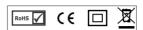


# **SUPPLY MONITORING DEVICE SERIES SM500**

# **Ordering Catalog Nos.:**

MD71B9 MGH3BF MD71BH MGH3BY MD71BF MG73BR MG73B9 MGH3BH MG73BH MGI3BF MG73BF MG73BQ





#### **NOTE:**

- The technical information provided in this document was correct at the time of publish.
- Product innovation being a continuous process, we reserve the right to alter specifications without any prior notice.

#### **FEATURES:**

- Adjustable Reference voltage
- Monitors own supply
- Phase Loss & Neutral loss detection.
- Phase Reverse detection
- Phase Asymmetry 10% (Phase to Phase)
- Adjustable Over & Under voltage trip level
- Adjustable Operate Time & Release Time
- SPDT, DPDT Relay output (5 A, Resistive)
- Din rail & base mounting
- LED indications
- Instant trip in case of Interruption, Phase
- Reverse and Phase Loss

# **A** CAUTION:

- Do not touch the terminals while power is being supplied.
- > Tighten terminal screws with the specified torque.
- Always follow instructions stated in product leaflet.
- Before installation, check to ensure that specifications agree with intended application.
- During installation, keep 10mm distance on both sides of product from adjacent devices.
- Suitable dampers should be provided in the event of excessive vibrations.
- > Only qualified persons are authorized to install the product.
- Use slow blow fuse of 250mA rating in series with product supply.
- Device should be kept away from wet, dust & humidity environments.
- Device manufacturer will not be responsible if any incident occur due to negligence of cautions.

# **SUITABILITY FOR USE:**

These are products with Auto reset, 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.

#### **FUNCTION DESCRIPTION:**

#### MD71B9, MD71BH, MD71BF

- Output relay will energize after operate time if all phases are present & Healthy with in the levels set.
- Output relay will de-energize after release time if any of or all phases exceeds OV or UV trip levels.

#### MG73B9, MG73BH, MG73BF, MG73BR

Rated voltage - 240 VAC Un (PH - N)

MGH3BH - Rated voltage - 220 VAC Un (PH - N)

MGH3BF - Rated voltage - 220 VAC Un (PH - N)

MGH3BY - Rated voltage - 220 VAC Un (PH - N)

MGI3BF - Rated voltage - 230 VAC Un (PH - N)

- Output Relay will energize after operate time if following conditions are within limit:
- 1. All phases are present and phase voltages are within the over & under voltage trip levels set on the device.
- 2. If Phase Sequence is ok.
- 3. If Phase to phase asymmetry is less than value mentioned in technical specification.
- Relay will trip after release time if any of Phase exceeds over voltage and under voltage trip levels.
- Relay will be trip in <100ms if any phase fail, Line interruption or phase Reverse.

#### MG73BQ

- Rated voltage 120 to 240 VAC Un(PH N) selectable
- Output Relay will energize after operate time if following conditions are within limit:
- All phases are present and phase voltages are within the over & under voltage trip levels set on the device.
- 2. If Phase Sequence is ok.
- 3. If Phase to phase asymmetry is less than value mentioned in technical specification.

Relay will trip after release time if any of Phase exceeds over voltage and under voltage trip levels. Relay will be trip in <100ms if any phase fail, Line interruption or phase Reverse.

