Spectra RMS™ SG Frame Molded-Case Circuit Breaker

with MicroVersaTrip® Plus or MicroVersaTrip PM Trip Unit

Introduction

Spectra RMS™ molded-case circuit breakers with MicroVersaTrip® Plus or MicroVersaTrip PM trip units provide adjustable overload and short-circuit protection for electrical equipment. Frame types SGHB, SGLB, SGPB, SGHH, SGLL, and SGPP are available with a selection of rating plugs to a maximum of 600 amperes, depending on the sensor rating.

SG frame circuit breakers are listed per Underwriters Laboratories standard UL489 and Canadian Standards Association standard CSA22.2 No. 5 and meet the requirements of the International Electrotechnical Commission standard IEC947-2.

WARNING: Danger of electrical shock or injury. Turn OFF the power ahead of equipment before installing this device or removing any other device.

IMPORTANT: Danger d'electrocution. Couper l'alimentation avant d'installer cet appareil ou avant de retirer un autre appareil.

CAUTION: This product is NOT suitable for use in equipment not specifically designed to accept it. Contact the equipment manufacturer for possible equipment modifications.

IMPORTANT: Cet appareil ne doit pas etre employé dans un equipement non specialement adapté a cet effet. Contactez le constructeur concernant les possibles modifications a apporter a l'equipement.
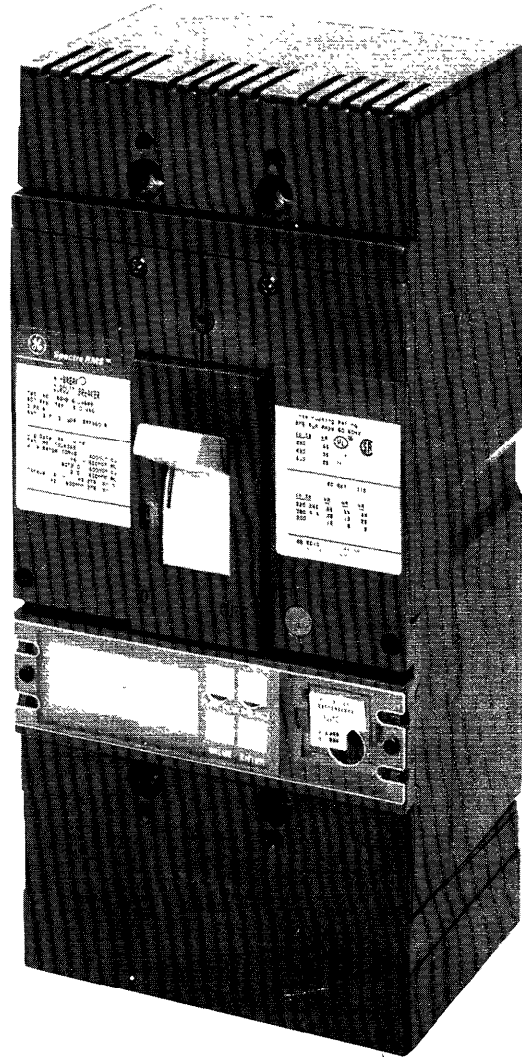
SG 600A Frame PM breaker with a rating plug installed.

Installation Instructions

Assembly

1. Unpack the circuit breaker and inspect it for any shipping damage. Ensure that the breaker has the proper ampere range, sensor rating, voltage rating, and interruption rating for the application.

Since this breaker is available in a wide variety of configurations, compare the catalog number of your purchased breaker with the catalog number key in Table 1. Installation of an incorrect breaker could result in misapplication, lack of system coordination, or reduction in system functionality.

SG LB 36 C B 0400

Code	Description		Function
SG	SG600		Frame designation
HB	35 kA at 480 Vac	Standard UL	
LB	65 kA at 480 Vac	rating	
PB	100 kA at 480 Vac		Interruption rating
HH	35 kA at 480 Vac	100% continuous	
LL	65 kA at 480 Vac	UL rating	
PP	100 kA at 480 Vac		
3,6	3 poles, 600 Vac		Poles, Maximum UL voltage
B	MicroVersaTrip® Plus trip unit		
C	MicroVersaTrip PM trip unit with Metering and POWER LEADER Communications Bus		Trip system
D	MicroVersaTrip PM trip unit with Metering and POWER LEADER Communications Bus and Protective relays		
A	LI		Overcurrent protective functions:
B	LSI		L = long-time (standard)
C	LIG		S = short-time
D	LSIG		I = instantaneous (standard)
E	LI - CP (MicroVersaTrip Plus trip unit only)		G = ground fault
F	LSI - CP (MicroVersaTrip Plus trip unit only)		CP = 24 Vdc control power
0150	150 amperes		
0400	400 amperes		Sensor ratings
0600	600 amperes		

Table 1. Catalog numbering system for Spectra RMS™ SG Frame breakers with MicroVersaTrip Plus or MicroVersaTrip PM trip units.

