DELAB

User Guide

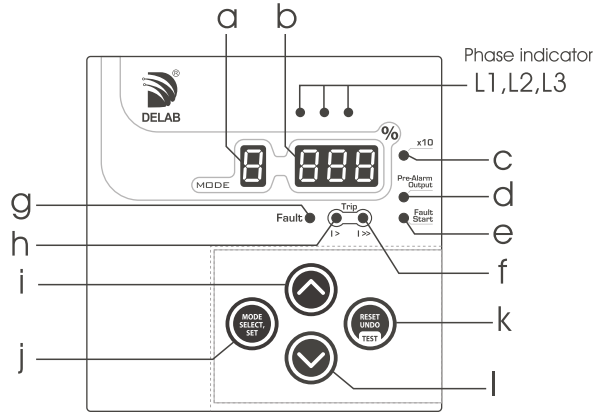
DP-33

(IDMT) Digital Over Current Relay

features

- True RMS Measurement with SPARC[1] and DCOI[2] Algorithm
- Auto / Manual Scroll for Real Time Display of Phase Current in (%)
- 6 Selectable IDMT Graphs + DTL
- Fault / Io-set & hi-set Trip LED Indication
- Fault Start Event Recording & LED Indication + Output[3]
- Pre-Alarm LED Indication + Output[3]
- Trip Event Memory (non-volatile 7 previous records for all phases)
- Fault Start Event Memory (non-volatile 4 previous records with phase info)
- Selectable Frequency (50 / 60 Hz)
- Programmable Relay Output Contact for K2
- Last Trip Elapsed Time (up to 99days)
- Software Lock to Prevent Unauthorized Setting
- Complies with IEC-60255-26/27 ; BS EN 50121-5 Standards
- ANSI Code: 50P, 51P
- External Plug-in Module for :- A-01s / A-01sp (RS-485 MODBUS RTU) isolated type

Panel 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. up button / increment
j. mode select / set button
k. reset / undo / test trip button
l. down button / decrement

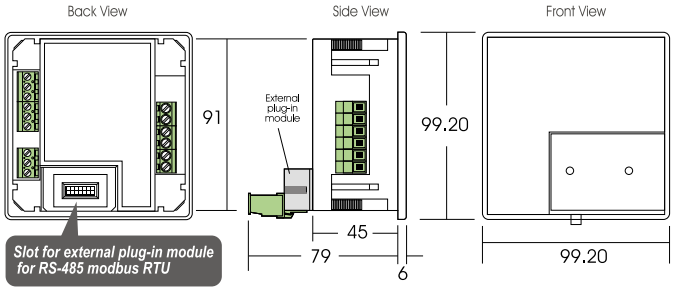
Technical Data

Aux Power	:	65~275 Vac (45~65 Hz) ; 90~300 Vdc or 18~72 Vdc
Current Input (In)	:	../5A or ../1A
Fundamental Frequency	:	50 or 60 Hz (software selectable)
Burden	:	<0.3 VA @ In
Output Relay Rating	:	SPDT 5A, 250V AC/DC
Consumption	:	< 3 VA
Accuracy	:	Current protection threshold (±5%), Time delayed (+5% or 50ms)
Display	:	7-Segment LED (3 + 1digit)
Indication (LEDs)	:	phase, x10, pre-alarm, fault start event, Io / hi-set trip, fault
Operating Temp.	:	0°C ~ +55°C
Humidity	:	56 days at 93%RH, 40°C non-condensing
IP Rating	:	IP54 (front panel)
Weight	:	260 g

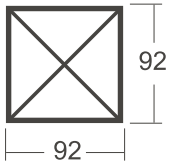
Parameter Setting Range

$I_P >$ (%): Io-set trip	2% ~ 200% (step of 1%)
IDMT $I_P >$	6 IDMT + DTL
TMs $I_P >$: Time multiplier for IDMT	0.05 ~ 1.00 (step of 0.01)
$t_P >$ (sec): Io-set trip time delay for DTL	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)
$I_P >>$ (%): 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	Instant or 0.02s ~ 0.5s (step of 0.01s)

Casing



Panel Cut-out
92 x 92



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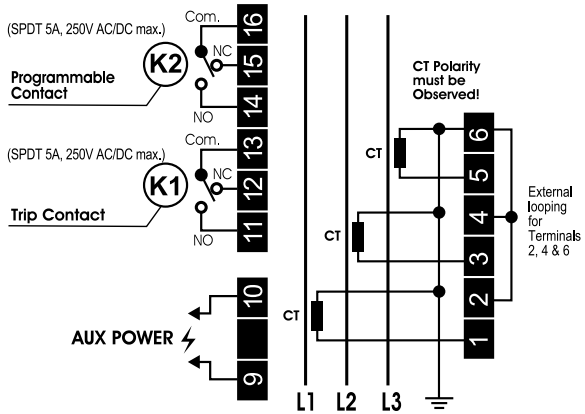
Note: All measurement in mm.

