Technical Characteristics :

Cat. Nos.			MI81BJ	MI91BJ	MI81BL	MI91BL
Supply Voltage (U_n)			(110-240) VAC	(220-440) VAC	(110-240) VAC	(220-440) VAC
Supply Variation			-15% to +15% of U_n			
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 Ie rated current		120/240 V 3/1.5 A			
Utilization Category DC-13	Ue rated voltage Ie rated current		125/250 V 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 Range Selection			A B Frequency Range 0 0 (5 to 15) Hz 1 0 (15 to 45) Hz 0 1 (45 to 135) Hz 1 1 N.A.		50 Hz 60 Hz	
Trip Levels		Over Frequency (F_{0VR})	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			
		Setting Accuracy (%)	± 5%			
		Repeat Accuracy (%)	± 0.02%			
Response Time		Operate Time (OT)	500 ms(Fixed)			
		Release Time (RT)	500 ms(Fixed)		500 ms - 5 s	
		Reset Time	< 150 ms			
LED Indications		Continuous OFF	Power Fail			
		Continuous ON	Power Supply Healthy			
	Er	Continuous ON	Relay ON		Not Applicable	
		Continuous OFF	Relay OFF			
		Flashing	No Signal			
	UF	Continuous OFF	Not Applicable		$F_{IN} > F_{UND}$	
		Continuous ON			Under Frequency Signal	
	OF	Continuous OFF	Not Applicable		$F_{IN} < F_{0VR}$	
		Continuous ON			Over Frequency Signal	
	All LEDs	Continuous OFF	Power Fail			
		Flashing	Switch Position is changed during Runtime			
Degree of Protection			IP-40 Enclosure, IP-20 Terminals			
Pollution Degree			II			
Ambient						
Storage Temperature			-15 °C to +60 °C			
Operating Temperature			-20 °C to +80 °C			
Relative Humidity			95% (without condensation)			
Operating Position			Any			
Maximum Operating Altitude			2000 m			

Frequency Monitoring Series PD225

Cat. Nos.

MI81BJ/MI91BJ (Over Frequency Control)

MI81BL/MI91BL (Under /Over Frequency Control)

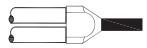
CE RoHS

⚠ Caution:

1. Signal input should be applied to terminal B1 with respect to B2.
2. Always follow instruction stated this product leaflet.
3. Before installation, check to ensure that the specifications agree with the intended application.
4. Installation to be done by skilled electrician.
5. Automation and control devices must be installed properly so that theyare protected against any risk of involuntary actuations.
6. Suitable dampers should be provided in the event of excessive vibrations.

Note:Product innovation being a continuous process, we reserve the right to alter specifications with out any prior notice.

Terminal Details:

 Ø3.5....4.0mm	0.6 N.m (6 Lb.in) Terminal screw - M3
	1 x 1...4 mm² Solid Wire / Single Wire Ferrule
	2 x 0.5...2.5 mm² Insulated Twin Wire Ferrule
AWG	1 x 17 to 11

Features:

Common for MI81BJ, MI91BJ, MI81BL & MI91BL

- Operable in various auxiliary supply voltage conditions by selecting proper.
- Accuracy Is maintained even with +15%.
- Operable in various frequency range by selecting proper model.
- Wide input level range.
- Monitors Frequency of three signals .
  1. Sine 2. Square 3. Triangular.
- Adjustable Relay status in healthy or unhealthy condition using DIP switch "ET"(Energize to Trip) or "DT" (De-energize to trip)
- SPDT Relay Output.
- LED indications for healthy, unhealthy and no signal conditions.
- DIN Rail & Base mounting.

Only for MI81BJ & MI91BJ

- Selectable over frequency from wide range.

Only for MI81BL & MI91BL

- Selectable frequency range of 50 Hz or 60 Hz with under frequency and over frequency setting of 1 to 10 Hz using "UF" and "OF" potentiometer.
- The release time can be set from 500 ms to 5 s using RT potentiometer.

Functional Description:

Common for MI81BJ, MI91BJ, MI81BL & MI91BL

Frequency Monitoring Relay is sensitive to the frequency of the signal applied at the terminal B1 with respect toB2.The frequency range and trip setting should be set before device RESET.
Functionality is independent of input signal level B1-B2, within a wide range from 15 V to 500 V and response is independent of the input signal waveform (Sinusoidal, Triangular, Square). Auxiliary supply voltage should be applied to device between terminals A1- A2 to produce connection.The output connects or disconnects in faulty condition depending on the selection of ET(Energize to Trip) or DT(De-energize to Trip) switch position respectively and vice versa if the fault is recovered.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 over if the fault occurs, irrespective of "ET" (Energize to Trip) and (De-energizeto Trip).

Only for MI81BJ & MI91BJ

One of the three frequency ranges can be selected using ON/OFF 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(F_{IN}) is above threshold over frequency (F_{ovr}) set by The Potentiometer. The fault recovers if the signal frequency (F_{IN}) is below the Reset Hysteresis frequency(F_{RST}).

Only for MI81BL & MI91BL

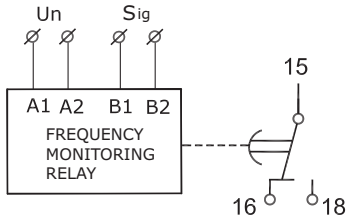
The frequency range, 50 or 60 Hz can be selected using ON / OFF switch at respective position.The fault occurs in following conditions.

1. If no signal is applied.
2. If the signal frequency (F_{IN}) 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.

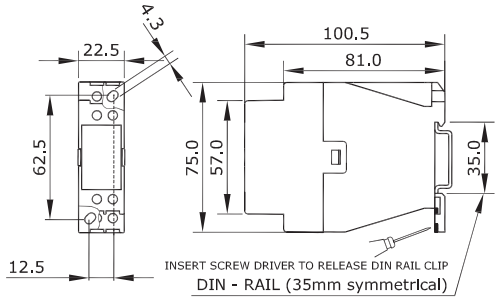
Only for MI81BL & MI91BL

The frequency range, 50 or 60 Hz can be selected using ON/OFF switch at respective position.
The fault occurs in following conditions,
1. If no signal is applied.
2. If the signal frequency(F_{IN}) is not within the range set by the "UF" and "OF "potentiometer for selected range . The fault is indicated by the corres.
ponding LED. The fault recovers if the signal frequency resume with in Hysteresis range set by the "UF" and "OF" potentiometer.

Connection Diagram:



Overall product dimensions and mounting details: (in mm)



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) evel 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 and enclosure	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 (19999-01) <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

Function Diagram: