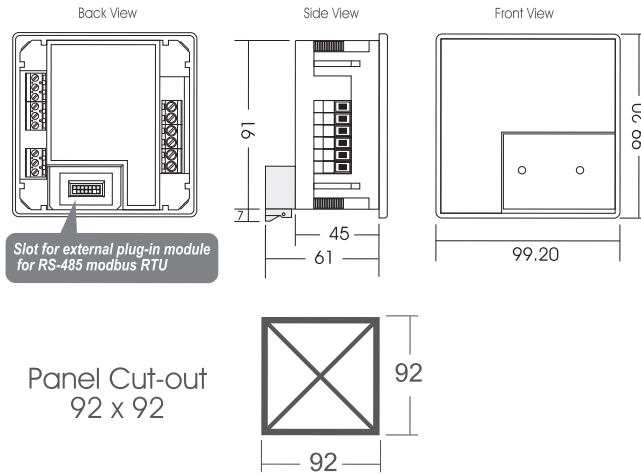




Note: Specification subject to change without prior notification  
(please visit [www.delab.com.my](http://www.delab.com.my) for latest specification)

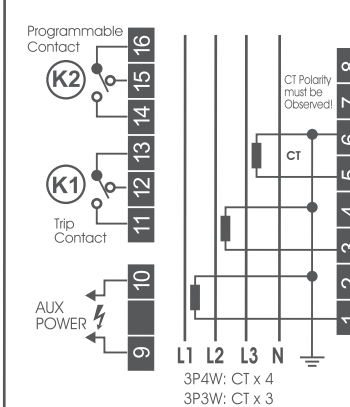
## Casing



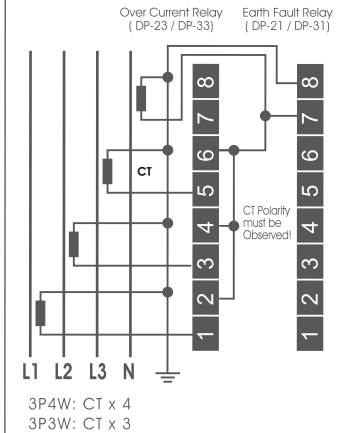
Note: All measurement in mm.

## Wiring

When used without Earth Fault Relay



CT connection when used with Earth Fault Relay



# User Guide

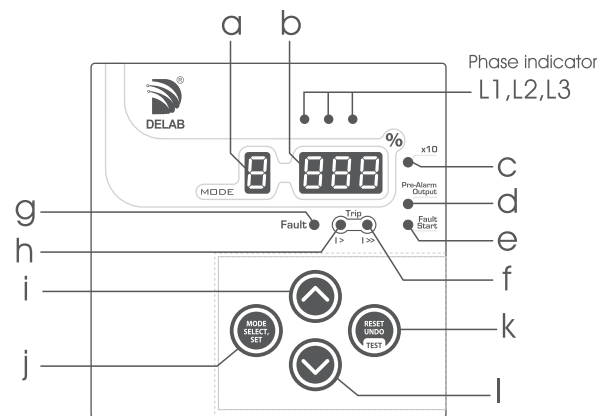
## DP-33

### IDMT Over Current Relay

#### features

- True RMS Measurement with SPARC<sup>1</sup> and DCOI<sup>2</sup> Algorithm
- Auto / Manual Scroll for Real Time Display of Phase Current
- 6 Selectable IDMT Graphs + 1 DTL
- Fault / lo-set & hi-set Trip LED Indication
- Fault Start Event Recording & LED Indication + Output<sup>3</sup>
- Pre-Alarm LED Indication + Output<sup>3</sup>
- 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 $I_p >$ :	6 IDMT+1 DTL
$T_M$ s $I_p >$ (sec): Time Multiplier	0.05s ~ 1.00s (step of 0.01s)
$t_p >$ (sec) :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)
$I_p >>$ :	OFF or 20% ~2000%
hi-set trip	20% ~ 1000% (step of 10%)
	1000% ~ 2000% (step of 100%)
$t_p >>$ (sec): hi-set trip time delay	0.03s ~ 0.5s

