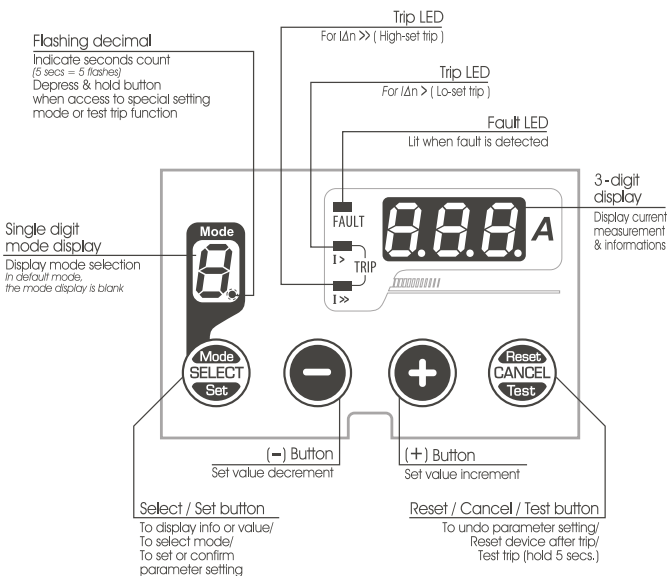


Auto-reset type **TM-18R** Digital Earth Leakage Relay - DIN Rail Type

features

- True RMS Measurement with SPARC¹ and DCO² Algorithm
- Fundamental Signal Detection³
- Real Time Display of $I_{\Delta n}$ in Ampere
- Fault / Io-set & hi-set Trip LED Indication
- Fault Start Event Recording
- Trip Event Memory (non-volatile 7 previous records)
- Fault Start Event Memory (non-volatile 4 previous records)
- Selectable Frequency (50/60 Hz)
- Trip Lock-out Contact for K2
- Last Trip Elapsed Time (up to 99days)
- Self reclosing / Auto-reset
- Re-start Interval Setting
- Auto Z.C.T. Detection
- Software Lock to Prevent Unauthorized Setting
- 35mm wide DIN Rail mount
- Complies with : IEC-60255-26/27 ; BS EN 50121-5 Standards

Panel Overview



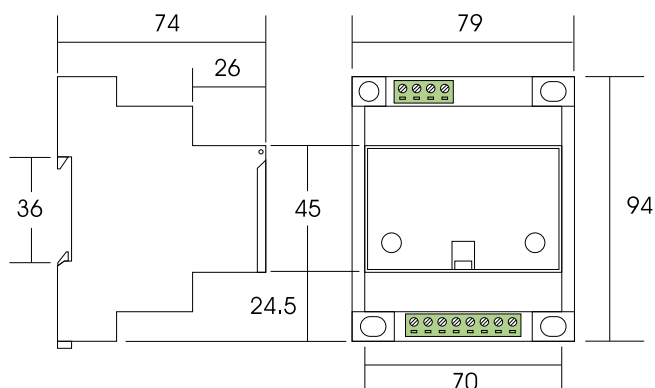
Technical Data

Aux Power	: 65 ~ 275 Vac (45 ~ 65 Hz); 90 ~ 300 Vdc (for model 220a)
	: 18 ~ 72 Vdc (for model 024a)
Fundamental Frequency	: 50 or 60 Hz (software selectable)
Current Input ($I_{\Delta n}$)	: ZCT (multiple sizes from ID of 30~300mm)
Measurement Range	: 0.01 ~ 30.0 A
Output Relay Rating	: SPDT 5A, 250V AC/DC
Consumption	: < 3 VA
Accuracy	: Current protection threshold ($\pm 5\%$), Time delayed ($+5\%$ or 50ms)
Display	: 7-Segment LED (3 + 1 digit)
Indication (LEDs)	: fault, Io / hi-set trip
Operating Temp.	: 0°C ~ +55°C
Humidity	: 56 days at 93%RH, 40°C non-condensing
IP Rating	: IP55 (mounted at relay front), IP52 (mounted at relay rear)
Weight	: 200 g

Parameter Setting Range

1 $I_{\Delta n} >$ (A) (lo-set)	0.03 ~ 30.0 A	t \gg (sec) hi-set trip time delay	Fixed @ 30ms
	0.03~1.00 A (step of 0.01A)		
	1.00~3.00 A (step of 0.05A)	4 Trip-lockout \gg	1 ~ 10 times (step of 1 time)
	3.00~10.0 A (step of 0.10A)	5 Auto-reset timer (sec)	3s ~ 200s (step of 1sec)
	10.0~30.0 A (step of 0.50A)	6 Re-start Interval (minutes / hour)	OFF or 5 / 10 / 15 / 30 / 45 mins 1 ~ 8 hrs / 10 / 12, 24 hrs
2 t \gg (sec) (hi-set trip time delay)	0.03 ~ 20.0 sec		
	0.03 ~ 0.10 s (step of 0.01s)		
	0.10 ~ 1.00 s (step of 0.02s)		
	1.0 ~ 20.0 s (step of 0.1s)		
3 $I_{\Delta n} >>$ (A) (hi-set)	OFF or 0.10 ~ 30.0 A		
	0.10 ~ 10.0 A (step of 0.1A)		
	10.0 ~ 30.0 A (step of 0.5A)		

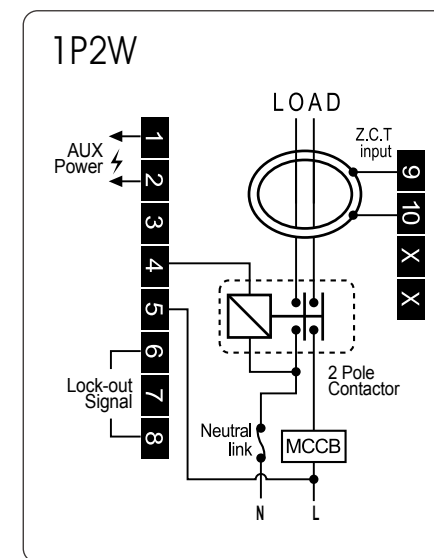
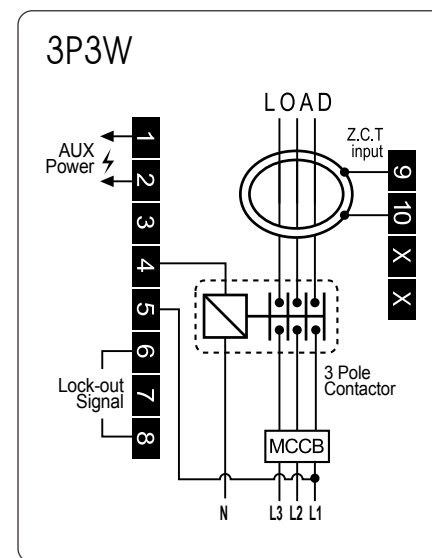
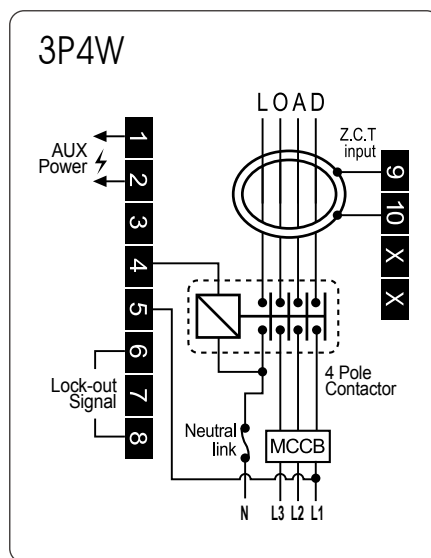
Casing (DIN Rail type)



Note: All measurement in mm.



Wiring



Modes

Factory Setting	0.50	1 IΔn > (A) : Lo-set leakage current	3	4 Trip Lock-out : max. 10 times
	0.30	2 t > (sec) : Trip time delay	5.0	5 Auto-reset Timer : Redosing Time
SETTING	OFF	3 IΔn > (A) : Hi-set leakage current	01h	6 Re-start Interval : Reset Trip Count Interval

INFO VIEWING

A Trip Count	: int / tot	Interval Trip Count / Total Trip Count
6 , 01 to 06 Trip Memory	: 7 Trip Event Memories (non-volatile)	
d Last Trip Elapsed Time	: Last Trip Elapsed Time	
01 to 04 Fault Start Memory	: 4 Fault Start Event Memories (non-volatile)	
F U E r Version	: Firmware Version	
F o P h Operation Hour	: Device Operated in Hours (x 1000 hr.)	

