

Supply Monitoring Series SM 175

- Compact 17.5 mm Wide
- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- Multi-Voltage: 3 x 208 to 3 x 480 V
- Selectable Under Voltage / Over Voltage & Asymmetry
- LED Indication for all Faults & for change in settings during run time for better security
- Adjustable Time Delay
- 1 C/O Configuration



Cat. No.		MN21D5	MK21D5	MC21D5	MA21DN
Parameters					
Supply Voltage (Φ)		208 - 480 VAC, (3 Phase 3 Wire)			
Supply Variation		-12% to + 10% (of Φ)			
Frequency		50/60 Hz			
Power Consumption (Max.)		3.5 VA			
Trip Levels	Phase Loss	Yes	Yes	Yes	Yes
	Phase Sequence	N A	Yes	Yes	Yes
	Phase Asymmetry	N A	N A	30% Fixed	5% to 15%
Time Delay	ON Delay	500 ms	500 ms	500 ms	5s
	Trip Time (OFF Delay)	100 ms	100 ms	100 ms	0.5 to 15 s (Selectable)
Output	Relay Output	1 C/O			
	Contact Rating	5A @ 250 VAC / 30 VDC (Resistive)			
	Electrical Life	1X10 ⁵			
	Mechanical Life	3X10 ⁶			
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 Indication	Healthy	Relay LED Continuous ON			
	Phase Reverse	N A	Relay LED Flashing		
	Asymmetry	N A	N A	Relay LED Off (Red Colour)	
Operating Temperature		- 15° C to +60° C			
Storage Temperature		- 20° C to +70° C			
Humidity (Non Condensing)		95% (Rh)			
Enclosure		Flame Retardant UL 94-V0			
Dimension (W x H x D) (in mm)		17.5 X 90 X 58.5			
Weight (unpacked)		70 g			
Mounting		Base / DIN rail			
Degree of Protection		IP 20 for Terminal, IP 30 for Enclosure			
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 Transients		IEC 61000-4-4	Ed. 2.0 (2004-07) Level IV		
Surges		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 & Interruptions (AC)		IEC 61000-4-11	Ed. 2.0 (2004-03) Level All 7 Levels		
Conducted Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A		
Radiated Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class B		
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		

ORDERING INFORMATION

Cat. No.	Description
MN21D5	208 - 480 VAC, Phase Loss Monitoring, 1 C/O
MK21D5	208 - 480 VAC, Phase Loss, Phase Sequence Monitoring , 1 C/O
MC21D5	208 - 480 VAC, Phase Loss, Phase Sequence, Phase Asymmetry Monitoring (30% Fixed), 1 C/O
MA21DN	208 - 480 VAC, Phase Loss, Phase Sequence, Phase Asymmetry Monitoring (5% to 15% Variable), 1 C/O