Example: a breaker with catalog number SGLB36CB0400 has the following features:

- SG-Frame breaker (SG)

- 65 kA at 480 Vac standard UL rating (LB)

- 3 poles, 600 Vac maximum UL voltage (36)

- MicroVersaTrip PM trip unit with metering and POWER LEADER™ communications (C)

- Long-time, short-time, and instantaneous over-current protective functions (B)

- 400 ampere sensor rating (0400)

2. Following the instructions supplied with the rating plug, install the plug into the breaker body. Available rating plugs, with their catalog numbers, are listed in Table 2.

Catalog Number	Sensor Rating, Amps	Plug Rating
SRPG150B60		60
SRPG150B80		80
SRPG150B100	150	100
SRPG150B125		125
SRPG150B150		150
SRPG400B150		150
SRPG400B200		200
SRPG400B225		225
SRPG400B250	400	250
SRPG400B300		300
SRPG400B350		350
SRPG400B400		400
SRPG600B300		300
SRPG600B400		400
SRPG600B450	600	450
SRPG600B500		500
SRPG600B600		600

Table 2. SG Frame rating plugs.

3. Install any internal accessories, following the instructions supplied with each accessory. Available accessories and their mounting locations are listed in Table 3. Check all accessories for proper installation and wire routing. Verify breaker operation with the installed accessories.

Internal Accessory Installation	Accessory Compartment Location and Exit Side[1]		Maximum Number of Accessories
	Left	Right	
Auxiliary Switches[2] (SPDT or DPDT)		√	(1) Bell Alarm, plus
Shunt Trip	√		(1) Aux. Switch, plus either
Bell Alarm Switch	√		
Undervoltage Release	√		(1) Shunt Trip or (1) Undervoltage Release

[1] Leads may be routed under breaker to opposite side.
[2] An auxiliary switch is required for MicroVersaTrip® PM breaker status signal.

Table 3. Available accessories.

4. Attach the terminal lugs, listed in Table 4, following the instructions supplied with the kit. Use one kit for either line or load end; two kits are required for both.

5. Ensure that all terminals are torqued to the proper value, as listed in Table 4. Install the terminal covers, ensuring that they are firmly seated.

NOTE: Aluminum wire must be used with a joint compound recommended by the wire manufacturer.

IMPORTANT: Dan les cas d'emploi de cable aluminum, utilizez le lubricant recommandé par le fabricant.

Catalog Number	Wire Range	Wire Type	Location	Torque (in-lb)		Strip Length	Lug Material
				Wire-Lug	Lug-Strap		
TCLK265	Bottom Hole 2/0-600 KCMIL	Copper or Aluminum	2 Pole (2 lugs)	#8 - #3 275 in-lbs	200 in-lbs	Top 7/8 inch	Tin-Plated Aluminum
TCLK365			3 Pole (3 lugs)				
TCOK265	Top Hole #8 - 400 KCMIL	Copper	2 Pole (2 lugs)	#2 - 600 MCM		Bottom 1-5/8 inches	Copper
TCOK365	Bottom Hole 2/0 - 600 KCMIL		3 Pole (3 lugs)	375 in-lbs			

Table 4. Terminal lug catalog numbers and specifications.

Installation Instructions

WARNING: It is important that the terminal covers are installed correctly to ensure proper circuit breaker operation.

IMPORTANT: Il est important de verifier que tous couvercles ou caches de protection sont correctement installés afin d'assurer le bon fonctionnement de l'appareil.

6. Finally, connect all associated components that are required for the breaker to function properly, using the instructions supplied with each component. The following is a list of available associated components:

- Terminal board connector
- Neutral current sensor connector
- Control power connector
- Extension cable
- Control power module (control power transformer may be required)
- Voltage conditioners (potential transformers may be required)
- Voltage module
- Neutral current sensor

Mounting

All Spectra RMS™ circuit breakers are suitable for reverse feed and have no line or load markings. Incoming power cables or busbars may be connected to either the upper or lower terminals as required by the application.

WARNING: Danger of electrical shock or injury. Turn OFF the power ahead of equipment before installing this device or removing any other device.

