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Technical Information

Easy Analog RNB140

Configurable limit value switch

Your benefits
- Complete family in one housing
- Power supply via
  - DIN rail bus connector: less wiring, easy module change (even during operation)
  - Terminals
- Power supply 19.2 to 30 V possible
- 6.2 mm (0.244") device width
  ➔ Cost saving through reduction in space
- Installation in 120 mm (4.72") small field housings
- Easy configuration via DIP switches, most common configurations printed on device
  ➔ Configuration possible in the field
- High flexibility concerning in-/output signals
  ➔ Wide-range usage
- Low power consumption
  ➔ Small heat loss

Application
- Control and monitoring of standardised signals
- DIN rail mounting as per IEC 60715

CE

TI119R/06/en
51010016

Endress+Hauser
People for Process Automation

Function and system design

Measuring principle

Configurable limit value switch for control / monitoring of analog standardised signals.
The 0...20 mA or 0...10 V analog standardised signals can be selected per DIP switch on the input side.
A relay with change-over contact is available on the output side. The switching thresholds are configured via potentiometer.
DIP switches accessible on the side of the housing allow the configuration of the switching hysteresis, the open-circuit and closed circuit current behaviour, and set-up of relay pickup and dropout delay times.
A yellow LED on the housing front indicates the relay state.
The voltage supply (19.2...30 V DC) can either be provided via connecting terminal blocks of the module, or via the DIN rail bus connector.

Input

Measured variable

Current, voltage

Measuring range

Current input	Voltage input
0...20 mA	0...10 V

Input

	Current input	Voltage input
Configurable	yes, DIP switches	
Max. input signal	100 mA	30 V
Input resistance	approx. 50 Ω	approx. 110 kΩ
Setting the switching threshold	by means of 25-gear potentiometer	

Output

Relay output

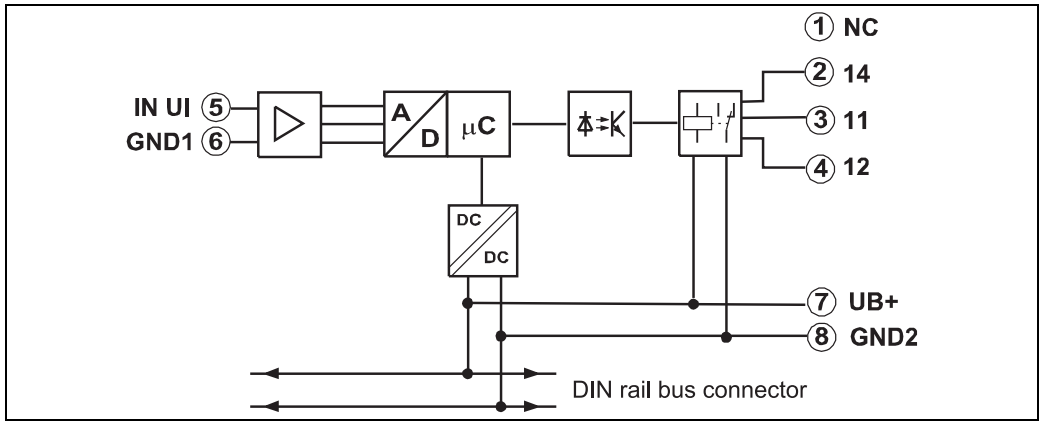
State indicator	Yellow LED
Contact type	1 SPDT
Contact material	$AgSnO_2$
Switching voltage	max. 250 V AC
Switching current	max. 2 A
Hysteresis	0.1 %, 1%, 2.5%, 5%; configurable via DIP switch
Open- and closed circuit behaviour	Switchable via DIP switch
Relay pickup / dropout delay time	0 s, 1 s, 2 s, 3 s, 4 s, 6 s, 8 s, 10 s; configurable via DIP switch

Galvanic isolation

Galvanic 3-way isolation
Test voltage: 1.5 kV, 50 Hz, 1 min

Power supply

Electrical connection



Terminal assignment RNB140

Supply voltage

19.2 to 30 V

Note!
The voltage supply (19.2...30 V DC) can either be provided via connecting terminal blocks of the module, or via the DIN rail bus connector.