Supply Monitoring Series SM 175

Cat. No.		MD21DF	MG21DH	MG21DF	MGD1DR
Parameters					
Supply Voltage (ϕ)		208 - 480 VAC, (3 Phase 3 Wire)			400 VAC, (3 Phase 3 Wire)
Supply Variation		-12% to + 10% (of ϕ)			
Frequency		50/60 Hz			
Power Consumption (Max.)		3.5 VA			
Settable Nominal Voltage		208 - 220 - 380 - 400 - 415 - 440 - 480 VAC			N A
Trip Levels	Phase Loss	Yes			
	Phase Sequence	Yes			
	Phase Asymmetry	N A		10% Fixed	
	Under Voltage	-2% to -20% (of ϕ)		-5% to -25% (of ϕ)	
	Over Voltage	+2% to +20% (of ϕ)		+5% to +25% (of ϕ)	
Time Delay	ON Delay	5 s	0.5 to 15 s (Selectable)	5 s	0.5 to 100 s (Selectable)
	Trip Time (OFF Delay)	0.5 to 15 s (Selectable)	5 s	0.5 to 15 s (Selectable)	0.5 to 15 s (Selectable)
Output	Relay Output	1 C/O			
	Contact Rating	5A @ 250 VAC / 30 VDC (Resistive)			
	Electrical Life	1X10 ⁵			
	Mechanical Life	3X10 ⁶			
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 Indication	DC - 13	Red LED: Supply Healthy → Continuous ON, Phase Reverse → Flashing			
	UV	Red LED: Under Voltage → Continuous ON			
	OV	Red LED: Over Voltage → Continuous ON			
	Asymmetry	Red LED: Asymmetry → Continuous ON			
	All LED's	Phase Fail → Continuous OFF, Blinking → Pot changed during running conditions			
Operating Temperature		- 15° C to +60° C			
Storage Temperature		- 20° C to +70° C			
Humidity (Non Condensing)		95% (Rh)			
Enclosure		Flame Retardant UL 94-V0			
Dimension (W x H x D) (in mm)		18 X 90 X 59			
Weight (unpacked)		70 g			
Mounting		Base / DIN rail			
Degree of Protection		IP 20 for Terminal, IP 30 for Enclosure			
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 Transients		IEC 61000-4-4	Ed. 2.0 (2004-07) Level IV		
Surges		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 & Interruptions (AC)		IEC 61000-4-11	Ed. 2.0 (2004-03) Level All 7 Levels		
Conducted Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A		
Radiated Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class B		
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		

ORDERING INFORMATION

Cat. No.	Description
MD21DF	208 - 480 VAC, Under Voltage / Over Voltage, Phase Sequence & Phase Loss Monitoring with Selectable ON Delay, 1 C/O
MG21DH	208 - 480 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable ON Delay, 1 C/O
MG21DF	208 - 480 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable OFF Delay, 1 C/O
MGD1DR	208 - 480 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable ON Delay & OFF Delay, 1 C/O

Supply Monitoring Series SM 301

- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- No Auxiliary Supply needed
- Voltage Sensing principle
- 1 C/O & 2 C/O Configurations
- Designed to meet Industrial and Agricultural segment applications



Cat. No.		MA51BK	MA51BC	MC21B5
Parameters				
Supply Voltage (≠)		415 VAC		
Frequency		50/60 Hz		
Power Consumption (Max.)		15 VA		
Trip Settings	Phase Loss	Yes	Yes	Yes
	Phase Sequence	Yes	Yes	Yes
	Phase Asymmetry	40 V (± 10 V)	65 V (± 10V)	65 V (± 10V)
	Hysteresis	10 to 18 V	10 to 18 V	10 to 18 V
Time Delay	ON Delay	2 s (± 2 s)	2 s (± 2 s)	< 550 ms
	Trip Time (OFF Delay)	7 s (± 2 s)	7 s (± 2 s)	< 550 ms
Output	Relay Output	1 C/O		2 C/O
	Contact Rating	5A (For 'NO') & 3A (For 'NC') @ 250 VAC / 28 VDC (Resistive)		5A @ 250 VAC / 28 VDC (Resistive)
	Electrical Life	1X10 ⁵		
	Mechanical Life	3X10 ⁶		
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 Indication		Red → Relay ON (Healthy)		See Note 1
Operating Temperature		- 10° C to + 50° C		
Storage Temperature		- 20° C to + 65° C		
Humidity (Non Condensing)		95% (Rh)		
Enclosure		Flame Retardant UL 94-V0		
Dimension (W x H x D) (in mm)		36 X 90 X 60		
Weight (unpacked)		120 g		
Mounting		Base / DIN rail		
Degree of Protection		IP20 for Terminals, IP 40 for Enclosure		
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 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	
Surges		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 & Interruptions (AC)		IEC 61000-4-11	Ed. 2.0 (2004-03) Level All 7 Levels	
Conducted Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A	
Radiated Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A	
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	

