MONITORING DEVICES

Voltage Monitoring Series

SM 175

SM 301

SM 500

SM 501

Product Selection Chart: Voltage Monitoring

Three Phase Indicator

Frequency Monitoring Series PD 225

Current Monitoring Series

Earth Leakage Relay Series CMR

CMR - Current Control

Temperature Monitoring Series

PTC Thermistor Relay Series PD 225

PTC Thermistor & Single Phasing Preventer Series PD225

Equipment Room Temperature Control Relay

Level Monitoring Series

Liquid Level Controller

- 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



Ordering Information

Cat. No.	Description
MN21D5	208 - 480 VAC, Phase Loss Monitoring,
MK21D5	208 - 480 VAC, Phase Loss, Phase Sequ
MC21D5	208 - 480 VAC, Phase Loss, Phase Seque (30% Fixed), 1 C/O
MA21DN	208 - 480 VAC, Phase Loss, Phase Seque (5% to 15% Variable), 1 C/O
MOF1D51	208 - 480 VAC, Phase Loss, Phase Asymr with trip time < 65 ms, 1 C/O

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Cat. No.			MN21D5	MK21D5	MC21D5	MA21DN	
Parameters							
Supply Voltage (中)		Þ)	208 - 480 VAC, (3 Phase 3 \	Wire)			
Supply	Variation		-12% to + 10% (of 中)	,			
Frequer			50/60 Hz				
Power (Consumpt	ion (Max.)	3.5 VA				
T	Phase	Loss	Yes	Yes	Yes	Yes	
Trip Levels	Phase	Sequence	NA	Yes	Yes	Yes	
LUVUIS	Phase	Asymmetry	NA	NA	30% Fixed	5% to 15%	
Time	ON De	ау	< 750 ms	< 750 ms	< 750 ms	5s	
Delay	Trip Tim	e (OFF Delay)	< 65 ms	100 ms	100 ms	0.5 to 15 s (Selectable)	
	Relay C	Dutput	1 C/O				
Output	Contac	t Rating	5A @ 250 VAC / 30 VDC (Resistive)				
Output	Electric	al Life	1X10 ⁵				
	Mechanical Life		3X10 ⁶				
Litilizatio	Utilization Category AC - 15		Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A				
DC - 13		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A				
		Healthy	Relay LED Continuous ON				
LED Inc	dication	Phase Reverse	NA	Relay LED Flashing			
		Asymmetry	Relay LED Off (Red Colour)	NA	Relay LED Off (Red	Colour)	
Operating Temperature Storage Temperature			- 15° C to +60° C - 20° C to +80° C				
Humidity (Non Condensing)		ondensing)	95% (Rh)				
Enclosure			Flame Retardant UL 94-V0				
Dimension (W x H x D) (in mm)		H x D) (in mm)	17.5 X 90 X 58.5				
Weight (unpacked)		d)	70 g				
Mounting			Base / DIN rail				
Degree of Protection		tion	IP 20 for Terminal, IP 30 for Enclosure				
Certification							

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental

Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27



Ordering Information

Cat. No.	Description
MD21DF	208 - 480 VAC, UV / OV, Phase Loss & Sequence with Selectable ON Delay, 1 C/O
MG21DH	208 - 480 VAC, UV / OV & SPP with Selectable ON Delay, 1 C/O
MG21DF	208 - 480 VAC, UV / OV & SPP with Selectable OFF Delay, 1 C/O
MGD1DR	208 - 480 VAC, UV / OV & SPP with Selectable ON Delay & OFF Delay, 1 C/O
MAE03D0200	115 VAC/DC or 240 VAC/DC, UV / OV with Selectable ON & OFF Delay, 1 C/O

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UL Approval not applicable to Cat Nos. MN21D5, MOF1D51, MGD1DR, MAE03D0200



