Level Pressure Flow Temperature Liquid Analysis Registration Systems Components Services Solutions

Technical Information

Easy Analog RNB130

Primary switched-mode power supply

Your benefits
- Small housing, 35 mm (1.38") width
- High availability
- Wide range input - can be used world-wide
- Power reserve (Power Boost)
- Power supply without wiring:
  Supply via DIN rail bus connector

Application
- Voltage supply for Easy Analog family units
- Space saving DIN rail mounting as per IEC 60715
- Voltage supply for sensors

TI120R/06/en
51010014

Endress+Hauser
People for Process Automation

Function and system design

Measuring principle

Primary switched-mode power supply
Input: 100-240 V AC
Output: 24 V DC connection, max. 30 V in the event of a fault
Connection to monophased a.c. networks or to two phase conductors of three-phase supply networks (TN-, TT- or IT-networks as per VDE 0100 T 300/IEC 364-3) with 100-240 V AC nominal voltage

Output

Output data

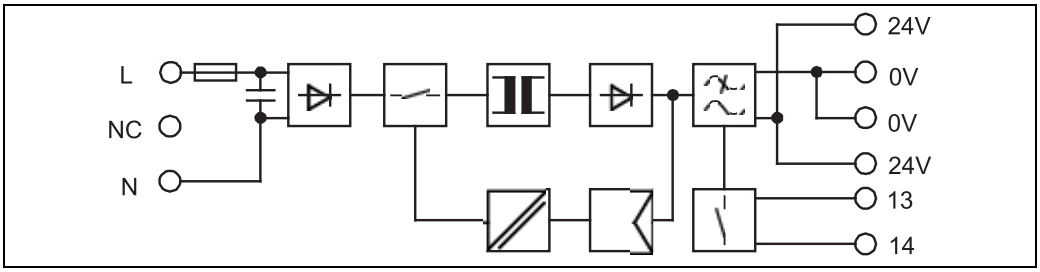
Nominal output voltage U_N	24 V DC
Tolerance	± 1%
Output current during convection cooling and nominal values	
POWER BOOST I_{BOOST} -25 to +40 °C (-13 to +104 °F)	2 A (U_{OUT} = 24 V)
Nominal output current I_N -25 to +50 °C (-13 to 122 °F)	1.5 A (U_{OUT} = 24 V)
Derating	2.5% per K from +60 °C (1.4% per °F from +140 °F)
Short-circuit current limit	7 A
Startup of capacitive loads	unrestricted
System deviation on Static load change 10-90% Dynamic load change 10-90% Input voltage change ± 10%	typ. < 1% typ. < 3% typ. < 0.1%
Maximum power dissipation no load / nominal load	2.5 W / 12 W
Level of efficiency (typical)	> 84% (at 230 V AC and at nominal values)
Response time U_{OUT} (10 - 90%)	typ. < 2 ms
Residual ripple/switching peaks (20 MHz)	< 100 mV_{SS} (at nominal values)
Can be connected in parallel	To increase redundancy and power
Internal surge protection	Yes, limited to 30 V DC, approximately
Resistance to return supply	30 V DC

