

# Digital Earth Fault Relay

# DP-21



## features



- True RMS Measurement with SPARC<sup>1</sup> and DCOI<sup>2</sup> Algorithm
- Fundamental Signal Detection<sup>3</sup>
- Real Time Display of Earth Fault in (%)
- Fault / lo-set & hi-set Trip LED Indication
- Fault Start Event Recording & LED Indication + Output<sup>4</sup>
- Pre-Alarm LED Indication + Output<sup>4</sup>
- Trip Event Memory (non-volatile 7 previous records)
- Fault Start Event Memory (non-volatile 4 previous records)
- 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: 50N, 51N
- External Plug-in Module for :- A-01s / A-01sp (RS-485 MODBUS RTU) isolated type

## technical data

Current Input (In)	: ./.5A or ./.1A
Fundamental Frequency	: Software selectable 50 or 60 Hz
Burden	: <0.3 VA @ In
Output Relay Rating	: SPDT 5A, 250V AC/DC
Accuracy	: Current protection threshold (±5%) Time delayed (+5% or 50ms)
Display	: 7-Segment LED (3 + 1 digit)
Indication (LEDs)	: x10, pre-alarm, fault start event, lo / 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	: 230 g

## parameter setting

$I_e >$ (%) : lo-set trip	2% ~ 100% (step of 1%)
$t_e >$ (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)
$I_e \gg$ (%) : hi-set trip	OFF or 20% ~ 1000% (step of 10%)
$t_e \gg$ (sec) : hi-set trip time delay	fixed @ 30ms

## aux power

DP-21-220a	: 65 ~ 275 Vac (45~65Hz), 90 ~ 300 Vdc
DP-21-024d	: 18 ~ 72 Vdc
Consumption	: < 3VA

## K1 output contact options

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

## K2 output contact options

<b>trP</b> (tripping output)	Lc or nLc
<b>LFS</b> (lo-set fault start signal)	Lc or nLc
<b>HFS</b> (hi-set fault start signal)	Lc or nLc
<b>AFS</b> (any fault start signal)	Lc or nLc
<b>dUF</b> (device failure)	nLc only
<b>CbF</b> (circuit breaker failure)	nLc only
<b>A50</b> (pre-alarm fault) >50% of $I_e >$	Lc or nLc
<b>A90</b> (pre-alarm fault) >90% of $I_e >$	Lc or nLc

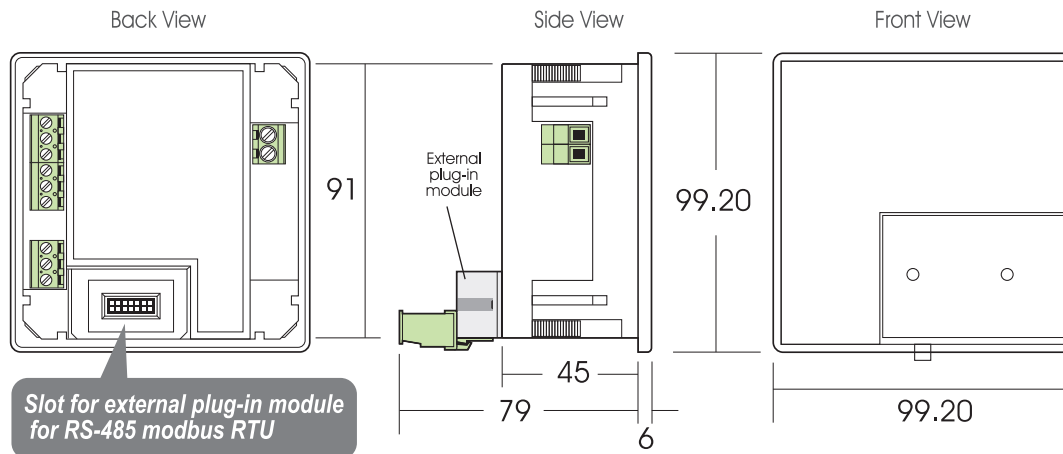
<sup>1</sup>SPARC - sampling progressive algorithm for RMS Computation:  
Computation of multiple rms values/cycle (Superior response in short circuit situation)

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

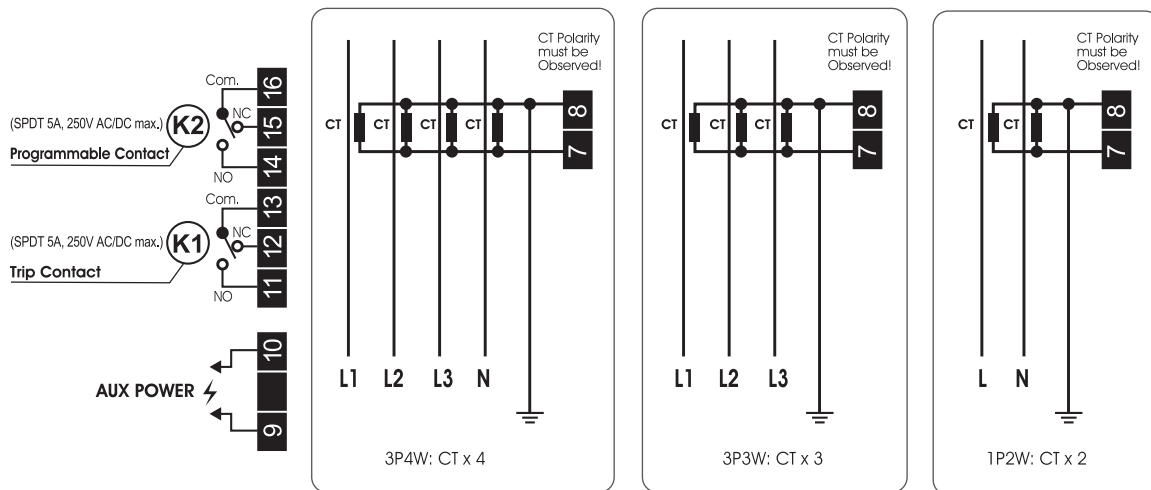
<sup>3</sup>Fundamental Signal Detection:  
To discriminate between signal and noise and eliminate nuisance tripping

<sup>4</sup>Output on k2 dependent on the programmed options

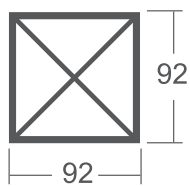
## casing dimension



## wiring diagram



## panel cut-out



Panel Cut-out : 92 x 92

## ordering information

Model	Description
DP-21-220a-5A	(CT.../5A) 65 ~ 275 Vac (45~65 Hz), 90~300 Vdc
DP-21-220a-1A	(CT.../1A) 65 ~ 275 Vac (45~65 Hz), 90~300 Vdc
DP-21-024d-5A	(CT.../5A) 18~72 Vdc
DP-21-024d-1A	(CT.../1A) 18~72 Vdc

Note: All measurement in mm.