# TECHNICAL SPECIFICATION:

# SUPPLY MONITORING DEVICE, SERIES: SM500, 3-PHASE 4-WIRE AND 1-PHASE

Function Reference Supply Voltage (#) 1-Phase or 3-Phase 4-Wire Frequency Power Consumption    Value Voltage (V)	Cat. No.:		MD71B9	MD71BH
1-Phase or 3-Phase 4-Wire   240 VAC	Function			
Power Consumption 4 VA (Max.)  Under Voltage (UV) 55% to 95% of #  Over Voltage (OV) 105% to 125% of #  Hysteresis for UV/OV 7V±2V  Asymmetry N.A.  Setting Accuracy +/-5% of full scale (Voltage setting are with respect to neutral)  Power ON Delay 550 msec  Setting Accuracy ±10% of Full Scale (Voltage setting are with respect to neutral)  Power ON Delay 0-15 min 0.5-15 s  Setting Accuracy ±10% of Full Off Delay 5 s fixed 5 s fixed  Note Phase Reverse trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase For Non-Inductive loads Phase For Non-Inductive loads Phase For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <100 ms. For Non-Inductive loads Phase Foil trip time is <10 ms.			240 VAC	
Under Voltage (UV)   S5% to 95% of ⇒			47 to 63 Hz	
Trip Levels  Over Voltage (OV) Hysteresis for UV/OV Asymmetry N.A.  Setting Accuracy Power ON Delay Setting Accuracy  Fower ON Delay  Setting Accuracy  In Setting Accuracy  Fower ON Delay  Setting Accuracy  In Setting Accuracy  Setting Accuracy  In Setting Accuracy  Setting Accuracy  In Setting Accurac	Power Consu	mption	4 VA (Max.)	
Trip Levels Hysteresis for UV/OV 7V±2V Asymmetry N.A.  Setting Accuracy +/- 5% of full scale (Voltage setting are with respect to neutral)  Power ON Delay < 500 msec  Setting Accuracy   On Delay   0 - 15 min   0.5 - 15 s   10% of Full scale   Off Delay   5 s fixed    Note   Phase Reverse trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms.  IED   Condition / Faults   Indications or Status of LED   ON (Green)   Power ON   Continuous ON   UV (RED)   Under Voltage   Continuous ON   Over Voltage   Continuous ON   Over Voltage   Continuous ON   High Cut OFF   N.A.   ASY / REV   Phase Asymmetry   N.A.   Relay Output   Contact Rating   5 A (Res.) @ 250 VAC / 28 VDC   Carlagory   Contact Material   Ag Alloy   Utilization   Ue Rated Voltage V   120/240V   Le Rated Current   1 (Co-13)   Mechanical Life Expectancy   24/125/250V   Le Rated Current   1 x 10 <sup>4</sup> Operations   Electrical Life Expectancy   1 x 10 <sup>4</sup> Operations   Ele		Under Voltage (UV)	55% to 95% of Ф	
Hysteresis for UV/OV 7V±2V   Asymmetry   N.A.	Trip Lovels	Over Voltage (OV)	105% to 125% of ф	
Setting Accuracy	IIIb reveis	Hysteresis for UV/OV	7V±2V	
Power ON Delay		Asymmetry	N.A.	
Setting Accuracy ±10% of Full scale  On Delay  On Delating is (100 ms.  On Indications of Status of LED  Onton-Inductive loade on Status of Led  On Status of LED  Onton-Inductive loace  On Status of Led  Onton-Inductive loace  On Manual Phase Reverse Plaue  Onton-Inductive loace  On Manual Phase Reverse  On Indications of Indications  On Indications  On Indications  On Indications  On Ontice  Ontice Indications  On Indication	Setting Accu	racy		
Accuracy ±10% of Full scale  Note    Off Delay   5 s fixed   5 s f	Power ON De	elay	< 500 msec	
Scale  Off Delay  5 s fixed  Fhase Reverse trip time is < 100 ms. For Non-Inductive loads Phase Fail trip time is < 100 ms. For Non-Inductive loads Phase Fail trip time is < 100 ms.  Indications or Status of LED  ON (Green)  UV (RED)  Over Voltage  Over Voltage  Continuous ON  High Cut OFF  N.A.  ASY / REV (RED)  Phase Reverse  N.A.  Contact Arrangement  Contact Atrangement  Contact Material  Utilization Category (AC-1s)  Utilization Category (DC-13)  Wechanical Life Expectancy  Derating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  Flame Retardant UL 94-V0  Mounting  Dimensions in mm (W xHx D)  Weight (Unpacked)  I ndications Continuous ON  Continuous ON  Continuous ON  NA.  Phase Reverse  N.A.  1 C/O  Ag Alloy  120/240V  120/240V  224/125/250V  224/125/250V  224/125/250V  220/0.22/0.1A  Contact Naterial  1 x 10 <sup>8</sup> Operations  Poperations  Poperating Temperature  -15°C to +75°C  Humidity (Non-Condensing)  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Dimensions in mm (W xHx D)  Meight (Unpacked)  120 g Approx.		On Delay	0 - 15 min	0.5 - 15 s
Note   For Non-Inductive loads Phase Fail trip time is < 100 ms.		Off Delay	5 s fixed	5 s fixed
ON (Green) Power ON Continuous ON  UV (RED) Under Voltage Continuous ON  OV (RED) Over Voltage Continuous ON  High Cut OFF N.A.  ASY / REV Phase Asymmetry N.A.  Relay Output Contact Arrangement Contact Rating Contact Material Ag Alloy  Utilization Category (AC-15)  UE Rated Voltage V 120/240V  Category (DC-13)  Mechanical Life Expectancy 1 x 10 <sup>6</sup> Operations  Electrical Life Expectancy 1 x 10 <sup>6</sup> Operations  Electrical Life Expectancy -15°C to +55°C  Storage Temperature -25°C to +70°C  Humidity (Non-Condensing) Pollution Degree Type II  Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 gentinions  Contact Material Ag Alloy  1 C/O  ARRED  Over Voltage Continuous ON  N.A.  Contact Material N.A.  1 C/O  24 (Res.) @ 250 VAC / 28 VDC  250 VAC / 28 VDC  24/125/250V  20/0.22/0.1A  20/0.22/0.1A  1 x 10 <sup>6</sup> Operations  1 x 10 <sup>6</sup> Operations  Poperations  Poperating Temperature -15°C to +55°C  Storage Temperature -25°C to +70°C  Humidity (Non-Condensing) 95% (Rh)  Max. Operating Altitude 2000 m  Degree of Protection IP-20 for Terminals ; IP-30 for Housing  Pollution Degree Type II  Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)	Note		For Non-Inductive	e loads Phase
UV (RED)  Under Voltage  Continuous ON  Plase Asymmetry (RED)  Phase Reverse  Contact Arrangement Contact Rating Contact Material Utilization Category (AC-15)  UF Rated Current I  Ue Rated Current I  Ue Rated Current I  Ue Rated Current I  Ue Rated Current I  Electrical Life Expectancy  Coperating Temperature  Life Expectancy  Storage Temperature  Degree of Protection  Degree of Protection  Uvilland Power Asymmetry Machanical User Voltage  Val 120 240V 2.0 125 250V 2.0	LED	Condition / Faults	Indications or Sta	tus of LED
OV (RED)  Over Voltage High Cut OFF N.A.  ASY / REV (RED) Phase Asymmetry Relay Output  Contact Arrangement Contact Arrangement Contact Material Utilization Category (AC-15) Utilization	ON (Green)	Power ON	Continuous ON	
High Cut OFF   N.A.     ASY / REV   Phase Asymmetry   N.A.     Relay Output   Contact Arrangement   Contact Rating   S A (Res.) @ 250 VAC / 28 VDC     Category (AC-15)   Ue Rated Voltage V   120/240V   120/2240V   120/2240V   120/2240V   120/2240V   120/2240V   120/2240V   120/2240V   120/2240V   120/2240V   120/220.1A   120/220.1A     Wethanical Life Expectancy   1 x 10° Operations   1 x 10° Operations     Electrical Life Expectancy   1 x 10° Operations     Storage Temperature   -15°C to +55°C     Storage Temperature   -25°C to +70°C     Humidity (Non-Condensing)   95% (Rh)     Max. Operating Altitude   2000 m     Degree of Protection   IP-20 for Terminals ; IP-30 for Housing     Pollution Degree   Type II     Housing   Flame Retardant UL 94-V0     Mounting   Base / Din-Rail (35 mm Symmetrical)     Dimensions in mm (W xHx D)   36 x 60 x 90     Weight (Unpacked)   120 g Approx.	UV (RED)	Under Voltage	Continuous ON	
High Cut OFF   N.A.     ASY / REV (RED)   Phase Asymmetry   N.A.     Phase Reverse   N.A.     Relay Output   Contact Arrangement   1 C/O     Contact Rating   5 A (Res.) @ 250 VAC / 28 VDC     Contact Material   Ag Alloy     Utilization   Ue Rated Voltage V   120/240V     Le Rated Current I   3.0/1.5A     Utilization   Ue Rated Voltage V   24/125/250V     Le Rated Current I   2.0/0.22/0.1A     Mechanical Life Expectancy   3 x 10 <sup>4</sup> Operations     Electrical Life Expectancy   1 x 10 <sup>5</sup> Operations     Electrical Life Expectancy   -15°C to +55°C     Storage Temperature   -25°C to +70°C     Humidity (Non-Condensing)   95% (Rh)     Max. Operating Altitude   2000 m     Degree of Protection   IP-20 for Terminals ; IP-30 for Housing     Pollution Degree   Type II     Housing   Flame Retardant UL 94-V0     Mounting   Base / Din-Rail (35 mm Symmetrical)     Dimensions in mm (W xHx D)   36 x 60 x 90     Weight (Unpacked)   120 g Approx.	OV (RED)	Over Voltage	Continuous ON	
RED   Phase Reverse   N.A.	O T (NEB)	High Cut OFF	N.A.	
Relay Output  Contact Arrangement Contact Rating Contact Material De Rated Voltage V Category (AC-15) Utilization Category (DC-13)  Mechanical Life Expectancy Derating Temperature Humidity (Non-Condensing)  Max. Operating Altitude Degree of Protection  Pollution Degree Housing Pollution Degree Housing  Contact Material De Rated Voltage V 120/240V 120/240V 24/125/250V 24/125/250V 2.0/0.22/0.1A  Paterial Life Expectancy Sax 10° Operations  1 x 10° Operations  1 x 10° Operations  Possible Contact Material Degree of Protection  Possible Contact Material In C/O  Ag Alloy  120/240V 3.0/1.5A  Possible Contact Material Ag Alloy Possible Contact Material Possible Contact Material Possible Contact Material Possible Contact Material Possible Contact Ma		Phase Asymmetry	N.A.	
Relay Output  Arrangement Contact Rating S A (Res.) @ 250 VAC / 28 VDC  Contact Material Utilization Category (AC-15) Utilization Category (PC-13) Utilization Category (PC-13)  Mechanical Life Expectancy I = Rated Current I  Mechanical Life Expectancy I = Rated Current I  Storage Temperature  Degree of Protection  Degree of Protection  Flame Retardant UL 94-V0  Mounting  Arrangement  Contact Rating S A (Res.) @ 250 VAC / 28 VDC  Ag Alloy  120/240V  120/240V  120/240V  24/125/250V  24/125/250V  2.0/0.22/0.1A  S x 10 <sup>4</sup> Operations  1 x 10 <sup>5</sup> Operations  Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  P5% (Rh)  Max. Operating Altitude  Degree of Protection  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  Weight (Unpacked)  120 g Approx.	(KED)		N.A.	
Contact Material Ag Alloy  Utilization Category (AC-15)  Ue Rated Current I 20/240V 3.0/1.5A  Ue Rated Current I 20/2250V 1e Rated Current I 2.0/0.22/0.1A  Uitilization Ue Rated Current I 2.0/0.22/0.1A  Mechanical Life Expectancy 3 x 106 Operations  Electrical Life Expectancy 1 x 108 Operations  Departing Temperature -15°C to +55°C  Storage Temperature -25°C to +70°C  Humidity (Non-Condensing) 95% (Rh)  Max. Operating Altitude 2000 m  Degree of Protection IP-20 for Terminals ; IP-30 for Housing  Pollution Degree Type II  Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	Relay Output	Arrangement		
Utilization Category (AC-15) Utilization Ue Rated Current I Rated Current I Utilization Ue Rated Current I Rated Current I UeC-13)  Wechanical Life Expectancy Ie Rated Current I Rated Current I UeC-13)  Mechanical Life Expectancy In the state I I I I I I I I I I I I I I I I I I I				
Category (AC-15)  Utilization Category (DC-13)  Mechanical Life Expectancy  Electrical Life Expectancy  Operating Temperature  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  Pollution Degree  Housing  Mounting  ERated Current I  3.0/1.5A  24/125/250V 2.0/0.22/0.1A  24/125/250V 2.0/0.22/0.1A  24/125/250V 2.0/0.22/0.1A  25° C to +70° C  25° C to +70° C  25° C to +70° C  18-20 for Terminals ; IP-30 for Housing  Flame Retardant UL 94-V0  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  Weight (Unpacked)  120 g Approx.	Litilization		,	
Category (DC-13)  Mechanical Life Expectancy  Stronge Temperature  Degree of Protection  Pollution Degree  Housing  Mounting  Pollutions  Pollution Server (Mounting)  Dimensions in mm (W XHx D)  Mechanical Life Expectancy  Stronge Texpectancy  1 x 10° Operations  2 x 10° Operations  2 x 10° Operations  2 x 10° Operations  2 x 10° Operations  3 x 10° Operations  2 x 10° Operations  3 x 10° Operations  3 x 10° Operations  2 x 10° Operations  3 x 10° Operations  3 x 10° Operations  4 x 10° Operations  2 x 10° Operations  3 x 10° Operations  4 x 10° Operations  4 x 10° Operations  4	Category		,	
Electrical Life Expectancy  Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  Weight (Unpacked)  1 x 10° Operations  1 x 10° Operations  P5% (Rh)  Base / Din-Rail (35 mm Symmetrical)	Category			
Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Mechanical L	ife Expectancy	3 x 10° Operations	
Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  Weight (Unpacked)  -25°C to +70°C  To +70°C  Neight (Rh)  100 m  100	Electrical Life	Expectancy	1 x 10 <sup>5</sup> Operations	
Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  Pollution Degree  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  Weight (Unpacked)  95% (Rh)  95% (Rh)  95% (Rh)  95% (Rh)  800 m  100 m	Operating Ter	mperature	-15°C to +55°C	
Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Storage Temp	erature	-25°C to +70°C	
Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Humidity (Non	-Condensing)	95% (Rh)	
for Housing Pollution Degree Type II Housing Flame Retardant UL 94-V0 Mounting Base / Din-Rail (35 mm Symmetrical) Dimensions in mm (W xHx D) 36 x 60 x 90 Weight (Unpacked) 120 g Approx.	Max. Operating Altitude			
Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	Degree of Protection			
Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Pollution Degi	ree	Type II	
(35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Housing		Flame Retardant UL 94-V0	
Weight (Unpacked) 120 g Approx.	Mounting		1	
	Dimensions in	mm (W xHx D)	36 x 60 x 90	
Certifications CE, RoHS	Weight (Unpa	cked)	120 g Approx.	
	Certifications		CE, RoHS	

