Level | Pressure | Flow | Temperature | Liquid Analysis | Registration | Systems Components | Services | Solutions

Technical Information

RIA251

Process display
Digital loop powered display for 4...20 mA current loops



Application

- Plant and machine construction
- Control panels
- Laboratory fittings
- Process display, monitoring
- Suitable for Ex applications

Benefits at a glance

- 5 Digit LC display with 17 mm character height
- Loop powered display, no additional power supply cabling required
- Measurement range – 19999 to 99999
- Flexible measurement range set up using 3 push buttons

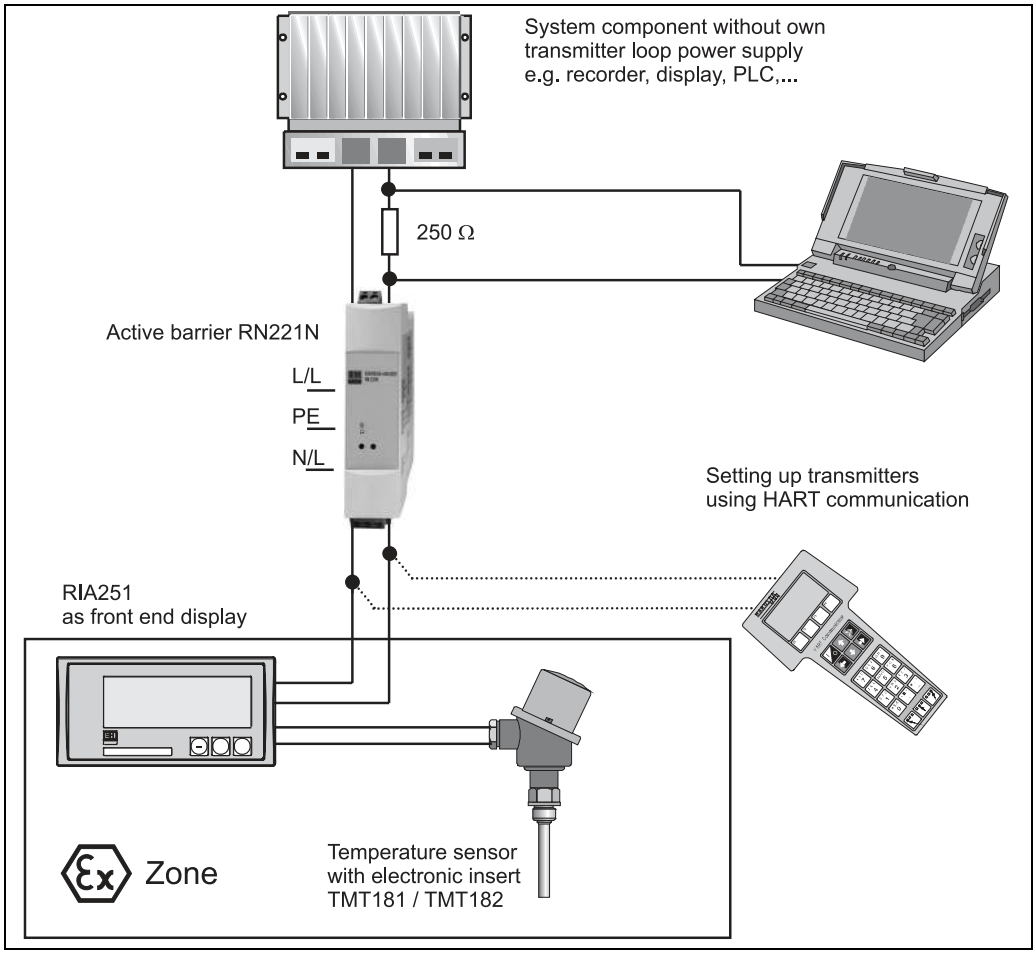
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Endress+Hauser
People for Process Automation

Function and system design

Measuring principle

The display receives an analog signal and shows the corresponding value on the display. The unit is connected in the 4 ... 20 mA circuit and also receives the required power from this circuit.
The analog signal connected is digitalized, analysed and indicated in the LC display.



