

# Digital Motor Protection Relay

# DP-53



## 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 and Earth Fault in (%)
- Thermal Overload Protection
- Undercurrent Protection
- Phase Unbalance Protection
- Phase Loss Protection
- Phase Sequence Protection
- Stalled Current (Locked Rotor) Protection
- Fault, Undercurrent, Overload, Phase Unbalance, Phase Loss, Phase Sequence, Locked Rotor, Earth Fault Indication
- Trip Event Memory (non-volatile 7 previous records for 3 phases + earth)
- Motor Hour Run (Accumulative)
- Selectable Frequency (50 / 60 Hz)
- Programmable Relay Output Contact for K2
- Selectable Auto/ Manual Reset Function
- Software Lock to Prevent Unauthorized Setting
- Complies with: IEC-60255-26/27 ; BS EN 50121-5 Standards
- ANSI Code: 37, 46, 49, 51P, 51G
- External Plug-in Module for:** A-01s / A-01sp (RS-485 MODBUS RTU) isolated type

## technical data

Aux Power	: 65~275 Vac (45~65 Hz); 90~300 Vdc (model 220a) : 18~72 Vdc (model 024d)
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, 250 Vac / Vdc
Consumption	: < 15 VA
Accuracy	: Current protection threshold (±5%), Time delayed (+5% or 50 ms)
Display	: 7-segment LED (3+1 digit)
Indication (LEDs)	: phase, x10, locked rotor, overload, undercurrent, fault, 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

## K1 output contact options

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

## K2 output contact options

<b>trP</b>	: tripping output	Lc or nLc
<b>Lrt</b>	: locked-rotor trip output	Lc or nLc
<b>unb</b>	: unbalance trip output	Lc or nLc
<b>PLt</b>	: phase loss trip output	Lc or nLc
<b>PSI</b>	: phase sequence trip output	Lc or nLc
<b>Eft</b>	: earth fault trip output	Lc or nLc
<b>uLt</b>	: underload trip output	Lc or nLc
<b>oLt</b>	: overload trip output	Lc or nLc

