

# PTC Thermistor Relay Series PD 225

- Monitors and Protects Motors with Integrated PTC Resistor sensors
- Protection against Over heating for Heavy Duty Load, High Switching Frequency, High operating temperature & Insufficient cooling conditions
- Wide Auxiliary Supply Voltage: 24 VAC/DC, 110 - 240 VAC & 220 - 415 VAC
- LED Indications for Healthy, Unhealthy, Sensor Open/Short conditions
- 1 C/O & 2 C/O Configuration
- Reset Options: Auto, Manual and Remote



## Ordering Information

Cat. No.	Description
MJ83BK	110 - 240 VAC, PTC Thermistor Relay, 2 C/O
MJ93BK	220 - 440 VAC, PTC Thermistor Relay, 2 C/O
MJA3BK	24 VAC/DC, PTC Thermistor Relay, 2 C/O
MJ81BK	110 - 240 VAC, PTC Thermistor Relay, 1 C/O
MJ91BK	220 - 440 VAC, PTC Thermistor Relay, 1 C/O

UL Approval not applicable for Cat Nos. MJ83BK & MJ93BK.



# PTC Thermistor Relay Series PD 225

Cat. No.	MJ83BK	MJ93BK	MJA3BK
<b>Parameters</b>			
Supply Voltage (Φ)	110 - 240 VAC	220 - 440 VAC	24 VAC/DC
Supply Variation	-20% to + 10% (of Φ)		
Frequency	50/60 Hz		
Power Consumption (Max.)	4 VA		2 VA
Trip Settings	Trip Level	2.7 kΩ, (± 5%)	
	Reset Level	1.71 kΩ, (± 5%)	
	Sensor Short	<20Ω, (±4Ω)	
	Hysteresis	40Ω, (± 4Ω)	
	Sensor Open	> 20 kΩ, (± 5%)	
Max Cold Res(Ω) of Sensor Chain	< 1.5 kΩ		
Reset Mode	Auto, Manual, Remote		
Repeat Accuracy	1%		
Time Delay	ON Delay	500 ms	
	OFF Delay	100 ms	
	Reset Time	150 ms	
Output	Relay Output	2 C/O	2 C/O
	Contact Rating	5A (Resistive) @ 250 VAC / 28 VDC	
	Electrical Life	1 x 10 <sup>5</sup>	
	Mechanical Life	3 x 10 <sup>6</sup>	
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
LED Indications	Green LED	Continuous ON → Healthy    Flashing → Sensor Open	
	Red LED	Continuous ON → Relay ON    Flashing → Sensor Short	
	All LEDs OFF	Power Supply Fail	
Operating Temperature	- 15° C to +60° C		
Storage Temperature	- 25° C to +80° C		
Humidity (Non Condensing)	95% (Rh)		
Enclosure	Flame Retardant UL94-V0		
Dimension (W x H x D) (in mm)	22.5 X 83 X 100.5		
Weight (unpacked)	120 g		
Mounting	Base / DIN rail		
Certification	  		
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure		

## EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Voltage Dips & Interruptions (DC)	IEC 61000-4-29
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

## Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

# PTC Thermistor & Single Phasing Preventer Series PD225

- Thermistor Relay combined with Protection against Phase Sequence, Phase Loss & Phase Asymmetry Faults
- Monitors and Protects Motors with Integrated PTC Resistor sensors
- Protection against Over heating for Heavy Duty Load, High Switching Frequency, High operating temperature & Insufficient cooling conditions
- LED indications for Healthy, Unhealthy, Sensor Open/Short and Phase Sequence fault conditions





## Ordering Information

Cat. No.	Description
ML64BS	230 VAC, PTC Thermistor & Single Phasing Preventer, 1 NO + 1 NO
ML67BS	230 VAC, PTC Thermistor & Single Phasing Preventer, 1 NO + 1 NC
MLD4BS	400 VAC, PTC Thermistor & Single Phasing Preventer, 1 NO + 1 NO
MLD7BS	400 VAC, PTC Thermistor & Single Phasing Preventer, 1 NO + 1 NC

UL Approval not applicable for Cat Nos. MJ83BK & MJ93BK.