Example of an application of the process display unit

Measuring system

The RIA 251 process display is connected directly into the 4 ... 20 mA measurement loop. The power required is taken from the current loop. The voltage drop of <2 V has no significant influence on the measurement circuit. Setting up the measurement range, decimal point and offset is easily done using the 3 front mounted push buttons. Setting up can also take place whilst the unit is operational, which means that later changes can be easily made.
The unit can be obtained with Ex certification to ATEX II 1 G EEx ia IIC T6, FM, CSA and NEPSI (option). Therefore special applications where the display is required directly in the hazardous area can now be realized.

Input

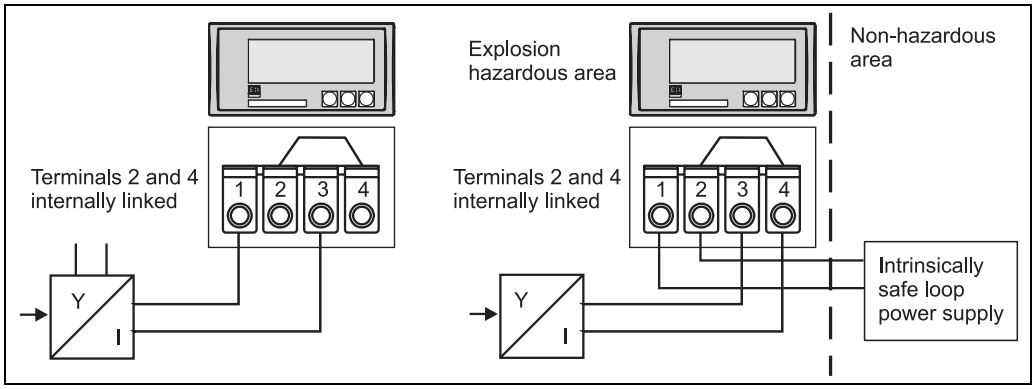
Measured variable	Current
Measuring range	4...20 mA (polarity protected)
Max. input current	150 mA (short circuit current)
Voltage drop	< 2 V
HART® protocol	The display is suitable for transmitting the HART® protocol.

Power supply

Electrical connection

Both the terminals and the connection values of the display correspond to the Ex requirements.
Connection of an active current source e.g. Transmitter with its own power source and an active current output.

Note!
The display can be placed into the explosion hazardous area if a suitable barrier is used.



Terminal layout of the process display

Voltage supply	From 4...20 mA current loop
Voltage drop	< 2 V

Performance characteristics

Accuracy	Accuracy < 0.1% of FSD
Temperaturdrift	< 0.01% / 10 K

Installation

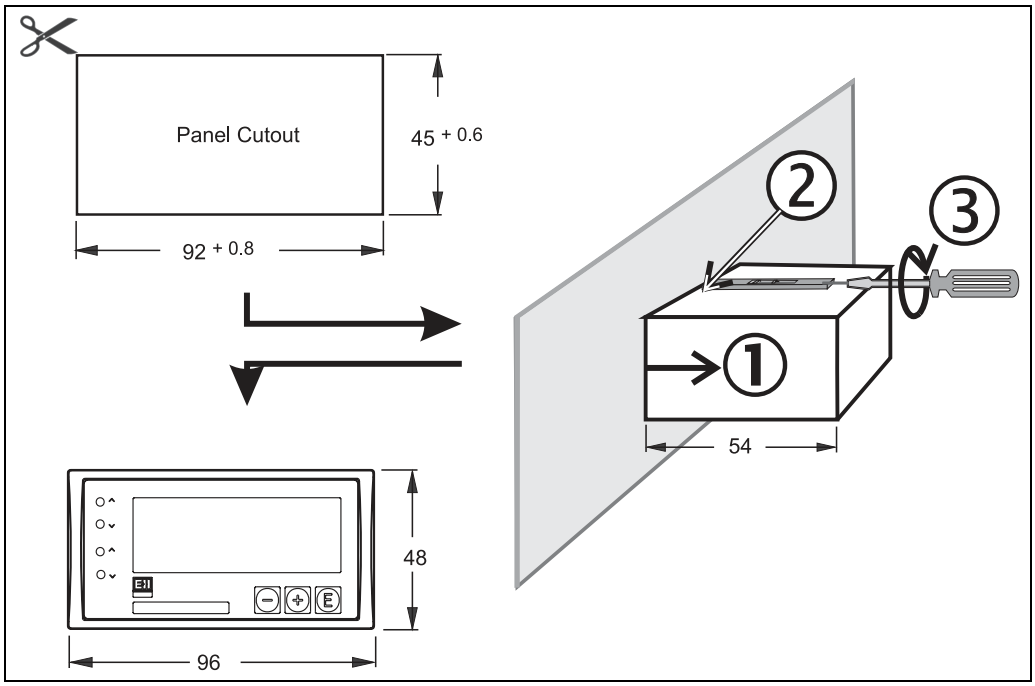
Installation instructions	**Mounting location** Panel cutout 48 x 96 mm (see 'Mechanical construction'). **Installation angle** No restrictions.

