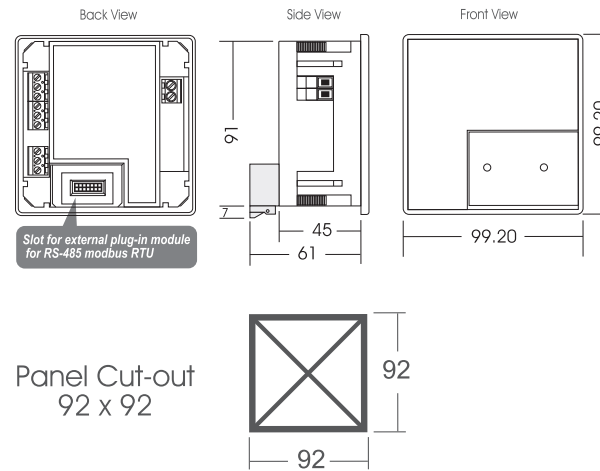




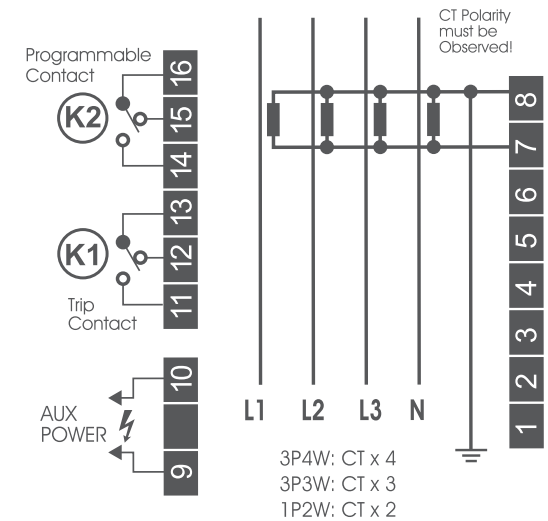
Note: Specification subject to change without prior notification
(please visit www.delab.com.my for latest specification)

Casing



Note: All measurement in mm.

Wiring



User Guide

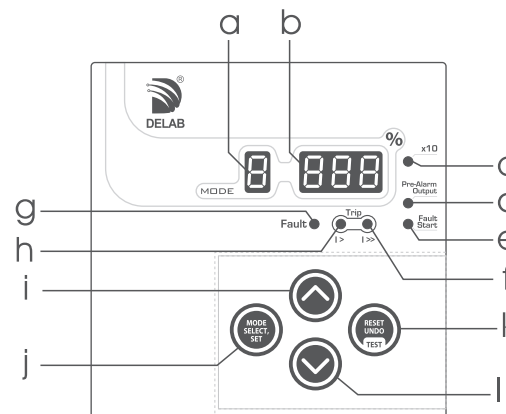
DP-31

IDMT Earth Fault Relay

features

- True RMS Measurement with SPARC¹ and DCOI² Algorithm
- Fundamental Signal Detection³
- Real Time Display of Earth Fault in (%)
- 6 Selectable IDMT Graphs + 1 DTL
- Fault / lo-set & hi-set Trip LED Indication
- Fault Start Event Recording & LED Indication + Output⁴
- Pre-Alarm LED Indication + Output⁴
- 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
- ANSI Code: 50N, 51N
- External Plug-in Module for :- A01 (RS-485 MODBUS RTU)

Overview



- a. single digit mode LED display
- b. 3 digit data LED display
- c. x 10
- 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 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)
Burden	: <0.3 VA @ In
Output Relay Rating	: SPDT 5A, 250V AC/DC
Display	: 7-Segment LED (3 + 1 digit)
Indication (LEDs)	: x10, pre-alarm, fault, fault start event, lo / hi trip
Operating Temp.	: 0°C ~ +55°C
Humidity	: 56 days at 93%RH, 40°C non-condensing
IP Rating	: IP54 (front panel)
Weight	: 230g

Parameter Setting Range

$I_e >$: lo-set trip	2% ~100% (step of 1%)
IDMT $I_e >$	6 IDMT+1 DTL
TMs $I_e >$ / $t_e >$: lo-set trip time delay	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)
$I_e >>$: hi-set trip	OFF or 20% ~1000% (step of 10%)
$t_e >>$: hi-set trip time delay	0.03s~20.0s (same range as $t >$)