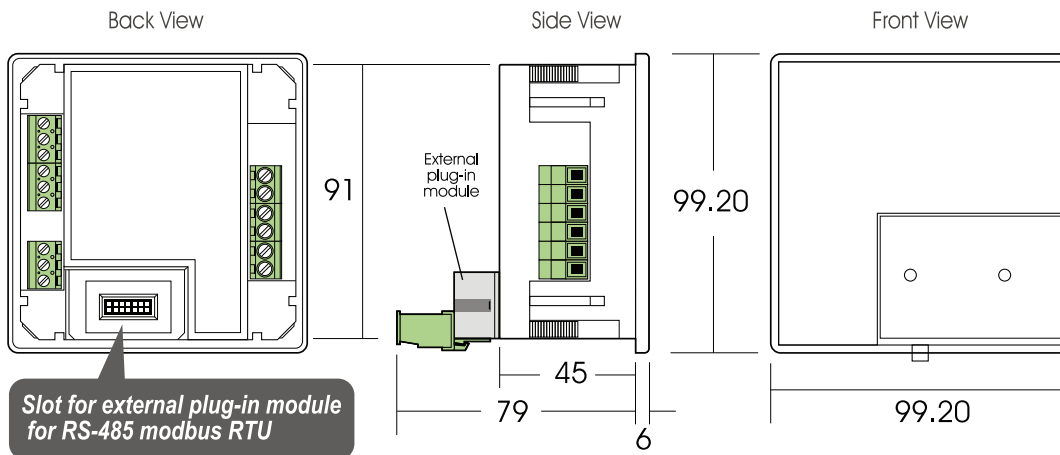
## parameter setting

Full Load Current, $I_0$ (%)	10% ~ 200% (step of 1%)
Thermal Overload Time Constant, $t_{ox}$ (sec)	0.1s ~ 10s (step of 0.1s) 10s ~ 60s (step of 1s)
Undercurrent, $I <$ (%)	OFF, 10% ~ 100% of $I_0$ (step of 1%)
Undercurrent Trip Time Delay, $t <$ (sec)	0.1s ~ 10s (step of 0.1s) 10s ~ 60s (step of 1s)
Unbalance, $\Delta I >$ (%)	OFF, 5% ~ 50% (step of 1%)
Unbalance Trip Time Delay, $t_{\Delta} >$ (sec)	0.1s ~ 10s (step of 0.1s) 10s ~ 60s (step of 1s)
Stalled Current, $I_{stall} >$ (%)	OFF, 1.0 ~ 12.0 x $I_0$ (step of 0.1 x $I_0$ )
Stalled Current Trip Time Delay, $t_{stall} >$ (sec)	0.1s ~ 10s (step of 0.1s) 10s ~ 60s (step of 1s)
Phase Loss	ON or OFF (Trip time delay fixed @ 100ms)
Phase Sequence	ON or OFF (Trip time delay fixed @ 100ms)
Earth Fault, $I_0 >$ (%)	OFF, 5% ~ 100% (step of 1%)
Earth Fault Trip Time Delay, $t_0 >$ (sec)	0.1s ~ 10s (step of 0.1s) 10s ~ 60s (step of 1s)

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

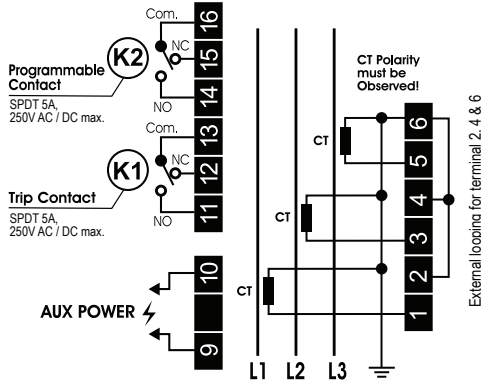
<sup>2</sup>DCOI - DC offset independent algorithm: Cancels out DC signal caused by EMI and aging circuitry (Better Immunity against EMI)

## casing dimension

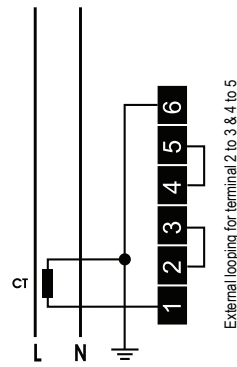


## wiring diagram

3P3W : CT x 3

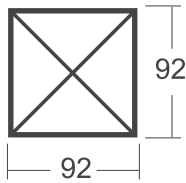


1P2W : CT x 1



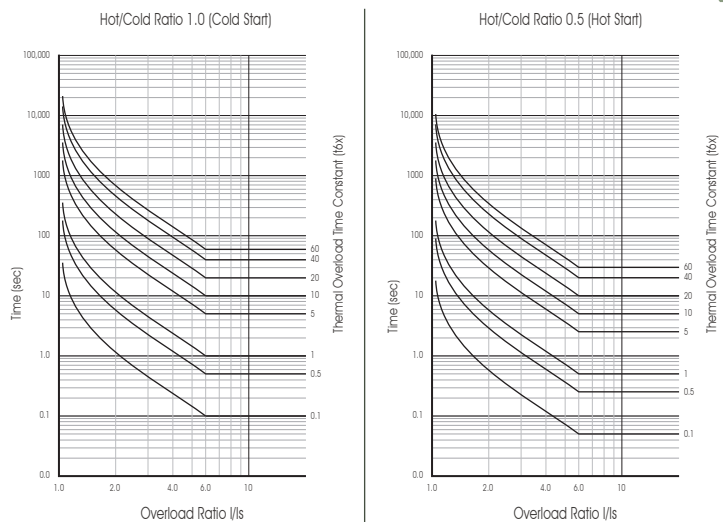
Earth Fault and Phase Sequence detection  set to 'OFF'

## panel cut-out



Panel Cut-out : 92 x 92

## thermal tripping curve



## ordering information

Model	Description
DP-53-220a-5A	(CT.../5A) 65~275 Vac (45~65 Hz), 90~300 Vdc
DP-53-220a-1A	(CT.../1A) 65~275 Vac (45~65 Hz), 90~300 Vdc
DP-53-024d-5A	(CT.../5A) 18~72 Vdc
DP-53-024d-1A	(CT.../1A) 18~72 Vdc

Note: All measurement in mm.