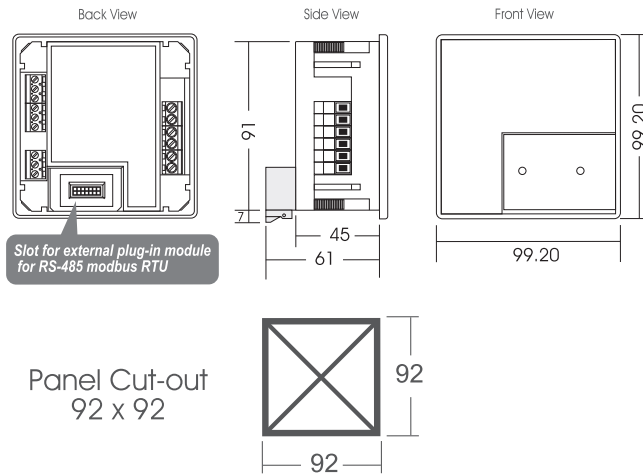




Note: Specification subject to change without prior notification
(please visit www.delab.com.my for latest specification)

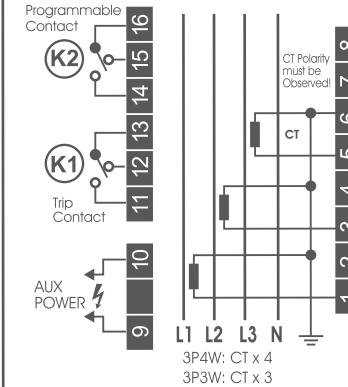
Casing



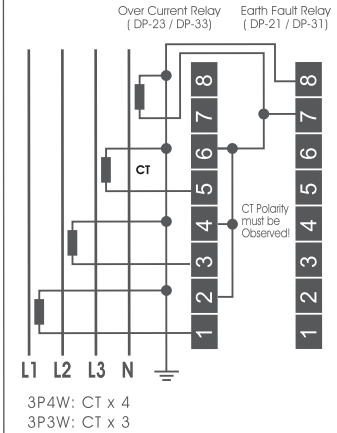
Note: All measurement in mm.

Wiring

When used without Earth Fault Relay



CT connection when used with Earth Fault Relay



User Guide

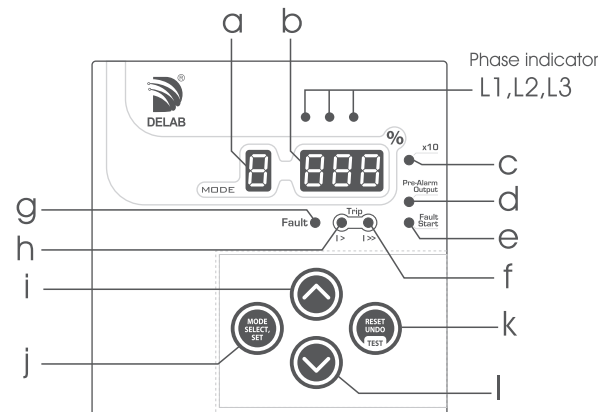
DP-23

DTL Over Current Relay

features

- True RMS Measurement with SPARC¹ and DCOI² Algorithm
- Auto / Manual Scroll for Real Time Display of Phase Current
- 1 LTI Inverse + 1 Definite Time Delay
- Fault / lo-set & hi-set Trip LED Indication
- Fault Start Event Recording & LED Indication + Output³
- Pre-Alarm LED Indication + Output³
- Trip Event Memory (non-volatile 7 previous records for all phases)
- Fault Start Event Memory (non-volatile 4 previous records with phase info)
- 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: 50P, 51P
- 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	: 260g

Parameter Setting Range

$I_{p>} (%)$: lo-set trip	2% ~ 200% (step of 1%)
IDMT $I_{p>}$:	1 LTI Inverse + 1 Definite Time Delay
$TMs I_{p>} / t_{p>} (%)$:	0.03s ~ 20.0s
(lo-set trip time delay)	0.03s ~ 0.10s (step of 0.01s)
	0.10s ~ 1.00s (step of 0.02s)
	1.0s ~ 20.0s (step of 0.1s)
$I_{p>>} (%)$: hi-set trip	OFF or 20% ~ 2000%
	20% ~ 1000% (step of 10%)
	1000% ~ 2000% (step of 100%)
$t_{p>>} (sec)$: hi-set trip time delay	0.03s ~ 20.0s (same range as $t_{p>}$)

Modes

Over Current

1 I _p > (%)	lo-set trip
2 IDMT I _p >	1 LTI Inverse + 1 Definite Time Delay
3 TMs I _p > / t _p > (sec)	Time Multiplier or lo-set trip time delay
4 I _p >> (%)	hi-set trip
5 t _p >> (sec)	hi-set trip time delay