SPECIAL SETTING MODE

OFF	L Software lock	: Keypad lock : OFF or ON
50	F r Network frequency	: Selectable as : 50 Hz or 60 Hz
On	- Standby mode	: Running LED bar : ON or OFF
Aut	0E Z.C.T. detection	: Auto detection or no detection
	End End program setting	: Save Changes and exit setting mode

Parameters Setting : Mode 1 ~ 6

When mode display is blank, press [SELECT] button to access the parameter setting mode.

- Press [SELECT] button while in default mode to access to parameter setting mode:

mode 1	mode 2	mode 3 ...
IΔn > (A) Set Lo-set leakage current	t > (sec) Set trip time delay	IΔn > (A) Set Hi-set leakage current

 To scroll thru modes, just press & release the [SELECT] button
- Press **-** or **+** button to adjust desire value.

For fast increment or decrement, press and hold the **-** or **+** button
- Press [Set] button to store new value and proceed to the next mode.

Press [CANCEL] button to exit mode or undo changes.

All modes exit automatically if left untouched for more than 20 secs.

Info Viewing

A int Interval trip counter

This mode display the number of tripping that has occurred within the time interval from the 1st tripping. Time interval can be adjusted in mode **6**. The counter will automatically reset to zero once the time interval has been achieved. The counter will also reset automatically when mode **4** is modified.

A tot Total trip counter (max. no = 255)

This mode display the number of tripping that has occurred. The value cannot be reset by any timer. To reset the recorded value, proceed to mode **6** and hold the [Reset] button for 3 seconds.

6, **01** ~ **06** Tripped values for last 7 events

Press [SELECT] button until mode **6**.
Display will flash the tripped value for the most recent tripped event.

Single flash : Indicate a lo-set trip	To reset trip event memory, hold [Reset] button for 3 sec. in mode 6 .
Double flash : Indicate a high-set trip	

Manual tripped event will display a flashing **ErP**.
If display shows **---**. (No tripping has occurred)
Press [SELECT] button again to scroll thru mode **01** to **06**. (Auto skip to mode **0** if memory is empty)
To skip directly to mode **6**, hold [SELECT] button for 1 sec.
To exit, press [CANCEL] button.

d View last trip elapsed time

Press [SELECT] button until mode **d**.
Display will show **---** (device has no tripping since last power up).

e.g.

hour min	Display up to	day hour	Display up to	over 99 day
00h 23n	99 hour 99 min	00d 23h	99 day 99 hour	0Ur 99d

To exit, press [CANCEL] button.

01 ~ **04** Fault start event memory

Press [SELECT] button until mode **01**. If display show **---** (no fault event has occurred).
Press [SELECT] button again to scroll thru mode **02** to **04**. (Auto skip to mode **0** if memory is empty)
To reset memory, hold [Reset] button for 3 seconds in mode **01**.
To exit, press [CANCEL] button.

F U E r Firmware version

This mode is not adjustable. For user to view firmware version.
Press [SELECT] button until mode **F U E r** is being displayed.
The display will show the firmware version of the device.
To exit, press [CANCEL] button.

F o P h Total operation hour

This mode shows the total time of the device that has been in operation.
Press [SELECT] button until mode **F o P h** is being displayed.
Display will show a value (x1000 hr).
To exit, press [CANCEL] button.

Trip Lock-out Conditions

LoC is being displayed when there is trip lock-out.

- Number of interval trip count = Trip lock-out setting
- Persistent fault

Special Setting Modes

L Software keypad lock

OFF or **On**

F r Electrical network system frequency

50 : 50 Hz or **60** : 60 Hz

- Standby option

OFF : De-activate **On** : Activate

After about 3 minutes of idle and no leakage is detected, running LED bar will be displayed instead of the real time leakage current if activated. It automatically exits on leakage detection or Z.C.T. is not connected or when any button is pressed. When device trips, standby mode is temporary de-activated until device is reset. When Z.C.T. is open circuited, standby mode is temporary de-activated until Z.C.T. is connected.
To toggle this setting, user can also press [SELECT] button when powering up the device.

0E Z.C.T. detection

OFF : No detection **Aut** : Auto detection

0E is being displayed and flashing instead of the real time leakage current when auto Z.C.T. detection is activated, it means that the Z.C.T. is not connected properly. User may need to check the wiring connection with the device.

End End setting

Press [SELECT] button to exit and save setting or [CANCEL] button to go back.