PTC THERMISTOR RELAY SERIES
PD - 225

Ordering Information:

MJ81BK
MJ91BK
MJA3BK
MJ83BK
MJ93BK

FEATURES:

- Operable in various supply voltage conditions by selecting proper model.
- Various mode selection like AUTO, MANUAL and REMOTE Reset.
- SPDT / DPDT relay output.
- LED indications for healthy, unhealthy, sensors open short conditions.
- DIN Rail & Base Mounting.

⚠ CAUTION:

- Always follow instructions stated in this product leaflet.
- Before installation, check to ensure that the specifications agree with the intended application.
- Installation to be done by skilled electrician.
- Automation and control devices must be against any risk of involuntary actuations.
- Suitable dampers should be provided in the event of excessive vibrations.
- Use a fuse of 250 mA in series with the device power supply.

NOTE:

- Product innovation being a continuous process, we reserve the right to alter specifications without any prior notice

TERMINAL DETAILS:

ø3.5....4.0 mm	0.6 N.m (6 Lb.in) Terminal screw - M3
	1 X 1 ....6 mm² Solid Wire
AWG	1 X 20 to 10

Use Cu wire of 60/75° C only.

SENSOR WARM STATE / OPEN:

Sensor Warm State/Probe cable open circuit detected by device if resistance is above 20 kΩ ±5% and cannot reset until resistance is lower than 1.7 kΩ ±5%. The resistance of the probe circuit must be with in 60 kΩ to 1.79 kΩ , over the temperature range of -20° C to Tr -20° C

SENSOR SHORT:

Probe cable short circuit is detected by device if resistance is lower than 20 Ω + 4 Ω and resets when probe resistance is greater than 60 Ω + 4 Ω.

FUNCTIONAL DESCRIPTION:

Thermistor Relay protects and controls motors and alternators fitted with PTC thermistor sensors. Motor heating is directly measured by temperature sensors that are incorporated in stater windings. This ensures a direct control in following operating conditions: Heavy Duty, High Switching Frequency, Single Phasing, High Ambient Temperature and Insufficient Cooling. This relay disconnects when probe resistance exceeds 2.70 kΩ + 5% and cannot reset until resistance lower than 1.71 kΩ + 5%. Auxiliary supply voltage should be applied to device between terminals A1-A2 to produce connection. The relay trips through probe heating, resetting may be AUTO, MANUAL or REMOTE.

AUTO RESET:

For auto reset operation, keep Y1 and Y2 terminals open. Device will reset automatically when the total loop resistance of the series connected the thermistors drops below 1.71 kΩ +5%.

MANUAL RESET:

For manual reset operation, keep Y1 and Y2 terminals short. Device will reset manually by pressing RESET key of device when the total loop resistance of the series connected thermistors drops below 1.71 kΩ +5%

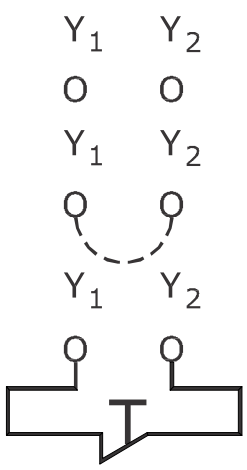
REMOTE RESET:

For Remote reset operation, connect a switch across Y1 and Y2 terminals. Device will be in Auto Reset mode, if switch is open; otherwise device will be in Manual Reset mode.

ADVANTAGES OF REMOTE TEST:

If fault occurs and recovers while using the device is in Manual Reset mode, then user can put the device in auto mode temporarily and switch ON the relay and out the back in Manual Reset mode. So, attending the device can be avoided.

CONNECTIONS FOR MODE SELECTION:



TECHNICAL SPECIFICATIONS:

Cat. Nos. :			MJ81BK	MJ91BK	MJA3BK	MJ83BK	MJ93BK
Supply Characteristics:							
Supply Voltage (⏛)			110 to 240 VAC	220 to 440 VAC	24 V AC/DC	110 to 240 VAC	220 to 440 VAC
Supply Frequency			48 to 62 Hz				
Supply Tolerance			-20% to +10% of ⏛				
Power Consumption			4 VA	8 VA	2 VA	4 VA	8 VA
Relay O/P Characteristics:							
Contact Arrangement			1 C/O		2 C/O		
Contact Rating			5A @ 250 VAC / 28 VDC				
Utilization Category	Ue rated voltage	V	120/240				
AC-15	Ie rated current	A	3.0/1.5				
Utilization Category	Ue rated voltage	V	24/125/250				
DC-13	Ie rated current	A	2.0/0.22/0.1				
Contact Material			Ag alloy				
Mechanical Life Expectancy			3 X 10^6 operations				
Electrical Life Expectancy			1 X 10^5 operations				
Feature Characteristics:							
Trip Resist			1.62 kΩ to 2.56 kΩ				
Reset Resistance			< 1.79 kΩ				
Sensors Short			20Ω, ± 4Ω				
Hysteresis Sensors short condition			40Ω, ± 4Ω				
Cable Resistance			< 20Ω				
Sensor Open			20 kΩ, ± 5%				
Cold resistance of sensor chain			20Ω to 1.33 kΩ				
Reset Selector			Manual Reset / Auto Reset / Remote Reset Selection.				
Manual Reset mode			Manual Reset using RESET key				
Repeat Accuracy			± 1%				
Response Time	Operate Time (OT)		< 350 ms				
	Release Time (RT)		~ 100 ms				
	Reset Time		~ 150 ms		~ 350 ms	~ 150 ms	
LED Indications	⏛ (Green LED)	Continuous ON	Power Supply Healthy				
		Continuous OFF	Power Fail				
		Flashing	Sensor Open				
	⏛ (RED LED)	Continuous ON	Relay ON				
		Continuous OFF	Relay OFF				
		Flashing	Sensor Short or Cable Short				
Mounting / Dimensions (W X H X D) mm			Base Or / Din-Rail / (22.5 X 83 X 100.5)				
Weight (Unpacked)			~ 120 g				
Certifications			CE, RoHS				
Ambient Conditions:							
Operating Temperature			-15°C to + 60°C				
Storage Temperature			-25°C to + 80°C				
Relative Humidity			5 to 95% (without condensation)				
Operating Position			Any				
Maximum Operating Altitude			2000 m				
Degree of Protection			IP 40 (Enclosure); IP 20 (Terminals)				
Pollution Degree			2				
Number of Sensors			3 PTC in series manufactured as per DIN 44081 or 44082				

CONFORMITY TO STANDARDS:

EMC:

Product	IEC 60255-27	Ed. 1.0 (2005-11)
Harmonic Current Emission	IEC 61000-3-2	Ed. 3.2 (2009-14) Class A
Voltage Flicker & Fluctuation	IEC 61000-3-3	Ed. 3.0 (2013-05) Class A
ESD	IEC 61000-4-2	Ed. 2.0 (2008-12) Level II
Radiated Susceptibility	IEC 61000-4-3	Ed. 3.2 (2010-04) Level III
Electrical Fast Transients (Supply Port)	IEC 61000-4-4	Ed. 3.0 (2012-04) Level IV
Electrical Fast Transients (Signal Port)	IEC 61000-4-4	Ed. 3.0 (2012-04) Level III
Surge Immunity	IEC 61000-4-5	Ed. 2.0 (2005-11) Level III
Conducted Susceptibility	IEC 61000-4-6	Ed. 3.0 (2008-10) Level III
Power Frequency Magnetic Field	IEC 61000-4-8	Ed. 2.0 (2009-09) Class 4
Voltage Dips	IEC 61000-4-29	Ed. 1.0 (2004-08) Class B
Conducted Emission	CISPR 11	Ed. 4.1 (2004-06) Class A
Radiated Emission	CISPR 11	Ed. 4.1 (2004-06) Class A

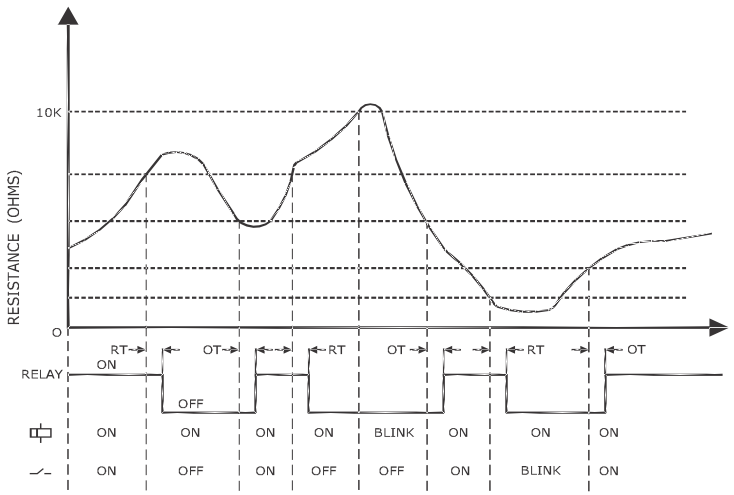
SAFETY:

Test Voltage between all terminals and enclosure	IEC 60947-5-1 Ed. 3.0 (2003-11) 2.5 kV
Single Fault	IEC 61010-1 Ed. 3.0 (2010-06)
Leakage Current	UL 508 Ed. 17 (1999-01) <3.5 mA