ORDERING INFORMATION



Cat. No.	Description
MA51BK	415 VAC, Single Phasing Preventor with 40 VAC Asymmetry, 1 C/O
MA51BC	415 VAC, Single Phasing Preventor with 65 VAC Asymmetry, 1 C/O
MC21B5	415 VAC, Single Phasing Preventor with 65 VAC Asymmetry, 2 C/O

Note 1:- ON: Relay ON, OFF: Phase Loss, Blinking: Asymmetry (200 ms, On/Off), Flashing: Phase Sequence (1 s, On/Off)

Supply Monitoring Series SM 500

- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- Can be configured for 3 Phase 4 Wire or 1 Phase system
- Selectable Over Voltage / Under Voltage Trip level
- Selectable Time Delay
- LED Indications for Power and Fault conditions
- Voltage Sensing principle
- 1 C/O or 2 C/O Configuration



Cat. No.		MD71B9	MD71BH	MD71BF
Parameters				
Supply Voltage (ϕ)		240 VAC (1 Phase & 3 Phase, 4 Wire)		
Frequency		50/60 Hz		
Power Consumption (Max.)		5 VA		
Trip Settings	Phase Loss	Yes	Yes	Yes
	Phase Sequence	N.A	N.A	N.A
	Phase Asymmetry	N.A	N.A	N.A
	Under Voltage	55% to 95% (of ϕ)		
	Over Voltage	105% to 125% (of ϕ)		
Time Delay	ON Delay	0 to 15 min (Selectable)	0 to 15 s (Selectable)	5 s
	Trip Time (OFF Delay)	5 s	5 s	0 to 15 s (Selectable)
Output	Relay Output	1 C/O		
	Contact Rating	5A @ 250 VAC / 28 VDC (Resistive)		
	Electrical Life	1X10 ⁵		
	Mechanical Life	3X10 ⁶		
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 Indication		Separate indications for Power ON, UV and OV		
Operating Temperature		-10° C To + 55° C		
Storage Temperature		-25° C To + 70° C		
Humidity (Non Condensing)		95% (Rh)		
Enclosure		Flame Retardant UL 94-V0		
Dimension (W x H x D) (in mm)		36 X 90 X 60		
Weight (unpacked)		120 g		
Mounting		Base / DIN rail		
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure		
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 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	
Surges		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 & Interruptions (AC)		IEC 61000-4-11	Ed. 2.0 (2004-03) All 7 Levels	
Conducted Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A	
Radiated Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A	
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	
Note: 1) Voltage setting is with respect to Neutral. Voltage Setting Accuracy: $\pm 5\%$ of Full Scale; Time Setting Accuracy: $\pm 10\%$ of Full Scale				

ORDERING INFORMATION

Cat. No.	Description
MD71B9	240 VAC, Under Voltage / Over Voltage with Selectable ON Delay (0 to 15 min), 1 C/O
MD71BH	240 VAC, Under Voltage / Over Voltage with Selectable ON Delay (0 to 15 sec), 1 C/O
MD71BF	240 VAC, Under Voltage / Over Voltage with Selectable OFF Delay (0 to 15 sec), 1 C/O