Cat. No.:		MD71BF	MG73B9	
Function		Phase and Volta	ge Control	
Reference Supply Voltage (中) 1-Phase or 3-Phase 4-Wire		240 VAC		
Frequency		47 to 63 Hz		
Power Consu	Under Voltage (UV)	4 VA (Max.)		
		55% to 95% of Ф		
Trip Levels	Over Voltage (OV)	105% to 125% of 中		
	Hysteresis for UV/OV	7V±2V		
	Asymmetry	N.A.	10% (Hysterisis: 1.3%±1%)	
Setting Accu	racy	+/- 5% of full scale are with respect	e (Voltage setting to neutral)	
Power ON De	elay	< 500 msec	io neenan	
Setting Accuracy	On Delay	5 s fixed	0 - 15 min	
±10% of Full scale	Off Delay	0 - 15 s	5 s fixed	
Note		Phase Reverse tri For Non-Inductive Fail trip time is < 1		
LED	Condition / Faults	Indications or Sta	tus of LED	
ON (Green)	Power ON	Continuous ON		
UV (RED)	Under Voltage	Continuous ON		
OV (RED)	Over Voltage	Continuous ON		
O + (N25)	High Cut OFF	N.A.		
ASY / REV	Phase Asymmetry	N.A.	Blinking	
(RED)	Phase Reverse	N.A.	Continuous ON	
Relay Output	Contact Arrangement	1 C/O	2 C/O (Minimum load of 5mA is recommended)	
	Contact Rating	5 A (Res.) @ 250 VAC / 28 VDC		
	Contact Material	Ag Alloy		
Utilization Category (AC-15)	Ue Rated Voltage V le Rated Current I	120/240V 3.0/1.5A		
Utilization Category (DC-13)	Ue Rated Voltage V le Rated Current I	24/125/250V 2.0/0.22/0.1A		
Mechanical Li	ife Expectancy	3 x 10°Operations		
Electrical Life	Expectancy	1 x 10⁵ Operations		
Operating Ter	mperature	-15°C to +55°C		
Storage Temperature		-25°C to +70°C		
Humidity (Non-Condensing)		95% (Rh)		
Max. Operating Altitude		2000 m		
Degree of Protection		IP-20 for Terminals ; IP-30 for Housing		
Pollution Degree		Type II		
Housing		Flame Retardant UL 94-V0		
Mounting		Base / Din-Rail (35 mm Symmetrical)		
Dimensions in	mm (W xHx D)	36 x 60 x 90		
Weight (Unpa	cked)	120 g Approx.		
Certifications		CE, RoHS		

<sup>\*</sup>All LEDs should off incase of Single Phase Loss, 2 Phase Loss & 3 Phase Loss conditions.