Cat. No.			MD21DF	MG21DH	MG21DF	MGD1DR	
Parameters							
Supply Voltage (中))	208 - 480 VAC, (3 Phas	e 3 Wire)		400 VAC, (3 Phase 3 Wire)	
Supply Variation			-12% to + 10% (of 中)				
Frequer	псу		50/60 Hz				
Power C	Consumptio	on (Max.)	3.5 VA				
Settable Nominal Voltage		/oltage	208 - 220 - 380 - 400 - 415 - 440 - 480 VAC N A				
	Phase Loss		Yes				
- ·	Phase Sequence		Yes				
Trip Levels	Phase Asymmetry		NA	N A 10% Fixed			
Levels	Under Vo	ltage	-2% to -20% (of 中)		-5% to -25% (of 中)		
	Over Volt	age	+2% to +20%(of 中)		+5% to +25%(of ⇔)		
Time	ON Delay	/	5 s	0.5 to 100 s (Selectable)		0.5 to 100 s (Selectable)	
Delay	Trip Time	(OFF Delay)	0.5 to 15 s (Selectable)	5 s	0.5 to 100 s (Selectable)	0.5 to 15 s (Selectable)	
	Relay Ou	tput	1 C/O				
Output	Contact Rating		5A @ 250 VAC / 30 VDC (Resistive)				
Output	Electrical Life		1X10 ⁵				
	Mechanical Life		3X10 ⁶				
Utilizatio	n Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A				
Utilization Category DC - 13		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A				
		Healthy	Red LED: Supply Healthy \rightarrow Continuous ON, Phase Reverse \rightarrow Flashing				
		UV	Red LED: Under Voltage → Continuous ON				
LED Inc	dication	OV	Red LED: Over Voltage \rightarrow Continuous ON				
		Asymmetry	Red LED: Asymmetry \rightarrow Continuous ON				
		All LED's	Phase Fail or Higher Cut OFF(> 560 VAC) or lower cut off (<175 VAC), Blinking → Pot changed during running conditions				
	ng Tempera		- 15° C to +60° C				
Storage Temperature			- 20° C to +80° C				
Humidity (Non Condensing)		idensing)	95% (Rh)				
Enclosure			Flame Retardant UL 94-V0				
Dimension (W x H x D) (in mm)		, , ,	18 X 59 X 90				
Weight (unpacked) Approx.		Approx.	70 g				
Mounting			Base / DIN rail				
Degree of Protection		on	IP 20 for Terminal, IP 30 for Enclosure				
Certification			CE COMPLETED Complement				

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EMI / E	MC
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Repetitive Shock

Non-Repetitive Shock

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1
Environmental	
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6

IEC 60068-2-27

IEC 60068-2-27

- 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.	Description
MA51BC	415 VAC, Single Phasing Preventor with 65 VAC Asymmetry, 1 C/O
MA51BK	415 VAC, Single Phasing Preventor with 40 VAC Asymmetry, 1 C/O
MC21B5	415 VAC, Single Phasing Preventor with 65 VAC Asymmetry, 2 C/O



Cat. No.			MA51BC	MA51BK	MC21B5		
Parameters							
Supply Voltage (中)			415 VAC				
Frequen	ю		50/60 Hz				
Power C	Consumption ((Max.)	15 VA				
	Phase Loss		Yes	Yes Yes			
Trip	Phase Sequence		Yes	Yes	Yes		
Settings	Phase Asyn	nmetry	65 V (± 10V)	40 V (± 10 V)	65 V (± 10V)		
	Hysteresis		10 to 18 V	10 to 18 V	10 to 18 V		
Time	ON Delay		2 s (± 2 s)	2 s (± 2 s)	< 550 ms		
Delay	Trip Time (C	OFF Delay)	7 s (± 2 s)	7 s (± 2 s)	< 550 ms		
	Relay Outpu	ut	1 C/O	1 C/O	2 C/O		
Output	Contact Rating		5A (For 'NO') & 3A (For 'NC') @ 250 VAC / 28 VDC (Resistive) 5A @ 250 VAC / 28 VDC (Resistive)				
Output	Electrical Life		1X10 ⁵				
	Mechanical Life		3X10 ⁶				
Litilizatio	Utilization Category AC - 15		Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A				
Ounzauc	on Category	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A				
LED Ind	lication		Red → Relay ON (Healthy), See Note 1				
Operatir	ng Temperatu	re	- 15° C to + 50° C				
Storage	Temperature		- 20° C to + 65° C				
Humidity	y (Non Conde	ensing)	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			CE Rolfs Compliant				