Modes	
Earth Fault	
1 I _e >	lo-set trip
2 IDMT I _e >	6 IDMT + 1 DTL
3 TM I _e > or t _e >	Time Multiplier or lo-set trip timedelay
4 I _e >>	hi-set trip
5 t _e >>	hi-set trip time delay
b , 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 a P h	Operation hr. Device operated in hours (x 1000 hr)
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
r3	Trip relay K2 response type Latching or Non-latching
r4	Network frequency Selectable as : 50 Hz or 60 Hz
S	Standby mode Running LED bar : ON or OFF
P0	Selection of plug-in module A-01 (RS485 modbus plug-in module) or none
A0	Modbus address Selectable from 1 ~ 247
B0	Baud rate setting Selectable from 3,6,12,24,48,96,192,288
End	End program setting Exit special setting mode

Parameters Setting

Single digit mode display

Three digit mode display

Mode decimal
Indicates standby mode / seconds count

STEP 1

Press [SELECT] button while in default mode (when mode display is blank)

To scroll thru modes, just press & release the Select button

STEP 2

Press [UP] or [DOWN] button to desired value

For fast increment or decrement, press and hold the Up or Down button

MODE SELECT, SET

↑

↓

RESET UNDO TEST

STEP 3

Press [SET] button to store new value & proceed to next mode

RESET/UNDO

Press button to undo changes or exit mode

TEST TRIP

Press and hold 5 seconds to test trip device

5 flashes (mode decimal) = 5 seconds

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

Info Viewing

b 01 ~ 06

Tripped values for last 7 events

Press [SELECT] until mode **b** or hold [SELECT] for 1 second in any mode 1~A.

Display will show the tripped value for the most recent tripped event.

Single flash : Indicate a lo-set trip

Double flash : Indicate a high-set trip

Manual tripped event will display a flashing **r-r-p**.

Press [SELECT] button again to scroll thru mode **01** to **06**. (Auto skip to mode **d** if memory is empty)

Skip directly to mode d :

Hold [SELECT] button for 1 second.

Clear trip event memory :

Hold [RESET] button for 3 seconds in mode **b**.

Press [UNDO] button to exit.

d View last trip elapsed time

Press [SELECT] until mode **d**.

Display will show the elapsed time of last trip since last power up.

--- Indicate no tripping since last power up.

99h 99m
Display up to 99 Hour 99 min

99d 99h
Display up to 99 Day 99 hour

oUr 99d
Over 99 Days

Press [UNDO] button to exit.

00 ~ 04

Fault start event memory

Press [SELECT] until mode **00**.

If display shows ---. (No fault event has occurred)

Press [SELECT] button again to scroll thru mode **00** to **04**. (Auto skip to next mode if no fault start event has occurred)

Press [UNDO] button to exit.

F U E r Firmware version

Press [SELECT] until mode **F U E r**.

Display will show the firmware of the device.

Press [UNDO] button to exit.

F a P h Total operation hour

Press [SELECT] until mode **F a P h**.

Display will show the firmware of the device.

Press [UNDO] button to exit.

Special Setting Modes

When **NO** mode is selected (mode display is blank),

- Press [SELECT] & [RESET] button simultaneously and hold for 5 seconds until mode **L** appears.
- Press [Up] or [Down] button to modify
- Press [SET] button to confirm and proceed to next mode

L Software keypad lock

0FF or **0n**

r2 Trip relay K2 response type

Lc : Latching trip **nLc** : Non-Latching trip

r1 Trip relay K1 response type

Lc : Latching trip **nLc** : Non-Latching trip

r4 Electrical network system frequency

Electrical network frequency setting:

50 = 50 Hz **60** = 60 Hz

r2 Output relay K2 function

r-r-p : Tripping output (Lc / nLc)

S Standby option

0FF : De-activate **0n** : Activate

If set to on, after about 3 minutes of idle and no fault is detected, running LED bar will be displayed instead of the real time value. It automatically exits on fault 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.

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 **00** while no fault is present.

K2 output will be activated when there is any fault start event if programmed is being set as 'AFS'.

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 / A90, *Pre-alarm output LED (d)* will indicate the status of K2. Set **r2** to Lc in special setting mode if need to latch pre-alarm events.

Press [RESET] to clear output.

A0 Modbus address

A01 : A-01 **non** : None

B0 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

Data parity is fixed to none.

End End setting

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