Process	Cat. No.:		MG73BH	MG73BF
Phase or 3-Phase 4-Wire   240 VAC   Frequency	Function			
Frequency			Ŭ.	
Power Consumption			47 to 63 Hz	
Trip Levels	Power Consu	mption	4 VA (Max.)	
Trip Levels         Hysteresis for UV/OV         7 ∀±2V           Asymmetry         10% (Hysterisis: 1.3%±1%)           5 Setting Accuracy         4/-5% of full scale (Voltage setting are with respect to neutral)           Setting Accuracy         0 Delay         5.5 15 s         5 s fixed           Setting Accuracy         0 Delay         0.5 - 15 s         5 s fixed           Accuracy         10% of Pollay         5 s fixed         0.5 - 15 s         5 s fixed           Note         Continuous On Sequence of Prose of Non-Inductive loads Phase Fail trip time is < 100 ms.		Under Voltage (UV)	55% to 95% of ф	
Hysteresis for UV/OV   7V±2V	Trin Levels	Over Voltage (OV)	105% to 125% of Ф	
Setting Accuracy Power ON Delay Setting Accuracy Power ON Delay Setting Accuracy Setting In Set	lib rever	Hysteresis for UV/OV	7V±2V	
Power ON Delay		Asymmetry		,
Setting   Accuracy   ±10% of Full   scale	Setting Accu	racy		
Accuracy	Power ON De	elay	< 500 msec	
Scale		On Delay	0.5 - 15 s	5 s fixed
Note   For Non-Inductive loads Phase Fail trip fime is < 100 ms.		Off Delay	5 s fixed	0.5 - 15 s
ON (Green) Power ON Continuous ON  UV (RED) Under Voltage Continuous ON  OV (RED) High Cut OFF N.A.  ASY / REV (RED) Phase Asymmetry Phase Reverse Continuous ON  Relay Output Contact Rating Contact Marangement Rated Current I (RC-15)  Utilization Category (RC-13)  We Rated Voltage V Le Rated Voltage V Le Rated Current I (RC-15)  We Rated Current I Contact Life Expectancy Rated Current Rate	Note		For Non-Inductive	e Ioads Phase
UV (RED)  Under Voltage OV (RED)  OV (RED)  OV (RED)  Diver Voltage High Cut OFF N.A.  ASY / REV (RED)  Phase Asymmetry Phase Reverse Continuous ON  Contact Arrangement Contact Rating Contact Material Ag Alloy  Utilization Category (AC-15)  Ue Rated Voltage V Ie Rated Current I (Beated Current I (Be	LED	Condition / Faults	Indications or Sta	tus of LED
OV (RED)  Over Voltage High Cut OFF High Cut OFF N.A.  ASY / REV (RED)  Phase Asymmetry Phase Reverse Continuous ON  Relay Output  Contact Arrangement Contact Rating Contact Material Ag Alloy  Utilization Category (AC-15)  Utilization Utilization Category (BC-13)  We Rated Voltage V I Rated Current I Relay Output  Via Rated Current I Relay Output  Via Rated Current I Relay Output  Arrangement  Ag Alloy  Utilization Category (AC-15)  Ue Rated Voltage V I Rated Current I Relay Output  Via Rated Current I Relay Output  Via Rated Current I Relay Output  Via Rated Voltage V I Rated Voltage V I Relay Output I Solve Output I Relay Output I Solve Outp	ON (Green)	Power ON	Continuous ON	
High Cut OFF ASY / REV (RED)  Phase Asymmetry Relay Output  Relay Output  Relay Output  Relay Output  Contact Arrangement  Contact Rating Contact Material  Lilization Category (AC-15)  Ue Rated Voltage V Category (DC-13)  Wechanical Life Expectancy  Coperating Temperature  Life Expectancy  Storage Temperature  Degree of Protection  Phase Reverse  Continuous ON  2 C/O (Minimum load of 5mA is recommended)  2 C/O (Min	UV (RED)	Under Voltage	Continuous ON	
High Cut OFF ASY / REV (RED)  Phase Asymmetry Phase Reverse Continuous ON  Contact Arrangement  Contact Rating Contact Material Utilization Category (AC-15)  Utilization Ue Rated Voltage V 1e Rated Current 1 (PC-13)  Mechanical Life Expectancy  Coperating Temperature  Storage Temperature  Condensing)  Max. Operating Altitude  Degree of Protection  Mounting  High Cut OFF N.A.  Blinking Continuous ON  2 C/O (Minimum load of 5mA is recommended)  1 20/240V 3.0/1.5A  24/125/250V 2.0/0.22/0.1A  20/0.22/0.1A  20/0.22/0.1A  2 1x 10s Operations  Coperations  Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  95% (Rh)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals ; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-VO  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	OV (DED)	Over Voltage	Continuous ON	
RED   Phase Reverse   Continuous ON	OV (RED)	High Cut OFF	N.A.	
Relay Output  Relay Output  Contact Arrangement  Contact Rating Contact Rating Contact Material  Ag Alloy  Utilization Category (AC-15)  Ue Rated Voltage V Ie Rated Current I  Ue Rated C	·	Phase Asymmetry	Blinking	
Relay Output Contact Rating Contact Rating Contact Material During Rated Voltage V Ie Rated Current I Voltilization Category (AC-15) Ue Rated Voltage V Ie Rated Current I Voltilization Category (PC-13) Ue Rated Voltage V Ie Rated Current I Voltilization Category (PC-13) Ue Rated Voltage V Ie Rated Current I Voltilization Category (PC-13) Ue Rated Voltage V Ie Rated Current I Voltilization Category (PC-13)  Mechanical Life Expectancy  1 x 10° Operations  Deparating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  Weight (Unpacked)  120 g Approx.	(RED)	Phase Reverse	Continuous ON	
Contact Material Ag Alloy  Utilization Category (AC-15) Ue Rated Current I le Rated Curre	Relay Output		,	
Contact Material Ag Alloy  Utilization Category (AC-15) Ue Rated Current I le Rated Curre		Contact Rating	5 A (Res.) @ 250 VAC / 28 VDC	
Category (AC-15)  Utilization Category (DC-13)  Mechanical Life Expectancy  Degrating Temperature  Degree of Protection  Pollution Degree  Housing  Pollution Degree  Category (AC-15)  Ue Rated Current I  24/125/250V 2.0/0.22/0.1A  25/00000000000000000000000000000000000			Ag Alloy	
Category (DC-13)  Mechanical Life Expectancy  Storage Temperature  Degree of Protection  Pollution Degree  Housing  Mechanical Life Expectancy  I x 10° Operations  1 x 10° Operations  2 x 10° Operations  2 x 10° Operations  2 x 10° Operations  2 x 10° Operations  3 x 10° Operations  2 x 10° Operations  3 x 10° Operations  2 x 10° Operations  3 x 10° Operations  3 x 10° Operations  2 x 10° Operations  3 x 10° Operations  3 x 10° Operations  4 x 10° Operations  2 x 10° Operations  3 x 10° Operations  3 x 10° Operations  4 x 10° Operations  2 x 10° Operations  3 x 10° Operations  4 x 10° Operations  4 x 10° Operations  5 x 10° Operations  5 x 10° Operations  6 x 10° Operations  7 x 10° Operations  8 x 10° Operations  9 x 10° Operations  1 x 10° Operations  1 x 10° Operations  1 x 10° Operations  1	Category		120/240V	
Electrical Life Expectancy  1 x 10° Operations  Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  2000 m  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Category			
Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  95% (Rh)  Max. Operating Altitude  2000 m  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Mechanical L	ife Expectancy	3 x 10° Operations	
Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Electrical Life	Expectancy	1 x 10⁵Operations	
Humidity (Non-Condensing)  95% (Rh)  Max. Operating Altitude  2000 m  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Operating Ter	mperature	-15°C to +55°C	
Max. Operating Altitude  Degree of Protection  IP-20 for Terminals ; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Storage Temp	erature	-25°C to +70°C	
Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Humidity (Non-Condensing)		95% (Rh)	
for Housing  Pollution Degree Type II  Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	Max. Operating Altitude			
Housing Flame Retardant UL 94-V0 Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	Degree of Protection			
Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Pollution Degi	ree	Type II	
(35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Housing		Flame Retardant UL 94-V0	
Weight (Unpacked) 120 g Approx.	Mounting			
	Dimensions in	mm (W xHx D)	36 x 60 x 90	
Certifications CE, RoHS	Weight (Unpa	cked)	120 g Approx.	
	Certifications		CE, RoHS	

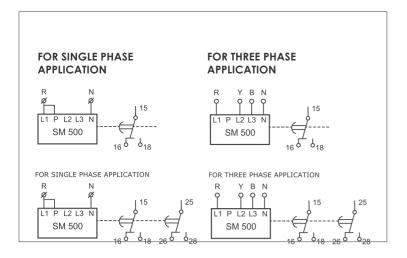
Pinase and Voltage Control	Cat. No.:		MGH3BF	MGH3BY
1-Phase or 3-Phase 4-Wire Frequency	Function		Phase and Volta	ge Control
Power Consumption			220 VAC	
Under Voltage (UV)   55% to 95% of □				
Over Voltage (OV) 105% to 125% of ##  Hysteresis for UV/OV 7V±2V  Asymmetry 10% (Hysterisis: 1.3%±1%)  +/-5% of full scale (Voltage setting are with respect to neutral)  Power ON Delay < 500 msec  Setting Accuracy	Power Consu	mption	4 VA (Max.)	
Trip Levels Hysteresis for UV/OV 7V±2V  Asymmetry 10% (Hysterisis: 1.3%±1%)  **For Monitor of Full scale (Voltage setting are with respect to neutral)  **Power ON Delay**  **Setting Accuracy		Under Voltage (UV)	55% to 95% of □	
Hysteresis for UV/OV   7V±2V     Asymmetry   10% (Hysterisis: 1.3%±1%)     Setting Accuracy   +/-5% of full scale (Voltage setting are with respect to neutral)     Power ON Delay   < 500 msec     Setting Accuracy ±10% of Full     Condition   Faults	Tring Laurala	Over Voltage (OV)	105% to 125% of ¤	Þ
Setting Accuracy	Inp Levels	Hysteresis for UV/OV	7V±2V	
Power ON Delay		Asymmetry	10% (Hysterisis: 1.3	3%±1%)
Setting Accuracy ±10% of Full scale  Note  Off Delay  Indication of Status of LED  Oon Indications of Status of LED  Oo	Setting Accu	racy		
Accuracy ±10% of Full scale  Off Delay  Off Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is <100 ms. Fail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  Weight (Unpacked)  Off Dela Phase Reverse Continuous ON  Contact Material Indications or Status of LED  Continuous ON  Accuracy Phase Reverse Conti	Power ON De	elay	< 500 msec	
Note   Off Delay   0.5 - 15 s		On Delay	5 s fixed	~500 ms
Note   For Non-Inductive loads Phase   Eail trip time is < 100 ms.		Off Delay	0.5 - 15 s	
ON (Green) Power ON Continuous ON  UV (RED) Under Voltage Continuous ON  OV (RED) High Cut OFF N.A.  ASY / REV (RED) Phase Asymmetry Blinking Phase Reverse Continuous ON  Contact Rating 5 A (Res.) @ 250 VAC / 28 VDC  Category (AC-15) Ue Rated Voltage V le Rated Current I (AC-15) Ue Rated Current I (BC-13)  Mechanical Life Expectancy 1 x 10 <sup>4</sup> Operations  Electrical Life Expectancy 1 x 10 <sup>4</sup> Operations  Operating Temperature -25°C to +70°C  Humidity (Non-Condensing) Pollution Degree Type II  Housing Pollution Pollution Pollution Degree Type II  Housing Pollution Pollutio	Note		For Non-Inductive	e loads Phase
UV (RED)  Under Voltage  OV (RED)  OV (RED)  OV (RED)  Diver Voltage  High Cut OFF  N.A.  ASY / REV (RED)  Phase Asymmetry Phase Reverse  Continuous ON  Contact Arrangement  Contact Arrangement  Contact Rating Contact Material  Ue Rated Voltage V I 120/240V 3.0/1.5A  Utilization Category (AC-15)  Utilization Utilization Utilization Utilization Category (Cotagory (	LED	Condition / Faults	Indications or Sta	tus of LED
OV (RED)  Over Voltage High Cut OFF High Cut OFF N.A.  ASY / REV (RED)  Phase Asymmetry Phase Reverse Continuous ON  Contact Arrangement Contact Arrangement Contact Rating Contact Material Ag Alloy  Utilization Category (AC-15)  Ue Rated Voltage V Ie Rated Current I (Bated Current I (Cottage V) (Cottage V) (Cottage V) (Cottage V) (In Rated Current I (In Reded Curr	ON (Green)	Power ON	Continuous ON	
High Cut OFF   N.A.     ASY / REV (RED)   Phase Asymmetry   Blinking     Phase Reverse   Continuous ON     Contact Arrangement   2 C/O (Minimum load of 5mA is recommended)     Contact Rating   5 A (Res.) @ 250 VAC / 28 VDC     Contact Material   Ag Alloy     Utilization   Ue Rated Voltage V (AC-15)   Ue Rated Current   2 (21/25/250V 2.0/0.22/0.1A     Utilization   Ue Rated Voltage V (DC-13)   Ue Rated Current   2 (24/125/250V 2.0/0.22/0.1A     Mechanical Life Expectancy   1 x 10 Operations     Electrical Life Expectancy   1 x 10 Operations     Storage Temperature   -15 C to +55 C     Storage Temperature   -25 C to +70 C     Humidity (Non-Condensing)   95% (Rh)     Max. Operating Altitude   2000 m     Degree of Protection   IP-20 for Terminals ; IP-30 for Housing     Pollution Degree   Type II     Housing   Flame Retardant UL 94-V0     Mounting   Base / Din-Rail (35 mm Symmetrical)     Dimensions in mm (W xHx D)   36 x 60 x 90     Weight (Unpacked)   120 g Approx.	UV (RED)	Under Voltage	Continuous ON	
High Cut OFF ASY / REV (RED) Phase Asymmetry Phase Reverse Continuous ON  Relay Output Contact Arrangement Contact Arrangement Contact Rating Contact Material Utilization Category (AC-15) Utilization Category (DC-13) Mechanical Life Expectancy Coperating Temperature Utilization Coperating Temperature Coperating Altitude Degree of Protection Phase Asymmetry Blinking Continuous ON  2 C/O (Minimum load of 5mA is recommended)  1 2 C/O (Minimum load of 5mA is recommended)  2 C/O (AC-15)  3 (Res.) @ 250 VAC / 28 VDC  2 0/0.22/010  3 (N1.5A  4 (N1.5A	OV (BED)	Over Voltage	Continuous ON	
RED  Phase Reverse   Continuous ON	OV (RED)	High Cut OFF		
Relay Output  Relay Output  Contact Arrangement  Contact Rating Contact Rating Contact Material  Relay Output  Contact Rating Contact Material  Ag Alloy  Utilization Category (AC-15)  Ue Rated Voltage V 1e Rated Current I Relay Output  Ue Rated Current I Rated Current I Relay Output  Ue Rated Voltage V 120/240V 2.0/0.22/0.1A  Ue Rated Current I Relay Output  Ue Rated Voltage V 2.4/125/250V 2.0/0.22/0.1A  Satisfy Operations  Ue Rated Current I Relay Output  Ue Rated Current I Relay Output  Ue Rated Current I Relay Output  Ue Rated Voltage V 2.4/125/250V 2.0/0.22/0.1A  In 10° Operations  Ue Rated Current I Relay Output  In 10° Operations  I	·	Phase Asymmetry	Blinking	
Relay Output  Contact Rating Contact Rating Contact Material  We Rated Voltage V Ie Rated Current I Villization Category (AC-15)  Ue Rated Voltage V Ie Rated Current I Villization Category (DC-13)  We chanical Life Expectancy  If Expectancy  Coperating Temperature  Coperating Temperature  Coperating Ag Alloy  120/240V 3.0/1.5A  24/125/250V 2.0/0.22/0.1A  20/0.22/0.1A  1 x 10° Operations  1 x 10° Operations  1 x 10° Operations  1 x 10° Operations  25° C to +70° C  1 x 10° Operations	(RED)	Phase Reverse	Continuous ON	
Contact Material Ag Alloy  Utilization Category (AC-15)  Ue Rated Current I 20/240V  le Rated Current I 2.0/1.5A  Utilization Category (PC-13)  Utilization Ue Rated Voltage V 2.0/0.22/0.1A  Mechanical Life Expectancy 3 x 10 <sup>4</sup> Operations  Electrical Life Expectancy 1 x 10 <sup>5</sup> Operations  Departing Temperature -15°C to +55°C  Storage Temperature -25°C to +70°C  Humidity (Non-Condensing) 95% (Rh)  Max. Operating Altitude 2000 m  Degree of Protection IP-20 for Terminals ; IP-30 for Housing  Pollution Degree Type II  Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	Relay Output		,	
Contact Material Ag Alloy  Utilization Category (AC-15)  Ue Rated Current I 20/240V  le Rated Current I 2.0/1.5A  Utilization Category (PC-13)  Utilization Ue Rated Voltage V 2.0/0.22/0.1A  Mechanical Life Expectancy 3 x 10 <sup>4</sup> Operations  Electrical Life Expectancy 1 x 10 <sup>5</sup> Operations  Departing Temperature -15°C to +55°C  Storage Temperature -25°C to +70°C  Humidity (Non-Condensing) 95% (Rh)  Max. Operating Altitude 2000 m  Degree of Protection IP-20 for Terminals ; IP-30 for Housing  Pollution Degree Type II  Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.		Contact Rating	5 A (Res.) @ 250 VAC / 28 VDC	
Category (AC-15)  Utilization Category (DC-13)  Mechanical Life Expectancy  Electrical Life Expectancy  Operating Temperature  Humidity (Non-Condensing)  Degree of Protection  Pollution Degree  Housing  Mechanical Life Expectancy  I x 10° Operations  1 x 10° Operations  2 x 10° Operations  3 x 10° Operations  2 x 10° Operations  3 x 10° Operations  2 x 10° Operations  3 x 10° Operations  3 x 10° Operations  2 x 10° Operations  3 x 10° Operations  3 x 10° Operations  4 x 10° Operati			, ,	
Category (DC-13)  Mechanical Life Expectancy  Storage Temperature  Degree of Protection  Housing  Pollution Degree  Housing  Mechanical Life Expectancy  I x 10° Operations  1 x 10° Operations  2 x 10° Operations  3 x 10° Operations  4 x 10° Operations  2 x 10° Operations  3 x 10° Opera	Category		· '	
Electrical Life Expectancy  Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)	Category			
Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)	Mechanical Li	ife Expectancy	3 x 10°Operations	
Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Electrical Life	Expectancy	1 x 10⁵Operations	
Humidity (Non-Condensing)  95% (Rh)  Max. Operating Altitude  Degree of Protection  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)	Operating Ter	mperature	-15°C to +55°C	
Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Storage Temperature		-25°C to +70°C	
Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Humidity (Non-Condensing)		95% (Rh)	
for Housing  Pollution Degree Type II  Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	Max. Operating Altitude		2000 m	
Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	Degree of Protection			
Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Pollution Deg	ree	Type II	
(35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Housing		Flame Retardant UL 94-V0	
Weight (Unpacked) 120 g Approx.	Mounting			cal)
	Dimensions in	mm (W xHx D)	36 x 60 x 90	
Certifications CE, RoHS	Weight (Unpacked)		120 g Approx.	
	Certifications		CE, RoHS	