EMI / EMC Harmonic Current Emissions ESD Radiated Susceptibility Electrical Fast Transients Surges Conducted Susceptibility Voltage Dips & Interruptions (AC) Conducted Emission Radiated Emission	IEC 61000-3-2 IEC 61000-4-2 IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-6 IEC 61000-4-11 CISPR 14-1 CISPR 14-1
Environmental	

Environmental	
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

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

- 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.	Description
MD71BH	240 VAC, UV $$ / OV with Selectable ON Delay (0.5 to 15 sec), 1 C/O $$
MD71BF	240 VAC, UV $$ / OV with Selectable OFF Delay (0.5 to 15 sec), 1 C/O $$
MD71B9	240 VAC, UV $$ / OV with Selectable ON Delay (0.5 s to 15 min), 1 C/O $$



Cat. No.			MD71BH	MD71BF	MD71B9		
Parame	ters						
Supply Voltage (中)			240 VAC (1 Phase & 3 Phase, 4	Wire)			
Frequency			50/60 Hz	· · · · · · · · · · · · · · · · · · ·			
Power Consumption (Max.)		(Max.)	4 VA				
	Phase Loss		Yes	Yes	Yes		
Trip	Phase Sequ	ience	N.A	N.A	N.A		
Settings	Phase Asym	nmetry	N.A	N.A	N.A		
•	Under Volta	ge	55% to 95% (of 中)				
	Over Voltag	е	105% to 125% (of 中)				
Time	ON Delay		0.5 to 15 s (Selectable)	5 s	0.5 s to 15 min (Selectable)		
Delay	Trip Time (C	OFF Delay)	5 s	0.5 to 15 s (Selectable)	5 s		
	Relay Output		1 C/O				
Output	Contact Rat	ing	5A @ 250 VAC / 28 VDC (Resistive)				
Output	Electrical Life		1X10 ⁵				
	Mechanical	Life	3X10 ⁶				
Litilizatio	on Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A				
Ounzauc	on Oategory	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A				
LED Ind	lication		Separate indications for Power ON, UV and OV				
Operating Temperature Storage Temperature		re	-15° C To + 55° C -25° C To + 70° C				
Humidity	y (Non Conde	nsing)	95% (Rh)				
Enclosu	re		Flame Retardant UL 94-V0				
Dimension (W x H x D) (in mm)		D) (in mm)	36 X 90 X 60				
Weight ((unpacked) A	oprox.	120 g				
Mountin	g		Base / DIN rail				
Degree	of Protection		IP 20 for Terminals, IP 40 for Enclosure				
Certification			CE Rotts Compliant				

EMI / EMC

IEC 61000-3-2 IEC 61000-4-2
IEC 61000-4-3
IEC 61000-4-4
IEC 61000-4-5
IEC 61000-4-6
IEC 61000-4-11
CISPR 14-1
CISPR 14-1
IEC 60068-2-1
IEC 60068-2-2
IEC 60068-2-6
IEC 60068-2-27
IEC 60068-2-27

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



Cat. No.	Description
MG73B9	240 VAC, UV / OV & Single Phasing Preventor (SPP) with Selectable ON Delay (0.5 s to 15 min), 2 C/O
MG73BH	240 VAC, UV / OV $$ & SPP with Selectable ON Delay (0.5 to 15 sec), 2 C/O $$
MGH3BH	220 VAC, UV / OV $$ & SPP with Selectable ON Delay (0.5 to 15 sec), 2 C/O $$
MG73BF	240 VAC, UV / OV $$ & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O $$
MGI3BF	230 VAC, UV / OV $$ & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O $$



