

Frequency Monitoring Relay Series - PD 225

Ordering Information:

MI81BJ / MI91BJ
(Over frequency relay)
MI81BL / MI91BL
(Under / Over frequency
relay)



FEATURES:

Common for MI81BJ, MI91BJ, MI81BL, MI91BL

- Monitors a wide range of frequencies for Sinusoidal, square & triangular wave input signal.
- Settable under frequency* & Over frequency.
- Wide input signal range.
- Wide auxiliary supply voltage range.
- Relay can be adjusted for energise to trip (ET) & De-energise to trip (DT).
- LED indications for healthy, unhealthy and no signal conditions.
- Settable release time

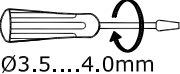

CAUTION:

- Signal input should not be applied to terminal B1 with respect to B2.
- Always follow instruction stated 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 installed properly, so that they are protected against any risk of involuntary actuations.
- Suitable dampers should be provided in the event.

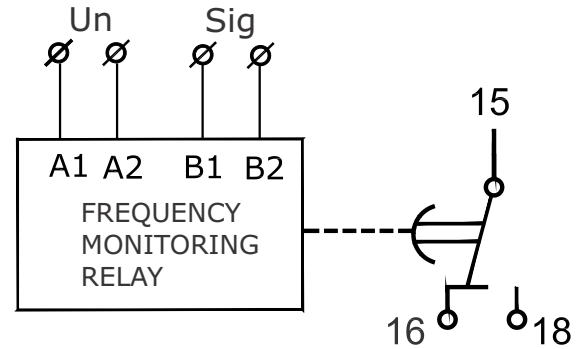
NOTE:

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

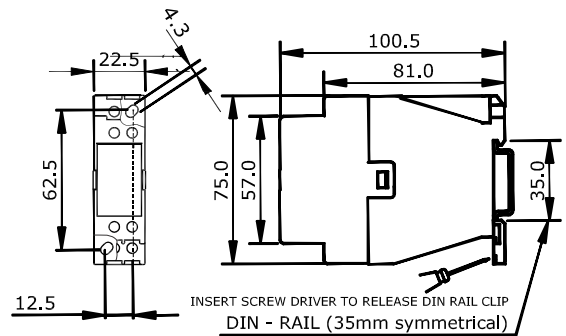
TERMINAL DETAILS:

 Ø3.5...4.0mm	0.6 N.m (6 Lb.in) Terminal screw - M3
	1 x 1...4 mm ² Solid Wire
AWG	1 x 18 to 10

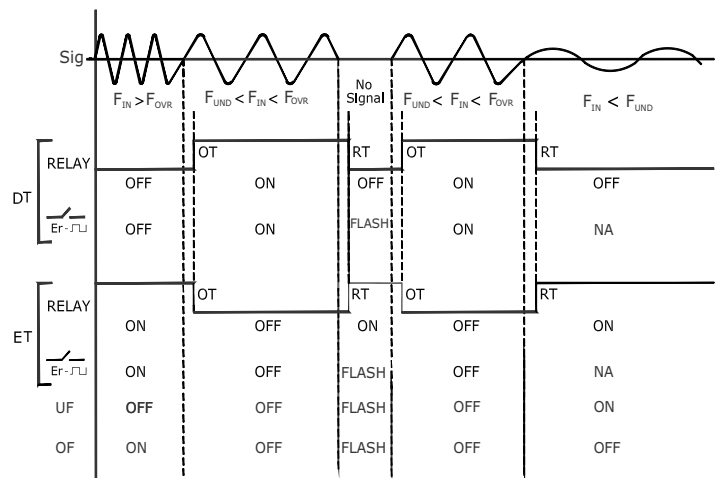
CONNECTION DIAGRAM:



Overall product dimensions and mounting details: (in mm)



FUNCTION DIAGRAM:



TECHNICAL CHARACTERISTICS:

Cat. Nos.		MI81BJ	MI91BJ	MI81BL	MI91BL
Supply Voltage (Φ)		(110-240) VAC	(220-440) VAC	(110-240) VAC	(220-440) VAC
Supply Variation		-15% to +15% of Φ			
Supply Frequency		(48 to 62) Hz			
Power Consumption		3 VA			
Relay O/P Characteristics :					
Contact Rating		1 C/O, 6A @ 240 VAC/ 28 VDC (Resistive)			
Utilization Category AC-15	Ue rated voltage	120/240 V			
	Ie rated current	3/1.5 A			
Utilization Category DC-13	Ue rated voltage	125/250 V			
	Ie rated current	0.22/0.1 A			
Contact Material		Ag Alloy			
Mechanical Life Expectancy		3 X 10 ⁶ operations			
Electrical Life Expectancy		1 X 10 ⁵ operations			
Feature Characteristics:					
Signal Type (Sig)		Sinusoidal, Square, Triangular			
Signal Input Voltage Range		(15 to 500) V			
Overall Frequency Range		(5 to 135) Hz		(40 to 70) Hz	
Frequency Selection	A	B	Frequency (Full Scale selected)	X	50/60 Frequency
	0	0	15 Hz	NA	0 50 Hz
	1	0	45 Hz	NA	1 60 Hz
	0	1	135 Hz	NA	1 60 Hz
	1	1	N.A.		
Trip Levels	Over Frequency (F _{ovr})	0.33 to 1 of Full Scale			(+1 to +10) Hz
	Under Frequency (F _{und})	N.A.			(-1 to -10) Hz
Trip Levels For Signal Frequency	Reset Hysteresis (%) (F _{rst})	-1.5 % of Full Scale selected			-1.5 % for OF & +1.5 % for UF, of selected Frequency Range.
	Setting Accuracy (%)	± 5 % of Full Scale selected			
	Repeat Accuracy (%)	± 0.02 % of Full Scale selected			
Response Time	Operate Time (OT)	< 2 sec.			
	Release Time (RT)	< 1 sec.	500 ms - 5 s		
	Reset Time	< 150 ms			
LED Indications	Green LED	Continuous OFF	Power Fail		
		Continuous ON	Power Supply Healthy		
	Red LED	Continuous ON	Relay ON		
		Continuous OFF	Relay OFF		
		Flashing	No Signal		
	UF Red LED	Continuous OFF	NA		
		Continuous ON	Under Frequency Signal (F _{IN} < F _{UND})		
	OF Red LED	Continuous OFF	NA		
		Continuous ON	Over Frequency Signal (F _{IN} > F _{ovr})		
	All LEDs	Continuous OFF	Power Fail		
Flashing		Switch Position is changed during Runtime			
UF & OF	Both Flashing	NA		No Signal	
Degree of Protection		IP-40 Enclosure, IP-20 Terminals			
Pollution Degree		II			
Storage Temperature		-40°C to + 80°C			
Operating Temperature		-15°C to + 60°C			
Relative Humidity		95% (without condensation)			
Mounting		Base / Din Rail			
Maximum Operating Altitude		2000 m			

