

TRIP AMPLIFIER



- AC/DC trip amplifier
- 2 adjustable alarm limits
- Galvanically isolated 3.75 kVAC
- Front-programmable
- 3-digit LED display
- 24 VDC or universal supply



Applications:

Alarm detector in connection with measurement of AC/DC current or voltage signals. • The unit is used where accurate setpoint setting and different alarm functions are required.

- The unit can be used as a single or dual trip amplifier.
- Alarm detector can be installed in PELV and SELV circuits.

Technical characteristics:

General:

The unit is microprocessor-based, which allows a very accurate setting of process parameters. Each unit is supplied with basic calibration data, which eliminates the tolerances in the component data. This means that the input can be programmed to the requested signal range without readjustment.

Measurement ranges less than the min. measurement range of 0.5 V down to 10 mV may be entered, though this will affect the resolution and the response time. Please note that the electric specifications of the module are only kept as long as the stated min. measurement ranges and max. zero offsets are not exceeded.

Input:

Standard DC current signals in the range 0...20 mA. The current signal is detected by a 50 Ω shunt, which is manually connected through an internal jumper.

DC voltage signals in the range 0...250 VDC.

By measurement of AC current signals up to 1 A from a current transformer or current clamp, a 1 Ω / 2 W input shunt is used. True RMS measurement of AC voltage signals in the range 0...250 VAC, with a crest factor < 5.

Functions:

The front-operated push buttons are used for programming the different standard functions.

Single or dual trip amplifier can be selected. Dual trip amplifier with relay 2 as pre-setpoint, single or dual trip amplifier with hysteresis in each relay, which is set as setlow or sethigh and dual trip amplifier with hold on relay 2 until relay 1 is activated.

Make or break function can be selected by an internal jumper.

Programming:

The front keys are used for selection of function and for setting all other parameters like setpoint, reset, active relay for increasing or decreasing signal, delay and input signal.

The arrow keys are used as hotkeys if a quick change of setpoint is required. If the setpoint is changed, the reset point follows, so the selected hysteresis is conserved. A password can prevent access for changing parameters.

Display:

During normal operation the 3-digit display shows the input signal in %. All programmed parameters can be shown by using the front-operated push buttons (see the routing diagram).

Electrical specifications:

Specifications range:

(@: -20°C to +60°C)

Common specifications:

Supply voltage, DC	24 VDC ±20%
Supply voltage, AC and DC	24...230 VAC ±10%, 50...60 Hz 24...250 VDC ±20%
Internal consumption, 2231D	1.5 W
Internal consumption, 2231P	2 W
Isolation voltage, test / operation	3.75 kVAC / 250 VAC
Signal dynamics, input	16 bit
Response time, program. DC / AC	0.25 / 0.75...60 s
Calibration temperature	20...28°C
Temperature coefficient:	
DC signals	< ±0.01% of span /°C
AC signals	< ±0.02% of span /°C
Linearity error:	
DC signals	< ±0.1% of span
AC sine wave signals	< ±0.35% of span 50...1000 Hz
Additional linearity error, AC signals	
Crest factor 1 - 3	±0.7% of span
Crest factor 5	±2.5% of span
Effect of supply voltage change	< ±0.002% of span /%V
EMC immunity influence	< ±0.5%
Humidity	< 95% RH (non-cond.)
Dimensions (HxWxD)	84.5 x 35.5 x 80.5 mm (excl. pins)
Tightness	IP50
Weight 2231 D / 2231 P	125 g / 175 g

Electrical specifications - INPUT:

DC current input:

Measurement range	0...20 mA
Min. measurement range (span)	10 mA
Max. offset	50% of selec. max. value
Input resistance	50 Ω
Updating time	100 ms

AC current input:

Measurement range	0...1 ARMS
Min. measurement range (span)	0.5 ARMS
Max. offset	50% of selec. max. value
Input resistance	1 Ω / 2 W
Updating time	100 ms

Voltage input:

DC voltage input:

Measurement range	0...250 VDC
Min. measurement range (span)	0.5 VDC
Max. offset	50% of selec. max. value
Input resistance	Nom. 5 MΩ
Updating time	100 ms

AC voltage input:

Measurement range	0...250 VRMS
Min. measurement range (span)	0.5 VRMS
Max. offset	50% of selec. max. value
Input resistance	Nom. 5 MΩ
Updating time	100 ms

