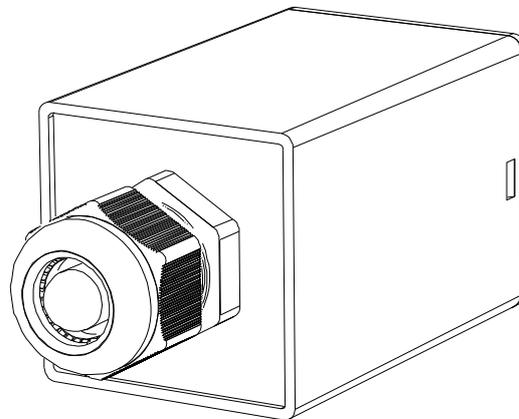
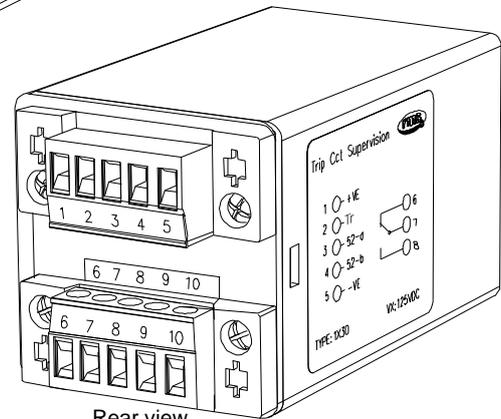


Features

- Monitors trip circuit supply
- Monitors trip circuit wiring integrity
- Monitors circuit breaker operate coil continuity
- Monitors circuit breaker 52a and 52b auxiliary switches in open and closed positions
- >300ms time delay to avoid nuisance alarms during normal CB operation
- Compact design
- Simple through hole panel mount
- De-mountable terminal blocks complete with locking screws
- Extra large LED
- Remote indication via one output contact
- Custom front panel label
- Cost effective
- Range of supervision voltages



Front view



Rear view

Application

The 1X30 Trip Circuit Supervision relay has been designed as a simple and cost effective device for monitoring the condition of the trip circuit supply, trip circuit wiring and circuit breaker operate coil continuity.

Local visual indication of fuse or circuit failure is provided by a large ultra high intensity LED. Remote indication is made possible through a single alarm relay output contact.

The 1X30 relay is characterized by it's compact size, plug in connection base and simple panel mounting configuration. A number of models are available to cover a range of sensing circuits.

Operation

Made in Australia

The 1X30 relay is comprised of two electromechanical output relays which are wired across the protection trip contact and the circuit breaker a and b pallet switches. This results in the alarm relay being normally energized provided the trip supply, the trip circuit and the circuit breaker coil are all healthy.

Failure of the trip supply, the circuit under supervision or the CB coil will cause the alarm relay to be de-energized providing a remote warning signal and the front panel alarm LED changing state. The 1X30 relay incorporates an electronic time delay to avoid nuisance alarm signals during normal operation of the circuit breaker between the open and closed state.

An important characteristic of the design is the low level of current required to flow through the CB coil for correct operation of the supervision scheme. A constant low supervision current is maintained irrespective of the CB open or closed position. This results in low power dissipation in the 1X30 circuit and the CB coil which avoids the possibility of nuisance tripping.

Two supervision schemes are available to provide a range of and visual alarm and output contact options.

The relay is designed for flush mounting utilizing the single 25mm mounting point which also houses the LED indicator. Electrical termination is made via ten (10) screw terminals on the rear of the case. This terminal block is of a plug in type further simplifying installation.

Technical Data

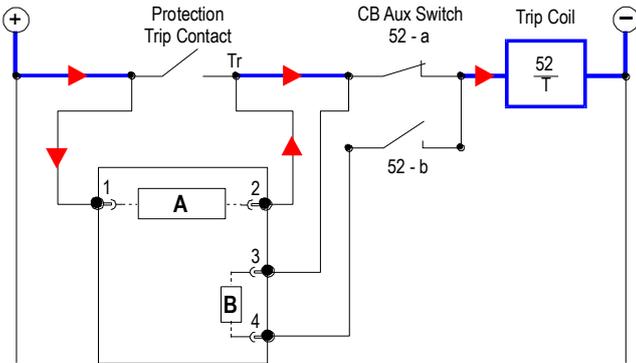
SUPERVISED CIRCUITS

The trip supply, circuit and CB coil are continuously monitored under all conditions as depicted in the following diagrams:

 The thick blue lines depicted below identify the supervised trip circuit and the red arrows the path of the supervision current under different conditions.