# PTC Thermistor & Single Phasing Preventer Series PD225



Cat. No.		ML64BS	MLD7BS
<b>Parameters</b>			
Supply Voltage ( $\phi$ )		230 VAC (3 Phase 3 Wire)	400 VAC (3 Phase 3 Wire)
Supply Variation		-15% to + 15% (of $\phi$ )	-15% to + 15% (of $\phi$ )
Frequency		50/60 Hz	50/60 Hz
Power Consumption (Max.)		15 VA	24 VA
Trip Settings	Trip Level	2.7 k $\Omega$ , ( $\pm$ 5%)	
	Reset Level	1.71 k $\Omega$ , ( $\pm$ 5%)	
	Sensor Short	<20 $\Omega$ , ( $\pm$ 4 $\Omega$ )	
	Hysteresis	40 $\Omega$ , ( $\pm$ 4 $\Omega$ )	
	Sensor Open	> 20 k $\Omega$ , ( $\pm$ 5%)	
Max Cold Res( $\Omega$ ) of Sensor Chain		< 1.5 k $\Omega$	
Cable Resistance		20 $\Omega$	
Phase Asymmetry		70 VAC ( $\pm$ 10 VAC)	104 VAC ( $\pm$ 10 VAC)
Asymmetrical Phase Loss		110 VAC ( $\pm$ 10 VAC)	220 VAC ( $\pm$ 10 VAC)
Symmetrical Phase Loss		130 VAC ( $\pm$ 10 VAC)	240 VAC ( $\pm$ 10 VAC)
Restart Voltage		145 VAC ( $\pm$ 10 VAC)	265 VAC ( $\pm$ 10 VAC)
Reset Mode		Auto	
Repeat Accuracy		1%	
Time Delay	Operate Time	< 350 ms	
	Release Time	360 - 550ms for Asymmetrical or Symmetrical Phase Fault & 100ms (max.) for Phase Sequence, Thermistor Trip	
	Reset Time	100 - 750 ms	
Output	Relay Output	1 NO (SPP) + 1 NO (PTC Thermistor)	1 NO (SPP) + 1 NC (PTC Thermistor)
	Contact Rating	5A 'NO' & 3A 'NC' @ 240 VAC / 28 VDC (Resistive)	
	Electrical Life	1 x 10 <sup>5</sup>	
	Mechanical Life	3 x 10 <sup>7</sup>	
Utilization Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A	
	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A	
LED Indications	(Green)	Continuous ON	Power Supply Healthy
		Continuous OFF	Power Fail
		Flashing	Sensor Open
	(Amber)	Continuous ON	Over Temperature Trip
		Continuous OFF	Thermistor Relay ON
		Flashing	Sensor Short or Cable Short
(Red)	Continuous ON	SPP Relay Trip (For Supply Above Restart Voltage)	
	Continuous OFF	SPP Relay ON (After ensuring the input Voltage of 5V above the Restart Voltage)	
Flashing	Supply & SPP Fault below restart voltage		
Operating Temperature		- 10° C to +60° C	
Storage Temperature		- 15° C to +70° C	
Humidity (Non Condensing)		95% (Rh)	
Enclosure		Flame Retardant UL94-V0	
Dimension (W x H x D) (in mm)		22.5 X 83 X 100.5	
Weight (unpacked)		150 g	
Mounting		Base / DIN rail	
Certification		 	
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure	

