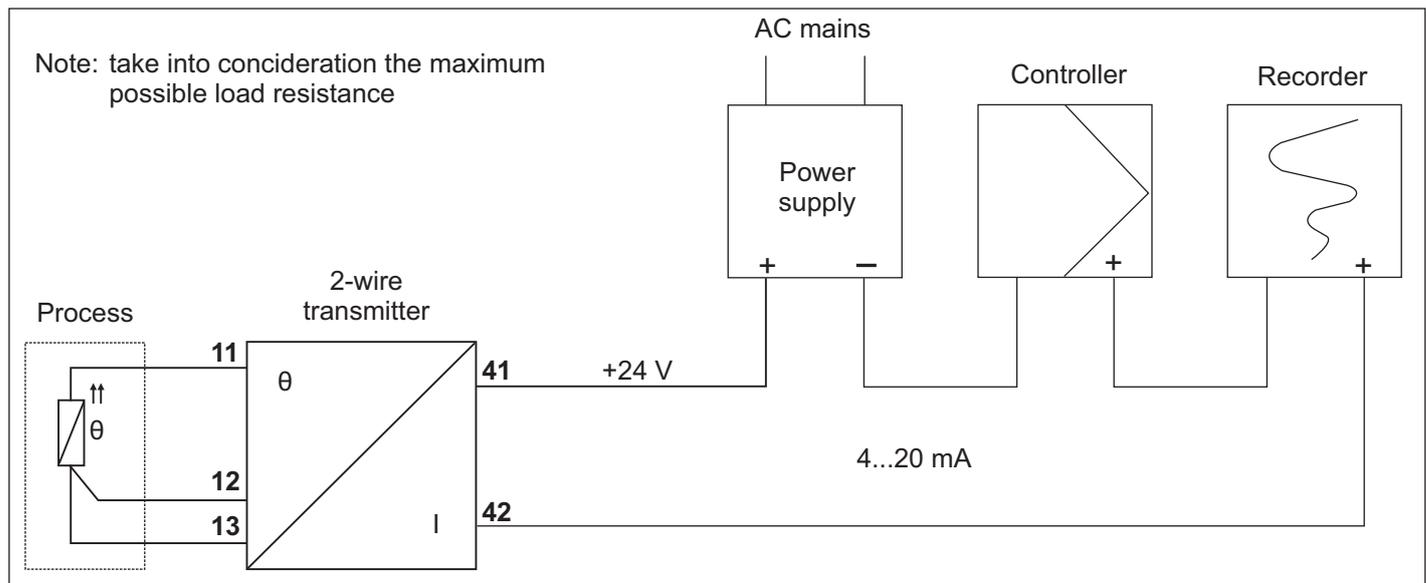
In the case of these transmitters described here there is an internal galvanic connection between the sensor input and analogue output. No external conducting is to be made (eg by earthing) between the connected temperature sensor and analogue output. In case of flexible leads the use of crimped connector sleeves is recommended.

2-wire: Two connection lines are intended for the voltage supply. The supply current is the measurement signal.
(Terminals 41 / 42 and 51 / 52)

Pin assignment



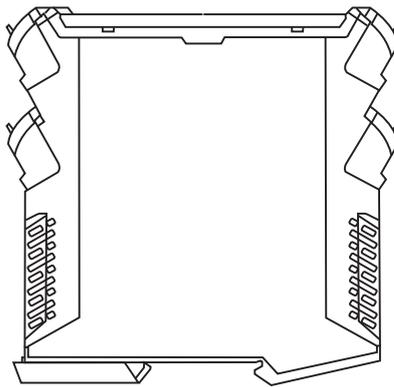
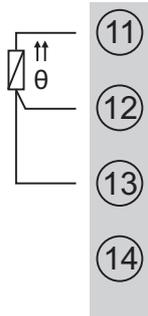
Example of wiring for channel 2