Current consumption

< 15 mA

Power consumption

< 450 mW

Performance characteristics

Reference operating conditions

+23 °C ± 5 °C (73.4 °F ± 9 °F)

Linearity error of end value

< 0.05%

Temperature coefficient

< 0.02 %/K (0.011%/°F)

Step response

35 ms

Installation

Installation notes

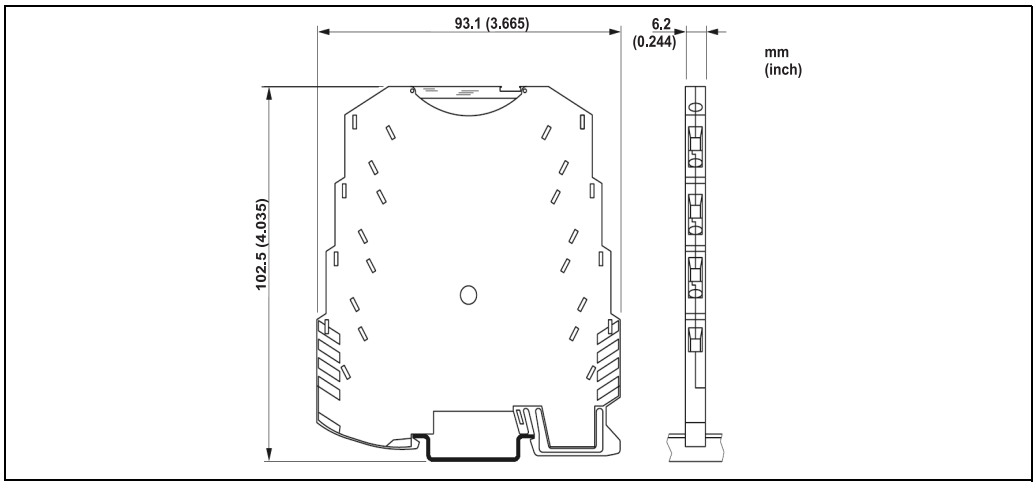
Installation on DIN rail according to IEC 60715.
The DIN rail bus connector can be used to provide the supply voltage (see "Accessories").

Environment

Ambient temperature limits	-20 °C to +65 °C (-4 °F to 149 °F)
Storage temperature	-40 °C to +85 °C (-40 °F to 185 °F)
Climate class	IEC 60654-1, B2
Degree of protection	IP20
Vibration resistance	4G
Electromagnetic compatibility	CE compliant

Mechanical construction

Design, dimensions



Dimensions of the Easy Analog devices

Weight	approx. 55 g
Material	Housing: PBT

Connection data

Conductor cross section solid min.	0.14 mm²
Conductor cross section solid max.	2.5 mm²
Conductor cross section stranded min.	0.2 mm²
Conductor cross section stranded max.	2.5 mm²
Conductor cross section AWG/kcmil min.	26
Conductor cross section AWG/kcmil max.	12
Stripping length	12 mm (0.47")
Screw thread	M3
Connection type	Screw connection

Human interface

Display elements

- Yellow LED as relay state indicator
- red LED as error indicator

Operating elements

The RNB140 limit value switch can be configured via DIP switches on the side of the housing.
The switching thresholds are set by means of a potentiometer on the housing front.

Certificates and approvals

CE mark

The device complies with the legal requirements of the EC directives. Endress+Hauser confirms that the device has been successfully tested by affixing to it the CE mark.