Cat. No.			MG73BH	MG73BF	MG73B9		
Parame	ters						
Supply Voltage (中)			240 VAC (1 Phase & 3 Phase, 4 Wire)				
Frequency			50/60 Hz	·			
Power Consumption (Max.)			5 VA				
Phase Loss			Yes				
.	Phase Sequ	ience	Yes				
Trip Settings	Phase Asym	nmetry	10% (of 中)				
bottingo	Under Volta	ge	55% to 95% (of中)				
	Over Voltag	е	105% to 125% (of中)				
	Hysterisis		7 V (± 2 V)				
Time	ON Delay		0.5 to 15 s (Selectable)	5 s	0.5 s to 15 min (Selectable)		
Delay	Trip Time (C	OFF Delay)	5 s	0.5 to 15 s (Selectable)	5 s		
	Relay Output		2 C/O				
Output	Contact Rating		5A @ 250 VAC / 28 VDC (Resistive)				
Output	Electrical Life		1X10 ^₅				
	Mechanical Life		3X10 ⁶				
Utilizatio	on Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A				
	0,	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 Storage Temperature			-15° C To + 55° C				
0	•		-25° C To + 70° C				
	y (Non Conde	nsing)	95% (Rh)				
Enclosure			Flame Retardant UL 94-V0				
Dimension (W x H x D) (in mm)) (in mm)	36 X 90 X 60				
Weight (unpacked)			120 g				
Mountin	•		Base / DIN rail	1			
Degree	of Protection		IP 20 for Terminals, IP 40 for End	ciosure			
Certification			CE Rolls Compliant				

EMI / EMC

Harmonic Current Emissions ESD	IEC 61000-3-2 IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1
Environmental	
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

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

Voltage 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



Ordering Information

Cat. No. MAC04D0100 Description

415V AC, Neutral Loss Protection with Phase and Voltage Control, 2 C/O

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Voltage Monitoring Series SM500 -Neutral Loss Protection