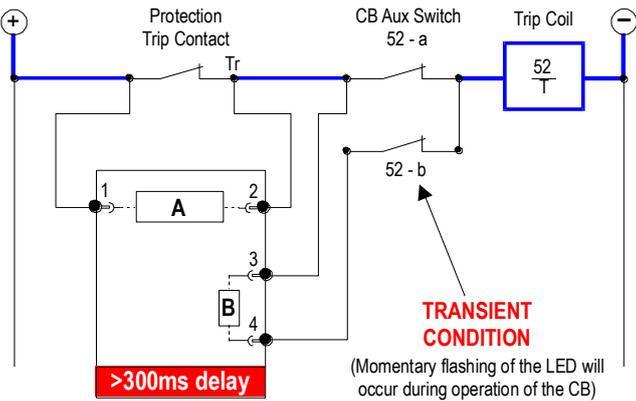
SUPERVISION WITH CB CLOSED

Loss of the DC trip supply or circuit continuity through the indicated current path for >300ms will cause the normally energised fail alarm relay to drop out.



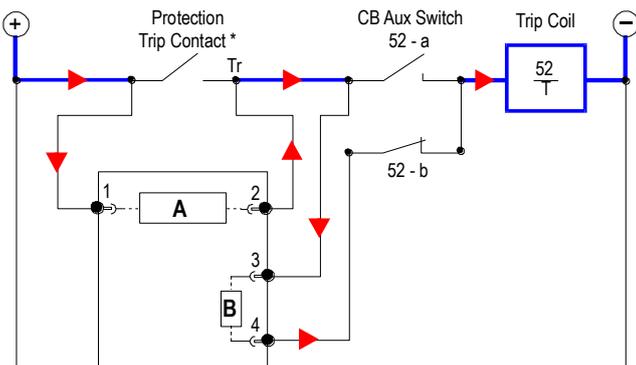
SUPERVISION DURING CB OPERATION

A 300ms time delay holds in alarm contact during CB operation. The LED will remain off while the protection trip contact closed.



SUPERVISION WITH CB OPEN

Alternate supervision current path when the CB is open.



Note: * The protection contact Tr may be a latching type lockout relay. In this case supervision current will not flow through supervision element A. Supervision element B will continue to function and maintain the normally energised fail alarm contact to remain picked up.

SUPERVISION SCHEMES

Two different supervision schemes are available as described on page 3.

VOLTAGE OPERATING RANGE

70% to 125% of nominal voltage.

DROP OUT VOLTAGE

Drop out between 25 and 40% of nominal rated operate voltage.

SUPERVISION OPERATING CURRENT

The 1X30 circuit design is optimized to minimize the supervision current in the trip coil to avoid the possibility of nuisance tripping.

Nominal supply	Supervision Circuit (CB open and closed)		Supervision current
	Resistance (ohms)		
	1X30	Trip coil (Maximum) *	
24V DC	640	19	37mA
32V DC	1,600	34	20mA
48V DC	2,500	77	20mA
110V DC	22,000	400	5mA
125V DC	25,000	520	5mA

Note: * The maximum recommended CB trip coil resistance stated above equates to a minimum CB operating power of 30W.

BURDEN

Total power dissipated in the 1X30 supervision and alarm circuits at nominal operating voltage is tabulated below:

Red LED versions:

Nominal supply	Normal conditions	
	CB Closed	CB Open
24V DC	1.8W	1.4W
32V DC	1.4W	1.1W
48V DC	2.0W	1.5W
110V DC	1.2W	0.9W
125V DC	1.3W	1.0W

Green LED versions:

Nominal supply	Normal conditions	
	CB Closed	CB Open
24V DC	2.2W	1.7W
32V DC	1.7W	1.4W
48V DC	2.4W	1.9W
110V DC	2.1W	1.8W
125V DC	2.3W	2.0W

VISUAL INDICATOR

Panel mounted extra large red, yellow or green LED.

INSULATION WITHSTAND in accordance with IEC 255-5: 2KV RMS and 1.2/50 5KV impulse between input and output.

ALARM DELAY

>300ms at nominal operating voltage.

OUTPUT RELAY CONTACT CONFIGURATION

1 contact as indicated in supervision scheme diagrams
 1 KV isolation across open contacts

OUTPUT CONTACT RATING

Make and carry

30A AC or DC (Limits L/R=40ms and 300V max.) for 0.2s
 20A AC or DC (Limits L/R=40ms and 300V max.) for 0.5s
 5A AC or DC continuously

Break (Limits 5A and 300V max.)