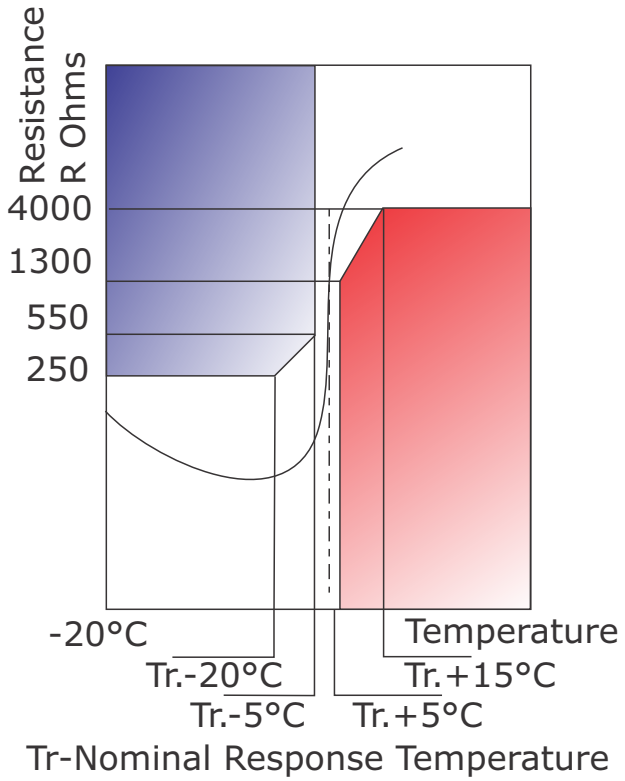
ENVIRONMENTAL:

Cold Heat	IEC 60068-2-1 Ed. 6.0 (2007-03)
Dry Heat	IEC 60068-2-2 Ed. 5.0 (2007-07)
Vibration	IEC 60068-2-6 Ed. 7.0 (2007-12), 5 g
Repetitive Shock	IEC 60068-2-27 Ed. 4.0(2008-02), 40 g, 6ms
Non-Repetitive Shock	IEC 60068-2-27 Ed. 4.0 (2008-02), 30 g, 15ms

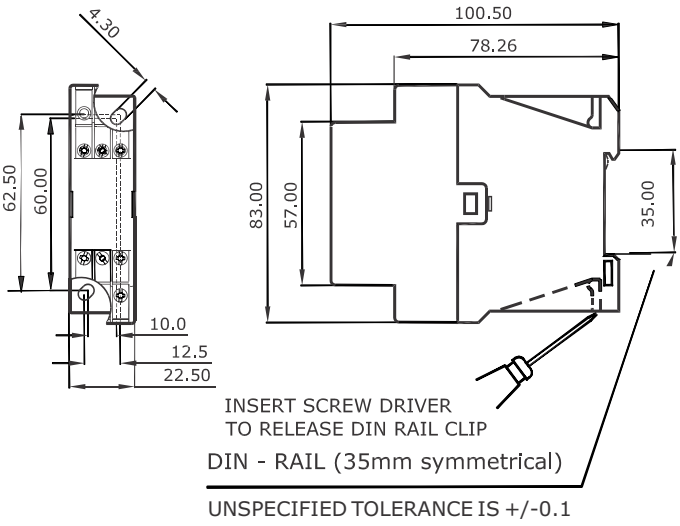
FUNCTION DIAGRAM:



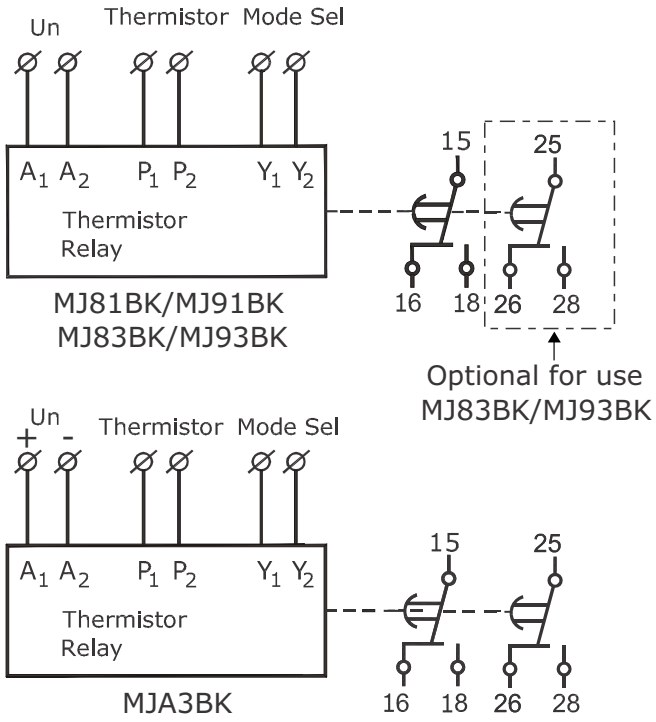
TYPICAL PTCR CHARACTERISTICS FOR MOTOR CONTROL APPLICATION ACCORDING TO DIN 44081:



OVERALL PRODUCT DIMENSIONS & MOUNTING DETAILS:



CONNECTION DIAGRAM:



E-Waste Regulatory notice:
Kindly treat, recycle or dispose of this equipment in an environmentally sound manner after End of Life, as per WEEE (Waste Electrical and Electronic Equipment) regulations;
or hand it over to General Industrial ControlsPvt. Ltd, through website https://www.gicindia.com/get-in-touch/