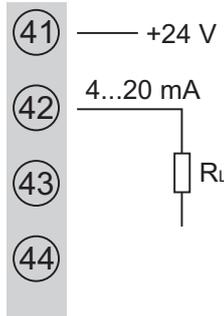
● **Starting, operation (continued)**

Electrical connection (terminals)

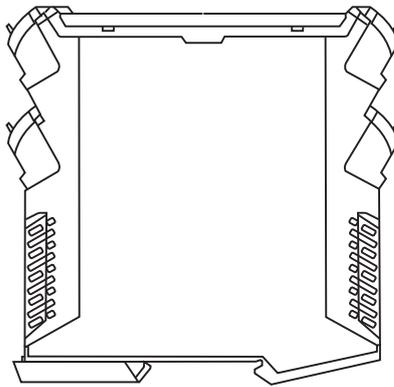
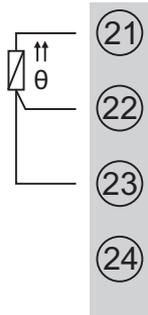
Channel 1
RTD Pt100
3-wire



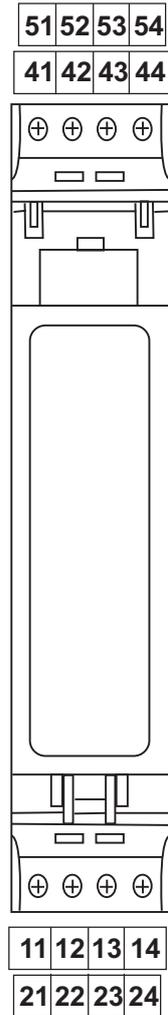
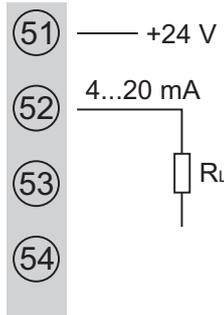
Channel 1
Supply
Current loop



Channel 2
RTD Pt100
3-wire



Channel 2
Supply
Current loop



Functional test



The output signal must be proportional to the temperature. If not, this might point to a wrong wiring or sensor fault. In that case refer to chapter "Troubleshooting" (page 8).



Warning

- Observe the ambient and working conditions outlined in chapter "Technical data" (page 6)
- Make sure that the RTD transmitter is only used within the electrical limits all the time.

● Technical data

Input

Sensor:	1x or 2x RTD Pt100 (IEC 751), 3-wire
Current:	0,8 mA
Ranges:	-30...+80 °C / -50...+200 °C / 0...+200 °C / 0...+300 °C / 0...+400 °C / 0...800 °C

Output

Current:	1x or 2x 4...20 mA (current loop)
Over- Under-Scale limit:	2,2...27 mA (typical)
Load:	<500 Ω
Adjustment:	Zero and span: 1 potentiometer (each channel) Range: ±3% FS

Performance

Accuracy:	0,2% full scale range (typical), 0,5% maximum
Response time:	10 ms
Temperature coefficient:	250 ppm/K maximum
Linearization:	yes
Galvanical insulation:	without

Supply

Voltage:	1x or 2x 10...35 VDC (current loop)
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Ambient conditions

Operation temperature:	-20...+50°C
Storage temperature:	-20...+85°C
CE-mark:	EMC directive 2004/108/EG / EN 61000-6 / EN 60751

Mechanics

Case:	
Type:	DR22,5
Dimensions:	117,2x22,5x113,6 mm
Material:	PA66 GF30, black
Flammability:	UL 94 V-0
Mounting:	DIN rail TS 35
Lift-up lid:	covers potentiometer for adjustment
Protection:	IP 20
Weight:	approx. 150 g
Electrical connection:	4 plug-in terminal strips 4-pole (Clamping range:0,13...3,31 mm ²)

● Adjustment of zero point / span



- We do not recommend to adjust the span potentiometer. It is used for adjustment ex factory and should not be adjusted by you unless you have adequate calibration equipment at your disposal (at least three times more accurate than the instrument being tested).