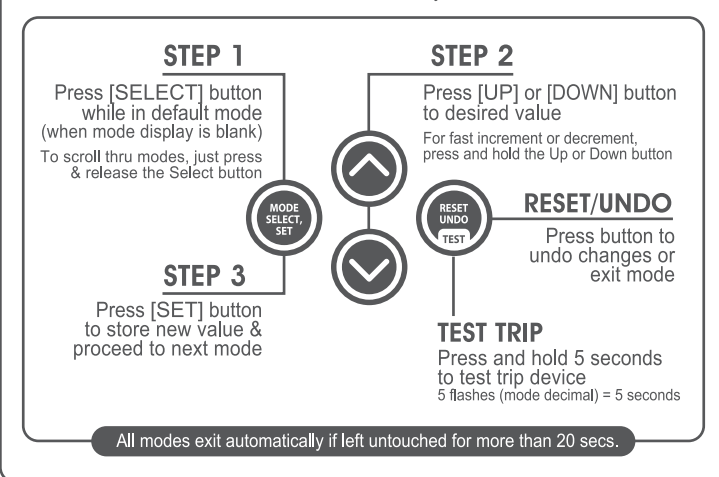
VIEWING INFO

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
P1	TripRelay K1 response type	Latching or Non-latching
P2	Output relay K2 function	Programmable relay output
P3	Trip relay K2 response type	Latching or Non-latching
P4	Network frequency	Selectable as : 50 Hz or 60 Hz
S	Standby mode	Running LED bar : ON or OFF
P5	Selection of plug-in module	A-01 (RS485 modbus plug-in module) or none
A0	Modbus address	Selectable from 1 ~ 247
B R	Baud rate setting	Selectable from 3,6,12,24,48,96,192,288
E n d	End program setting	Exit special setting mode

Parameters Setting



Info Viewing

b, 01 ~ 06 Trip 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 **F 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.

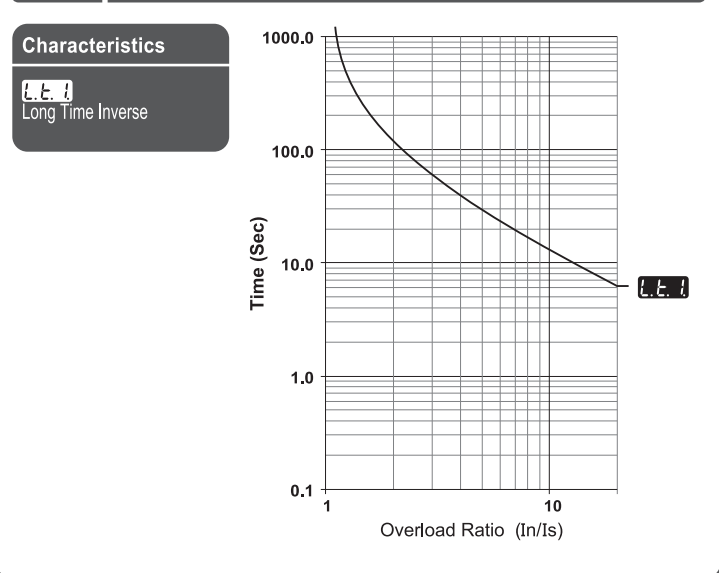
--- Indicate no tripping since last power up.

99h 99n : Display up to 99 Hour 99 min
99d 99h : Display up to 99 Day 99 hour
0u 99d : Over 99 Days

Press [UNDO] button to exit.

IDMT graph

Time graph based on Time Multiplier 1.0



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 o P h Total operation hour
Press [SELECT] until mode **F o P h**. Display will show the firmware of the device. Press [UNDO] button to exit.

Manual Scroll
Press [UP/DOWN] when mode display is blank. Display will show the individual phase current (L1,L2,L3) in real time. Continue pressing the [UP/DOWN] button to scroll thru the next phase. Press [UNDO] button to exit.

Special Setting Modes

When NO mode is selected (mode display is blank),
i) Press [SELECT] & [RESET] button simultaneously and hold for 5 seconds until mode **d** appears.
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

P2 Trip relay K2 response type
Lc : Latching trip nLc : Non-Latching trip

P1 Trip relay K1 response type
Lc : Latching trip nLc : Non-Latching trip

P4 Electrical network system frequency
Electrical network frequency setting:
50 = 50 Hz 60 = 60 Hz

P2 Output relay K2 function
F r P : Tripping output (Lc / nLc)
FFF : De-activate 0n : Activate

Fault Start Output Function
L F S : Lo-set fault start signal output (Lc / nLc)
H F S : Hi-set fault start signal output (Lc / nLc)
A F S : 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 **00** while no fault is present.

Selection of plug-in module
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 **P2** to Lc in special setting mode.

P5 Selection of plug-in module
A01 : A-01 none

Modbus address
Selectable from 1~247

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
Data parity is fixed to none.

Device Failure Output Function
d U F : Device failure output (Lc only)
K2 automatically turns ON when device is functioning normally.

Circuit Breaker Failure Output Function
C b F : Circuit breaker failure output (nLc only)
Activates K2 output if fault still exists after 100 ms of trip event.

Pre-Alarm Output Function
A90 : >90% pre-alarm (Lc / nLc)
A95 : >95% 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 **P2** to Lc in special setting mode if need to latch pre-alarm events.
Press [RESET] to clear output.

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