Other standards and guidelines

IEC 60529: Degrees of protection through housing (IP code)

IEC 61010: Protection measures for electrical equipment for measurement, control, regulation and laboratory procedures

EN 61326/A1 (IEC 1326): Electromagnetic compatibility (EMC requirements)

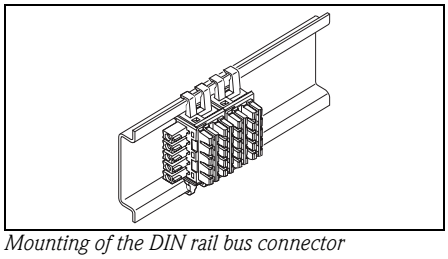
Ordering information

Product structure RNB140

Limit value switch RNB140						
Limit switch, configurable via potentiometer. Controlling and monitoring standard analog signals. DIP switch: configuration of limit threshold, operating current/closed circuit current behaviour and relay pickup/dropout delay. Relay state shown via yellow LED. Power supply (19.2...30 V DC) via connecting terminal blocks or DIN rail bus connector.						
	Approvals:					
	A	Non-hazardous area				
		Input:				
		A	0-20 mA			
		B	0-10 V			
			Connection:			
			1	Screw strip		
			3	Screw connection, power terminal block		
			4	Screw connection, DIN rail bus connector		
			5	Screw connection, power terminal block, DIN rail bus connector		
				Version:		
				A	Standard	
RNB140-	A			A	⇐ Order code complete	

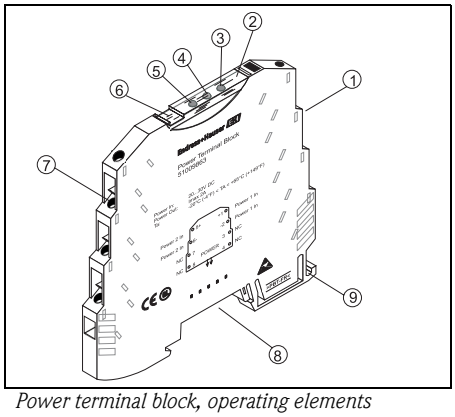
Accessories

DIN rail bus connector (order no. 51009864)



Mounting of the DIN rail bus connector

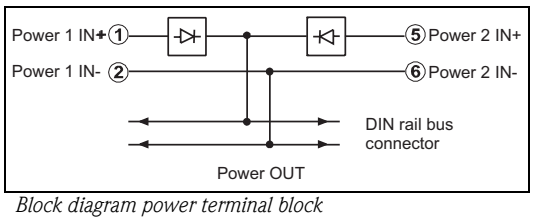
Power terminal block (order no. 51009863)



Power terminal block, operating elements

1 Input: Supply voltage 1
2 Transparent cover
3 LED: Reverse polarity indicator Power IN1
4 LED: Bus voltage state indicator
5 LED: Reverse polarity indicator Power IN2
6 Groove for Tag
7 Input: Supply voltage 2
8 Connection for DIN rail bus connector
9 Universal snap on foot for mounting rails

The power terminal block is used to feed the supply voltage to the DIN rail bus connector (order no. 51009864, see above).
Design and dimensions are the same as for all other Easy Analog devices except RNB130.
Two separate voltage inputs allow a redundant voltage supply of 24 V DC and a maximum current of 2 A.
A green LED on the front panel (fig. on the left, pos. 4) lights up when there is supply voltage on the DIN rail bus connector.
Red LEDs (fig. on the left, pos. 3 and 5) light up when supply voltages are connected to the wrong poles. When the supply voltage has been connected correctly, the respective red LED extinguishes.



Block diagram power terminal block

The power terminal block can be snapped onto all 35 mm DIN rails following IEC 60715.

System power supply RNB130

Further information can be found in the respective Technical Information (see "Documentation").

Documentation

- Technical Information RNB110, RNB111 and RNB112 (TI116R/09/en)
- Technical Information RNB127 fund RNB128 (TI117R/09/en)
- Technical Information RNB150 (TI118R/09/en)
- Technical Information RNB130 (TI120R/09/en)
- Operating Instructions RNB140 (BA211R/09/b4)
- Brochure "System Components" (FA016K/09/en)

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FrameMaker+SGML 6.0