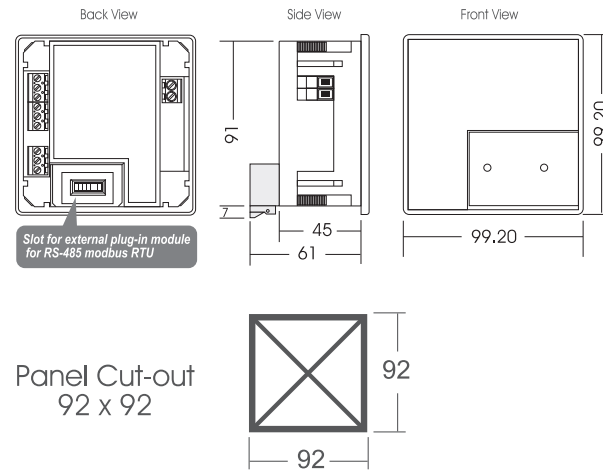




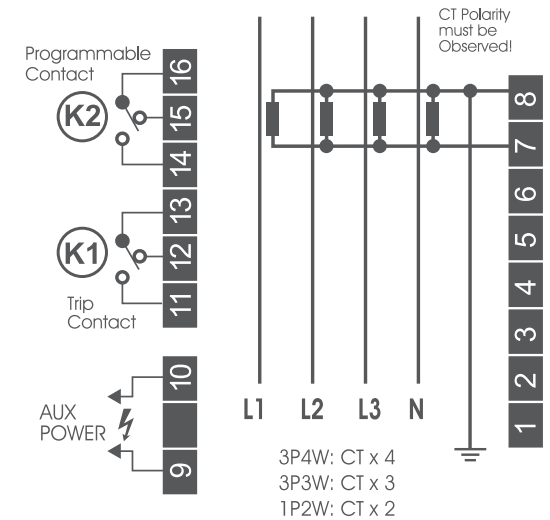
Note: Specification subject to change without prior notification
(please visit www.delab.com.my for latest specification)

Casing



Note: All measurement in mm.

Wiring



User Guide

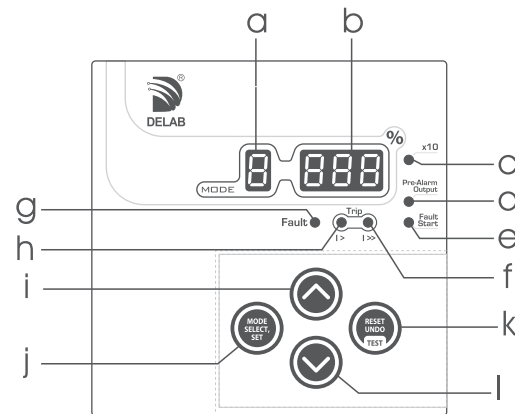
DP-21

DTL Earth Fault Relay

features

- True RMS Measurement with SPARC¹ and DCOI² Algorithm
- Fundamental Signal Detection³
- Real Time Display of Earth Fault in (%)
- 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%)
$t_e >$: lo-set trip time delay	0.03s ~ 20.0s
	0.10s ~ 1.00s (step of 0.01s)
	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 delay time	fixed @ 30ms

Modes	
SETTING	1 I _e > Lo-set trip (%) 2 t _e > Trip time delay (sec) 3 I _e >> Hi-set trip (%)
VIEWING INFO	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 o P h Operation hr. Device operated in hours (x 1000 hr.)
SPECIAL SETTING MODE	L Software lock Keypad lock : OFF or ON r r TripRelay K1 response type Latching or Non-latching r r Output relay K2 function Programmable relay output r r Network frequency Selectable as : 50 Hz or 60 Hz o Standby mode Running LED bar : ON or OFF r r Selection of plug-in module A-01 (RS485 modbus plug-in module) or none r r Modbus address Selectable from 1 ~ 247 b r 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

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

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**. 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 **ErrP**.
 Press [SELECT] again to scroll thru mode **01** to **06**. (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.

To exit, press [UNDO] button.

01 ~ 04 Fault start event memory

Press [Select] until mode **01**. If display show **---** (no fault event has occurred).
 Press [SELECT] again to scroll thru mode **02** to **04**.
 To exit, press [UNDO] button.
 To reset memory, hold [RESET] button for 3 seconds in mode **01**.

F U E r View firmware version

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

F o P h View total operation hour

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

r r Electrical network system frequency

Electrical network frequency setting:
50 = 50 Hz **60** = 60 Hz

r r Trip relay K1 response type

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

o 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.

r r Output relay K2 function

ErrP : Tripping output (Lc / nLc)

r r Selection of plug-in module

r r : A-01 **non** : None

Fault Start Output Function
LFS : Lo-set fault start signal output (Lc / nLc)
HFS : Hi-set fault start signal output (Lc / nLc)
AFS : Any fault start signal output (Lc / nLc)
 Fault start event LED (e) indicates any detected fault events.
 To clear event indication, press [RESET] or scroll to mode **01** 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 **r r** to Lc in special setting mode.

r r Device Failure Output Function

dUF : Device failure output (Lc only)
 K2 automatically turns ON when device is functioning normally.

r r Modbus address

Selectable from 1~247

r r 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.

b r 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

r r 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 status of K2. Set **r r** to Lc in special setting mode if need to latch pre-alarm events.
 Press [RESET] to clear output.

End End setting

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