Supply Monitoring Series SM 500



Cat. No.		MG73B9	MG73BH	MG73BF
Parameters				
Supply Voltage (ϕ)		240 VAC (1 Phase & 3 Phase, 4 Wire)		
Frequency		50/60 Hz		
Power Consumption (Max.)		5 VA		
Trip Settings	Phase Loss	Yes		
	Phase Sequence	Yes		
	Phase Asymmetry	10% (of ϕ)		
	Under Voltage	55% to 95% (of ϕ)		
	Over Voltage	105% to 125% (of ϕ)		
	Hysteresis	7 V (\pm 2 V)		
Time Delay	ON Delay	0 to 15 min (Selectable)	0 to 15 s (Selectable)	5 s
	Trip Time (OFF Delay)	5 s	5 s	0 to 15 s (Selectable)
Output	Relay Output	2 C/O		
	Contact Rating	5A @ 250 VAC / 28 VDC (Resistive)		
	Electrical Life	1X10 ⁵		
	Mechanical Life	3X10 ⁶		
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 Indication		Separate indications for Power ON, UV and OV; ON: Phase Reverse; BLINK: Phase Asymmetry		
Operating Temperature		-10° C To + 55° C		
Storage Temperature		-25° C To + 70° C		
Humidity (Non Condensing)		95% (Rh)		
Enclosure		Flame Retardant UL 94-V0		
Dimension (W x H x D) (in mm)		36 X 90 X 60		
Weight (unpacked)		120 g		
Mounting		Base / DIN rail		
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure		
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 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	
Surges		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 & Interruptions (AC)		IEC 61000-4-11	Ed. 2.0 (2004-03) All 7 Levels	
Conducted Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A	
Radiated Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A	
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	

Note: 1) Voltage setting is with respect to Neutral. Voltage Setting Accuracy: \pm 5 % of Full Scale; Time Setting Accuracy: \pm 10 % of Full Scale



ORDERING INFORMATION

Cat. No.	Description
MG73B9	240 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable ON Delay (0 to 15 min), 2 C/O
MG73BH	240 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable ON Delay (0 to 15 sec), 2 C/O
MG73BF	240 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable OFF Delay (0 to 15 sec), 2 C/O

Supply Monitoring Series SM500 - Neutral Loss Protection



- Phase loss (failure) detection.
- Neutral loss detection.
- Phase reverse detection.
- Phase asymmetry.
- Adjustable Over & Under voltage trip level.
- LED indication for all failure conditions.
- Automatic recovery on fault removal.

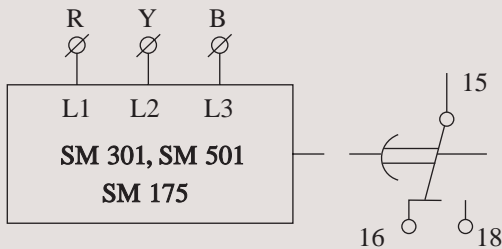
Cat. No.		MAC04D0100			
Parameters					
Supply Voltage (φ)		415 VAC (Ph-Ph); 3 Phase, 4 Wire			
Frequency		50/60 Hz			
Power Consumption (Max.)		10 VA			
Trip Settings	Phase Loss	Yes			
	Phase Sequence	Yes			
	Phase Asymmetry	94V±4V (Ph-Ph)			
	Under Voltage	55% to 95% (of φ)			
	Over Voltage	105% to 125% (of φ)			
	Hysteresis	7 V (± 2 V)			
Time Delay	ON Delay	5 s ±1 s (Fixed)			
	Trip Time (OFF Delay)	For Phase failure phase Imbalance	5 s ±1 s (Fixed)		
		Under voltage / Over Voltage	500 ms -1s		
Output	Relay Output	2 C/O			
	Contact Rating	5A @ 250 VAC / 28 VDC (Resistive)			
	Electrical Life	1X10 ⁵			
	Mechanical Life	3X10 ⁶			
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 on front plate	Respective fault condition will be indicated by LED immediately & Relay will be tripped after specified trip time only.				
		GREEN LED	RED LED 1	RED LED 2	RED LED 3
	Power ON	ON	OFF	OFF	OFF
	Phase reverse	ON	OFF	OFF	ON
	Asymmetry	ON	OFF	OFF	BLINK
	UV	ON	ON	OFF	OFF
	OV	ON	OFF	ON	OFF
	Phase Fail	BLINK	OFF	OFF	OFF
Neutral Fail	ON	BLINK	BLINK	BLINK	
Operating Temperature	-10° C To + 55° C				
Storage Temperature	-25° C To + 70° C				
Humidity (Non Condensing)	95% (Rh)				
Enclosure	Flame Retardant UL 94-V0				
Dimension (W x H x D) (in mm)	36 X 90 X 60				
Weight (unpacked)	120 g				
Mounting	Base / DIN rail				
Degree of Protection	IP 20 for Terminals, IP 40 for Enclosure				
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 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			
Surges	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 & Interruptions (AC)	IEC 61000-4-11	Ed. 2.0 (2004-03) All 7 Levels			
Conducted Emission	CISPR 14-1	Ed. 5.0 (2005-11) Class A			
Radiated Emission	CISPR 14-1	Ed. 5.0 (2005-11) Class A			
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			

