



User Guide

DP-34

(IDMT) Digital Combined Over Current & Earth Fault Relay

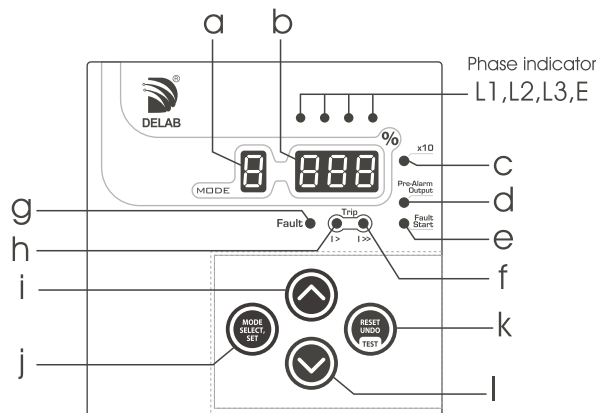
features

- True RMS Measurement with SPARC¹ and DCOI² Algorithm
- Auto / Manual Scroll for Real Time Display of Phase Current and Earth Fault in %
- 6 Selectable IDMT Graphs + DTL
- 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 3 phases + earth)
- Fault Start Event Memory (non-volatile 4 previous records with phase info)
- Selectable Frequency (50 / 60 Hz)
- Programmable Relay Output Contacts for K2, K3*, K4* (Last Trip Elapsed Time (up to 99days))
- Software Lock to Prevent Unauthorized Setting
- Accessible only with A-03s (plug-in module): Programmable Digital Input - (activated by digital input function) Dual Setting Parameters - (activated by digital input function) Remote Reset Function -
- Compiles with: IEC-60255-26/27; BS EN 50121-5 Standards ANSI Code: 50P, 50G, 51P, 51G

External Plug-in Module (Items sold separately)

- A-01s/A-01sp** : RS-485 MODBUS RTU (isolated type)
- A-02s** : RS-485 MODBUS RTU (isolated type) +1 output contact (K3*)
- A-02sd** : RS-485 MODBUS RTU (isolated type) +1 digital output (optically isolated)
- A-03s** : RS-485 MODBUS RTU (isolated type) +2 output contacts (K3* & K4*) +1 digital input (optically isolated)

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 (for model 220a)
	: 18 ~ 72 Vdc (for model 024d)
Fundamental Frequency	: 50 or 60 Hz (software selectable)
Current Input (In)	: ..5A or ..1A (depending on model : CT.../5A or CT.../1A)
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 + 1 digit)
Indication (LEDs)	: phase, x10, pre-alarm, fault start event, fault, lo / hi-set trip
Operating Temp.	: 0°C ~ +55°C
Humidity	: 56 days at 93%RH, 40°C non-condensing
IP Rating	: IP54 (front panel)
Weight	: 275 g

Parameter Setting Range

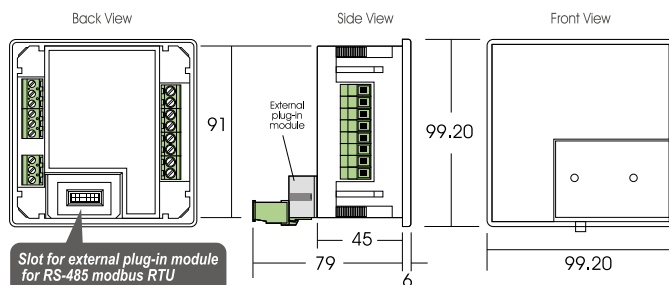
Phase Over Current

$I_p >$ (%) : lo-set trip	2% to 200% (step of 1%)
IDMT $I_p >$	6 IDMT + DTL
TMs $I_p >$ for IDMT	0.05 ~ 1.00 (step of 0.01)
$t_p >$ (sec) :	0.03s ~ 20.0s
lo-set trip time delay for DTL	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) :	Instant or
hi-set trip time delay	0.02s ~ 0.50s (step of 0.01s)

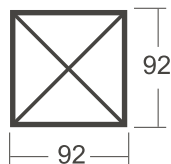
Earth Fault

$I_E >$ (%) : lo-set trip	2% to 100% (step of 1%)
IDMT $I_E >$	6 IDMT + DTL
TMs $I_E >$ for IDMT	0.05 ~ 1.00 (step of 0.01)
$t_E >$ (sec) :	0.03s ~ 20.0s
lo-set trip time delay for DTL	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%)
$t_E >>$ (sec) :	Instant or
hi-set trip time delay	0.02s ~ 0.50s (step of 0.01s)

Casing



Panel Cut-out
92 x 92



Note: All measurement in mm.