Adjustment

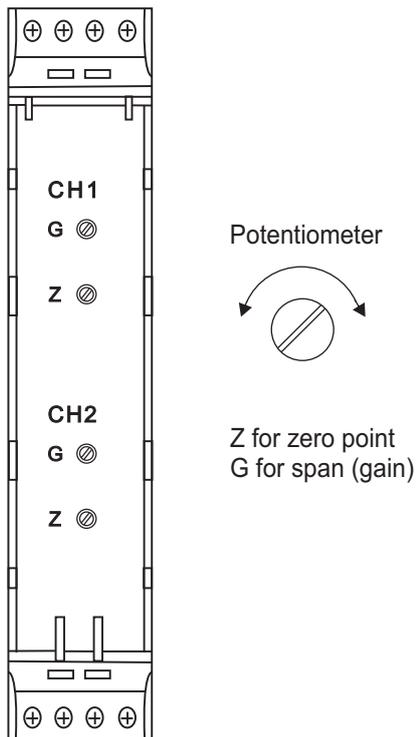
The adjustment of the zero point and the span is carried out with potentiometers. In order to adjust the transmitter output to optimal values please adjust to the desired value by turning the potentiometer in one direction only.

Example

Adjust the potentiometer in a clockwise direction:

The potentiometer has to be turned clockwise (the output current gets higher) until the signal shows the desired value.

If the potentiometer is turned too much (the output current is too high), the potentiometer must be turned back again until a value below the desired value is reached (output current is too low). Adjust the potentiometer in a clockwise direction again until the desired value is reached. Repeat steps as necessary.



Preparation

- Connect a suitable simulation source to the input of the transmitter (Pt100 simulator)
When simulating a Pt100 connect the simulator in a 3-wire connecting circuit. It is recommended to use passive resistances. Electronical simulation sources can cause incorrect measuring values.
- Connect a mA meter in 4...20 mA-loop according drawing (page 5) to measure the output signal (with Ri less than maximum permissible load).
- Connect a suitable power supply to the transmitter.
- Open lift-up lid to make approachable the potentiometers.

Adjustment

Carry out steps **A** to **F** in the given order.

- A:** Set the lower value of the measurement range with the simulator, eg. -30 °C for measuring range -30...+80 °C.
- B:** Turn the zero potentiometer **Z**, until the output signal shows the desired value.
- C:** Set the end value of the measurement range with the simulator, eg +80 °C for measurement range -30...+80 °C.
- D:** Turn the span potentiometer **G**, until the output signal shows the desired value.
- E:** Repeat step **A** and check output signal of zero.
- F:** Repeat step **C** and check output signal of span.

Closing steps

- Disconnect the simulator, the mA meter and the power supply.

● Troubleshooting



- Verify in advance if the temperature sensor is being mounted and if the right voltage supply and the right wiring has been chosen.

Failure	Possible cause	Procedure
No output signal	Cable break No/incorrect voltage supply or current spike	Check connectors and cable Adjust voltage supply to correspond with the operating instructions
No/false output signal	Incorrectly wired	Follow pin assignment (see instrument label / operating instructions)
Output signal unchanged after change in temperature	Zero/span potentiometer in wrong position	Readjust the transmitter
Signal span dropping off / too small	False type of resistance thermometer	Replace resistance thermometer
Signal span erratic/incorrect	Electromagnetic interference source in the vicinity e. g. inverter drive Working temperature too high/ too low	Shield the device, shield the cables, remove the interference source Ensure permissible temperatures as per the operating instructions
Abnormal zero point signal	Working temperature too high/ too low	Ensure permissible temperatures as per the operating instructions

Note: In case of unjustified reclamation an additional charge is possible.

Make sure that after the setting the unit is working properly. In case the error continues to exist send the instrument for inspection (or replace the unit).