



True RMS Measurement with SPARC<sup>1</sup> and DCOI<sup>2</sup> Algorithm

Auto / Manual Scroll for Real Time Display of Phase Current

1 LTI Inverse + 1 Definite Time Delay

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 :-

A-01s (RS-485 MODBUS RTU) isolated type

### technical data

Current Input (In)	: ..5A or ..1A
Frequency	: Software selectable 50 or 60 Hz
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	: 260 g

### parameter setting

I>: lo-set	2% ~ 200% (step of 1%)
TM >: lo-set time Multiplier	0,05 ~ 1,00 (step of 0,01, 1 LTI + 1 DTL)
t>: lo-set trip delay time	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>>: hi-set	OFF or 20%~2000%
	20%~1000% (step of 10%) 1000%~2000% (step of 100%)
t>>: hi-set trip delay time	0,03s~0,5s

### aux power

DP-23-220a	: 65 ~ 275 Vac (45~65Hz), 90 ~ 300 Vdc
DP-23-024d	: 16 ~ 36 Vdc
Consumption	: < 3VA

### fundamental frequency

50 or 60Hz Selectable

### K1 output contact options

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

### K2 output contact options

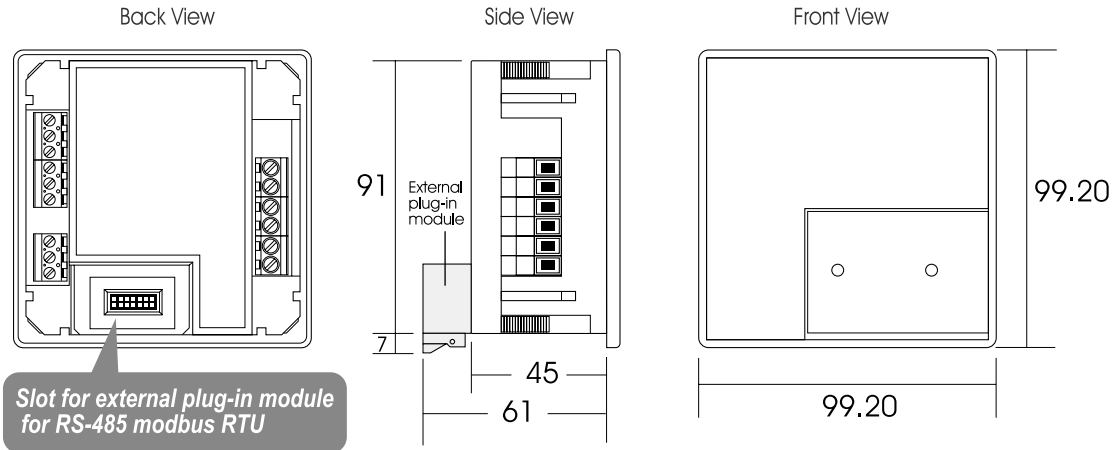
CbF (circuit breaker Failure - nLc only)  
A50 (pre-fault 50% of I> - Lc or nLc)  
A90 (pre-fault 90% of I> - Lc or nLc)  
trP (tripping output - Lc or nLc)  
LFS (lo fault start signal - Lc or nLc)  
HFS (hi fault start signal - Lc or nLc)  
AFS (all fault start signal - Lc or nLc)  
dUF (device failure - Lc only)

<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)

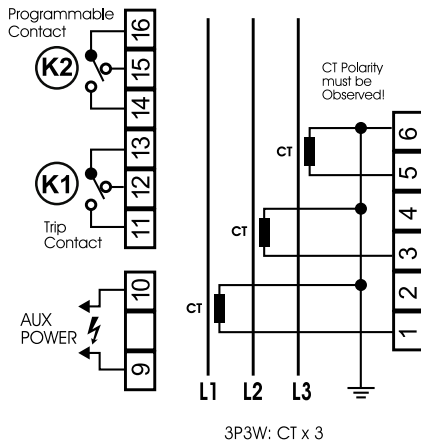
<sup>3</sup>Output on k2 dependent on the programmed options

## casing dimension

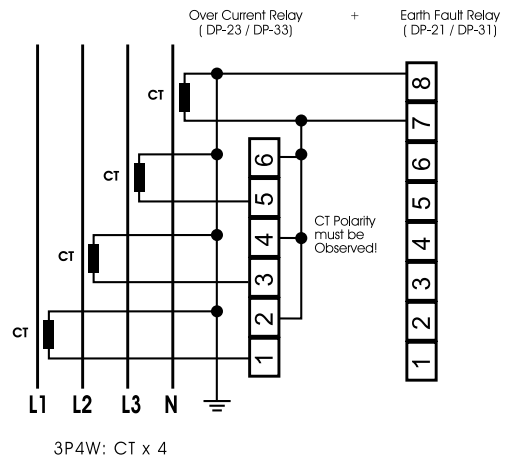


## wiring diagram

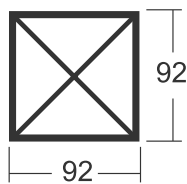
When used without Earth Fault Relay



CT connection when used with Earth Fault Relay



## panel cut-out



Panel Cut-out : 92 x 92

## ordering information

► Refer to page 26 for IDMT graphs

Model	Description
DP-23-220a-5A	(CT.../5A) 65 ~ 275 Vac (45~65 Hz), 90~300 Vdc
DP-23-220a-1A	(CT.../1A) 65 ~ 275 Vac (45~65 Hz), 90~300 Vdc
DP-23-024d-5A	(CT.../5A) 16~36 Vdc
DP-23-024d-1A	(CT.../1A) 16~36 Vdc

Note: All measurement in mm.



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 %

6 Selectable IDMT Graphs + 1 DTL

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)

Programmable Relay Output Contacts

Last Trip Elapsed Time (up to 99days)

Software Lock to Prevent Unauthorized Setting

Complies with IEC-60255-26 Standards

ANSI Code: 50N, 51N

External Plug-in Module for :-  
A-01s (RS-485 MODBUS RTU) isolated type

## technical data

Current Input (In)	: ..5A or ../1A
Frequency	: Software selectable 50 or 60 Hz
Burden	: <0.3 VA @ In
Output Relay Rating	: SPDT 5A, 250V AC/DC
Display	: 7-Segment LED (3 + 1 digit)
Indication (LEDs)	: mA, 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	: 230 g

## parameter setting

I>: lo-set	2% ~ 100% (step of 1%)
TM >: lo-set time Multiplier	0.05 ~ 1.00 (step of 0.01, 5 IDMT + 1 DTL)
t>: lo-set trip delay time	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<>: hi-set	OFF or 20%~1000% (step of 10%)
t<>: hi-set trip delay time	0.03s~0.5s

## aux power

DP-31-220a	: 65 ~ 275 Vac (45~65Hz), 90 ~ 300 Vdc
DP-31-024d	: 16 ~ 36 Vdc
Consumption	: < 3VA

## fundamental frequency

50 or 60Hz Selectable

## K1 output contact options

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

## K2 output contact options

CbF (circuit breaker Failure - nLc only)  
A50 (pre-fault 50% of I> - Lc or nLc)  
A90 (pre-fault 90% of I> - Lc or nLc)  
trP (tripping output - Lc or nLc)  
LFS (lo fault start signal - Lc or nLc)  
HFS (hi fault start signal - Lc or nLc)  
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dUF (device failure - Lc only)