## EMI / EMC

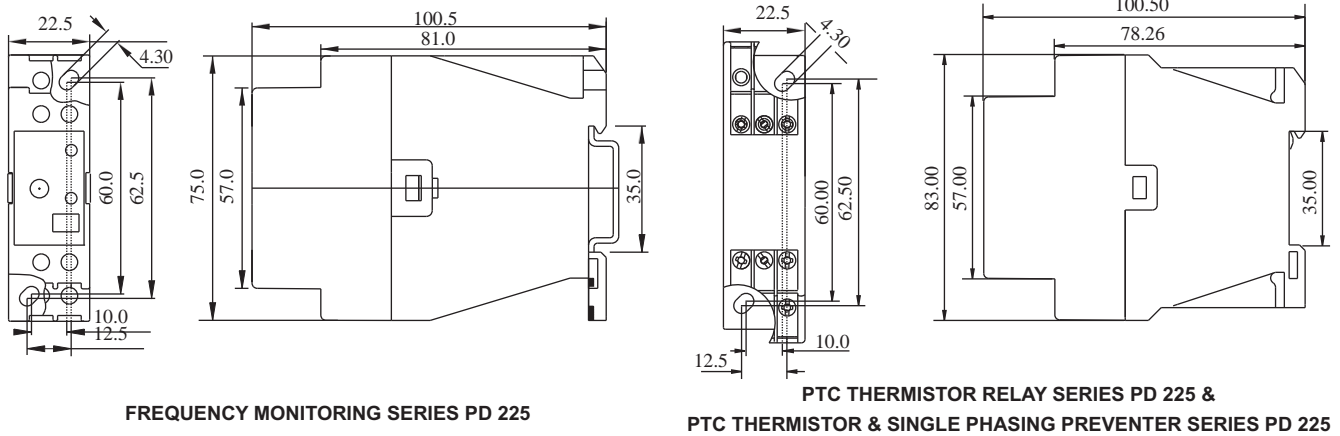
Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

## Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

# Frequency Monitoring & PTC Thermistor Relay Series PD225

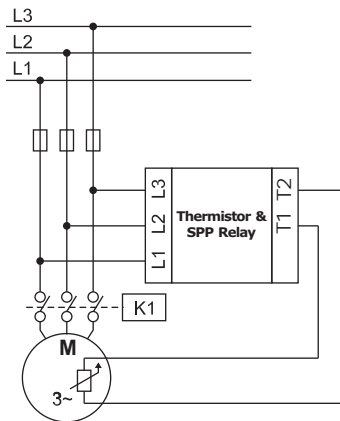
## MOUNTING DIMENSION (mm)



FREQUENCY MONITORING SERIES PD 225

PTC THERMISTOR RELAY SERIES PD 225 & PTC THERMISTOR & SINGLE PHASING PREVENTER SERIES PD 225

## CONNECTION DIAGRAM



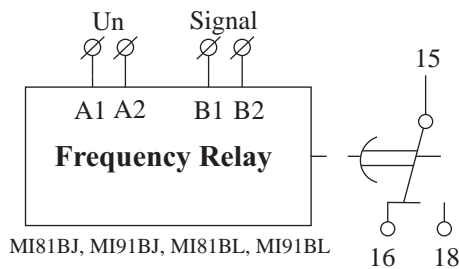
PTC THERMISTOR & SINGLE PHASING PREVENTER SERIES PD 225

## CONTACT ARRANGEMENT :

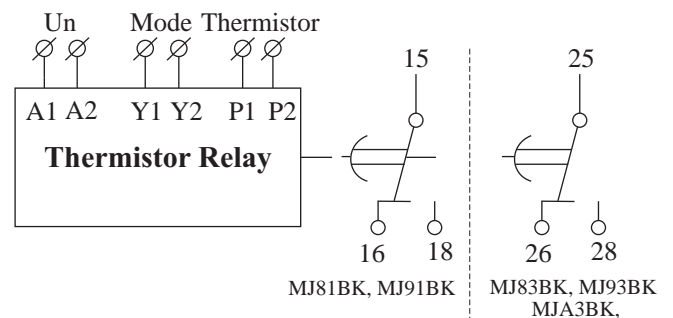
For 1 NO + 1 NO PRODUCT:  
ML64BS, MLD4BS



For 1 NO + 1 NC PRODUCT:  
ML67BS, MLD7BS

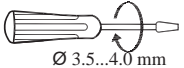



FREQUENCY MONITORING SERIES PD 225



PTC THERMISTOR RELAY SERIES PD 225

## TERMINAL TORQUE & CAPACITY

 Ø 3.5...4.0 mm	Torque - 0.6 N.m (6 Lb.in) Terminal screw - M3
	Solid Wire - 1 X 1...6 mm <sup>2</sup>
AWG	1 X 20 to 12

FREQUENCY MONITORING SERIES PD 225

PTC THERMISTOR RELAY SERIES PD 225

PTC THERMISTOR & SINGLE PHASING PREVENTER SERIES PD 225