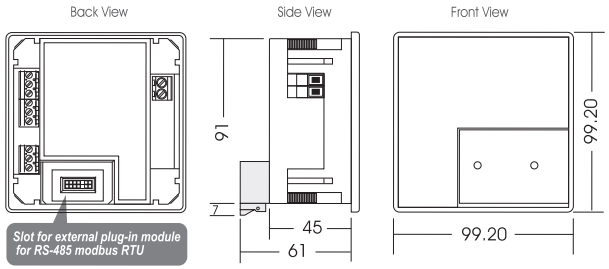
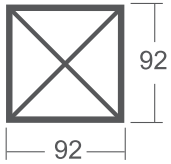
DELAB

Note: Specification subject to change without prior notification
(please visit www.delab.com.my for latest specification)

Casing

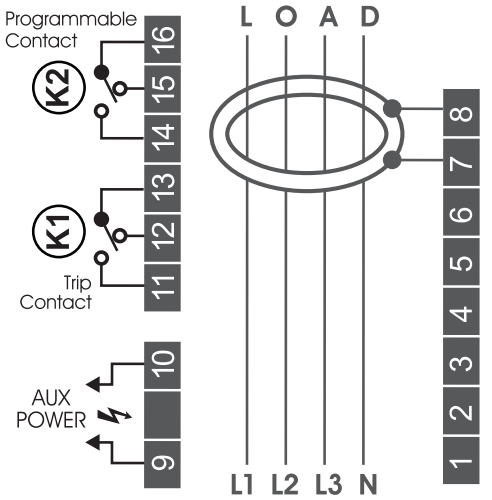


Panel Cut-out
92 x 92



Note: All measurement in mm.

Wiring



DELAB

User Guide

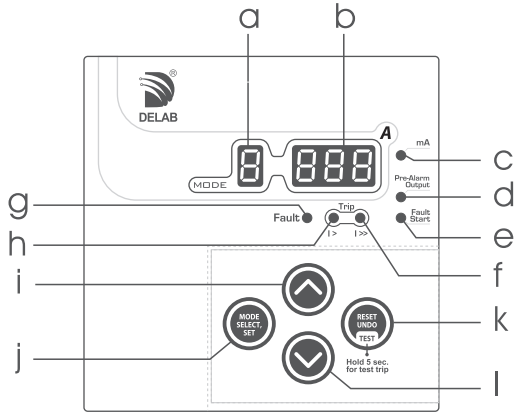
DP-10

Earth Leakage Relay

features

- True RMS Measurement with SPARC[1] and DCOI[2] Algorithm
- Fundamental Signal Detection[3]
- Real Time Display of IΔn in mA/A
- Fault / Io-set & hi-set Trip LED Indication
- Fault Start Event Recording & LED Indication + Output[4]
- Pre-Alarm LED Indication + Output[4]
- Trip Event Memory (non-volatile 7 previous records)
- Fault Start Event Memory (non-volatile 4 previous records)
- Programmable Relay Output contact for K2
- Last Trip Elapsed Time (up to 99days)
- Software Lock to Prevent Unauthorized Setting
- Complies with IEC-60255-26 Standards
- External Plug-in Module for :- A01 (RS-485 MODBUS RTU)

Panel Overview



a. single digit mode LED display
b. 3 digit data LED display
c. (mA) indication
d. Pre-Alarm output indication
e. Fault start indication
f. Hi-set trip indication
g. Fault indication
h. Lo-set trip indication
i. increment / up button
j. mode select / set button
k. reset / undo / test trip button
l. decrement / down button

Technical Data

Aux Power	:	65~275 Vac ; 90~300 Vdc / 16~36 Vdc
Fundamental Frequency	:	50 or 60 Hz (software selectable)
Current Input (IΔn)	:	ZCT (multiple sizes from ID of 25~200mm)
Measurement Range	:	0.005 ~ 30.0 A
Output Relay Rating	:	SPDT 5A, 250V AC/DC
Display	:	7-Segment LED (3 + 1digit)
Indication (LEDs)	:	mA, pre-alarm, fault, fault start event, Io / hi trip
Operating Temp.	:	0°C ~ +55°C
Humidity	:	56 days at 93%RH, 40°C non-condensing
IP Rating / Weight	:	IP54 (front panel) / 230g

Parameter Setting Range

IΔn >: Io-set	30mA~5.00A
	0.03~1.00A (step of 0.01A)
	1.00~5.00A (step of 0.05A)
t>: Io-set tri p delay time	0.03s~20.0s
	0.03s~0.10s (step of 0.01s)
	0.10s~1.00s (step of 0.02s)
	1.0s~20.0s (step of 0.1s)
IΔn >>: hi-set	OFF or 0.1A~20.0A (step of 0.1A)
t>>: hi-set trip delay time	fixed @ 30ms

Modes

SETTING	1	IΔn > (A) — Lo-set leakage current
	2	t > (sec) — Trip time
	3	IΔn >> (A) — Hi-set leakage current
INFO VIEWING	b, C1 to C6	**Trip memory** — 7 trip event memories (non-volatile)
	d	**Last trip elapsed time** — Last trip elapsed time
	E1 to E4	**Fault start memory** — 4 fault start event memories (non-volatile)
	FUEr	**Version** — Firmware version
	FoPh	**Operation hr.** — Device operated in hours (x 1000 hr.)
SPECIAL SETTING MODE	L	**Software lock** — Keypad lock : OFF or ON
	r1	**TripRelay K1 response type** — Latching or Non-latching
	r2	**Output relay K2 function** — Programmable relay output
	Fr	**Network frequency** — Selectable as : 50 Hz or 60 Hz
	-	**Standby mode** — Running LED bar : ON or OFF
	PC	**Selection of plug-in module** — A-01 (RS485 modbus plug-in module) or none
	Ad	**Modbus address** — Selectable from 1 ~ 247
	br	**Baud rate setting** — Selectable from 3,6,12,24,48,96,192,288
	End	**End program setting** — Save changes and exit setting mode

Parameters Setting

1 IΔn > (A) : *To set leakage current*

Step 1 : Press **[SELECT]** once to enter mode 1.
Display will show the existing set value. *(Range : 0.03 ~ 5.0 Ampere)*
Step 2 : Set the desired leakage current using the **[Up] or [Down]** button.
Newly selected value will flash.
Step 3 : Press **[SELECT]** to store / confirm new value and advance to mode 2 or press [UNDO] to undo changes.

2 t > (sec) : *To set trip time*

Step 1 : Press **[SELECT]** until mode 2 is displayed.
Display will show the existing set value. *(Range : 0.03 ~ 20.0 seconds)*
Step 2 : Set the desired trip time using the **[Up] or [Down]** button.
Newly selected value will flash.
Step 3 : Press **[SELECT]** to store / confirm new value and advance to mode 3 or press [UNDO] to undo changes.

3 IΔn >> (A) : *To set high set leakage current*

Step 1 : Press **[SELECT]** until mode 3 is displayed.
Display will show the existing set value. *(Range : 0.1 ~ 20 Ampere or OFF)*
Step 2 : Set the desired high-set leakage current using the **[Up] or [Down / (-)]** button.
Newly selected value will flash.
Step 3 : Press **[SELECT]** to store / confirm new value and advance to mode b or press [UNDO] to undo changes.

Info Viewing

b, C1 ~ C6 *Tripped values for last 7 events*

Press **[SELECT]** until mode b. 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 b.**
Double flash : Indicate a high-set trip	

Manual tripped event will display a flashing trP.
Press **[SELECT]** again to scroll thru mode C1 to C6. *(Auto skip to mode d if memory is empty)*
To skip directly to mode d, hold **[SELECT]** button for 1 sec.
To exit, press **[UNDO]** button.

d *View last trip elapsed time*

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

e.g. hour min — Display up to 99 hour 99 min (00h 23n) → day hour — Display up to 99 day 99 hour (00d 23h) → over 99 day (ovr 99d)

To exit, press **[UNDO]** button.

E1 ~ E4 *Fault start event memory*

Press **[Select]** until mode E1. If display show --- (no fault event has occured).
Press **[SELECT]** again to scroll thru mode E2 to E4.
To exit, press **[UNDO]** button.
To reset memory, hold **[RESET]** button for 3 seconds in mode E1.

FUEr *View firmware version*

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

FoPh *View total operation hour*

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

Special Setting Modes

When NO mode is selected (mode display is blank),
i) **Press [SELECT] & [RESET] button simultaneously and hold for 5 seconds.**
ii) **Press [Up] or [Down] button to modify**
iii) **Press [SET] button to confirm and proceed to next mode**

L *Software keypad lock*

OFF or On

r1 *Trip relay K1 response type*

Lc : Latching trip nLc : Non-Latching trip

r2 *Output relay K2 function*

trP : Tripping output (Lc / nLc)

Fault Start Output Function

LFS : Lo-set fault start signal output (nLc)
HFS : Hi-set fault start signal output (nLc)
AFS : Any fault start signal output (nLc)

Fault start event LED (e) indicates any detected fault events.
To clear event indication, press **[RESET]** or scroll to mode E1 while no fault is present.
K2 output will be on if programmed as fault start event. To latch fault events output, select r2 to Lc in special setting mode.

Device Failure Output Function

dUF : Device failure output (Lc only)

K2 automatically turns ON when device is functioning normally.

Circuit Breaker Failure Output Function

CbF : Circuit breaker failure output (nLc only)

Activates K2 output if fault still exists after 100 ms of trip event.

Pre-Alarm Output Function

A50 : >50% pre-alarm (Lc / nLc)
A90 : >90% pre-alarm (Lc / nLc)

If K2 is programmed to pre-alarm [A50 or A90].
Pre-alarm output LED (d) will indicate the staus of K2. Set r2 to Lc in special setting mode if need to latch pre-alarm events.

Press [RESET] to clear output.

Fr *Electrical network system frequency*

Electrical network frequency setting:
50 = 50 Hz 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 when any button is pressed. When device trips, standby mode is temporary de-activated until device is reset.

To toggle this setting, user can also press **[SELECT]** button when powering up the device.

PC *Selection of plug-in module*

A01 : A-01 non : None

Ad *Modbus address*

Selectable from 1~247

br *Baud rate setting*

Set the baud rate in a modbus communication between host computer and device. Selectable as: (3 = 300, 6 = 600, 12 = 1200, 24 = 2400, 48 = 4800, 96 = 9600, 192=19200 or 288 = 28800) bps

End *End setting*

Press **[SELECT]** to exit or **[UNDO]** to go back.