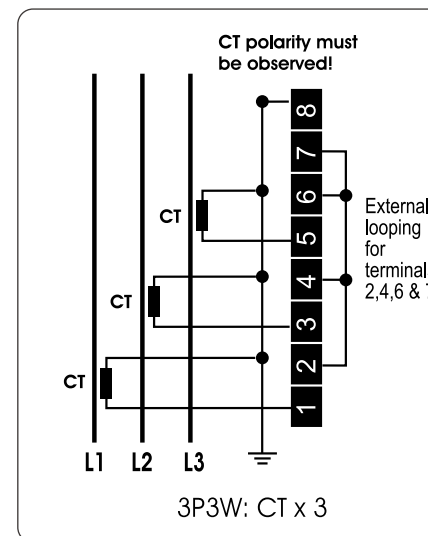
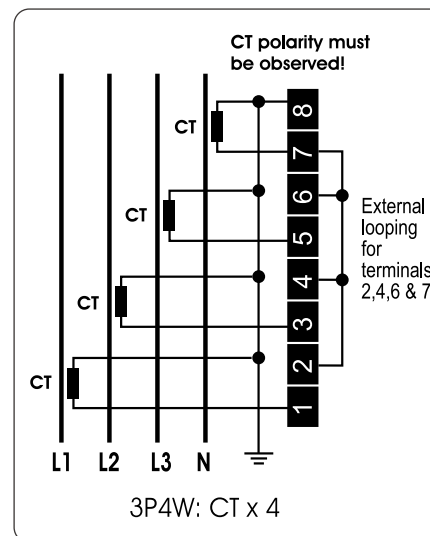
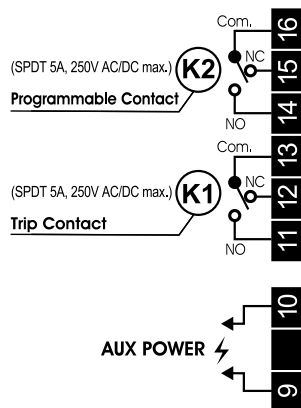


Note: Specification subject to change without prior notification (please visit www.delab.com.my for latest specification)

YouTube : Delab Scientific Sdn. Bhd.



Wiring



Modes

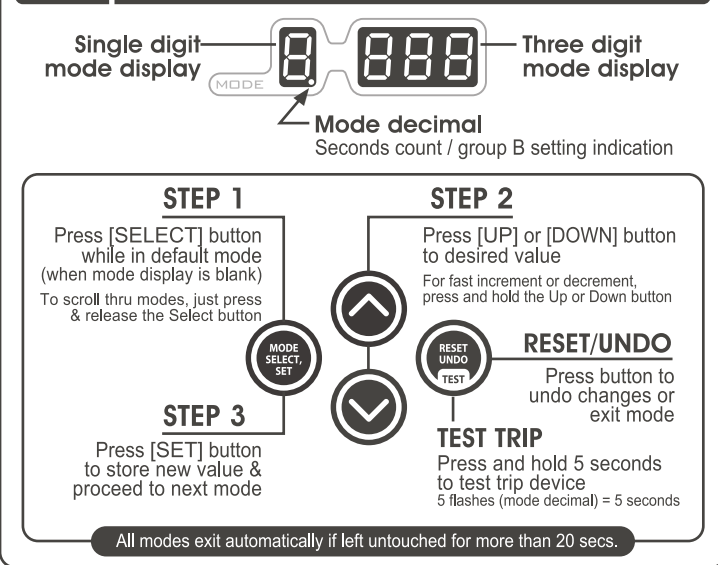
Factory Setting	Phase Over Current	Factory Setting	Earth Fault
80 1 $I_p >$ (%) : lo-set trip		10 6 $I_p >$ (%) : lo-set trip	
n3.0 2 IDMT $I_p >$: 6 IDMT + DTL		n3.0 7 IDMT $I_p >$: 6 IDMT + DTL	
0.10 3 TMs $I_p >$ / $t_p >$: Time Multiplier or lo-set trip time		0.10 8 TMs $I_p >$ / $t_p >$: Time Multiplier or lo-set trip time	
600 4 $I_p >>$ (%) : hi-set trip		400 9 $I_p >>$ (%) : hi-set trip	
0.05 5 $t_p >>$ (sec) : hi-set trip time delay		0.05 R $t_p >>$ (sec) : hi-set trip time delay	

