

SUPPLY MONITORING DEVICE SERIES SM501

Ordering Catalog Nos.:

MG53BH
MG53BF
MG53BP
MG53BI
MG53BO
MG53BT
MB53BM
MG63BH
MG63BF
MG53BR



FEATURES:

- Monitors own supply.
- Phase Loss detection.
- Phase Reverse detection.
- Adjustable Asymmetry or fixed Asymmetry.
- Adjustable Over & Under voltage trip level.
- Adjustable or fixed On Time delay /Off Time delay.
- DPDT Relay output (5A, Resistive).
- Din rail & base mounting.
- LED indication.

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.
- Installation to be done by skilled electrician.
- Suitable dampers should be provided in the event of excessive vibrations.

SUITABILITY FOR USE:

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

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.

FUNCTION DESCRIPTION:

MG53BH, MG53BF, MG53BP, MG53BI, MG63BH, MG63BF

- Detects sequence of the three phases.
- Failure of any of the three phases.
- Under voltage adjustable from 55% to 95%.
- Over voltage adjustable from 105% to 125%.
- Failure due to Asymmetry is fixed at 65V for MG53BP, MG53BI and 10% for remaining other catalogs.

MG53BT

- Detects sequence of the three phases.
- Failure of any of three phases.
- Under voltage adjustable from -2%, -4%, -6%, -8%, -10%.
- Over voltage adjustable from 2%, 4%, 6%, 8%, 10%.
- Failure due to Asymmetry (10% ±1%), Hysteresis (1.3%±1%)

MB53BM

- Detects sequence of the three phases.
- Failure of any of the three phases.
- Under voltage fixed at 80% symmetrical.
- Failure due to Asymmetry adjustable from 5% to 17%.
- High Cut OFF 500 V (+/-10V)

MG53BO

- Detects sequence of the three phases
- Failure of any of the three phases.
- Over voltage fixed at 110%.
- Under voltage fixed at 85%.
- Failure due to Asymmetry fixed at 10%.

MG53BR

- Failure of any of the three phases.
- Under voltage adjustable from 75% to 95%. (Symmetrical)
- Over voltage adjustable from 105% to 125%. (Symmetrical) (Max. difference from avg. line voltage)

TECHNICAL SPECIFICATION:

SUPPLY MONITORING DEVICE SERIES: SM-501
3-Phase 3-Wire

Cat. No.:		MG53BH	MG53BF
Function		Phase and Voltage Control	
Reference Supply Voltage (≡)		3-Phase 3-Wire, 415 VAC	
Supply Tolerance		-45% to +27% of ≡	
Frequency		47 to 63 Hz	
Power Consumption		10VA (Max.)	
Trip Levels	Under Voltage (UV)	55% to 95% of ≡ (±10 V)	
	Over Voltage (OV)	105% to 125% of ≡ (±10 V)	
	Asymmetry	10% ±1%,	10% ±1%,
	Hysteresis for UV/OV	2.7%±1%	2% ±1%
Setting Accuracy		+/-5% of full scale	
Time Delay	On Delay	<0.5 - 15 s	5 s fixed
	Off Delay	5 s fixed	<0.5 - 15 s
		Phase Reverse Trip time is < 100 ms. For Non -Inductive loads Phase Fail trip time is <100 ms.	
Time Setting Accuracy		+/-10% of full scale	
LED	Condition / Faults	Indications or Status of LED	
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 (RED)	Phase Asymmetry	Blinking	
	Phase Reverse	Continuous ON	
Relay Output	Contact Arrangement	2 C/O (Minimum load of 5mA is recommended)	
	Contact Rating	5A (Res.) @ 250 VAC / 30 VDC	
	Contact Material	Ag Alloy	
Utilization Category (AC-15)	Ue Rated Voltage V Ie Rated Current I	120/240V 3.0/1.5A	
Utilization Category (DC-13)	Ue Rated Voltage V Ie Rated Current I	24/125/250V 2.0/0.22/0.1A	
Mechanical Life Expectancy		3 x 10 ⁶ Operations	
Electrical Life Expectancy		1 x 10 ⁵ Operations	
Operating Temperature		-15°C to +55°C	
Storage Temperature		-25°C to +70°C	
Humidity (Non-Condensing limits)		Max. 95%	
Max. Operating Altitude		2000 m	
Degree of Protection		IP-20 for Terminals; IP-40 for Housing	
Pollution Degree		Type II	
Housing		Flame Retardant UL 94-V0	
Mounting		Base / Din-Rail(35mm Symmetrical)	
Dimensions in mm (W xHx D)		36 x 60 x 90	
Weight (Unpacked)		120 g Approx.	
Certifications		CE, RoHS	

Cat. No.:		BP*	MG53BI	MG53BO
Function		Phase and Voltage Control		
Reference Supply Voltage (≡)		3-Phase 3-Wire, 415 VAC		
Supply Tolerance		-45% to +27% of ≡		
Frequency		47 to 63 Hz		
Power Consumption		10VA (Max.)		
Trip Levels	Under Voltage (UV)	55% to 95% of ≡ (±10 V)		85% Fix (±10V)
	Over Voltage (OV)	105% to 125% of ≡ (±10 V)		110%Fix (±10V)
	Asymmetry	65V +/-5V		10% ±1%,
	Hysteresis for UV/OV	7V +/-5V		2.7%±1%
Setting Accuracy		+/-5% of full scale		N.A.
Time Delay	On Delay	5 s fixed		3 min fixed
	Off Delay	<0.5 -15 s	5 s fixed	5 s fixed
		Phase Reverse Trip time is < 100 ms. For Non -Inductive loads Phase Fail trip time is <100 ms.		
Time Setting Accuracy		+/-10% of full scale		N.A.
LED	Condition / Faults	Indications or Status of LED		
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 (RED)	Phase Asymmetry	Blinking		
	Phase Reverse	Continuous ON		
Relay Output	Contact Arrangement	2 C/O (Minimum load of 5mA is recommended)		
	Contact Rating	5A (Res.) @ 250 VAC / 30 VDC		
	Contact Material	Ag Alloy		
Utilization Category (AC-15)	Ue Rated Voltage V Ie Rated Current I	120/240V 3.0/1.5A		
Utilization Category (DC-13)	Ue Rated Voltage V Ie Rated Current I	24/125/250V 2.0/0.22/0.1A		
Mechanical Life Expectancy		3 x 10 ⁶ Operations		
Electrical Life Expectancy		1 x 10 ⁵ Operations		
Operating Temperature		-15°C to +55°C		
Storage Temperature		-25°C to +70°C		
Humidity (Non-Condensing limits)		Max. 95%		
Max. Operating Altitude		2000 m		
Degree of Protection		IP-20 for Terminals; IP-40 for Housing		
Pollution Degree		Type II		
Housing		Flame Retardant UL 94-V0		
Mounting		Base / Din-Rail(35mm Symmetrical)		
Dimensions in mm (W xHx D)		36 x 60 x 90		
Weight (Unpacked)		120 g Approx.		
Certifications		CE, RoHS		

* For MG53BP & MG53BI Voltage Asymmetry is 65 Volt **MG53BR voltage asymmetry is 30V. (Voltage Asymmetry is Maximum deviation from average line voltage)

Note: All LEDs should become off incase of Single Phase Loss, 2 Phase Loss & 3 Phase Loss conditions and also if the Asymmetry is >24%.

Cat. No.:		MG53BT	MB53BM
Function		Phase and Voltage Control	
Reference Supply Voltage (㉮)		3-Phase 3-Wire, 415 VAC	
Supply Tolerance		-45% to +27% of ㉮	
Frequency		47 to 63 Hz	
Power Consumption		10VA (Max.)	
Trip Levels	Under Voltage (UV)	-2% to -10% ($\pm 5V$)	80% Fix Sym. ($\pm 10V$)
	Over Voltage (OV)	2% to 10% ($\pm 5V$)	110% Fix ($\pm 10V$)
	Asymmetry	10% $\pm 1\%$,	5% to 17%
	Hysteresis for UV/OV	2% $\pm 1\%$	2.7% $\pm 1\%$
Setting Accuracy		+/-5% of full scale	
Time Delay	On Delay	5 s fixed($\pm 1s$)	<0.5 - 15 s
	Off Delay	0 - 5 s ($\pm 1s$)	<0.5 - 15 s
		Phase Reverse Trip time is < 100 ms. For Non -Inductive loads Phase Fail trip time is <100 ms.	
Time Setting Accuracy		+/-10% of full scale	
LED	Condition / Faults	Indications or Status of LED	
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 (RED)	Phase Asymmetry	Blinking	
	Phase Reverse	Continuous ON	
Relay Output	Contact Arrangement	2 C/O (Minimum load of 5mA is recommended)	
	Contact Rating	5A (Res.) @ 250 VAC / 30 VDC	
	Contact Material	Ag Alloy	
Utilization Category (AC-15)	Ue Rated Voltage V Ie Rated Current I	120/240V 3.0/1.5A	
Utilization Category (DC-13)	Ue Rated Voltage V Ie Rated Current I	24/125/250V 2.0/0.22/0.1A	
Mechanical Life Expectancy		3 x 10 ⁶ Operations	
Electrical Life Expectancy		1 x 10 ⁵ Operations	
Operating Temperature		-15°C to +55°C	
Storage Temperature		-25°C to +70°C	
Humidity (Non-Condensing limits)		Max. 95%	
Max. Operating Altitude		2000 m	
Degree of Protection		IP-20 for Terminals; IP-40 for Housing	
Pollution Degree		Type II	
Housing		Flame Retardant UL 94-V0	
Mounting		Base / Din-Rail(35mm Symmetrical)	
Dimensions in mm (W xH x D)		36 x 60 x 90	
Weight (Unpacked)		120 g Approx.	
Certifications		CE, RoHS	

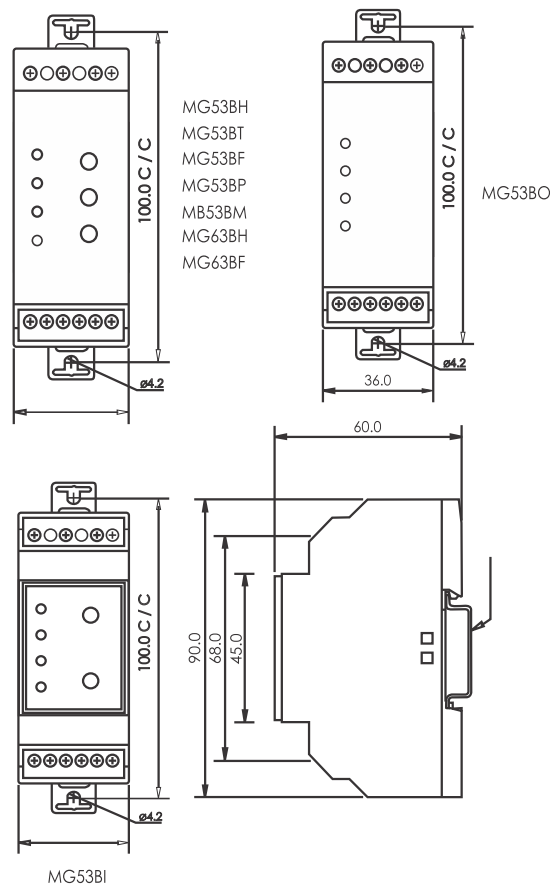
Cat. No.:		MG63BH	MG63BF
Function		Phase and Voltage Control	
Reference Supply Voltage (㉮)		3-Phase 3-Wire, 220 VAC	
Supply Tolerance		-45% to +27% of ㉮	
Frequency		47 to 63 Hz	
Power Consumption		5VA (Max.)	
Trip Levels	Under Voltage (UV)	55% to 95% of ㉮($\pm 10V$)	
	Over Voltage (OV)	105% to 125% of ㉮($\pm 10V$)	
	Asymmetry	10% $\pm 1\%$,	
	Hysteresis for UV/OV	2.7% $\pm 1\%$	
Setting Accuracy		+/-5% of full scale	
Time Delay	On Delay	5 s fixed($\pm 1s$)	<0.5 - 15 s
	Off Delay	0 - 5 s ($\pm 1s$)	<0.5 - 15 s
		Phase Reverse Trip time is < 100 ms. For Non -Inductive loads Phase Fail trip time is <100 ms.	
Time Setting Accuracy		+/-10% of full scale	
LED	Condition / Faults	Indications or Status of LED	
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 (RED)	Phase Asymmetry	Blinking	
	Phase Reverse	Continuous ON	
Relay Output	Contact Arrangement	2 C/O (Minimum load of 5mA is recommended)	
	Contact Rating	5A (Res.) @ 250 VAC / 30 VDC	
	Contact Material	Ag Alloy	
Utilization Category (AC-15)	Ue Rated Voltage V Ie Rated Current I	120/240V 3.0/1.5A	
Utilization Category (DC-13)	Ue Rated Voltage V Ie Rated Current I	24/125/250V 2.0/0.22/0.1A	
Mechanical Life Expectancy		3 x 10 ⁶ Operations	
Electrical Life Expectancy		1 x 10 ⁵ Operations	
Operating Temperature		-15°C to +55°C	
Storage Temperature		-25°C to +70°C	
Humidity (Non-Condensing limits)		Max. 95%	
Max. Operating Altitude		2000 m	
Degree of Protection		IP-20 for Terminals; IP-40 for Housing	
Pollution Degree		Type II	
Housing		Flame Retardant UL 94-V0	
Mounting		Base / Din-Rail(35mm Symmetrical)	
Dimensions in mm (W xH x D)		36 x 60 x 90	
Weight (Unpacked)		120 g Approx.	
Certifications		CE, RoHS	

* For MG53BP & MG53BI Voltage Asymmetry is 65 Volt **MG53BR voltage asymmetry is 30V. (Voltage Asymmetry is Maximum deviation from average line voltage)

Note: All LEDs should become off incase of Single Phase Loss, 2 Phase Loss & 3 Phase Loss conditions and also if the Asymmetry is >24%.

