

**TECHNICAL SPECIFICATION:**
**53885**
**SUPPLY MONITORING DEVICE  
SERIES SM175**

**Cat. No.:**
**MK21D5  
MC21D5  
MA21DN  
MD21DF  
MG21DH  
MG21DF  
MN21D5  
MGD1DR**
**⚠ Caution :**

- 1) Do not touch the terminals while power is being supplied.
- 2) Tighten terminal screws with the specified torque.
- 3) Always follow instructions stated in product leaflet.
- 4) Before installation, ensure that specifications agree with intended application.
- 5) Installation to be done by skilled electrician.
- 6) Suitable dampers should be provided in the event of excessive vibrations.

**Suitability for use :**

These are products with Auto reset and Auto Switch On, hence never use the products for an application involving significant risk to life without ensuring that the system as a whole has been designed to address the risks and that our products are properly rated and installed for the intended use within the entire system or equipment.

**Notice :**

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

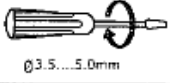


Cat. No.:		MK21D5	MC21D5	MN21D5	MA21DN	MD21DF	MG21DH	MG21DF	MGD1DR
Function		Phase Control				Phase and Voltage Control			
Supply Voltage (Φ)		208 to 480 VAC, 3-Ph -3Wire (-12% to +10% of Φ)						400 VAC, 3-Ph-3Wire (Fix)	
Frequency		47 to 63 Hz							
Power Consumption		3 VA (Max.)							
Adjustable Nominal Voltage (Φ)		N.A.				208 - 220 - 380 - 400 - 415 - 440 - 480 VAC		N.A.	
Trip Levels	Under Voltage	N.A.			-2%to-20% of Φ		-5%to-25% of Φ		
	Over Voltage	N.A.			2%to20% of Φ		5%to25% of Φ		
	Asymmetry	N.A.		30% fixed	5% to 15%	N.A.	10% fixed		
Setting Accuracy		+/- 5% of full scale							
Time Delay Setting Accuracy +/- 10 % of Full scale	Operate Time	500 ms fixed			5 s fixed	5 s fixed	~500 ms to 100 s	5 s fixed	~500 ms to 100 s
	Release Time	~ 500 ms			(< 0.5 to 15) s	(< 0.5 to 15) s	5 s fixed	(< 0.5 to 100) s	~500 ms to 15 s
In the event of phase sequence or phase loss fault, release time is ~100 ms									
LED Indications	R/Φ	Healthy	R Continuous ON			Φ Continuous ON			
		Phase Reverse	R Flashing		N.A.	R Flashing	Φ Flashing		
		Asymmetry	N.A.	R OFF		R OFF	N.A.		
	OV	N.A.			Over Voltage				
	UV	N.A.			Under Voltage				
	AS	N.A.			Asymmetry				
	ALL LEDS	OFF	Phase Fail / Supply Voltage > 560 VAC			Φ Pot changed during running conditions			N.A.
Output	Relay	1 C/O , 5A (Res.) @ 250 VAC / 30 VDC							
	Utilization	AC - 15	Rated Voltage (Ue): 120/240 V; Rated Current (Ie): 3.0/1.5 A						
	Category	DC - 13	Rated Voltage (Ue): 24/125/250 V; Rated Current (Ie): 2.0/0.22/0.1 A						
	Contact Material	Ag Alloy							
Mechanical Life Expectancy		3 x 10 <sup>6</sup> Operations							
Electrical Life Expectancy		1 x 10 <sup>5</sup> Operations							
Operating Temperature		-15°C to +60°C							
Storage Temperature		-20°C to +80°C							
Humidity (Non-Condensing)		95 % (Rh)							
Max. Operating Altitude		2000 m							
Degree of Protection		IP-20 for Terminals ; IP-30 for Housing							
Pollution Degree		2							
Housing		Flame Retardant UL 94-V0							
Mounting		Base / Din-Rail (35 mm Symmetrical)							
Dimensions in mm (WxHxL)		18 x 59 x 90							
Weight (Unpacked)		70 g Approx.							
Certifications		CE , RoHS							

**SUPPLY MONITORING DEVICE  
SERIES SM175**

**MAIN FEATURES :**

- Controls own supply voltage.
- Multi-voltage from 3x208 to 3x480 V
- LED status indication.
- SPDT Relay output (5 A resistive)
- Din Rail & Base mounting.

**Terminal Details :**

	1.1 N.m (10 Lb.in) Terminal screw - M3.5
	2 x 0.2 ... 2.5 mm <sup>2</sup> Solid Wire
	1 x 24 to 10

**CERTIFICATION :**

EMI/EMC:		
Harmonic Current Emissions	IEC 61000-3-2	Ed. 3.0 (2005-11) Class A
ESD	IEC 61000-4-2	Ed. 1.2 (2001-04) Level III
Radiated Susceptibility	IEC 61000-4-3	Ed. 3.0 (2006-02) Level III
Electrical Fast Transient	IEC 61000-4-4	Ed. 2.0 (2004-07) Level IV
Surge	IEC 61000-4-5	Ed. 2.0 (2005-11) Level III
Conducted Susceptibility	IEC 61000-4-6	Ed. 2.2 (2006-05) Level III
Voltage Dips & Interruptions(AC)	IEC 61000-4-11	Ed. 2.0 (2004-03)
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 & O/P	IEC 60947-5	Ed. 3.0 (2002-12) 2 kV
Impulse Voltage Between I/P & O/P	IEC 60947 - 5-1	Ed. 3.0 (2003-11) Level IV
Single Fault	IEC 61010-1	Ed. 2.0 (2001-02) Level IV
Insulation Resistance	UL 508	Ed.17 (1999-01) >50 kΩ
Leakage Current	UL 508	Ed.17 (1999-01) <3.5mA
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) 5g
Repetitive Shock	IEC 60068-2-27	Ed. 4.0 (2008-02) 40g, 6ms
Non-repetitive Shock	IEC 60068-2-27	Ed. 4.0 (2008-02) 30g, 15ms