Parame	No.		MAC0	4D0100				
-								
Supply Voltage (中)			(Ph-Ph); 3 F	Phase, 4 Wi	re			
Frequency		47 to 53 l	Ηz					
Power Consumption (Max.)		10 VA (ma	ax)					
	Phase		Yes					
Trip	Phase Sequence		Yes					
Settings		Asymmetry	94V ±4V	· /				
•		Voltage	55% to 95					
	Over Voltage			25% (of 中)				
	Hyste		7 V (± 2 \	,				
	ON D	-	5 s ±1 s (ł	e failure pha	aa Imbalar	200		
Time Delay	Trip T	ime Delay)		ltage / Over		5 s ±1 s (Fix	ed)	
Delay	(OFF	Delay)	For Neut	-	vonago	500 ms -1s		
	Relav	Output	2 C/O					
A :		ct Rating		VAC / 28 V	DC (Resist	ive)		
Output		ical Life	1X10 ⁵		、 - -	,		
		anical Life	1X10 ⁷					
l Itilizot:	on Cata	AC - 15		tage (Ue): 1	20/240 V, F	Rated Current (le): 3	5.0/1.5 A	
Julizati	on Categ	DC - 13	Rated Vo	tage (Ue): 2	4/125/250	V, Rated Current (le): 2.0/0.22/0.1 A	
				e fault cond		indicated by LED in	nmediately & Relay will be tripped	
			GREEN	UV	OV	Blink: ASY, ON: RE	/	
		Power ON	ON	OFF	OFF	OFF		
LED	0.00	Power ON Phase reverse		OFF	OFF	ON		
ndicati		Asymmetry	ON	OFF	OFF	BLINK		
	piaro	UV	ON	ON	OFF	OFF		
		OV	ON	OFF	ON	OFF		
		Phase Fail	BLINK	OFF	OFF	OFF		
		Phase Fail *	BLINK	ON	OFF	BLINK		
		Neutral Fail	ON	BLINK	BLINK	BLINK		
		* Phase fail in	dications wh	nen I/P volta	ges are be	low UV set point an	d below asymmetry	
Operating Temperature				-10° C To + 60° C -10° C To + 70° C				
Storage Temperature			. 10 0					
-	v (Non C	Humidity (Non Condensing)		95% (Rh)				
Humidit		condensing)	Flame Re	Flame Retardant UL 94-V0				
Humidit Enclosu	ure							
Humidit Enclosu Dimens	ure sion (W x	H x D) (in mm)	36 X 90 X					
Humidit Enclosu Dimens Weight	ure sion (W x (unpacke	H x D) (in mm)		60				
Humidit Enclosu Dimens Weight Mountir	ure sion (W x (unpacke	H x D) (in mm) ed)	36 X 90 X 120 g Base / DI	60 N rail		closure		
Humidit Enclosu Dimens Weight Mountir Degree	ure sion (W x (unpackong of Prote	H x D) (in mm) ed)	36 X 90 X 120 g Base / DI IP 20 for	60		losure		
Humidit Enclosu Dimens Weight Mountir Degree	ure sion (W x (unpackong of Prote	H x D) (in mm) ed)	36 X 90 X 120 g Base / DI	60 N rail		closure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor	ure iion (W x (unpackong of Prote- ation MC	H x D) (in mm) ed)	36 X 90 X 120 g Base / DII IP 20 for CE	Compliant Compli		closure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD	ure ion (W x (unpacking of Prote- ation MC nic Curre	H x D) (in mm) ed) ction nt Emissions	36 X 90 X 120 g Base / DII IP 20 for CE IEC 6100 IEC 6100	Compliant Compliant Compliant Compliant Compliant Compliant Compliant		losure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate	ire ion (W x (unpacking of Prote- ation MC nic Curre ed Susce	H x D) (in mm) ed) ction nt Emissions ptibility	36 X 90 X 120 g Base / DII IP 20 for CE IEC 6100 IEC 6100 IEC 6100	Compliant Compli		losure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric	ire ion (W x (unpacking of Prote- ation MC nic Curre ed Susce	H x D) (in mm) ed) ction nt Emissions	36 X 90 X 120 g Base / DII IP 20 for CE IEC 6100 IEC 6100 IEC 6100 IEC 6100	Compliant Compli		closure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric Surges	ure (unpackung of Prote- ation MC nic Curre ed Susce al Fast T	H x D) (in mm) ed) ction nt Emissions ptibility ransients	36 X 90 X 120 g Base / DII IP 20 for CE IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100	Compliant Compli		closure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric Surges Conduc	ure ion (W x (unpacking of Prote- ation MC nic Curre ed Susce al Fast T cted Susc	H x D) (in mm) ed) ction nt Emissions ptibility ransients ceptibility	36 X 90 X 120 g Base / DII IP 20 for CE IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100	Compliant Compli		closure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric Surges Conduc Voltage	rre ion (W x (unpacked ng of Prote- ation MC nic Curre ad Susce al Fast T cted Susce Dips & I	H x D) (in mm) ed) ction nt Emissions ptibility ransients ceptibility nterruptions (AC	36 X 90 X 120 g Base / DII IP 20 for CE IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100	Compliant Compli		dosure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric Surges Conduc Voltage Conduc	ure ion (W x (unpacking of Prote- ation MC nic Curre ed Susce al Fast T cted Susc	H x D) (in mm) ed) ction nt Emissions ptibility ransients ceptibility nterruptions (AC ssion	36 X 90 X 120 g Base / DII IP 20 for CE IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100	60 V rail Ferminals, IF 0-3-2 0-4-2 0-4-3 0-4-4 0-4-5 0-4-6 0-4-11 I-1		dosure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric Surges Conduc Voltage Conduc Radiate	ire ion (W x (unpacking of Prote- ation MC nic Curre ad Susce al Fast T cted Susce Dips & I cted Emis	H x D) (in mm) ed) ction nt Emissions ptibility ransients ceptibility nterruptions (AC ssion	36 X 90 X 120 g Base / Dll IP 20 for ⁻ C C IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 O IEC 6100 CISPR 14	Control Compliant Control Compl		dosure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric Surges Conduc Voltage Conduc Radiate Environ Cold He	rre ion (W x (unpacked of Prote- ation MC ation MC ation MC ation MC ation MC ation MC ation MC ation MC ation MC ation MC ation MC ation MC ation MC ation Atio	H x D) (in mm) ed) ction nt Emissions ptibility ransients ceptibility nterruptions (AC ssion	36 X 90 X 120 g Base / Dll IP 20 for - C C 100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 O IEC 6100 O IEC 6100 O IEC 6100 IEC 6100 IEC 6006	60 N rail Ferminals, IF Compliant 0-3-2 0-4-2 0-4-2 0-4-3 0-4-4 0-4-5 0-4-6 0-4-11 I-1 8-2-1		dosure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric Surges Conduc Voltage Conduc Radiate Environ Cold He Dry Hea	rre ion (W x (unpacked of Prote- ation MC ation Ati	H x D) (in mm) ed) ction nt Emissions ptibility ransients ceptibility nterruptions (AC ssion	36 X 90 X 120 g Base / Dll IP 20 for - C C IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 O IEC 6100 O IEC 6100 O IEC 6100 IEC 6006 IEC 6006 IEC 6006	60 N rail Ferminals, IF Compliant 0-3-2 0-4-2 0-4-3 0-4-4 0-4-5 0-4-6 0-4-11 1-1 1-1 8-2-1 8-2-1		dosure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric Surges Conduc Radiate Electric Conduc Radiate Electric Conduc Radiate Electric Conduc Radiate	Ire ion (W x (unpacked of Prote- ation MC ation Ati	H x D) (in mm) ed) ction nt Emissions ptibility ransients ceptibility nterruptions (AC ssion ion	36 X 90 X 120 g Base / Dll IP 20 for - C C 100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 O IEC 6100 O IEC 6100 O IEC 6100 IEC 6006 IEC 6006 IEC 6006 IEC 6006	60 N rail Ferminals, IF Compliant 0-3-2 0-4-2 0-4-2 0-4-3 0-4-4 0-4-5 0-4-5 0-4-6 0-4-11 I-1 8-2-1 8-2-1 8-2-2 8-2-6		dosure		
Humidit Enclosu Dimens Weight Mountir Degree Certifica EMI / E Harmor ESD Radiate Electric Surges Conduc Voltage Conduc Radiate Environ Cold He Dry Hea Vibratio Repetiti	rre ion (W x (unpacked of Prote- ation MC ation Ati	H x D) (in mm) ed) ction nt Emissions ptibility ransients ceptibility nterruptions (AC ssion ion	36 X 90 X 120 g Base / Dll IP 20 for - C C IEC 6100 IEC 6100 IEC 6100 IEC 6100 IEC 6100 O IEC 6100 O IEC 6100 O IEC 6100 IEC 6006 IEC 6006 IEC 6006	60 N rail Ferminals, IF Compliant 0-3-2 0-4-2 0-4-2 0-4-3 0-4-4 0-4-5 0-4-6 0-4-11 I-1 8-2-1 8-2-1 8-2-2 8-2-6 8-2-27		dosure		