1,250VA AC resistive
 250VA at 0.4PF AC inductive
 75W DC resistive
 30W DC inductive L/R = 40ms
 50W DC inductive L/R = 10ms

Minimum recommended load

0.5W, 10mA or 5V minimum.

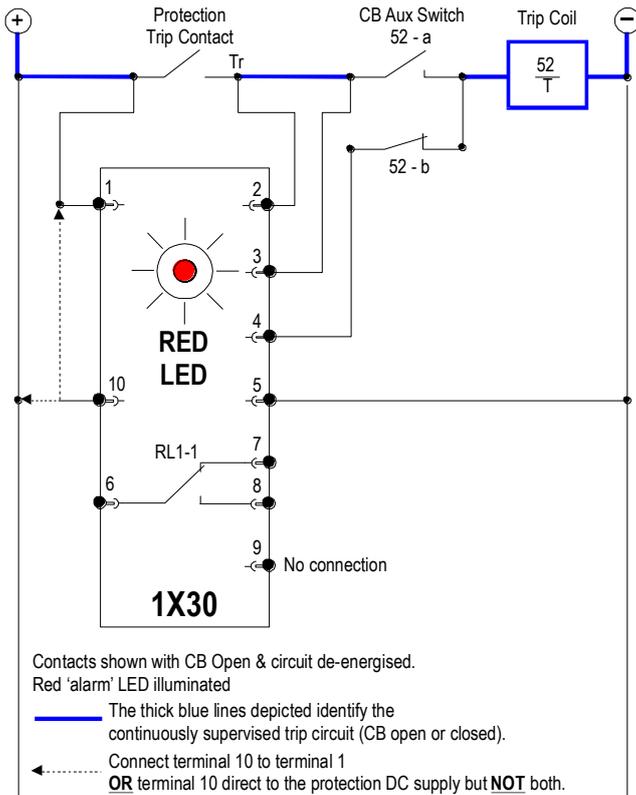
Supervision Schemes

SCHEME A Red 'alarm' LED and C/O alarm contact

In this scheme a C/O alarm contact and red 'alarm' LED is provided. The alarm contact remains picked up under normal healthy conditions and during switching transients. Under abnormal conditions the alarm contact will always drop out to signal a trip circuit failure. The red 'alarm' LED will also become illuminated provided the trip supply has not been lost to terminal 10 on the 1X30 relay.

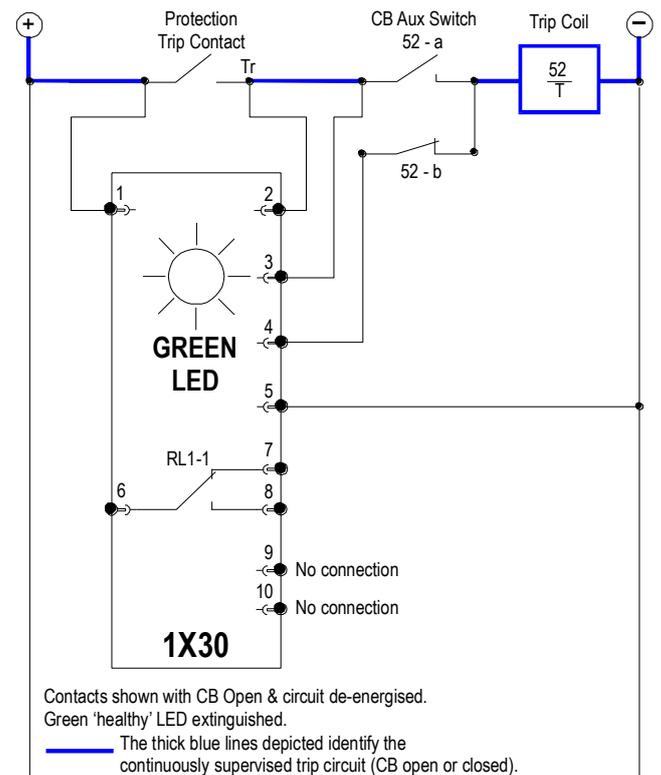
The trip supply may be wired directly to terminal 10. This will ensure that the red 'alarm' LED will still illuminate even for loss of the DC trip supply to the protection trip contact.

A yellow 'alarm' LED may be specified in place of the red LED.