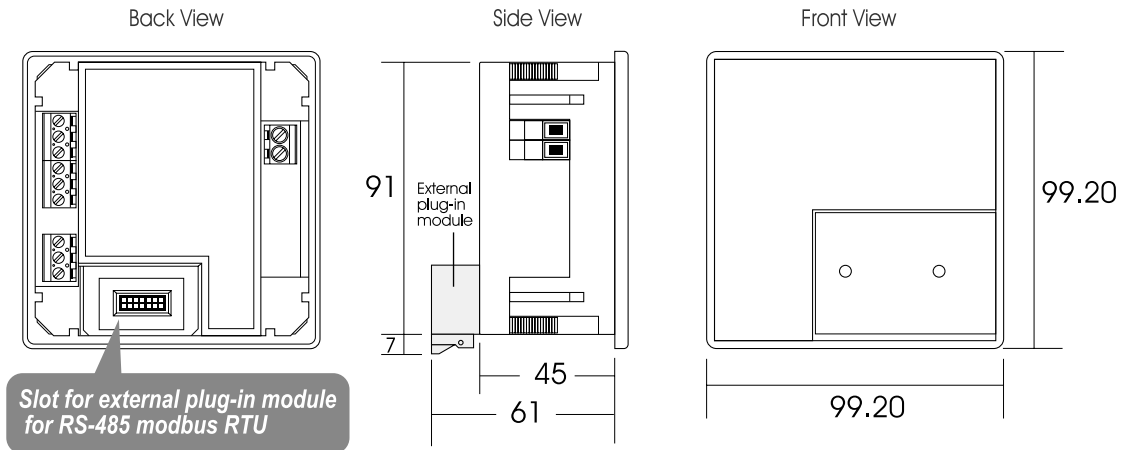
<sup>1</sup>SPARC - sampling progressive algorithm for RMS Computation: Computation of multiple rms values/cycle (Superior response in short circuit situation)

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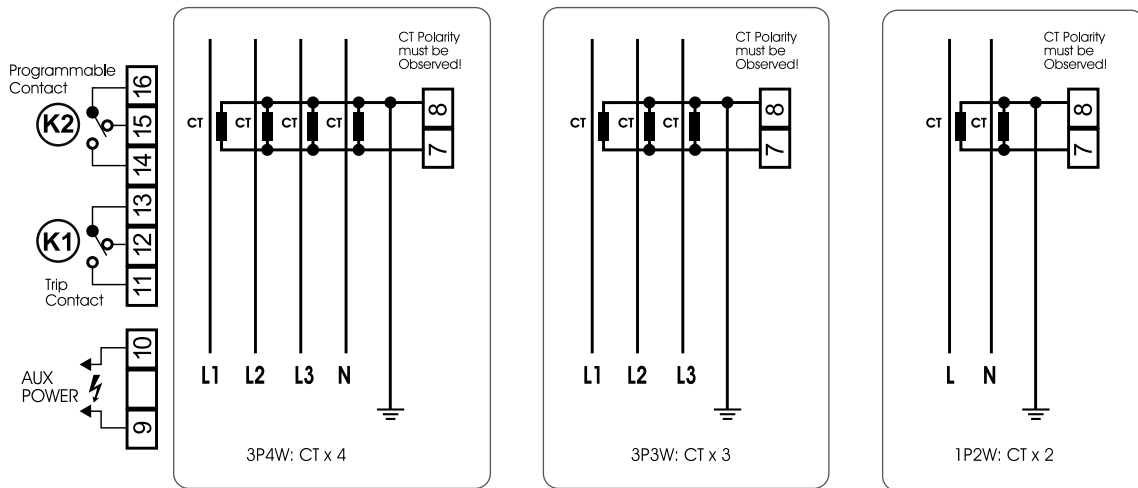
<sup>3</sup>Fundamental Signal Detection: To discriminate between signal and noise and eliminate nuisance tripping

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

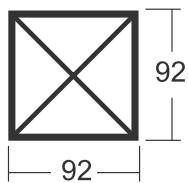
## casing dimension



## wiring diagram



## panel cut-out



Panel Cut-out : 92 x 92

## ordering information

► Refer to page 26 for IDMT graphs

Model	Description
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DP-31-024d-5A	(CT.../5A) 16~36 Vdc
DP-31-024d-1A	(CT.../1A) 16~36 Vdc

Note: All measurement in mm.