Environment

Ambient temperature range	-20 to +60 °C
Storage temperature	-30 to +70 °C
Climate class	As per IEC 60654-1, Class B2
Protection degree	NEMA 4x, IP 65 front; NEMA 1, IP 20 for terminals
Electromagnetic compatibility (EMC)	**RF protection** To EN 55011 Group 1, Class A **Interferance safety** ■ ESD: To IEC 61000-4-2, 6/8 kV ■ Electro magnetic fields: To IEC 61000-4-3, 10 V/m ■ Burst (supply): To IEC 61000-4-4, 2 kV ■ Surge: To IEC 61000-4-5, 1 kV ■ Cable high frequency: To EN 61000-4-6, 10 V

Mechanical construction

Design, dimensions



Dimensions of the RIA251

Weight

approximately 300 g

Material

- Housing front: Die cast aluminium
- Housing casing: Galvanized sheet steel
- Housing rear panel: Plastic ABS

Electrical connection

Plug on screw terminals (securable), Terminal size 1.5 mm^2 solid, 1.0 mm^2 strands with ferrule

Human interface

Display elements

- Display
  5 digit LC display, 17 mm character height
- Range
  -19999 to +99999
- Offset
  -19999 to +32767

Operation

3 push button operation (-/+/E)

Certificates and approvals

CE	89/336/EWG guidelines
Ex-Zulassung	■ ATEX II 1 G EEx ia IIC T6 to DIN EN 50014 and DIN EN 50020 ■ FM IS, Class I, Div. 1+2, Group A,B,C,D to FM 3600 and FM 3610 ■ CSA IS, Class I, Div. 1+2, Group A,B,C,D to C22.2 No 157 ■ NEPSI Ex ia IIC T6
GL approval	Germanischer Lloyd /marine approval

Ordering information

Product structure

RIA251	Electronical indicator, Depth: 54mm. Loop powered. 1 channel, scalable. Display LC, 5-digit, Char. hight 17mm. Approval: GL (German Llyod) Marine. CSA GP.

	Approval	
	A	Non-hazardous area
	B	ATEX II1G EEx ia IIC T6
	C	FM IS, Cl.I, Div.1, Gr.ABCD
	D	CSA Ex ia, Cl.I, Div.1, Gr.ABCD
	F	NEPSI Ex ia IIC T6

		Housing	
		1	Panel mounting, 48x96x54mm
		2	Panel mounting, 48x96x54mm + WCC=Works calib. certif.

RIA251-			⇐ **Order code**

Documentation

- System components – field and panel installation display unit, energy manager, active barrier, process transmitter and overvoltage protection: FA016K/09
- Operating instructions ’Process display RIA251’: BA087R/09
- Ex documentation:
  ATEX II(1)GD: XA001R/09/a3

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