<sup>\*</sup>All LEDs should off incase of Single Phase Loss, 2 Phase Loss & 3 Phase Loss conditions.

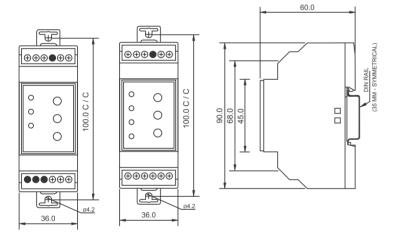
Cat. No.:		MG73BR	MGH3BH
Function		Phase and Voltage Control	
Reference Supply Voltage (中) 1-Phase or 3-Phase 4-Wire		240 VAC	220 VAC
Frequency Power Consumption		47 to 63 Hz 4 VA (Max.)	
	Under Voltage (UV)	173 V ± 10 V	55% to 95% of ф
	Over Voltage (OV)	288 V ± 10 V	105% to 125% of ¢
Trip Levels	Hysteresis for UV/OV	7V±2V	
	Asymmetry	20% ± 4%, Hyst. 4%±2%)	10%
Setting Accu	racy		e (Voltage setting to neutral)
Power ON De	elay	< 500 msec	
Setting Accuracy	On Delay	0.5-10 s ±1s	0.5 - 15 s
±10% of Full scale	Off Delay	0.5 - 5s	5 s fixed
Note		Phase Reverse tri For Non-Inductive Fail trip time is < 1	
LED	Condition / Faults	Indications or Sta	tus of LED
ON (Green)	Power ON	Continuous ON	
UV (RED)	Under Voltage	Continuous ON	
OV (RED)	Over Voltage	Continuous ON	
OV (KLD)	High Cut OFF	N.A.	Blinking
ASY / REV	Phase Asymmetry	Blinking	
(RED)	Phase Reverse	Continuous ON	
Relay Output	Contact Arrangement	2 C/O (Minimum load of 5mA is recommended)	
	Contact Rating	5 A (Res.) @ 250 VAC / 28 VDC	
	Contact Material	Ag Alloy	
Utilization Category (AC-15)	Ue Rated Voltage V le Rated Current I	120/240V 3.0/1.5A	
Utilization Category (DC-13)	Ue Rated Voltage V le Rated Current I	24/125/250V 2.0/0.22/0.1A	
Mechanical Li	ife Expectancy	3 x 10°Operations	
Electrical Life	Expectancy	1 x 10⁵Operations	
Operating Ter	nperature	-15°C to +55°C	
Storage Temp	erature	-25°C to +70°C	
Humidity (Non-Condensing)		95% (Rh)	
Max. Operating Altitude		2000 m	
Degree of Protection		IP-20 for Terminals ; IP-30 for Housing	
Pollution Degi	ree	Type II	
Housing		Flame Retardant UL 94-V0	
Mounting		Base / Din-Rail (35 mm Symmetrical)	
Dimensions in	mm (W xHx D)	36 x 60 x 90	
Weight (Unpa	cked)	120 g Approx.	
Certifications		CE, RoHS	
		I.	

