

# Battery Protection Relay

## Control relay for charge and discharge current

RPB45S **LOREME**

- **Bidirectional battery protection**

Charge current control

Discharge current control

- **3 relay outputs**

- **Measure display (10 000 pts)**

(front face programming)

- **Isolated Analog Output**

(measure copy function)

- **Pluggable connectors**

- **Universal power supply**



RPB45S is a universal battery protection relay, used with a shunt , It allows to measure any intensity. Protection thresholds and delays are freely setting for each current direction (charge and discharge), allowing to support every battery types. RPB45S has an insulated analog output to copy the current measurement.

**DESCRIPTION:**

**Measure input :**

- Voltage (-0.5V to + 8V range) from measuring shunt.
- configurable sensitivity : A/mV (for direct display of current)

**Protection**

- The module monitors current in the two directions
- 1) Battery charging :
  - prevent an excessive charge current.
  - setting the charging current limits and delay (0 ... 999 s)
- 2) Battery discharge :
  - protect against short circuit or excessive current value.
  - setting current limits and delay (0.02 ... .0.99 s)

**Front face :**

- 1 green Led « Power »
- 1 flashing green Led « RUN »
- 1 flashing red Led « TRIP »
- 1 error red Led « FAULT / WATCH DOG »
- 4 digits led display, battery current display (max 999KA)
- 2 push buttons for adjustment and device configuration.
- Bilingual English (by default) or French. (Locked by password)
- 1 push button « trip reset » ( in front face)
- 1 push button « trip test » ( under the hinged face)
- the user can define (by RS232 link) a standard library of battery selectable in front face :
- 21 battery models defined by 16 alphanumeric characters (allowing automatic configuration of product)

**Relays :**

- 3 output relays
- R1 and R2 relays provide the current protection output relays are internally polarized with 24V allowing direct control of a trip coil.
- Relay R3 is assigned to watchdog normally closed, it indicate:
  - \* power supply loss
  - \* device failure
  - \* measurement shunt connection breaking
  - \* breaking of output command circuit
  - \* low energy storage

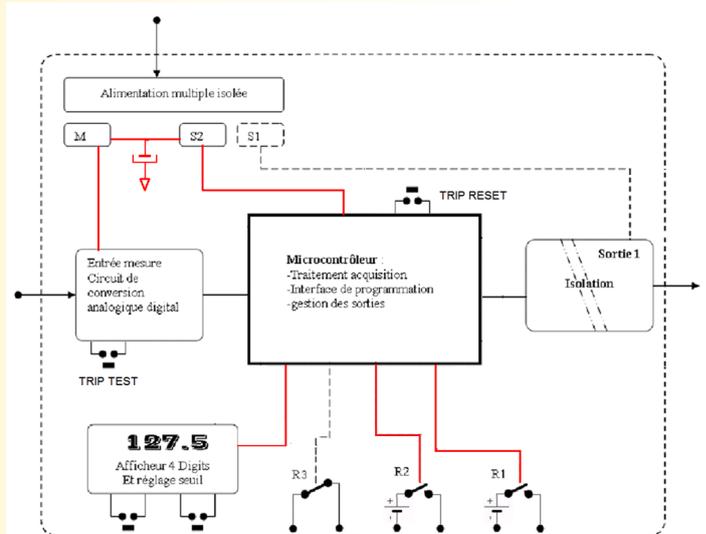
**Analog output :**

- 1 isolated analog output configurable for voltage or current:
  - 0 ... 4 ... 20 mA or 0...1...5...10 V
- adjustable response time and burn out value (shunt link breaking detection)

**Feature:**

- 45mm box width, DIN rail mounting (symmetrical)
- pluggable screw terminal blocks ( 2.5mm<sup>2</sup> maxi)
- Not polarized universal switching mode power supply (with more then 30 seconds of operating reserve)
- conformal coating.
- firmware update possible (uploaded via the RS232 link)
- FLASH backup of configuration settings, guaranteed data retention > 40 years.
- Watchdog to monitor the firmware running. (contact open when no more energy stored available)
- Galvanic isolation: input / output / power

**Synoptic:**



Version and order code:

[Request a quote](#)

Basic version : **RPB45S** : 2 output relays (24Vdc internally polarized) + analog output (image of current) + watchdog relay

**INPUT**

(resolution :14 bits , 60 samples/sec, 5 ppm reference)

Type	Range	Accuracy
Voltage	-0.5V to +8 Vdc	+/- 1.5 mV
Input impedance	125 Kohms	
<i>Shunt breaking detection current = 100 uA.</i>		
<i>Measure cycle: 20ms (50 measures / second)</i>		
<i>Including all delays (processing and switching)</i>		

**RELAY**

R1: static relay, polarized by internal power supply 23 V +/- 5% (5A limited current, 50ms)

R2: static relay, polarized by internal power supply 23 V +/- 5% (5A limited current, 50ms)

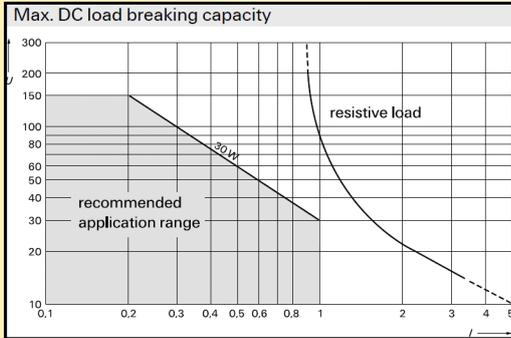
R1 and R2 stay activated after default disappearance until alarm reset command  
(breaking current is displayed in "flashing" mode)

R3 electromechanical relay with N.O contact, (the coil is excited without default)

Timers resolution : +/- 20 ms (acquisition cycle)

AC breaking capacity: 250Vac , 1A (resistive load)

DC breaking capacity:



**OUTPUT (10 bits resolution)**

Type	Range	Accuracy
<b>Current</b>	0 ... 4 ... 20 mA	+/- 25 µA
admissible load:	0.....850 Ohms	
<b>Voltage</b>	0 ... 10 V	+/- 10 mV
Output impedance:	500 Ohms (0.1% internal shunt)	
Analog output response time:		from 30 ms up to 60 s (programmable)

**POWER SUPPLY**

Universal : (2 versions: standard or low voltage, not polarized)  
 standard : 20 to 265 Vac/dc consumption < 3 VA  
 low voltage : 9 to 30 Vdc consumption < 3 VA  
 Operating reserve: >30 seconds on power supply loss or short-circuit.  
 (the essential functions of the relay are maintained including the energy required for the activation of the trip coil, loss of the analog output)

**ENVIRONMENT**

Operating temperature	-10 to +60 °C
Storage temperature	-20 to +85 °C
Thermal drift	< 20 PPM / °C
Humidity	85 % (no condensed)
Weight	~ 180 g
Protection rating	IP20
Dielectric strength	1500 Vrms continuous

**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 55011 group 1 class A
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	



**WIRING AND OUTLINE DIMENSIONS:**