ORDERING INFORMATION

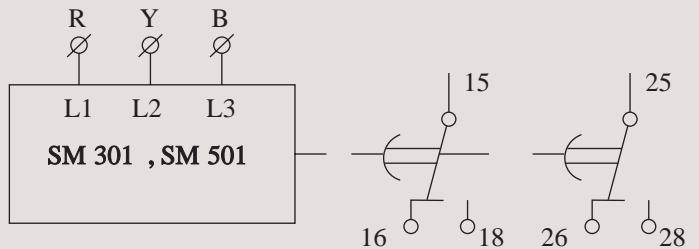
Cat. No.	Description
MAC04D0100	415V AC, Neutral Loss Protection with Phase and Voltage Control, 2 C/O



CONNECTION DIAGRAM

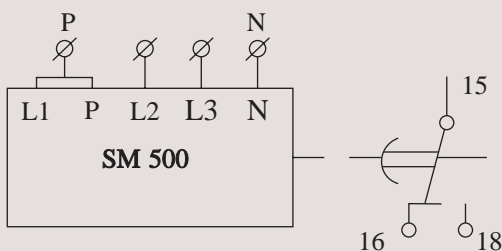


MA51BC, MA51BK, MN21D5, MK21D5, MC21D5
MA21DN, MD21DE, MG21DH, MG21DE, MGD1DR

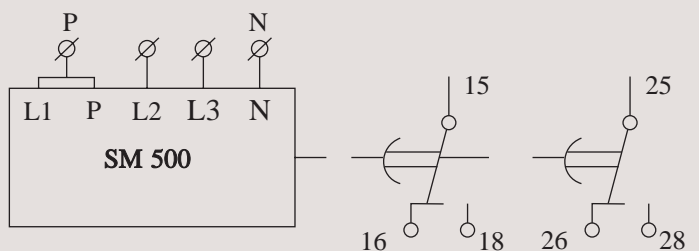


MG53BH, MG53BF, MG63BH, MG63BF
MG53BI, MG53BO, MB53BM, MC21B5

SINGLE PHASE

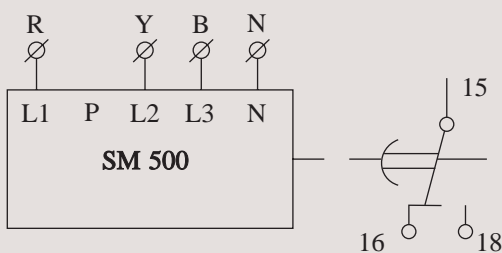


MD71BH, MD71BF, MD71B9

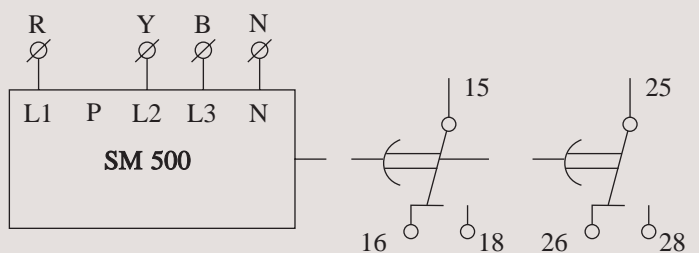


MG73BH, MG73BF, MG73B9

THREE PHASE

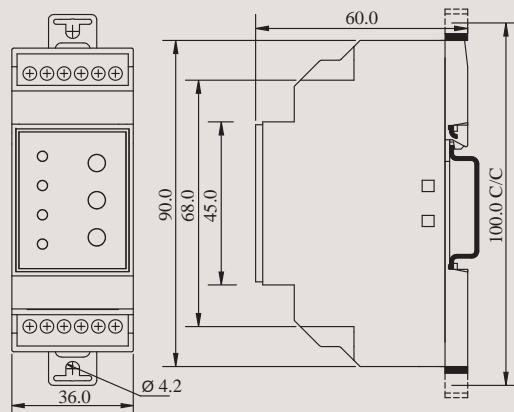


MD71BH, MD71BF, MD71B9

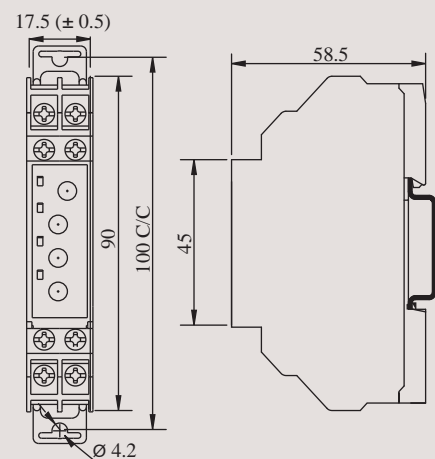


MG73BH, MG73BF, MG73B9, MAC04D0100

MOUNTING DIMENSION (mm)

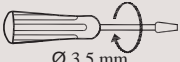



SM 301, SM 500, SM 501





SM 175

TERMINAL TORQUE & CAPACITY

 Ø 3.5 mm	Torque - 0.54 N.m (5 Lb.in) Terminal screw - M2.6
	Solid Wire - 1 X 0.2...3.3 mm ²
AWG	1 X 24 to 12

SM 301, SM 500, SM 501

 Ø 3.5...5.0 mm	Torque - 1.1 N.m (10 Lb.in) Terminal screw - M3.5
	Solid Wire - 2 X 0.2...2.5 mm ²
AWG	1 X 24 to 10

SM 175

Supply Monitoring Series SM 501

- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- Suitable for 3 Phase 3 Wire system
- Selectable Under Voltage / Over Voltage Trip level
- Selectable Time Delay
- Models for Selectable Phase Asymmetry
- LED Indications for Power and Fault conditions
- Voltage Sensing Principle
- 2 C/O Configuration



Cat. No.		MG53BH	MG53BF	MG63BH	MG63BF
Parameters					