Group A setting = Default setting of mode **1** to **8**
 To activate group B setting, user need to set the digital input function (in mode **0F** to **0B**) and then put a signal to digital input (60 ~ 130 Vdc). Access for mode 1 to A will now reference to **group B setting indicated by a dot** (mode decimal) on the single digit mode display.

0 to 06 : 7 Trip event memories (non-volatile)	F UER : Firmware version
0 : Last trip elapsed time	F 0PH : Operation hr.(x 1000 hr)
00 to 04 : 4 Fault start event memories (non-volatile)	

OFF 0 Software Lock : Keypad lock - OFF or ON	non PR Parity Setting : None or Odd or Even
Lc 01 Trip Relay K1 Response Type : Latching (Lc) or Non-latching (nLc)	PHt 03 Output Relay K3 Function : Programmable [activated by A-02s or A-02sd or A-03s]
trP 02 Output Relay K2 Function : Programmable relay output	Lc 03 Trip Relay K3 Response Type : Latching (Lc) or Non-latching (nLc)
nLc 02 Trip Relay K2 Response Type : Latching (Lc) or Non-latching (nLc)	Eft 04 Output Relay K4 Function : Programmable [activated by A-03s]
50 0F Network Frequency : Selectable as 50 or 60 Hz	Lc 04 Trip Relay K4 Response Type : Latching (Lc) or Non-latching (nLc)
ON 0 Standby Mode : Running LED bar - ON or OFF	OFF 0B Digital Input Function : [activated by A-03s] OFF / A-b / b-A / dtb / rSt
non 0C Selection of Plug-in Module : Selectable as - None or A-01 or A-02 or A-03	Inf 0B Blocking Timer Selection : Selectable from - infinite, 0.1/ 0.2/ 0.3/ 0.5/ 1.0/ 1.5/ 2.0-10.0 sec
1 0D Modbus Address : Selectable from 1 ~ 247	End End program setting : Exit special setting mode
96 0E Baud Rate Setting : Selectable from - 3, 6, 12, 24, 48, 96, 192, 288	

Parameters Setting



Info Viewing

Tripped values for last 7 events

Press [SELECT] button until mode **0** or hold [SELECT] button for 1 second in any mode **0** ~ **06**. 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
 If display shows **---** (No trip event has occurred) Manual tripped event will display a flashing **ErrP**.

Press [SELECT] button again to scroll thru mode **00** to **06** (Auto skip to mode **0** if memory is empty)
Skip directly to mode 0 : Hold [SELECT] button for 1 second.

To clear trip event memory : Hold [RESET] button for 3 sec in mode **0**. Press [UNDO] button to exit.

Press [UNDO] button to exit.

