Endress+Hauser
People for Process Automation

RN42 Intrinsically Safe Analog Input Isolators

Part No. RN42-CB1BO-LT

The Endress+Hauser RN42 intrinsically safe isolation barriers provide galvanic isolation and intrinsically safe transmission of 0/4 to 20 mA analog signals from process instruments located in hazardous locations to the control system located in a non-hazardous location. The RN42 can accept current input from a 2-wire or 4-wire process instrument or transmitter and includes an internal power supply output for loop-powered transmitters. The output signal is 0/4-20mA and equal to the input signal. Models are available in a 1-channel configuration with either screw terminals or push-in terminals. Bidirectional transmission of digital HART communication signals is possible and includes connection sockets on the front for HART communicator devices. The RN42 is powered from a wide range power supply of 19.2 to 253 VAC/DC.

Applications

- 1-channel analog input isolation barrier
- Transmission and galvanic isolation of analog 0/4 to 20 mA signals, intrinsically safe from the hazardous area
- HART transparent: allows bidirectional transmission of digital HART communication signals
- For ambient temperatures –40 to +60°C (–40 to 140°F)

Features

- Wide 19.2 to 253 VAC/DC power supply range
- Input 0/4 to 20 mA with internal power supply for loop-powered transmitters
- Output 0/4 to 20 mA
- 2mm Connection sockets integrated on front for HART communicators
- Simple and quick wiring with either screw or push-in terminals
- Compact housing width: 17.5 mm (0.69 in)

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Part Number	Input	Output	Operating Voltage	Connection	Pcs/Pkg	Wt(lb)	Price	Vendor QSG	Vendor Manual	Drawing Link
RN42-CB1AO-LT	0-20 mA or 4-20 mA	0-20 mA or 4-20 mA	19.2 to 253 VAC/ VDC	Screw terminals	1	0.45	$250.00	PDF	PDF	PDF
RN42-CB1BO-LT				Push-in terminals	1	0.45	$250.00			PDF

For additional details and information, refer to the vendor Quick Start Guide and Manual.

RN42 Intrinsically Safe Analog Input Isolator Specifications

Input		
Input Data, Measuring Range	Input signal range (underrange / overrange	0 to 22 mA
	Function range, input signal	0/4 to 20 mA
	Input voltage drop signal for 4-wire connection	< 7V at 20 mA
	Transmitter supply voltage	17.5 V ± 1V at 20 mA Open-circuit voltage: 24.5 V ± 5%
Output		
Output Data	Output signal range (underrange / overrange)	0 to 22 mA
	Function range, output signal	0/4 to 20 mA
	Transmission behavior	1:1 to input signal
	NAMUR NE 43	A current at the input that is valid according to NAMUR NE 43 is transmitted to the output (within the specified measuring uncertainty range)
	Maximum load, active mode	≤ 500Ω
	Open-circuit voltage, active mode	17.5 V (± 5%)
	Maximum load, passive mode	Rmax = (Uext - 2 V) / 0.022 A
	External voltage, passive mode	Uext = 12 to 30 V
	Transmissible communication protocols	HART

