

# Digital IDMT Combined Over Current & Earth Fault Relay

# DP-34



## features



## technical data

|                     |                                                                             |
|---------------------|-----------------------------------------------------------------------------|
| Aux Power           | : 65~275 Vac (45~65 Hz); 90~300 Vdc (model 220a)                            |
| Fund. Frequency     | : 50 or 60 Hz (software selectable)                                         |
| Current Input (In)  | : ..5A or ..1A (depending on model)                                         |
| Burden              | : < 0.3 VA @ In                                                             |
| Output Relay Rating | : SPDT 5A, 250V AC/DC                                                       |
| Consumption         | : < 3 VA                                                                    |
| Accuracy            | : Current protection threshold ( $\pm 5\%$ ),<br>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

### Phase Over Current

|                                                          |                                                                                                                |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| $I_p > (\%)$ : lo-set trip                               | 2% to 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)                                                                                     |
| $t_p > (\text{sec})$ : lo-set trip time delay<br>for DTL | 0.03s ~ 20.0s<br>0.03s ~ 0.10s (step of 0.01s)<br>0.10s ~ 1.00s (step of 0.02s)<br>1.0s ~ 20.0s (step of 0.1s) |
| $I_p \gg (\%)$ : hi-set trip                             | OFF or 20% ~ 2000%                                                                                             |
|                                                          | 20% ~ 1000% (step of 10%)<br>1000% ~ 2000% (step of 100%)                                                      |
| $t_p \gg (\text{sec})$ : hi-set trip time delay          | Instant or 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 $I_e >$ : Time multiplier for IDMT                   | 0.05 ~ 1.00 (step of 0.01)                                                                                     |
| $t_e > (\text{sec})$ : lo-set trip time delay<br>for DTL | 0.03s ~ 20.0s<br>0.03s ~ 0.10s (step of 0.01s)<br>0.10s ~ 1.00s (step of 0.02s)<br>1.0s ~ 20.0s (step of 0.1s) |
| $I_e \gg (\%)$ : hi-set trip                             | OFF or 20% ~ 1000% (step of 10%)                                                                               |
| $t_e \gg (\text{sec})$ : hi-set trip time delay          | Instant or 0.02s ~ 0.50s (step of 0.01s)                                                                       |

True RMS Measurement with SPARC<sup>1</sup> and DCOI<sup>2</sup> 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 + Output<sup>3</sup>  
Pre-Alarm LED Indication + Output<sup>3</sup>

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

- Dual Setting Parameters (activated by digital input function)

- Remote Reset Function (activated by digital input function)

Complies 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-03s : RS-485 MODBUS RTU (isolated type)  
+ 2 output contact (K3\* & K4\*), + 1 digital input

## K1 output contact options

Latching (Lc) or non-latching (nLc) trip

## K2/K3\*/K4\* output contact options

|                                                                                                     |           |
|-----------------------------------------------------------------------------------------------------|-----------|
| <b>trP</b> : tripping output                                                                        | Lc or nLc |
| <b>LFS</b> : lo-set fault start signal - K2 & K3* only                                              | Lc or nLc |
| <b>AFS</b> : any fault start signal - K2 only                                                       | Lc or nLc |
| <b>HFS</b> : hi-set fault start signal - K3* only                                                   | Lc or nLc |
| <b>EFS</b> : earth fault start signal - K4* only                                                    | Lc or nLc |
| <b>PFS</b> : phase over current start signal - K4* only                                             | Lc or nLc |
| <b>dUF</b> : device failure - K2 only                                                               | nLc only  |
| <b>CbF</b> : circuit breaker failure - K2 only                                                      | nLc only  |
| <b>ALr</b> : pre-alarm fault<br>phase over current > 90% of $I_p >$<br>earth fault > 50% of $I_e >$ | Lc or nLc |
| <b>Eft</b> : earth fault trip                                                                       | Lc or nLc |
| <b>PhT</b> : phase over current trip                                                                | Lc or nLc |
| <b>Lft</b> : lo-set fault trip - K3* & K4* only                                                     | Lc or nLc |
| <b>Hft</b> : hi-set fault trip - K3* & K4* only                                                     | Lc or nLc |