Function         Phase and Voltage (ab) 1-Phase or 3-Phase 4-Wire         230 VAC         120 to 240 settable           1-Phase or 3-Phase 4-Wire         230 VAC         120 to 240 settable           1-Phase or 3-Phase 4-Wire         4 VA (Max.)         VA (Max.)           Trip Levels Frequency Trip Levels Page 10 (Nover Voltage (UV)         55% to 95% of ship         80% of ship           Setting Accuracy 10 (Hysterisis: 1.3 (With page 11) (With page 12) (Wi	Cat. No.:		MGI3BF	MG73BQ	
1-Phase or 3-Phase 4-Wire	Function		Phase and Voltage Control		
Frequency	Reference Supply Voltage (➪) 1-Phase or 3-Phase 4-Wire		230 VAC		
Trip Levels					
Trip Levels	Power Consu	mption	4 VA (Max.)		
Trip Levels		Under Voltage (UV)	55% to 95% of ф	80% of ⇔	
Hysteresis for UV/OV   74±2V	Trip Lovels	Over Voltage (OV)	105% to 125% of ¤	]	
Setting Accuracy	liib reveis	Hysteresis for UV/OV	7V±2V		
Power ON Delay		Asymmetry	, ,	,	
Setting   Accuracy ±10% of Full scale	Setting Accu	racy			
Accuracy ±10% of Full scale  Off Delay  Off Delay  O-15 s  Phase Reverse trip time is <100 ms. For Non-Inductive loads Phase Fail trip time is < 100 ms. Indications or Status of LED  ON (Green)  ON (Green)  OV (RED)  Under Voltage  Over Voltage  Over Voltage  Continuous ON  High Cut OFF  N.A.  Blinking  Phase Reverse  Continuous ON  Over Voltage  Continuous ON  Blinking  Phase Reverse  Continuous ON  Continuous ON  Continuous ON  ASY / REV (RED)  Phase Asymmetry Phase Reverse  Continuous ON  Contact  Arrangement  Contact Rating  Contact Rating  Contact Rating  Eached Current I  Category (Ac-15)  Utilization  Category (Ac-15)  Utilization  Category (Co-13)  Mechanical Life Expectancy  I x 10° Operations  Electrical Life Expectancy  Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  Pollution Degree  Type II  Housing  Menasions in mm (W xHx D)  Weight (Unpacked)  Phase Reverse trip time is <100 ms.  Pollution Desree  Phase Reverse Fail trip time is <100 ms.  For Non-Inductive loads Phase Feal trip time is <100 ms.  Indication Scholl Time is <100 ms.  Indication For Non-Inductive loads Phase Feal tlep  Continuous ON  Continuous ON  Blinking  Blinking  Continuous ON  2 C/O (Minimum load of 5mA is recommended)  Feal Asymmetry  Read Voltage V 2 (A (Res.) @ 250 VAC / 28 VDC  A (Res.) @ 250 VAC /	Power ON De	elay	< 500 msec		
Note   Off Delay		On Delay	5 s fixed		
Note   For Non-Inductive loads Phase Fail trip time is < 100 ms.		Off Delay	0 - 15 s		
ON (Green) Power ON Continuous ON  UV (RED) Under Voltage Continuous ON  OV (RED) Over Voltage Continuous ON  High Cut OFF N.A. Blinking  ASY / REV Phase Asymmetry Phase Reverse Continuous ON  Relay Output Contact Arrangement Relay Output Phase Reverse Phase Asymmetrical)  Ontact Rating Contact Material Phase Reverse Parameters Phase Asymmetry Phase Reverse Phase Arrangement Relay Output Phase Reverse Phase Asymmetry Phase Reverse Phase Phase Phase Reverse Phase Pha	Note		For Non-Inductive	e loads Phase	
UV (RED) Under Voltage Continuous ON  OV (RED) Over Voltage Continuous ON  High Cut OFF N.A. Blinking  ASY / REV (RED) Phase Asymmetry Phase Reverse Continuous ON  Relay Output Contact Arrangement Relay Output Phase Reverse Phase Asymmetry Phase Reverse Continuous ON  Contact Rating 5 A (Res.) @ 250 VAC / 28 VDC Contact Material Ag Alloy  Utilization Category (AC-15) Ue Rated Voltage V le Rated Current I Rated Current I Reated Current I Reated Current I Record Successful Phase Reverse Phase Ph	LED	Condition / Faults	Indications or Sta	tus of LED	
OV (RED)  Over Voltage High Cut OFF High Cut OFF N.A.  Blinking Phase Asymmetry Phase Reverse Continuous ON  Relay Output  Contact Arrangement Contact Rating Contact Material Contact Material Ue Rated Voltage V Ie Rated Current I Category (PC-13)  Ue Rated Voltage V Ie Rated Current I Category (PC-13)  Mechanical Life Expectancy  Operating Temperature  -15°C to +70°C  Storage Temperature  Degree of Protection  Pollution Degree  Housing  Pinse Reverse Continuous ON  Blinking Blinking Blinking Contain Blinking Blinking  Phase Asymmetry Re. A.  Blinking  Blinking  Blinking  Blinking  Blinking  Blinking  Blinking  Flame Retard of 5 mA is recommended)  2 C/O (Minimum load of 5mA is recommended)  1 20/240V 3.0/1.5A  24/125/250V 2.0/0.22/0.1A  2 2/00.22/0.1A  2 2/00.22/0.1A  2 2/00.22/0.1A  2 2/125/250V 2.0/0.22/0.1A	ON (Green)	Power ON	Continuous ON		
High Cut OFF N.A. Blinking  ASY / REV (RED) Phase Asymmetry Blinking  Phase Reverse Continuous ON  Relay Output Contact Arrangement Phase Reverse Continuous ON  Contact Rating S A (Res.) @ 250 VAC / 28 VDC (Arrangement Phase Reverse)  Contact Material Ag Alloy  Utilization Category (AC-15)  Utilization Ue Rated Voltage V 120/240V 2.0/0.22/0.1A  Utilization Category (PC-13)  Wechanical Life Expectancy In x 106 Operations  Electrical Life Expectancy In x 106 Operations  Operating Temperature In 2000 m  Operating Altitude In Type II  Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	UV (RED)	Under Voltage	Continuous ON		
High Cut OFF N.A.   Blinking ASY / REV (RED)   Phase Asymmetry   Blinking Phase Reverse   Continuous ON   Relay Output   Contact   Arrangement   2 C/O (Minimum load of 5mA is recommended)   Contact Rating   5 A (Res.) @ 250 VAC / 28 VDC   Contact Material   Ag Alloy   Utilization   Ue Rated Voltage V (AC-15)   Ue Rated Current   24/125/250V   Retaded Current   25°C to +55°C   Storage Temperature   -15°C to +55°C   Storage Temperature   -25°C to +70°C   Humidity (Non-Condensing)   95% (Rh)   Max. Operating Altitude   2000 m   Degree of Protection   IP-20 for Terminals ; IP-30 for Housing   Pollution Degree   Type II   Housing   Flame Retardant UL 94-V0   Mounting   Base / Din-Rail (35 mm Symmetrical)   Dimensions in mm (W xHx D)   36 x 60 x 90   Weight (Unpacked)   120 g Approx.	OV (DED)	Over Voltage	Continuous ON		
Relay Output Relay Output Relay Output Relay Output Relay Output Relay Output Contact Arrangement Contact Rating Contact Rating Contact Rating Contact Material Ag Alloy  Utilization Category (AC-15) Utilization Ue Rated Voltage V le Rated Current I Rechamber Service Service Category (DC-13)  We chanical Life Expectancy  I x 10° Operations  Electrical Life Expectancy  Storage Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  Weight (Unpacked)  12 C/O (Minimum load of 5mA is recommended)  2 4/125/250V 2.0/0.22/0.1A  3 x 10° Operations  1 x 10° Operations  1 x 10° Operations  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  P5% (Rh)  Max. Operating Altitude  2000 m  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)	OV (KED)	High Cut OFF	N.A.	Blinking	
Relay Output Arrangement		Phase Asymmetry	Blinking		
Relay Output Contact Rating Contact Material Dufflization Category (AC-15) Ue Rated Voltage V le Rated Current I Ue Rated Voltage V Ue Rated Current I Ue Rated Voltage V Ue At 125/250V Ue A	(RED)	Phase Reverse	Continuous ON		
Contact Material Ag Alloy  Utilization Category (AC-15)  Ue Rated Current I le Rated	Relay Output		,	load of 5mA is	
Contact Material Ag Alloy  Utilization Category (AC-15)  Ue Rated Current I le Rated		Contact Rating	5 A (Res.) @ 250 VAC / 28 VDC		
Category (AC-15)  Utilization Category (DC-13)  Mechanical Life Expectancy  Electrical Life Expectancy  Operating Temperature  Storage Temperature  Degree of Protection  Pollution Degree  Housing  Pollution Degree  Mechanical Life Extended Current I  Storage Temperature  Dimensions in mm (W xHx D)  Weight (Unpacked)  In Rated Current I  StorA (24/125/250V  24/125/250V  24/125/250		Contact Material	Ag Alloy		
Category (DC-13)  Mechanical Life Expectancy  3 x 10 <sup>4</sup> Operations  Electrical Life Expectancy  1 x 10 <sup>5</sup> Operations  Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  P-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Category				
Electrical Life Expectancy  1 x 10 <sup>5</sup> Operations  Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  2000 m  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Category	_			
Operating Temperature  -15°C to +55°C  Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Mechanical Li	ife Expectancy	3 x 10°Operations		
Storage Temperature  -25°C to +70°C  Humidity (Non-Condensing)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals ; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Electrical Life	Expectancy	1 x 10 <sup>5</sup> Operations		
Humidity (Non-Condensing)  95% (Rh)  Max. Operating Altitude  Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Operating Ter	mperature	-15°C to +55°C		
Max. Operating Altitude  2000 m  Degree of Protection  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Storage Temp	erature	-25°C to +70°C		
Degree of Protection  IP-20 for Terminals; IP-30 for Housing  Pollution Degree  Type II  Housing  Flame Retardant UL 94-V0  Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Humidity (Non-Condensing)		95% (Rh)		
for Housing  Pollution Degree Type II  Housing Flame Retardant UL 94-V0  Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	Max. Operating Altitude		2000 m		
Housing Flame Retardant UL 94-V0 Mounting Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D) 36 x 60 x 90  Weight (Unpacked) 120 g Approx.	Degree of Protection				
Mounting  Base / Din-Rail (35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Pollution Degree		Type II		
(35 mm Symmetrical)  Dimensions in mm (W xHx D)  36 x 60 x 90  Weight (Unpacked)  120 g Approx.	Housing		Flame Retardant UL 94-V0		
Weight (Unpacked) 120 g Approx.	Mounting				
, , ,	Dimensions in	mm (W xHx D)	36 x 60 x 90		
Certifications CE, RoHS	Weight (Unpa	cked)	120 g Approx.		
	Certifications	Certifications		CE, RoHS	