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RN42 Intrinsically Safe Analog Input Isolator Specifications Continued		
Output Continued		
Signal On Alarm	Line break in input	Input 0mA / output 0mA
	Line short circuit in input	Input > 22mA/ output > 22mA
Galvanic Isolation	Power supply for input/output	Testing voltage: 3,000 VAC 50Hz, 1 min
Power Supply*		
Performance Characteristics	Supply voltage	24 to 230 VAC/DC (-20% / +10%, 0/50/60 Hz)
	Power consumption	≤ 4.9 VA / 2.4 W (20mA); ≤ 5 VA / 2.5 W (22mA)
	Power loss	≤ 2 W (20mA); ≤ 2.1 W (22mA)
	Current consumption at 24 VDC	≤ 0.1 A (20mA); ≤ 0.1 A (22mA)
	Current consumption at 230 VAC	≤ 0.02 A (20mA); ≤ 0.02 A (22mA)
Terminals	Screw terminals Tightening torque: minimum 0.5 Nm/maximum 0.6 Nm	Rigid or flexible (Stripping length = 7 mm (0.28 in); cable cross-section 0.2 to 2.5 mm² (24 to 14 AWG)
		Flexible with wire end ferrules (with or without plastic ferrule); cable cross-section 0.25 to 2.5 mm² (24 to 14 AWG)
	Push-in spring terminals	Rigid or flexible (Stripping length = 10 mm (0.39 in); cable cross-section 0.2 to 2.5 mm² (24 to 14 AWG)
		Flexible with wire end ferrules (with or without plastic ferrule); cable cross-section 0.25 to 2.5 mm² (24 to 14 AWG)
Performance Characteristics		
Response Time	Step response (10 to 90 %)	≤ 1ms
Reference Operating Conditions	• Calibration temperature: +25°C ±3 K (77°F ± 5.4°F) • Supply voltage: 24VDC / 230VAC • Output load: 225Ω • External output voltage (passive output): 20VDC • Warm-up: > 1 hour	
Maximum Measured Error (Accuracies)	Transmission error	< 0.1 % / of full scale value (< 20µA)
	Temperature coefficient	< 0.01 % /K
Long-Term Drift	Max. ±0.1 %/year (of full scale value)	
Installation		
Mounting Location	The device is designed for installation on 35 mm (1.38 in) DIN rails in accordance with IEC 60715 (TH35).	
DIN rail Installation	The device can be installed in any position (horizontal or vertical) on the DIN rail without lateral clearance from neighboring devices.	
Environment		
Ambient Conditions	Ambient temperature range	–40 to 60°C (–40 to 140°F)
	Storage temperature	–40 to 80°C (–40 to 176°F)
	Degree of protection	IP 20
	Overvoltage category	II
	Pollution degree	2
	Humidity	5 to 95%
	Insulation class	Class III

** The data apply for the following operating scenario: input active / output active / output load 0 Ω. When external voltages are connected to the output, the power loss in the device may increase. The power loss in the device can be reduced by connecting an external output load.*

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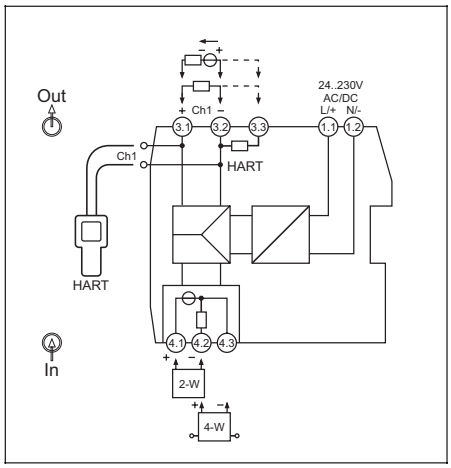
Environment Continued		
Maximum Temperature Change Rate	0.5 °C/min, no condensation permitted	
Shock and Vibration Resistance	Sinusoidal vibrations, in accordance with IEC 60068-2-6 • 5 to 13.2 Hz: 1 mm peak • 13.2 to 100 Hz: 0.7g peak	
Electromagnetic Compatibility (EMC)	CE compliance*	Electromagnetic compatibility in accordance with all the relevant requirements of the IEC/EN 61326 series and NAMUR Recommendation EMC (NE21). For details, refer to the Declaration of Conformity. • Maximum measured error < 1% of measuring range • Strong, pulse-like EMC interference can result in transient (< 1) deviations in the output signal (≥ ±1 %). • Interference immunity as per IEC/EN 61326 series, industrial requirements • Interference emission as per IEC/EN 61326 series (CISPR 11) Group 1 Class A
Mechanical Construction		
Materials	Housing: polycarbonate (PC); flammability rating according to UL94: V-0	
Certificates and approvals		
Agency Approvals	cULus (E225237), cCSAus (200600), CE	

** This unit is not intended for use in residential environments and cannot guarantee adequate protection of the radio reception in such environments.*

Wiring Diagrams



Note: HART communicators can be connected to the 2mm HART connection sockets. Ensure an adequate external resistance (≥ 230Ω) in the output circuit. To use the HART terminals, the internal 250Ω communication resistor can be added to the measuring loop via the alternative terminal assignment (terminal 3.3)

Warning: Safety products sold by AutomationDirect are Safety components only.
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