Signal Output Data

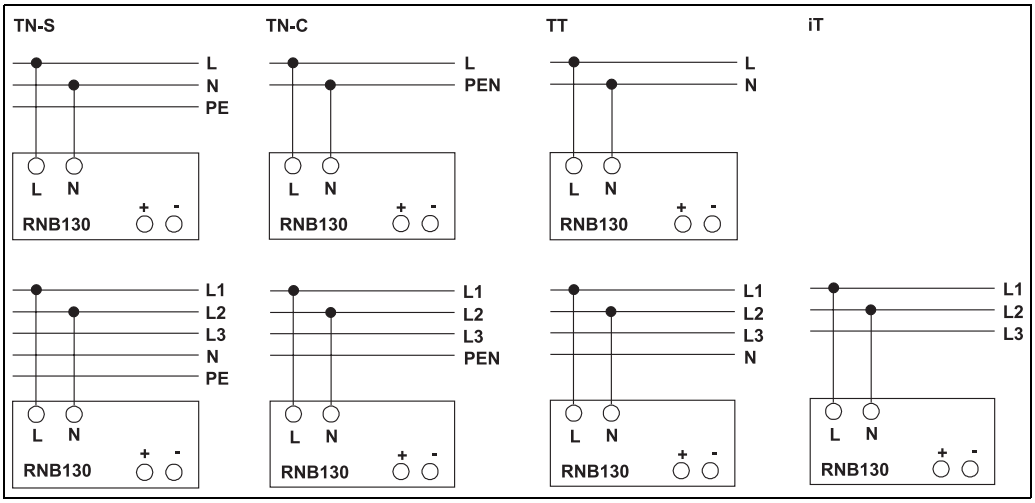
DC OK (electrically isolated) U_{OUT} > 21.5 V DC ≙ contact closed: max. 30 V AC/DC; max. 1 A
LED (U_{OUT} > 21.5 V DC ≙ green LED permanently on)

Power supply

Electrical connection



Terminal assignment RNB130



Types of supply networks 100-240 V AC

Supply voltage	Nominal input voltage: 100 – 240 V AC (wide-range voltage input) Input voltage range: 85 – 264 V AC Frequency: 45 – 65 Hz
Current consumption (for nominal values)	approximately 0.75 A (120 V AC)/0.45 A (230 V AC)
Inrush current limiting/I^2t (+25 °C / 77 °F)	typ. < 15 A / < 0.6 A^2s
Mains buffering for a nominal load (typical)	> 20 ms (120 V AC) / > 110 ms (230 V AC)
Switch-on time after applying the mains voltage	< 0.5 s
Transient surge protection	Varistor
Input fuse, internal	T3.15 AL250V (3.15 A) (device protection)
Recommended fuse	6 A, 10 A circuit breakers, characteristic B (IEC 60 898)

Installation

Installation notes

Horizontal installation (input terminals at bottom of unit) to NS 35 DIN rail as per IEC 60715.

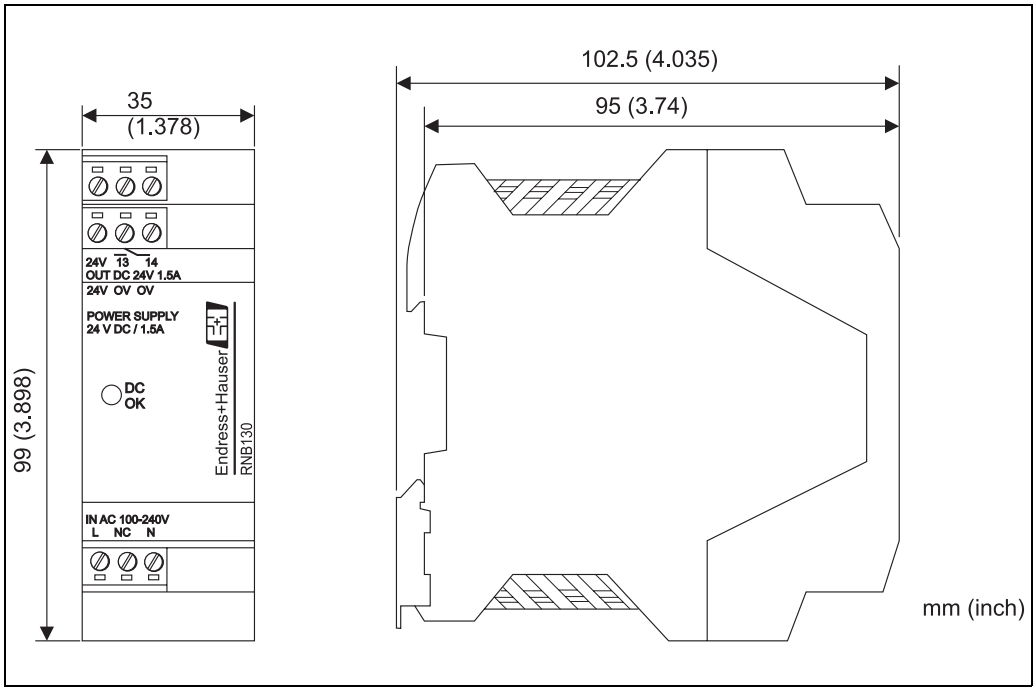
Can be mounted with spacing:
- vertical ≥ 5 cm (2")
- horizontal 0cm (0")