Electrical specifications - OUTPUT:

Relay outputs:

Setpoint setting	0...99.9% of span
Hysteresis	0...99.9% of span
Updating time	100 ms
Delay	0.0...99.9 s
Max. voltage	250 VRMS
Max. current	2 A / AC
Max. AC power	500 VA
Max. load at 24 VDC	1 A

Marine approval:

Det Norske Veritas Rules for Ships ... Certificat. Notes No.2.4

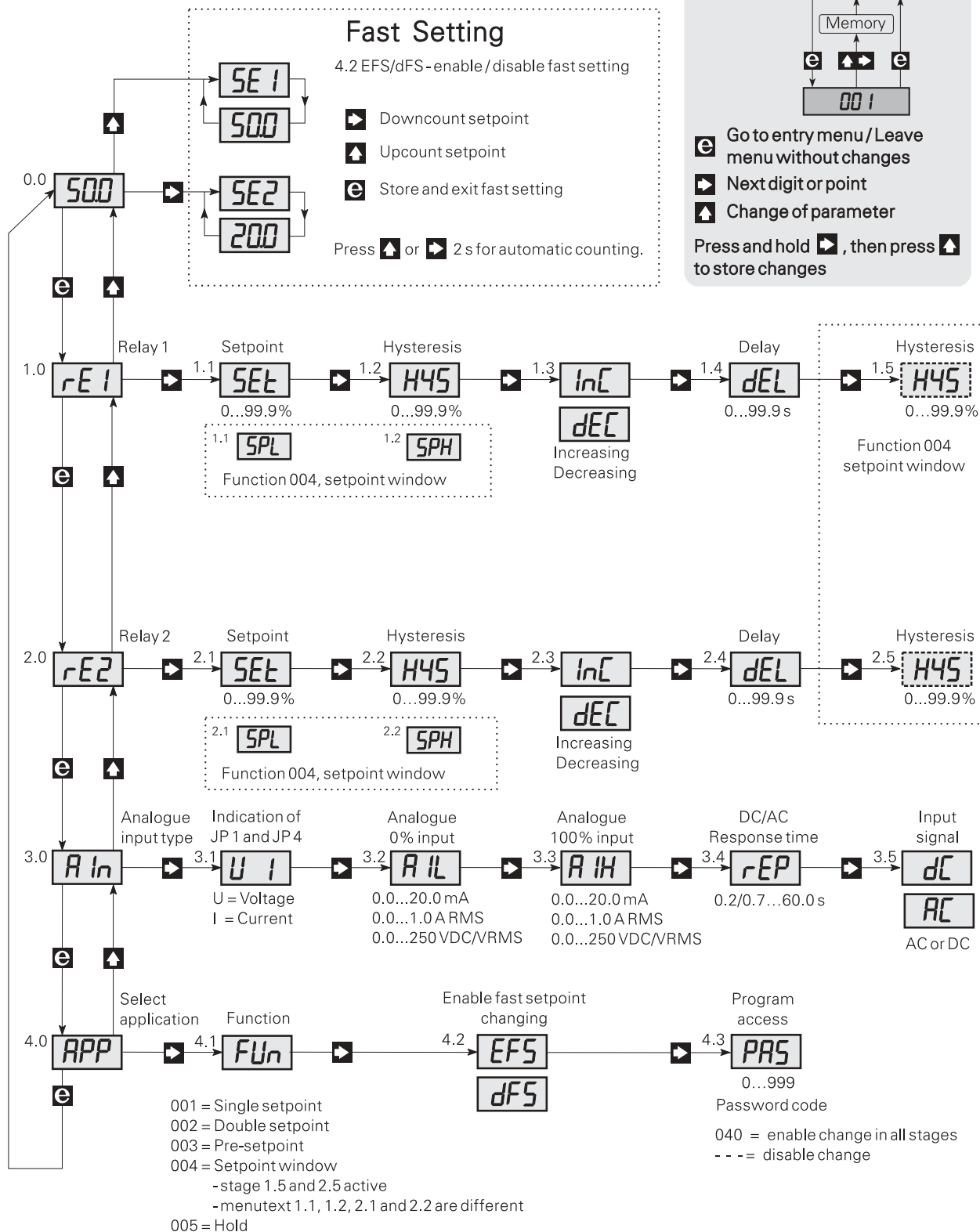
Observed authority requirements: Standard:

EMC 89/336/EEC, Emission	EN 50 081-1, EN 50 081-2
Immunity	EN 50 082-2, EN 50 082-1
Emission and immunity	EN 61 326
LVD 73/23/EEC	EN 61 010-1
PELV/SELV	IEC 364-4-41 and EN 60 742

Of span = Of the presently selected range

Routing diagram

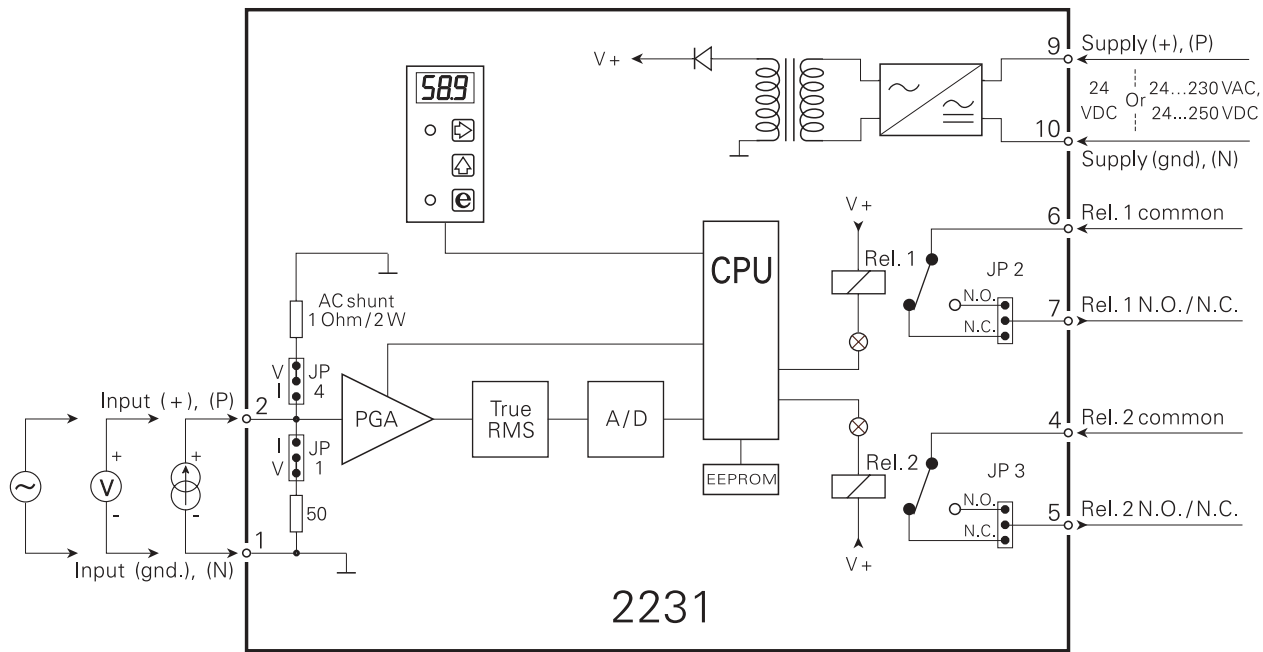
If no buttons are pressed for a period of 2 minutes, display returns to stage 0.0



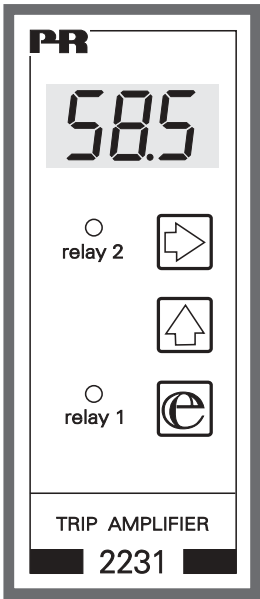
Order: 2231

Type	Supply
2231	24 VDC : D
	24...230 VAC
	24...250 VDC : P

Block diagram:



Front layout:



Hardware programming:

Input:

Input	JP1	JP4
0...20 mADC	I	V
0...1 ARMS	I	I
0...250 VDC	V	V
0...250 VRMS	V	V

Output:

Relay	JP position
Relay 1 normally open	JP 2 N.O.
Relay 1 normally closed	JP 2 N.C.
Relay 2 normally open	JP 3 N.O.
Relay 2 normally closed	JP 3 N.C.