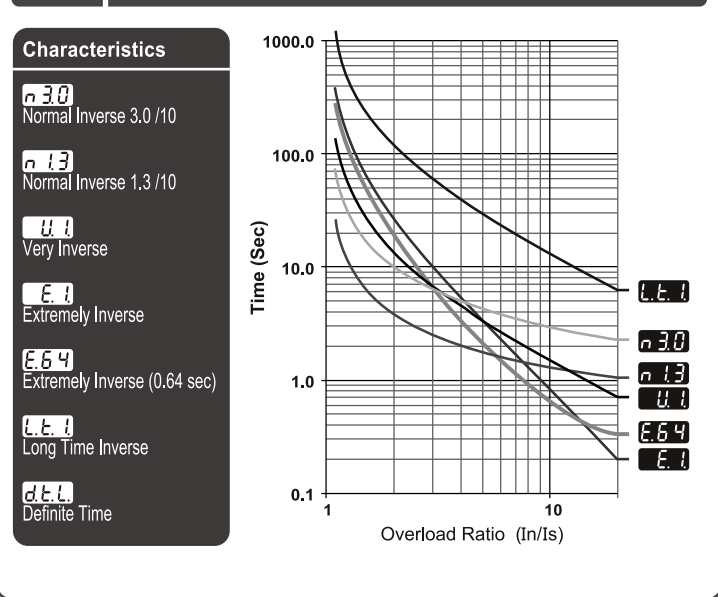
View last trip elapsed time

Press [SELECT] button until mode **0**. Display will show the elapsed time of last tripped since last power up.
--- Indicate no tripping since last power up.

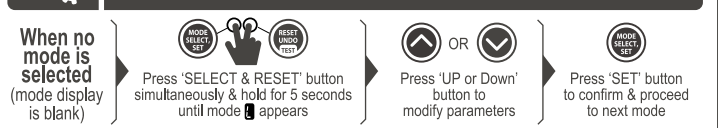


Press [UNDO] button to exit.

IDMT graph



Special Setting Modes



mode 0 Software Keypad Lock [OFF / ON]	mode 0E Blocking Timer Selection [Selectable]
mode 00 Trip Relay K1 Response Type [Lc / nLc]	mode 02 Output Relay K2 Function [Refer to 02 for K2 function]
mode 02 Trip Relay K2 Response Type [Lc / nLc]	mode 02 Trip Relay K2 Response Type [Lc / nLc]
mode 02 Electrical Network System Frequency [50 Hz / 60 Hz]	mode 0 Standby Option (Running LED bar) [OFF: De-activate / ON: Activate]

mode 0E Blocking Timer Selection
 Selectable as: (**---** = infinite, 0.1/ 0.2/ 0.3/ 0.5/ 1.0/ 1.5/ 2.0-10.0 seconds)
 Temporarily block trip timer of all faults from timeout. Only available if mode **0E** is set as **0E**.
End End Setting
 Press [SELECT] button to exit and save the settings or [UNDO] button to go back.

mode 00 Trip Relay K1 Response Type
mode 02 Output Relay K2 Function
mode 02 Trip Relay K2 Response Type
mode 02 Electrical Network System Frequency
mode 0 Standby Option (Running LED bar) [OFF: De-activate / ON: Activate]
 If set to ON, after about 3 minutes of idle & 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.

mode 0C Selection of plug-in module [non / A01 / A02 / A03]
 Select **002** for additional programmable output relay in order to activate **03** output relay K3 function.
 Select **003** for 2 programmable output relays in order to activate **03** & **04** output relay (K3 & K4) function & digital input function **0B**.

mode 0D Modbus Address [Selectable from 1 ~ 247]
mode 0E Baud Rate Setting [Selectable]
 Set the baud rate for Modbus communication between host computer and the unit. Selectable as: (3 = 300, 6 = 600, 12 = 1200, 24 = 2400, 48 = 4800, 96 = 9600, 192 = 19200 or 288 = 28800) bps

mode 02 Parity Setting [non / Odd / Even (Even)]
 Set the parity for Modbus communication between host computer and the unit.
mode 03 Output Relay K3 Function [activated by A-02s / A-02sd / A-03s]
 This function can only be activated by A-02s / A-02sd / A-03s (plug-in module) which is sold separately. (Refer to 03 for **03** output relay K3 function)

mode 03 Trip Relay K3 Response Type [Lc / nLc]
mode 04 Output Relay K4 Function [activated by A-03s only]
 This function can only be activated by A-03s (plug-in module) which is sold separately. (Refer to 04 for **04** output relay K4 function)

mode 04 Trip Relay K4 Response Type [Lc / nLc]
mode 0B Digital Input Function [activated by A-03s only]
0FF De-activate Digital Input Function
A-b Activate Group B Settings [Group A to Group B]
b-A Activate Group A Settings [Group B to Group A]
dtb Activate All Faults Blocking
rSt Activate Remote Reset when Tripped