Environment

Ambient temperature limits	-25 °C to +70 °C (-13 to +158 °F) (> +60 °C / 140 °F Derating)
Storage temperature	-40 °C to +85 °C (-40 to 185 °F)
Humidity	up to 95% at +25 °C (77 °F), no condensation
Climate class	3K3 (as per IEC 60721)
Degree of protection	IP20
Protection class	II (in closed control cabinets)
Shock resistance	as per IEC 68-2-27: 30 g, all space directions
Vibration resistance	as per IEC 68-2-6: < 15 Hz, amplitude ±2.5 mm / 15 - 150 Hz, 2.3 g
Electromagnetic compatibility	CE compliant

Mechanical construction

Design, dimensions



Dimensions RNB130

Weight approximately 0.25 kg

Material Housing: Polyamide PA

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 DC OK LED, green

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

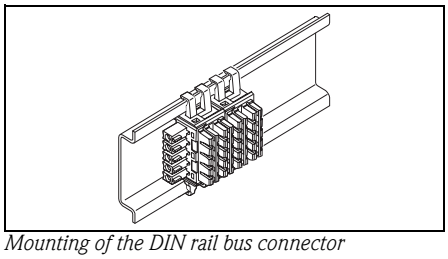
Product structure RNB130

System power supply RNB130				
Primary switched-mode. Input voltage: 85-264 V AC, 45-65 Hz Output voltage: 24 V DC, max. 30 V (for errors)				
	Approvals:			
	A	Non-hazardous area		
		Connection:		
		1	Screw strip	
		3	Screw connection, power terminal block	
			Version:	
			A	Standard

RNB130-	A		A	⇐ Order code complete

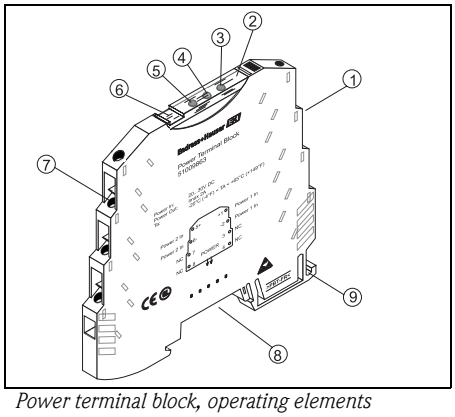
Accessories

DIN rail bus connector (order no. 51009864)



Mounting of the DIN rail bus connector

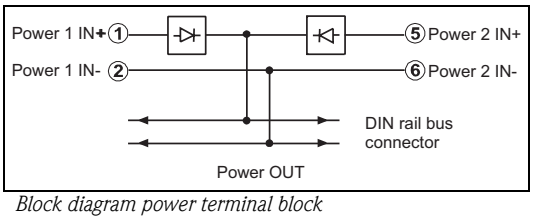
Power terminal block (order no. 51009863)



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.

Documentation

- Technical Information RNB110, RNB111 and RNB112 (TI116R/09/en)
- Technical Information RNB127 and RNB128 (TI117R/09/en)
- Technical Information RNB150 (TI118R/09/en)
- Technical Information RNB140 (TI119R/09/en)
- Operating Instructions RNB130 (BA210R/09/b4)
- Brochure "System Components" (FA016K/09/en)

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FrameMaker+SGML 6.0