**FUNCTIONAL DESCRIPTION:**

**MK21D5**

Controls:-

1. Correct sequence of three phases.
2. Failure of any of three phases when voltage falls below rated minimum of threshold.

**MC21D5**

Controls:-

1. Correct sequence of the three phases.
2. Failure of any of the three phases.
3. Failure due to Asymmetry fixed at 30%.

**MA21DN**

Controls:-

1. Correct sequence of the three phases.
2. Failure of any of the three phases .
3. Failure due to Asymmetry adjustable from 5% to 15%.

**MD21DF**

Controls:-

1. Correct sequence of the three phases.
2. Failure of any of the three phases.
3. Under & Over Voltage adjustable from 2 to 20% of Un  
(Up to - 12% across 3x208 V Range;  
Up to - 16% across 3x220 V Range;  
Up to +10% across 3x480 V Range)

**MGD1DR**

Controls:-

1. Correct sequence of the three phases.
2. Failure of any of the three phases.
3. Under & Over Voltage adjustable from 5 to 25%.
4. Failure due to Asymmetry fixed at 10%.

**MG21DH/MG21DF**

Controls:-

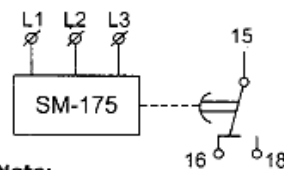
1. Correct sequence of the three phases.
2. Failure of any of the three phases.
3. Under & Over Voltage adjustable from 5 to 25% of Un  
(Up to - 12% across 3x208 V Range;  
Up to - 16% across 3x220 V Range;  
Up to +20% across 3x440 V Range;  
Up to +10% across 3x480 V Range)
4. Failure due to Asymmetry fixed at 10%.

**MN21D5**

Controls:-

1. Failure of any of the three phases.
2. Failure due to Asymmetry fixed at 30%.

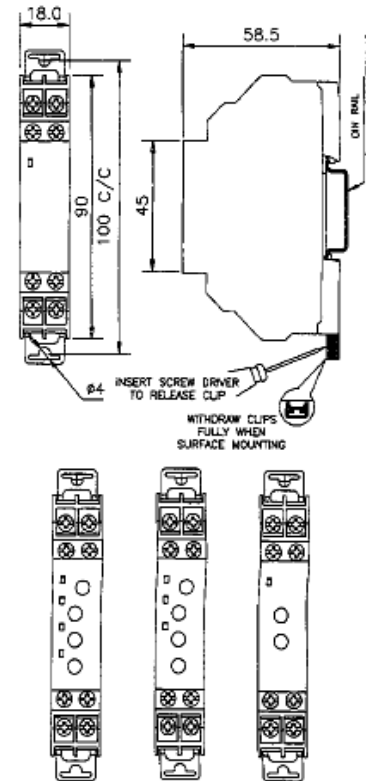
**CONNECTION DIAGRAM**



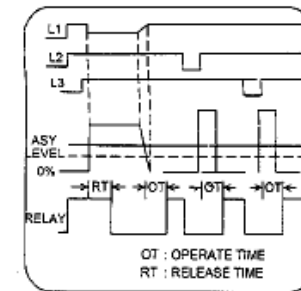
**Note:**

1. In case of MC21D5, MG21DH/MG21DF, phase imbalance levels are fixed. So, for very large motors with excessive back e.m.f. relay suitability to be checked by the user.
2. Minimum threshold supply voltage of tripping is 140 VAC for MK21D5, MC21D5.

**OVERALL & MOUNTING  
DIMENSIONS (in mm)**

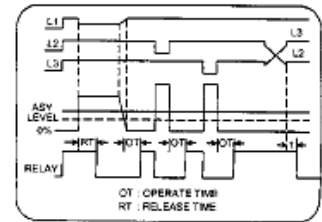


**MN21D5**

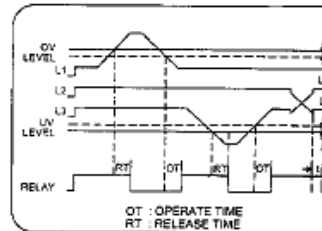


**FUNCTION DIAGRAM**

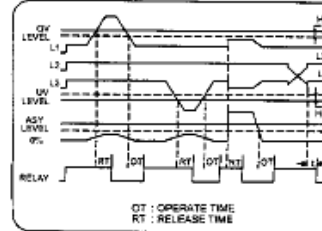
**MA21DN / MC21D5**



**MD21DF**



**MG21DH/MG21DF/MGD1DR**



**MK21D5**