CONFORMITY TO STANDARDS:

EMC:

Harmonic Current Emission	IEC 61000-3-2	Ed. 3.0 (2005-11) Class A
Product	IEC 60255	Ed. (2005-12)
ESD	IEC 61000-4-2	Ed. 1.2 (2001-04) Level II
Radiated Susceptibility	IEC 61000-4-3	Ed. 3.0 (2006-02) Level III
Electrical Fast Transients	IEC 61000-4-4	Ed. 2.0 (2004-07) Level IV
Surge	IEC 61000-4-5	Ed. 2.0 (2005-11) Level IV
Conducted Susceptibility	IEC 61000-4-6	Ed. 2.2 (2006-05) Level III
Voltage Dips, Short Interruptions and Voltage Variations	IEC 61000-4-11 (AC)	Ed.2.0 (2004-11)
Conducted Emission	CISPR 14-1	Ed. 5.0 (2005-11) Class A
Radiated Emission	CISPR 14-1	Ed. 5.0 (2005-11) Class B

SAFETY:

Test Voltage between I/P and O/P	IEC 60947-5-1 Ed.3.0 (2003-11) 2 kV
Test Voltage between all terminals	4 kV (between I/P, O/P and Enclosure)
Impulse Voltage between I/P and O/P	IEC 60947-5-1 Ed. 3.0 (2003-11) Level IV
Single Fault	IEC 61010-1 Ed. 2.0 (2001-02)
Insulation Resistance	UL 508 Ed. 17 (1999-01)
Leakage Current	UL 508 Ed. 17 (1999-01) <3.5 mA

ENVIRONMENTAL:

Cold Heat	IEC 61010-2-1 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)
Repetitive Shock	IEC 60068-2-27 Ed. 4.0 (2008-02), 40 g, 6 ms
Non-Repetitive Shock	IEC 60068-2-27 Ed. 4.0 (2008-02), 30 g, 6 ms

FUNCTIONAL DESCRIPTION:

Common for MI81BJ, MI91BJ, MI81BL & MI91BL

Frequency Monitoring Relay is used to monitor the frequency of the input signal (FIN) applied at the terminal B1 with respect to B2. Relay output operates as per healthy or unhealthy condition. For over frequency, the healthy or unhealthy condition occurs if the frequency of the input signal (FIN) falls below or rises above the set limit respectively. Similarly for under frequency, the healthy or unhealthy condition occurs if the frequency of the input signal (FIN) rises above or falls below the set limit respectively. Before device RESET, set the frequency range and trip setting by using DIP switches as mentioned in 'Technical Characteristics'. The device operates at the input signal (FIN) level from 15V to 500V for sinusoidal, triangular, square waveforms. Auxiliary supply voltage should be applied to device between terminals A1- A2. In faulty condition, for "ET" (Energize to Trip) the output connects and for "DT" (De-energize to Trip) the output disconnects. Similarly if fault is recovered then, for "ET" (Energize to Trip) the output disconnects and for "DT" (De-energize to Trip) the output gets connect. The Operate Time (OT) is the time for output changeover if the fault is recovered, irrespective of "ET" (Energize to Trip) and "DT" (De-energize to trip). Similarly, the release time RT is the time for output change

Only for MI81BJ & MI91BJ

One of the three frequency ranges can be selected using DIP switches (A and B). (Please refer to details under technical specifications)

The fault occurs in following conditions,

1. If invalid key position is selected at reset.
2. If no signal is applied.
3. If the frequency (FIN) is above threshold over frequency (FOVR) set by the Potentiometer.
The fault recovers if the signal frequency (FIN) is below the reset hysteresis frequency (FRST).

Only for MI81BL & MI91BL

The frequency range, 50 or 60 Hz can be selected using DIP switch at respective position. The fault occurs in following conditions.

1. If no signal is applied.
2. If the signal frequency (FIN) is not within the range set by the "UF" and "OF" potentiometer for selected range. The fault is indicated by the corresponding LED. The fault recovers if the signal frequency resumes within hysteresis range set by the "UF" and "OF" potentiometer.

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 Controls Pvt. Ltd, through website <https://www.gicindia.com/get-in-touch/>