# IDMT Over Current Relay

# DP-33



## features



True RMS Measurement with SPARC<sup>1</sup> and DCOI<sup>2</sup> Algorithm

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6 Selectable IDMT Graphs + 1 DTL

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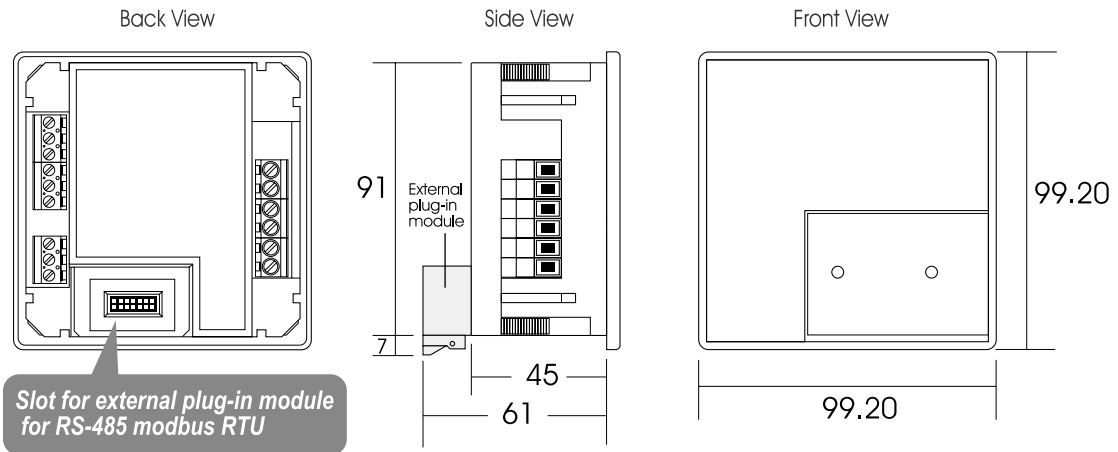
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I <sub>&gt;&gt;</sub> : hi-set	OFF or 20%~2000% 20%~1000% (step of 10%) 1000%~2000% (step of 100%)
t <sub>&gt;&gt;</sub> : hi-set trip delay time	0.03s~0.5s

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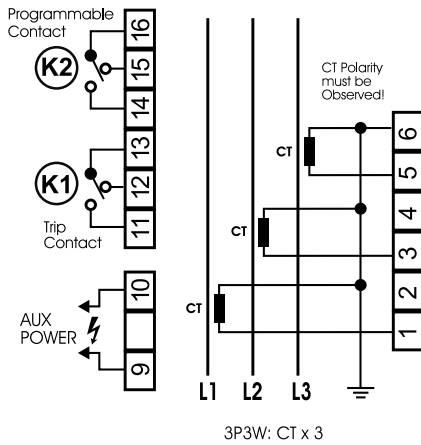
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## casing dimension

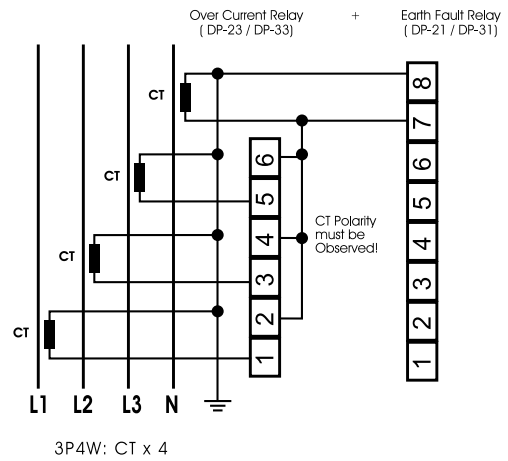


## wiring diagram

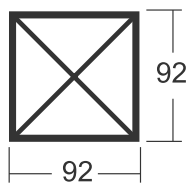
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