- Protects against Phase Loss, Phase Reversal & Phase Asymmetry
- Suitable for 3 Phase 3 Wire system
- Selectable Under Voltage / Ovder 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



escription
5 VAC, UV / OV & Single Phasing Preventor (SPP) th Selectable ON Delay (0.5 to 15 sec), 2 C/O
5 VAC, UV / OV & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O
20 VAC, UV / OV & SPP with Selectable ON Delay (0.5 to 15 sec), 2 C/O
20 VAC, UV / OV & SPP with Selectable OFF Delay (0.5 to 15 sec), 2 C/O
t



Cat. No.		MG53BH	MG53BF	MG63BH	MG63BF		
Parame	ters						
Supply Voltage (中)		415 VAC (3 Phase, 3 Wire)		220 VAC (3 Phase, 3 Wi	ire)		
Frequency		50/60 Hz					
Power Consumption (Max.)			10 VA	10 VA 5 VA			
	Phase Loss		Yes				
	Phase Sequence		Yes				
Trip Settings	Phase Asym	metry	10% (of 中)				
Settings	Under Voltag	ge	55% to 95% (of 中)				
	Over Voltage	е	105% to 125% (of中)				
	Hysterisis		7 V (± 2 V) of Trip Voltag	je			
Time	ON Delay		0.5 to 15 s (Selectable)	5 s	0.5 to 15 s (Selectable)	5 s	
Delay	Trip Time (C	FF Delay)	5 s	0.5 to 15 s (Selectable)	5 s	0.5 to 15 s (Selectable)	
	Relay Outpu	ıt	2 C/O	-			
Output	Contact Rat	ing	5A @ 250 VAC / 28 VDC (Resistive)				
Output	Electrical Life		1X10 ⁵				
	Mechanical Life		3X10 ⁶				
Litilizatio	on Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A				
Utilization Category DC - 13		DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A				
LED Ind	lication		Separate indications for Power ON, UV and OV; ON: Phase Reverse; BLINK: Phase Asymmetry				
Operating Temperature Storage Temperature		re	-15° C To + 55° C -25° C To + 70° C				
Humidity	y (Non Conde	nsing)	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					
Mountin	g		Base / DIN rail				
Degree	of Protection		IP 20 for Terminals, IP 40	IP 20 for Terminals, IP 40 for Enclosure			
Certification		CE Rotts Compliant					

EMI / EMC

Harmonic Current Emissions	IEC 61000-3-2
ESD	IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1

Environmental	
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6
Repetitive Shock	IEC 60068-2-27
Non-Repetitive Shock	IEC 60068-2-27

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



Cat. No.	Description
MG53BI	415 VAC, UV $$ / OV & Single Phasing Preventor (SPP) with 65 V Asymmetry, 2 C/O
MG53BO	415 VAC, UV / OV & SPP with 3 min ON Delay & 5s OFF Delay, 2 C/O
MB53BM	415 VAC, UV / OV (110% Fixed) & SPP with Selectable Asymmetry (5% to 17%), 2 C/O
MG53BQ	415 VAC, UV / OV & SPP with 30 V Asymmetry, 3 Sec ON Delay, 2 C/O



Cat. No.			MG53BI	MG53BO	MB53BM							
Parame	eters											
Supply Voltage (中)			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		65 V	10%	5% to 17%							
	Under Voltage		55% to 95% (of 中)	85% (of 中) Fixed	80% (of 中) Symmetrical							
	Over Voltage		105% to 125% (of 中)	110% (of 中) Fixed	110% Fixed							
	Hysterisis		7 V (± 2 V) of Trip Voltage	7 V (± 2 V) of Trip Voltage	7 V (± 2 V) of Input Voltage							
Time	-		5 s	3 min	0.5 to 15 s (Selectable)							
Delay			5 s	5 s	0.5 to 15 s (Selectable)							
	Relay Output		2 C/O									
Outout	Contact Rating		5A @ 250 VAC / 28 VDC (Resistive)									
Output	Electrical Life		1X10 ⁵									
	Mechanical Life		3X10 ⁶									
l Itilizatio	on Category	AC - 15	Rated Voltage (Ue): 120/240 V, Rated Current (Ie): 3.0/1.5 A									
ounzaud	on oategory	DC - 13	Rated Voltage (Ue): 24/125/250 V, Rated Current (Ie): 2.0/0.22/0.1 A									
LED Inc	dication		Separate indications for Power ON, UV and OV; ON: Phase Reverse; BLINK: Phase Asymmetry									
Operating Temperature Storage Temperature			-15° C To + 55° C -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