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

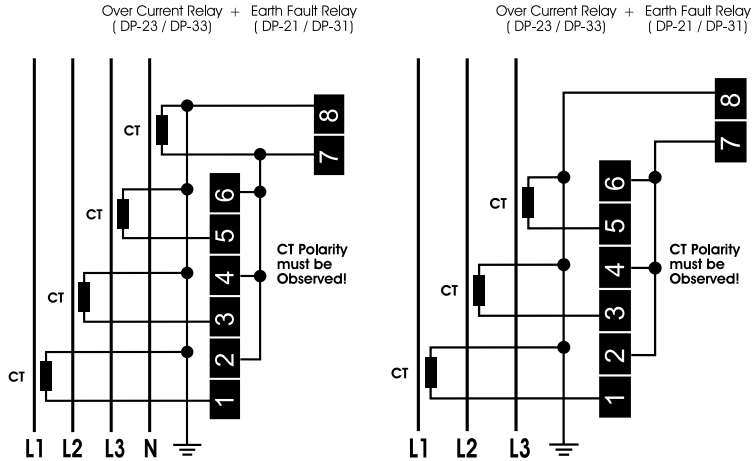
Wiring

When used without Earth Fault Relay



3P3W: CT x 3

CT connection when used with Earth Fault Relay



3P4W: CT x 4

3P3W: CT x 3

Modes

PARAMETER SETTING

1 $I_p >$ (%)	lo-set trip
2 IDMT $I_p >$	6 IDMT + DTL
3 TMs $I_p >$ or $t_p >$ (sec)	Time Multiplier or lo-set trip time delay
4 $I_p \gg$ (%)	hi-set trip
5 $t_p \gg$ (sec)	hi-set trip time delay

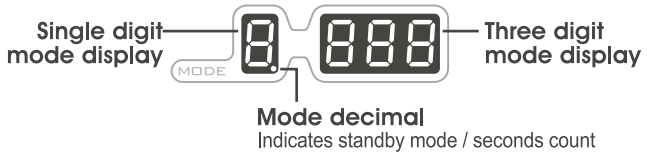
VIEWING INFO

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 hour	Device operated in hours (x 1000 hr)

SPECIAL SETTING MODE

L Software lock	Keypad lock : OFF or ON
r1 Trip relay K1 response type	Latching (Lc) or Non-latching (nLc)
r2 Output relay K2 function	Programmable relay output
r2 Trip relay K2 response type	Latching (Lc) or Non-latching (nLc)
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-01s / A-01sp (RS485 modbus isolated type) 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	Exit special setting mode

Parameters Setting



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

STEP 3
Press [SET] button to store new value & proceed to next mode

MODE SELECT. SET

RESET UNDO TEST

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 , c1 ~ c6
Tripped values for last 7 events

Press **[SELECT]** button until mode b or hold **[SELECT]** button for 1 sec in any mode 1~5. 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 trP.

--- Indicate no tripping has occured.

Press **[SELECT]** button again to scroll thru mode c1 to c6. *(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]** button until mode d.
Display will show the elapsed time of last trip since last power up.

--- Indicate no tripping since last power up.

99h99n Display up to 99 Hour 99 min
99d99h Display up to 99 Day 99 hour
our99d Over 99 Days

Press **[UNDO]** button to exit.

E1 ~ E4
Fault start event memory

Press **[SELECT]** button until mode E1.
If display shows ---. (No fault event has occured)
Press **[SELECT]** button again to scroll thru mode E2 to E4. *(Auto skip to next mode if no fault start event has occured)*
Clear fault start event memory:
Hold **[RESET]** button for 3 sec. in mode E1.
Press **[UNDO]** button to exit.

FUEr Firmware version

Press **[SELECT]** button until mode FUEr.
Display will show the firmware of the device.
Press **[UNDO]** button to exit.

FoPh Total operation hour

Press **[SELECT]** button until mode FoPh.
Display will show a value (x1000 hr).
Press **[UNDO]** button to exit.

Manual Scroll

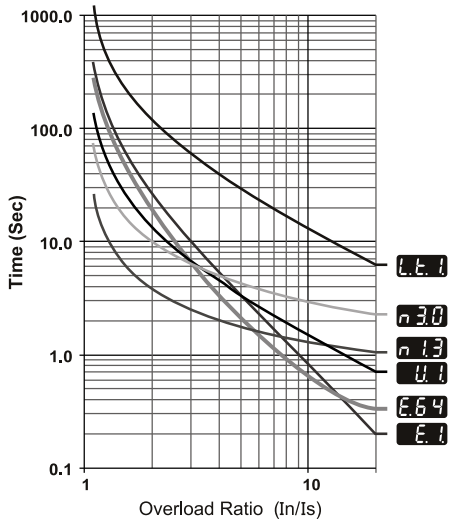
Press **[UP/DOWN]** button when mode display is blank. Display will show the individual phase current (L1,L2,L3) in real time. Continue pressing the **[UP/DOWN]** button to scroll thru the next phase. Press **[UNDO]** button to exit.

IDMT graph

Time graph based on Time Multiplier 1.0

Characteristics

- n3.0 Normal Inverse 3.0 /10
- n1.3 Normal Inverse 1.3 /10
- U.1 Very Inverse
- E.1 Extremely Inverse
- E.64 Extremely Inverse (0.64 sec)
- L.t.1 Long Time Inverse
- d.t.1 Definite Time



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 L 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

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 (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]** button or scroll to mode E1 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 trip relay K2 response type.

Device Failure Output Function

dUF : Device failure output (nLc 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

A90 : >90% of $I_p >$ (Lc / nLc)
A95 : >95% of $I_p >$ (Lc / nLc)

If K2 is programmed to pre-alarm A90 / A95, *Pre-alarm output LED* (d) will indicate the status of K2. Set r2 to Lc in trip relay K2 response type if need to latch pre-alarm events.

Press **[RESET]** button to clear output.

r2 Trip relay K2 response type

Lc : Latching trip nLc : Non-Latching trip

Fr Electrical network system frequency

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

- Standby option

OFF : De-activate On : 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.

PC Selection of plug-in module

A01 : A-01s / A-01sp 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
Data parity is fixed to none.

End End setting

Press **[SELECT]** button to exit & save the setting or **[UNDO]** button to go back.