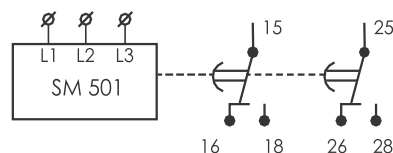
Cat. No.:		MG53BR
Function		Phase and Voltage Control
Reference Supply Voltage (中)		415 VAC
Supply Tolerance		-45% to +27% of 中
Frequency		47 to 63 Hz
Power Consumption		10VA (Max.)
Trip Levels	Under Voltage (UV)	75% to 90% of 中(±10V)
	Over Voltage (OV)	105% to 125% of 中(±10V)
	Asymmetry	30V**(± 7V)
	Hysteresis for UV/OV	10V (±7V)
Setting Accuracy		N.A.
Time Delay	On Delay	2.5-3.1 s fixed
	Off Delay	<0.5 Sec Phase Fail:<100ms Phase Reverse Trip time is < 100 ms. For Non -Inductive loads Phase Fail trip time is <100 ms.
Time Setting Accuracy		+/-10% of full scale
LED	Condition / Faults	Indications or Status of LED
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 (RED)	Phase Asymmetry	Blinking
	Phase Reverse	N.A.
Relay Output	Contact Arrangement	2 C/O (Minimum load of 5mA is recommended)
	Contact Rating	5A (Res.) @ 250 VAC / 30 VDC
	Contact Material	Ag Alloy
Utilization Category (AC-15)	Ue Rated Voltage V Ie Rated Current I	120/240V 3.0/1.5A
Utilization Category (DC-13)	Ue Rated Voltage V Ie Rated Current I	24/125/250V 2.0/0.22/0.1A
Mechanical Life Expectancy		3 x 10 ⁶ Operations
Electrical Life Expectancy		1 x 10 ⁵ Operations
Operating Temperature		-15°C to +55°C
Storage Temperature		-25°C to +70°C
Humidity (Non-Condensing limits)		Max. 95%
Max. Operating Altitude		2000 m
Degree of Protection		IP-20 for Terminals; IP-40 for Housing
Pollution Degree		Type II
Housing		Flame Retardant UL 94-V0
Mounting		Base / Din-Rail(35mm Symmetrical)
Dimensions in mm (W xH x D)		36 x 60 x 90
Weight (Unpacked)		120 g Approx.
Certifications		CE, RoHS

OVERALL & MOUNTING DIMENSIONS (in mm)

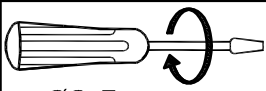



CONNECTION DIAGRAM :

THREE PHASE APPLICATION



Terminal Details :

 Ø3.5 mm	0.54 N.m (5 Lb.in) Terminal screw - M2.6
	1 x 0.2...3.3 mm ² Solid Wire
AWG	1 x 24 to 12

* For MG53BP & MG53BI Voltage Asymmetry is 65 Volt **MG53BR voltage asymmetry is 30V. (Voltage Asymmetry is Maximum deviation from average line voltage)

Note: All LEDs should become off incase of Single Phase Loss, 2 Phase Loss & 3 Phase Loss conditions and also if the Asymmetry is >24%.

CERTIFICATION :**EMI/EMC :**

Product	IEC 60255	
Harmonic Current Emission	IEC 61000-3-2	Class A
ESD Immunity	IEC 61000-4-2	Level III
Radiated Susceptibility	IEC 61000-4-3	Level III
Electrical Fast Transients	IEC 61000-4-4	Level IV
Surge Immunity	IEC 61000-4-5	Level IV
Conducted Susceptibility	IEC 61000-4-6	Level III
Voltage Dips, & Interruptions (AC)	IEC 61000-4-11	
Conducted Emission	CISPR 14-1	Class A
Radiated Emission	CISPR 14-1	Class B
Voltage Flickering and Fluctuation	IEC 61000-3-3	Class A

Safety :

Test Voltage between I/P and O/P	IEC 60947-5-1	2kV
Test Voltage between all terminals and enclosure	IEC 60947-5-1	4kV
Impulse Voltage between I/P and O/P	IEC 60947-5-1	Level IV
Single Fault	IEC 61010-1	
Insulation Resistance	UL 508	>50 k Ω
Leakage Current	UL 508	<3.5 mA

Environmental :

Cold Heat	IEC 60068-2-1	
Dry Heat	IEC 60068-2-2	
Repetitive Shock	IEC 60068-2-27	40 g, 6 ms
Non-Repetitive Shock	IEC 60068-2-27	30 g, 15 ms

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 Controls Pvt. Ltd, through website <https://www.gicindia.com/get-in-touch/>