Repetitive Shock

Non-Repetitive Shock

Harmonic Current Emissions ESD	IEC 61000-3-2 IEC 61000-4-2
Radiated Susceptibility	IEC 61000-4-3
Electrical Fast Transients	IEC 61000-4-4
Surges	IEC 61000-4-5
Conducted Susceptibility	IEC 61000-4-6
Voltage Dips & Interruptions (AC)	IEC 61000-4-11
Conducted Emission	CISPR 14-1
Radiated Emission	CISPR 14-1
Environmental	
Cold Heat	IEC 60068-2-1
Dry Heat	IEC 60068-2-2
Vibration	IEC 60068-2-6

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

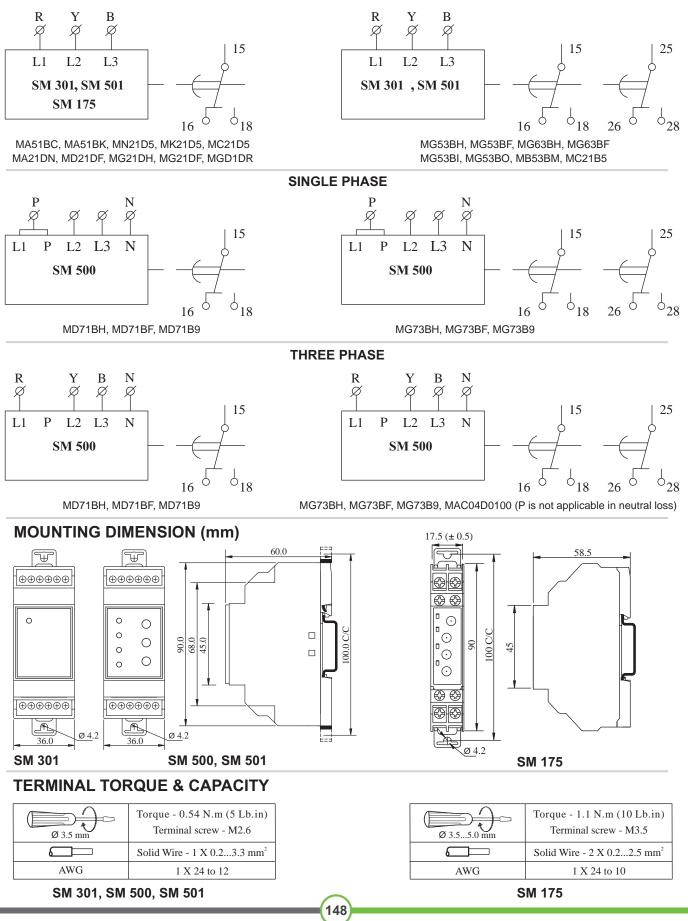
IEC 60068-2-27

IEC 60068-2-27

3) MG53BQ does not detect Phase Sequence Fault



CONNECTION DIAGRAM



Product Selection Chart: Voltage Monitoring

Cat. No.	3-Phase 3-Wire	3-Phase 4-Wire	1 - Phase	Under Voltage Protection	Over Voltage Protection	Phase Loss Protection	Phase Sequence Protection	Phase Asymmetry Monitoring	Settable ON Delay	Settable OFF Delay	Relay	2 C/O Relay Output	Neutral Loss Protection	115 VAC	208 to 480 VAC	240 VAC	415 VAC
MN21D5																	
MK21D5						•	•										
MC21D5						•	•										
MA21DN							•										
MD21DF				•	•		•										
MG21DH				•	•	•	•	•									
MG21DF				•	•	•	•	•									
MOF1D51						•		•									
MAE03D0200				•	•												
MA51BC						•	•	•									
MA51BK							•	•									
MC21B5						•	•	•									
MD71BH				•	•	•											
MD71BF					•												
MD71B9																	
MG73BH				•	•		•	•									
MG73BF																	
MG73BR																	
MG73B9																	
MAC04D0100																	
MG53BH																	
MG53BF																	
MG53BT																	
MG53BQ																	
MG53BI																	
MG53BO																	
MB53BM																	

Note: The product can be made available in 120 VAC, 220 VAC, 230 VAC and 400 VAC.