SCHEME B Green 'healthy' LED and C/O alarm contact

In this scheme a C/O alarm contact and green 'healthy' LED is provided. The alarm contact remains picked up and the green 'healthy' LED illuminated under normal healthy conditions and during switching transients. Under abnormal conditions the alarm contact will always drop out to signal a trip circuit failure and the green 'healthy' LED extinguished.



MOUNTING

Panel mounting through LED indicator assembly.
Optional custom label fits between panel and LED mounting nut.

CASE STYLE

Double insulated high impact plastic case moulded in polystyrol.

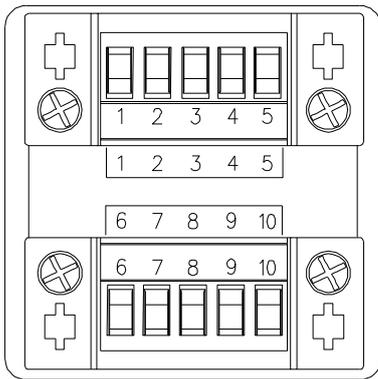
TERMINAL WIRING

2x 5 way screw compression terminal blocks mounted in two plug-in bases for easy wiring and installation.

Each terminal block is polarised to ensure that it cannot be plugged into the wrong terminal socket.

Screws to retail the plug-in terminal blocks are provided.

Terminal 9 is not used to allow adequate high voltage isolation between terminals 8 and 10.



Rear terminal layout

TEMPERATURE RANGE

Operating: -10 to +55°C
Storage: -25 to +75°C

Ordering Information

Generate the required ordering code as follows: e.g. 1X30-DBA

1X30 - 1 2 3

1 SUPERVISION VOLTAGE

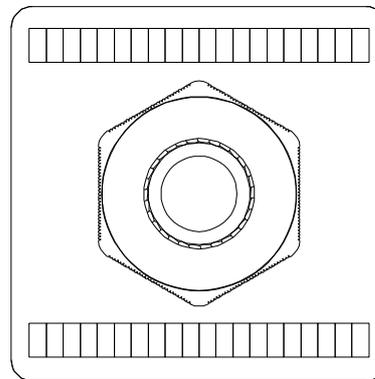
A	24V DC	D	110V DC
B	32V DC	E	125V DC
C	50V DC		

2 SUPERVISION SCHEME

- A Red 'alarm' LED illuminated under fault conditions
- B Green 'healthy' LED illuminated under normal conditions
- C Yellow 'alarm' LED illuminated under fault conditions

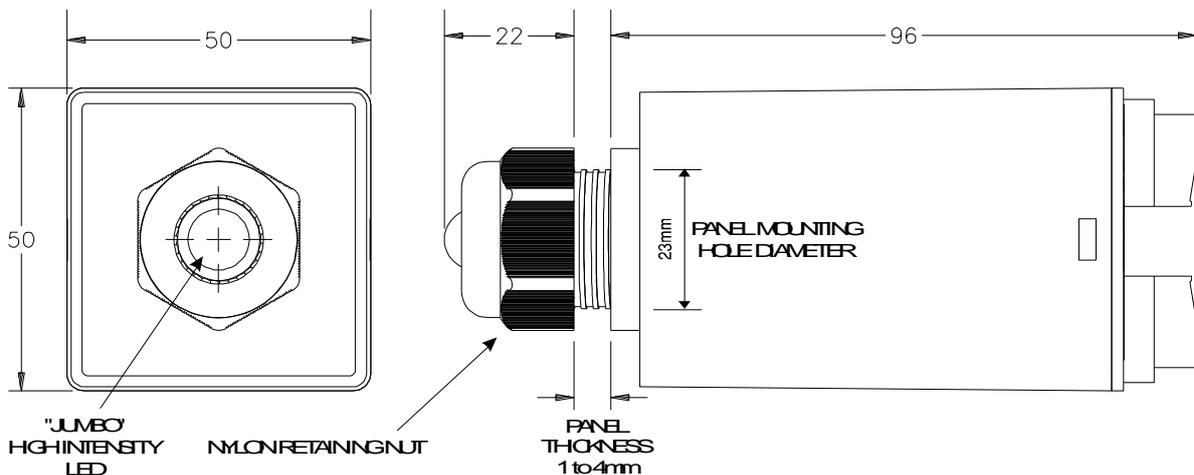
3 CUSTOM FRONT PANEL LABEL

- A Not required
- B Required Advise 2 x 20 characters (Maximum) of custom text for custom front panel label with order.



Maximum 2 X 20 characters

CASE DIMENSIONS



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