

Relays for Monitoring DC Supply Nets

*Monitoring of faults on earthed
and un-earthed supply nets*





Battery undervoltage. BMCA

Battery over and undervoltage. BMCD

The relay (BMCA) triggers an alarm at undervoltage, thereby preventing drain of the battery. BMCD triggers alarms both in the case of drain and overcharging.

Programmable
for 12, 24, 48 or
110 VDC

LED indication
status

OFF delay 0-10
sec. or 0-100
sec.

Relay function:

- Undervoltage: 1xC/O and 1xN/C
- Overvoltage: 1xN/O and 1xN/C or 1x2C/O

DC Voltage monitoring. BMW

Combined over and under-voltage relay. By means of a built-in switchmode supply designed to monitor levels in the range 14 – 340 VDC. The individually adjustable hysteresis for over and undervoltage means that the relay can be used for both in and out coupling of equipment, with well defined voltage values. BMW can be used as Window discriminator with well defined upper and lower limit values.



2 relay outputs,
can be combined
or used individually

Exact adjustment
of upper level /
return and lower
level / return

Dip switches for
the setting of over
and/or undervoltage,
or window function

LED indication of
state of input,
relay state and
timing state

Battery symmetry monitor. BVSA



The relay triggers an alarm when an asymmetry is present in the battery packs two halves eg. if a cell in a battery doesn't function anymore. This relay presupposes that the two halves of the battery are identical. For a complete monitoring of the battery, BVSA can be used together with a BMCD (Hi/Low).

- Supply direct from battery. 12, 24 or 48V
- LED indication of status and fault state
- LATCH function by symmetry fault
- TEST and RESET function direct on relay and via terminals
- Adjustable sensitivity and time delay to avoid false alarms

Earth and/or isolation faults in main wires and branches in DC supplies in networks, un-earthed or with grounded middle voltage. DDCA

The supply wires are installed directly through the hole in the cabinet. This enables detection of fault currents both in the + and - wire. Faults can be the result eg. of bad isolation. The built-in transformer eliminates the need of shunts with resulting voltage drop and creation of heat.

- Built-in coil, $\varnothing 14\text{mm}$ or $\varnothing 29\text{mm}$
Alt. external coil, $\varnothing 50\text{mm}$ or $\varnothing 90\text{mm}$
- Detect fault current in the range 5 - 200 mA
- Cover the range 18 – 340 VDC
- Output signal indicating direction (12 ± 8 mA) and LED indication
- Relay function:
2x1C/O (fault from + or -) or 1x2C/O
- Adjustable time delay for ON and OFF





Earth and/or isolation faults in DC supplied un-earthed net. DDEA

By the use of an artificial ground, the relay detects fault currents from the + or - side to ground. This could be the result of direct shortages or bad insulation.

- Detects fault current in the range 0,2 – 30 mA
- Actual fault current shown in 3½ LED display
- Cover the range 20– 500 VDC
- Programmable delay
- Relay function: 2x1C/O (fault from + or -) or 1x2C/O

Battery symmetry. BMSA

Relay can be used with identical or different batteries connected in series. The individual cells in the batteries have to be identical. The series connection needs to have an output from a reference point between the + and the - side. The relay will trigger an alarm if the balance between the two batteries in series is changing. This could be the result of a collapsed cell. BMSA can also be programmed to monitor over and undervoltage.

- Complete unit, multirange 24 – 512 VDC
- No leak current through the middle point
- Adjustable delay, ON and OFF
- LED indication of status, latch and timer function





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