## Modes

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

<b>b</b> , <b>01</b> to <b>06</b>	Trip memory	7 trip event memories (non-volatile)
<b>d</b>	Last trip elapsed time	Last trip elapsed time
<b>01</b> to <b>04</b>	Fault start memory	4 fault start event memories (non-volatile)
<b>UEr</b>	Version	Firmware version
<b>OPh</b>	Operation hr.	Device operated in hours (x 1000 hr)

<b>l</b>	Software lock	Keypad lock : OFF or ON
<b>1</b>	TripRelay K1 response type	Latching or Non-latching
<b>2</b>	Output relay K2 function	Programmable relay output
<b>2</b>	Trip relay K2 response type	Latching or Non-latching
<b>F</b>	Network frequency	Selectable as : 50 Hz or 60 Hz
<b>-</b>	Standby mode	Running LED bar : ON or OFF
<b>0</b>	Selection of plug-in module	A-01 (RS485 modbus plug-in module) or none
<b>A</b>	Modbus address	Selectable from 1 ~ 247
<b>B</b>	Baud rate setting	Selectable from 3,6,12,24,48,96,192,288
<b>End</b>	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 **ErP**.  
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.

99h99m  
Display up to 99 Hour 99 min

99d99h  
Display up to 99 Day 99 hour

oUr99d  
Over 99 Days

Press [UNDO] button to exit.

### **01** ~ **04**

#### Fault start event memory

Press [SELECT] until mode **01**.  
If display shows **---**. (No fault event has occurred)  
Press [SELECT] button again to scroll thru mode **02** to **04**. (Auto skip to next mode if no fault start event has occurred)  
Press [UNDO] button to exit.

### **UEr** Firmware version

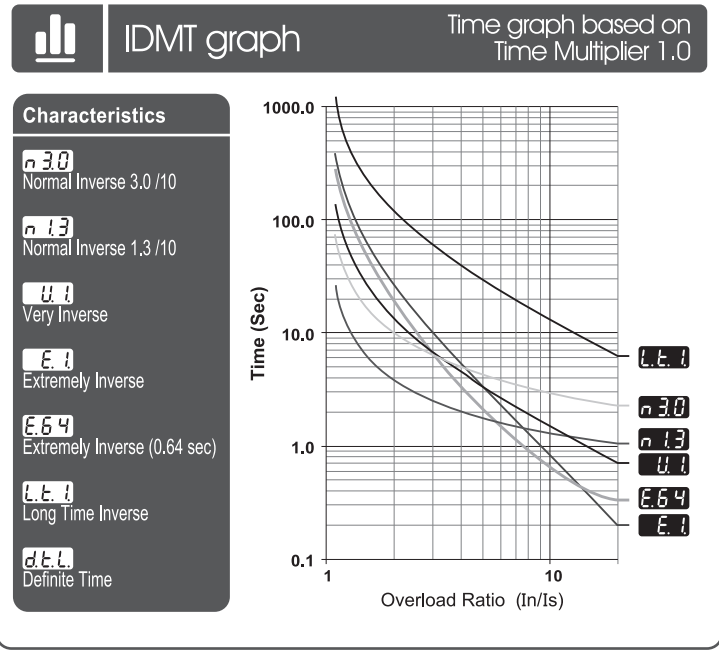
Press [SELECT] until mode **UEr**.  
Display will show the firmware of the device.  
Press [UNDO] button to exit.

### **OPh** Total operation hour

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

### **0** 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),

- 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

**OFF** or **On**

### **2** Trip relay K2 response type

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

### **1** Trip relay K1 response type

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

### **F** Electrical network system frequency

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

### **2** Output relay K2 function

**ErP** : 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] 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 **2** to Lc in special setting mode.

### **-** 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.

### **0** Selection of plug-in module

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

### **A** Modbus address

Selectable from 1~247

### **B** 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**

**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**

**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 **2** 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.