

• All types of protection curves

Constant time, inverse time

very inverse time or extremely inverse time curves ...

• 1, 2, 3 or 4 relay outputs

• Measure display (10 000 pts)

Configuration on front face

• Option: 1 or 2 isolated analog outputs

option: measure converter function

• Universal power supply



RPS23 is a thermal protection relay for direct current, associated with a standard current shunt (provided in option), it is able to measure all intensity. All protection coefficients are freely settable by user, allowing to meet all loads type. In option, RPS23 can be equipped with one or two isolated analog outputs to ensure the measure converter function.

DESCRIPTION :

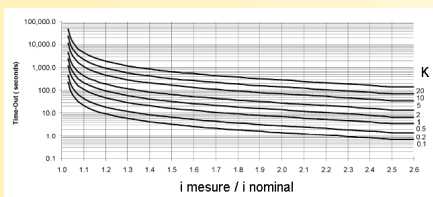
Input :

- Voltage (max : 2000mV) from the measure shunt.

Thermal protection :

- The device continuously calculates with the current measurement, the thermal image of load, allowing to have an alarm and to shutdown power supply in case of overheating.

Curve type, to thermal protection with reverse time



Protection algorithm :

- The table below gives algorithms used for thermal protection (tripping time and drop time)

The coefficients : K , a , b , c , R are given for information according to reference standards and remains freely configurable by user.

By default, the product is delivered with normally inverse time curve.

Front face :

- 1 green Led (power supply).
- a 4 digits Led display for electric current in load.
- 2 pushbuttons for device setting and configuration.
- 4 red Leds to controlling the state of relays.

Relays:

- Up to 4 relay (2 changeover contact relay and 2 NO).
- Security, hysteresis and delay individually adjustable on each relay (on tripping and on release).
- R1 and R2 relays provide the thermal protection
- R3 relay signals an exceeding of nominal value current.
- R4 relay is assigned to watchdog normally closed, it indicates a problem on the product or a breaking with the shunt link.

Output : (option)

- 1 or 2 isolated analog outputs. Individually configurable in current or voltage :
0 ... 4 ... 20 mA or 0...1...5...10 V; ...
- response time and security value adjustable for each output.

Feature:

- 23 mm box width, DIN rail mounting (symmetrical)
- pluggable screw terminal blocks (2.5mm²)
- universal switching power supply
- conformal coating.
- update of firmware via the serial link
- 3 ways galvanic isolation input / outputs / power supply

Factory default value output

Triggering time characteristics				
Triggering time characteristics	Constants and equations (t in s)			
(k = 0.01...10.00)	a	b	c	R
Constant time	t = K			
According ANSI/IEE C37.112	Triggering		Drop Time	
Moderately inverse	0.0515	0.0200	0.1140	4.85
Very inverse	19.6100	2.0000	0.4910	21.60
Extremely inverse	28.2000	2.0000	0.1217	29.10
According to ANSI	Triggering		Drop Time	
Normally inverse	8.9341	2.0938	0.17966	9.00
Short time inverse	0.2663	1.2969	0.03393	0.50
Long time inverse	5.6143	1.0000	2.18592	15.75
$t = K \cdot \left[\frac{a}{\left(\frac{I}{I_{ref}} \right)^b - 1} + c \right]$ $t = K \cdot \frac{R}{\left(\frac{I}{I_{ref}} \right)^2 - 1}$				

Version and order code:

Basic version : **RPS23** : 1 relay (thermal protection)
Option : **/R2** : 2 relays (thermal protection)
/R3 : 3 relays (idem /R2 + current alarm)
/R4 : 4 relays (idem /R3 + Watchdog)
/S1 : 1 analog output (image of current)
/S2 : 2 analog outputs (image of current)
Note : all options are cumulative.

INPUT

(resolution : 14 bits process; reference: 5 ppm)

Type	Range	Accuracy
Voltage (Low levels)	- 250 to 2000mVdc	+/- 40 μ V
Input impedance	1 Mohms	
<i>(on two automatic ranges : 250mV and 2000 mV)</i>		

breaking detection current = 5 μ A**RELAY**

R1 and R2 : potential free changeover contact
 R3 and R4 : closing contacts (NO)
 Switching power : 250VAC , 6A (resistive load)

ANALOG OUTPUT (in option)
(12 bits resolution)

Type	Range	Accuracy
Current S1 and S2	0 ... 4 ... 20 mA	+/- 20 μ A
Maximum load :	850 Ohms	
Voltage S1 and S2	0 ... 10 V	+/- 10 mV
Impedance output:	500 Ohms (internal shunt 0.1%)	

Response time (programmable) from 100 ms to 60 s

POWER SUPPLY

Universal : (2 versions: standard and low voltage, not polarized)

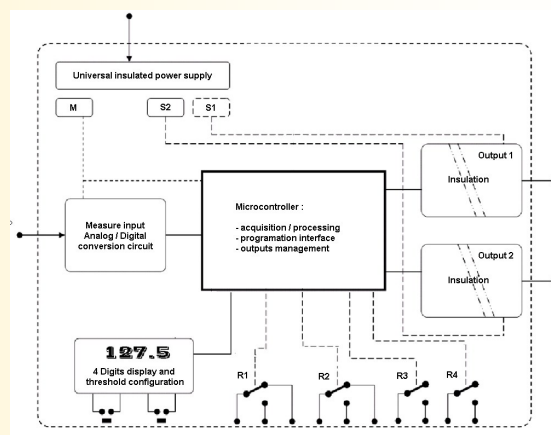
standard : 20....to.....265Vac/dc

low voltage : 9 vdc....to.....30Vdc.

Consumption: < 3 VA

ENVIRONMENT

Operating temperature	-10 to +60 °C
Storage temperature	-20 to +85 °C
Temperature drift	< 20 PPM / °C
Relative humidity	85 % (not condensed)
Weight	~ 160 g
Protection rating	IP20
Dielectric strength	1500 Veff continuous 2500 Veff 1 minute.
MTBF (MIL HDBK 217F)	> 4 000 000 Hrs @ 25°C
Life time	> 200 000 Hrs @ 30°C

Synoptic :**Electromagnetic compatibility 2014/30/UE / Low Voltage Directive 2014/35/UE**

Immunity standard for
industrial environments
EN 61000-6-2

Emission standard for
industrial environments
EN 61000-6-4

EN 61000-4-2 ESD	EN 61000-4-8 AC MF
EN 61000-4-3 RF	EN 61000-4-9 pulse MF
EN 61000-4-4 EFT	EN 61000-4-11 AC dips
EN 61000-4-5 CWG	EN 61000-4-12 ring wave
EN 61000-4-6 RF	EN 61000-4-29 DC dips

EN 55011
group 1
class A

**WIRING AND OUTLINE DIMENSIONS:**