Supply Voltage (φ)		415 VAC (3 Phase, 3 Wire)		220 VAC (3 Phase, 3 Wire)	
Frequency		50/60 Hz			
Power Consumption (Max.)		10 VA		5 VA	
Trip Settings	Phase Loss	Yes			
	Phase Sequence	Yes			
	Phase Asymmetry	10% (of φ)			
	Under Voltage	55% to 95% (of φ)			
	Over Voltage	105% to 125% (of φ)			
	Hysteresis	7 V (± 2 V) of Trip Voltage			
Time Delay	ON Delay	0 to 15 s (Selectable)	5 s	0 to 15 s (Selectable)	5 s
	Trip Time (OFF Delay)	5 s	0 to 15 s (Selectable)	5 s	0 to 15 s (Selectable)
Output	Relay Output	2 C/O			
	Contact Rating	5A @ 250 VAC / 28 VDC (Resistive)			
	Electrical Life	1X10 ⁵			
	Mechanical Life	3X10 ⁶			
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 Indication		Separate indications for Power ON, UV and OV; ON: Phase Reverse; BLINK: Phase Asymmetry			
Operating Temperature		-10° C To + 55° C			
Storage Temperature		-25° C To + 70° C			
Humidity (Non Condensing)		95% (Rh)			
Enclosure		Flame Retardant UL 94-V0			
Dimension (W x H x D) (in mm)		36 X 90 X 60			
Weight (unpacked)		120 g			
Mounting		Base / DIN rail			
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure			
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 Transients		IEC 61000-4-4	Ed. 2.0 (2004-07) Level IV		
Surges		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 & Interruptions (AC)		IEC 61000-4-11	Ed. 2.0 (2004-03) Level All 7 Levels		
Conducted Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A		
Radiated Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class B		
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		