<sup>\*</sup>All LEDs should off incase of Single Phase Loss, 2 Phase Loss & 3 Phase Loss conditions.



Ø3.5 mm	0.54 N.m (5 Lb.in) Terminal screw - M2.6
	1 x 0.23.3 mm <sup>2</sup> Solid Wire
AWG	1 x 24 to 12



# **OPERATING MODES:**

All products operates in Single Phase as well as Three Phase Mode.

## **Three Phase Mode:**

Connect three phases at L1, L2, L3 and Neutral at N terminal. Keep P terminal open.

# Single Phase Mode:

Connect a link between L1 & P and Neutral at N terminal. L2 & L3 connections are don't care. In single phase mode, device monitors only L1 phase for UV & OV condition.

#### Note:

The technical information provided in this document is correct at the time of going to the press. Product innovation being a continuous process , we reserve the right to alter specifications without any prior notice.

## **CERTIFICATION:**

Product Standard :IEC 60255-1		
EMI/EMC:		
Harmonic Current Emission	IEC 61000-3-2	Class A
ESD	IEC 61000-4-2	Level III
Radiated Susceptibility	IEC 61000-4-3	Level III
Electrical Fast Transients	IEC 61000-4-4	Level IV
Surge	IEC 61000-4-5	Level IV
Conducted Susceptibility	IEC 61000-4-6	Level III
Voltage Dips and Interruptions (AC)	IEC 61000-4-11	
Conducted Emission	CISPR 14-1	Class A
Radiated Emission	CISPR 14-1	Class A
Safety:		
Test Voltage Between I/P & O/P	IEC 60947-5-1	2 kV
Impulse Voltage Between I/P & O/P	IEC 60947-5-1	Level IV
Single Fault	IEC 61010-1	
Insulation Resistance	UL 508	>50 KΩ
Leakage Current	UL 508	<3.5 mA
Environmental:		
cold Heat	IEC 60068-2-1	
Dry Heat	IEC 60068-2-2	
Vibration	IEC 60068-2-6	5 g
Repetitive Shock	IEC 60068-2-27	45g,6ms
Non-repetitive Shock	IEC 60068-2-27	30g,15ms

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 ControlsPvt. Ltd, through website https://www.gicindia.com/ get-in-touch/