PERFORMANCE MADE SMARTER



Universal trip amplifier

4131

– Input for RTD, TC, Ohm, potentiometer, mA and V
– 2 adjustable alarm limits
– FM-approved for installation in Div. 2
– 2 relay outputs
– Universal AC or DC supply

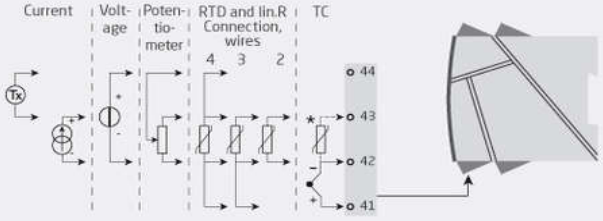
Advanced features
- Programmable via detachable display front (4501), process calibration, relay simulation, password protection, error diagnostics and selection of help text in several languages.

Application
- Process control with 2 pairs of potential-free relay contacts which can be configured to suit any application.
- Trip amplifier with window function defined by a high and a low setpoint. The relay changes state outside the window.
- Relay latch function, where the relay is activated and can only be reset manually.
- Sophisticated sensor error surveillance, where one relay holds the state immediately prior to the sensor error, while allowing the process to continue. The other relay can be set for sensor error alarm so that the defect sensor can be replaced immediately.

Technical characteristics
- When 4131 is used with the 4501 display / programming front, all operational parameters can be modified to suit any application. As the 4131 is designed with electronic hardware switches, it is not necessary to open the device for setting of DIP-switches.
- A green front LED indicates normal operation and malfunction. A yellow LED is ON for each active output relay.
- Continuous check of vital stored data for safety reasons.
- 3-port 2.3 kVAC galvanic isolation.

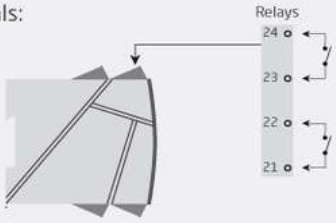
Applications

Input signals:

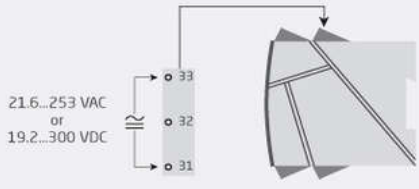


*Order separately: CJC connector 5910.

Output signals:



Supply:



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Order:

Type
4131

Environmental Conditions

Operating temperature	-20°C to +60°C
Calibration temperature	20...28°C
Relative humidity	< 95% RH (non-cond.)
Protection degree	IP20

Mechanical specifications

Dimensions (HxWxD)	109 x 23.5 x 104 mm
Dimensions (HxWxD) w/ 4501/451x	109 x 23.5 x 116 / 131 mm
Weight approx.	170 g
Weight incl. 4501 / 451x (approx.)	185 g / 200 g
Wire size	1 x 2.5 mm^2 stranded wire
Screw terminal torque	0.5 Nm
Vibration	IEC 60068-2-6
2...13.2 Hz	±1 mm
13.2...100 Hz	±0.7 g

Common specifications

Supply

Supply voltage, universal	21.6...253 VAC, 50...60 Hz or 19.2...300 VDC
Fuse	400 mA SB / 250 VAC
Max. required power	≤ 2.0 W

Isolation voltage

Isolation voltage, test / working	2.3 kVAC / 250 VAC

Response time

Temperature input (0...90%, 100...10%)	≤ 1 s
mA / V input (0...90%, 100...10%)	≤ 400 ms

Auxiliary supplies

2-w. supply (term. 44...43)	25...16 VDC / 0...20 mA
Programming	PR 45xx
Signal / noise ratio	Min. 60 dB (0...100 kHz)
Accuracy	Better than 0.1% of sel. range
EMC immunity influence	< ±0.5% of span
Extended EMC immunity: NAMUR NE21, A criterion, burst	< ±1% of span

Input specifications

RTD input

RTD type	Pt10/20/50/100/200/250; Pt300/400/500/1000; Ni50/100/120/1000; Cu10/20/50/100
Cable resistance per wire	50 Ω (max.)
Sensor current	Nom. 0.2 mA
Effect of sensor cable resistance (3-/4-wire)	< 0.002 Ω / Ω
Sensor error detection	Yes
Short circuit detection	< 15 Ω

Linear resistance input

Linear resistance min....max	0 Ω...10000 Ω

Potentiometer input

Potentiometer min....max	10 Ω...100 kΩ

TC input

Thermocouple type	B, E, J, K, L, N, R, S, T, U, W3, W5, LR
Cold junction compensation (CJC) via ext. sensor in 5910	20...28°C ≤ ±1°C, -20...20°C / 28...70°C ≤ 2°C
CJC via int. mounted sensor	±(2.0°C + 0.4°C * Δt)
Δt =	Internal temp.-ambient temp.
Sensor error detection	Yes
Sensor error current: When detecting / else	Nom. 2 µA / 0 µA

Current input

Measurement range	0...20 mA
Programmable measurement ranges	0...20 and 4...20 mA
Input resistance	Nom. 20 Ω + PTC 50 Ω

Voltage input

Measurement range	0...12 VDC
Programmable measurement ranges	0/0.2...1, 0/1...5, 0/2...10 VDC
Input resistance	Nom. 10 MΩ

Output specifications

Relay output

Relay functions	Setpoint, Window, Sensor error, Latch, Power and Off
Hysteresis	0...100%
ON and OFF delay	0...3600 s
Max. voltage	250 VRMS
Max. current	2 AAC or 1 ADC
Max. AC power	500 VA
Sensor error reaction	Break / Make / Hold
of span	= of the currently selected measurement range

Observed authority requirements

EMC	2014/30/EU
LVD	2014/35/EU
EAC	TR-CU 020/2011

Approvals

FM	3025177
UL	UL 508 / C22.2 no. 14
DNV-GL Marine	Stand. f. Certific. No. 2.4
EU RO Mutual Recognition Type Approval	MRA000000Z