Note: 1) Voltage Setting Accuracy: ± 5 % of Full Scale; Time Setting Accuracy: ± 10 % of Full Scale
 2) In the event of Phase Sequence or Phase Loss, OFF Delay is 100 ms

ORDERING INFORMATION

Cat. No.	Description
MG53BH	415 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable ON Delay (0.5 to 15 sec), 2 C/O
MG53BF	415 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable OFF Delay (0.5 to 15 sec), 2 C/O
MG63BH	220 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable ON Delay (0.5 to 15 sec), 2 C/O
MG63BF	220 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with Selectable OFF Delay (0.5 to 15 sec), 2 C/O

Supply Monitoring Series SM 501

Cat. No.		MG53BI	MG53BO	MG53BM
Parameters				
Supply Voltage (ϕ)		415 VAC (3 Phase, 3 Wire)		
Frequency		50/60 Hz		
Power Consumption (Max.)		10 VA		
Trip Settings	Phase Loss	Yes	Yes	Yes
	Phase Sequence	Yes	Yes	Yes
	Phase Asymmetry	94 V	10%	5% to 17%
	Under Voltage	55% to 95% (of ϕ)	85% (of ϕ) Fixed	80% (of ϕ) Symmetrical
	Over Voltage	105% to 125% (of ϕ)	110% (of ϕ) Fixed	N A
	Hysteresis	7 V (\pm 2 V) of Trip Voltage	7 V (\pm 2 V) of Trip Voltage	7 V (\pm 2 V) of Input Voltage
Time	ON Delay	5 s	3 min	0.5 to 15 s (Selectable)
Delay	Trip Time (OFF Delay)	5 s	5 s	0.5 to 15 s (Selectable)
Output	Relay Output	2 C/O		
	Contact Rating	5A @ 250 VAC / 28 VDC (Resistive)		
	Electrical Life	1X10 ⁵		
	Mechanical Life	3X10 ⁶		
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 Indication		Separate indications for Power ON, UV and OV; ON: Phase Reverse; BLINK: Phase Asymmetry		
Operating Temperature		-10° C To + 55° C		
Storage Temperature		-25° C To + 70° C		
Humidity (Non Condensing)		95% (Rh)		
Enclosure		Flame Retardant UL 94-V0		
Dimension (W x H x D) (in mm)		36 X 90 X 60		
Weight (unpacked)		120 g		
Mounting		Base / DIN rail		
Degree of Protection		IP 20 for Terminals, IP 40 for Enclosure		
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 Transients		IEC 61000-4-4	Ed. 2.0 (2004-07) Level IV	
Surges		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 & Interruptions (AC)		IEC 61000-4-11	Ed. 2.0 (2004-03) Level All 7 Levels	
Conducted Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class A	
Radiated Emission		CISPR 14-1	Ed. 5.0 (2005-11) Class B	
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	

ORDERING INFORMATION

Cat. No.	Description
MG53BI	415 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with 94 V Asymmetry, 2 C/O
MG53BO	415 VAC, Under Voltage / Over Voltage & Single Phasing Preventor with 3 min ON Delay & 5s OFF Delay, 2 C/O
MG53BM	415 VAC, Under Voltage & Single Phasing Preventor with Selectable Asymmetry (5% to 17%), 2 C/O