(Accessible only with A-03s) **digital input rating**

**Range** : 60 ~ 130 Vdc (optically isolated)

K3\* output contact available only for model A-02s or A-03s

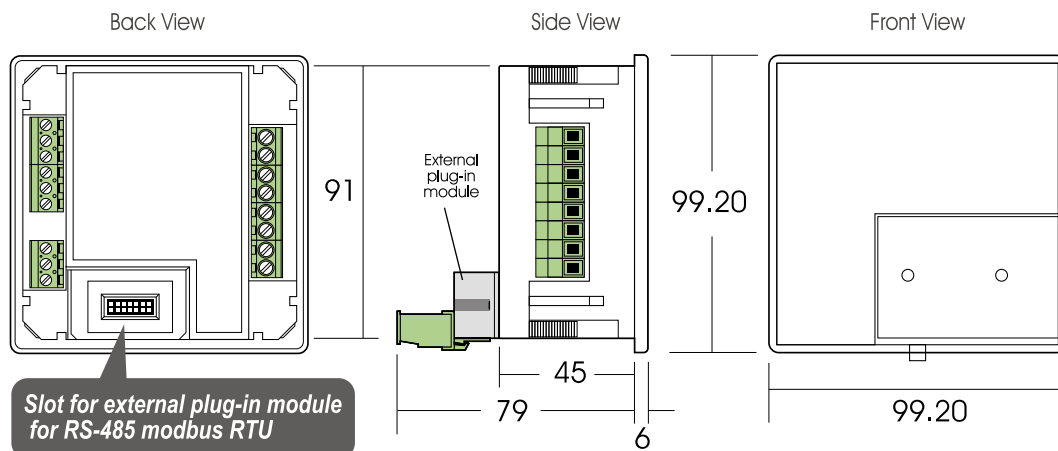
K4\* output contact available only for model A-03s

<sup>1</sup>SPARC - sampling progressive algorithm for RMS Computation:  
Computation of multiple rms values/cycle (Superior response in short circuit situation)

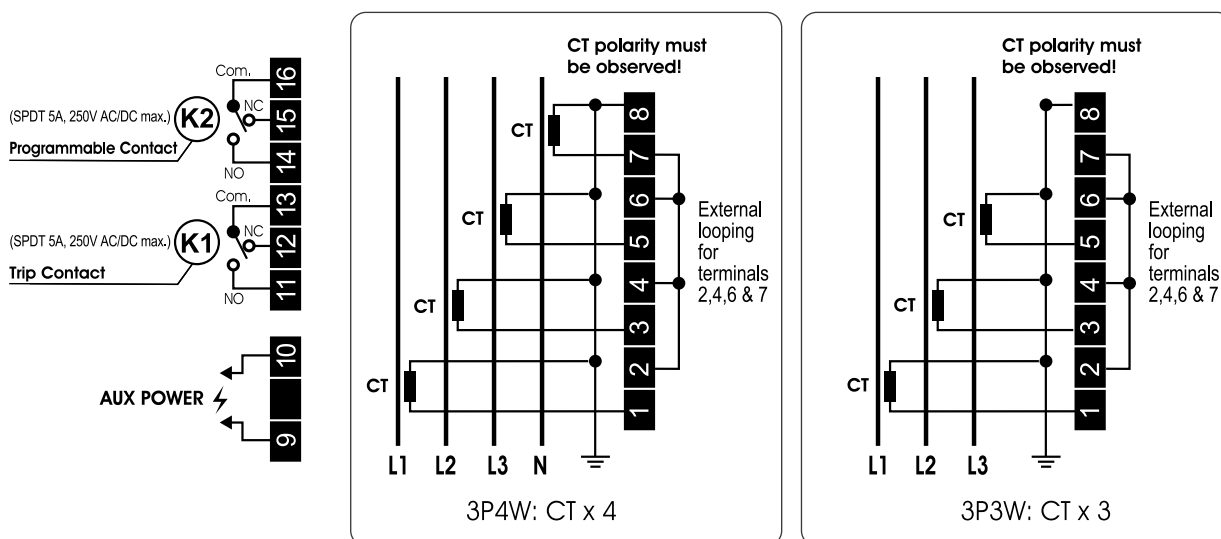
<sup>2</sup>DCOI - dc offset independent algorithm:  
Cancels out dc signal caused by EMI and aging circuitry (Better Immunity against EMI)

<sup>3</sup>Output on K2 dependent on the programmed options

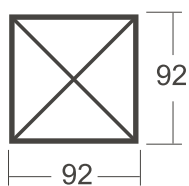
## casing dimension



## wiring diagram



## panel cut-out



Panel Cut-out : 92 x 92

## ordering information

| Model         | Description                                    |
|---------------|------------------------------------------------|
| DP-34-220a-5A | (CT.../5A) 65 ~ 275 Vac (45~65 Hz), 90~300 Vdc |
| DP-34-220a-1A | (CT.../1A) 65 ~ 275 Vac (45~65 Hz), 90~300 Vdc |
| DP-34-024d-5A | (CT.../5A) 18~72 Vdc                           |
| DP-34-024d-1A | (CT.../1A) 18~72 Vdc                           |

Note: All measurement in mm.