IMPORTANT: Danger de choc électrique ou de blessure. Il est donc impératif de mettre en position d'arrêt la commande actionneur de l'alimentation de puissance avant de monter cet appareil ou de démonter d'autres appareils.

For individual front panel mounting:

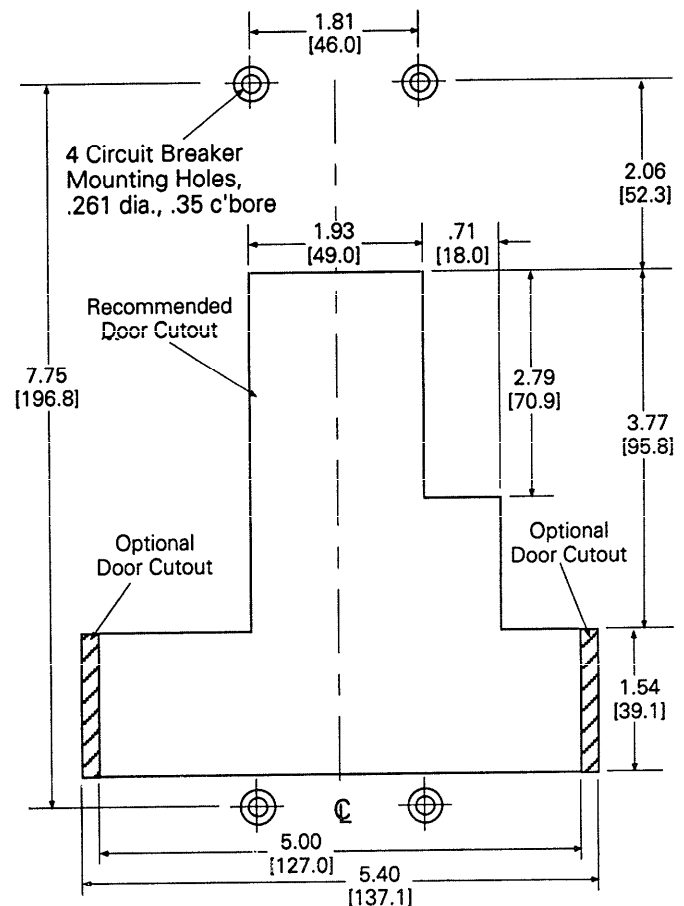1. Drill and tap all mounting holes and make any necessary front-panel escutcheon cutouts, as shown in Figure 1.

Figure 1. Mounting hole and escutcheon cutout pattern (in/[mm]).

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2. Mount the breaker with the hardware described in Table 5, following the instructions supplied with the kit.

Catalog Number	Application	Kit Description
SFGMSK1	Mounting plate with tapped holes	Four #12-24 x 3-3/4 screws and lock washers
SFGMSK2	Mounting plate with clearance holes	Four #12-24 x 4-1/4 screws, nuts, and lock washers

Table 5. Breaker mounting-screw kits.

For GE switchboard and panelboard mounting:

Install the breaker into the equipment according to the instructions supplied with the equipment. Available mounting hardware kits are listed in Table 6.

Equipment	Double Branch	Single Branch
Panelboard – Spectra Series	AMC6GBFP	AMC3GMFP
Switchboard – Spectra Series class 1 and 2	AMC6GBFP	AMC3GMFP
Switchboard – AV1, AV2	N/A	N/A
Switchboard – AV3, AV5	N/A	Contact Factory

Table 6. Equipment mounting hardware kits and catalog numbers.

For individual mounting in a GE enclosure:

Install the breaker according to the instructions supplied with the enclosure. Available enclosures are listed in Table 7.

Type[1]	400A Catalog No.	600A Catalog No.
NEMA 1 (indoor)	SG400F (flush) SG400S (surface)	SG600F (flush) SG600S (surface)
NEMA 3R (outdoor)	SG400R	SG600R
NEMA 12 (oil-tight and dust-tight)	SG400J	SG600J
Neutral Bar	TNIA400	TNIA600

[1] Enclosures do not apply to 100%-rated breakers with ampere ratings over 400 amperes.

Table 7. GE enclosure types and catalog numbers.

Setup and Adjustment

The Spectra RMS MicroVersaTrip® Plus and MicroVersaTrip PM trip units are digital, rms sensing, electronic trip units with an LCD and keypad for viewing and/or changing the various function settings. Refer to User's Manual GEH-5934, packaged with this breaker, for detailed information concerning the operation, adjustment, and setting of the breaker trip unit.

You should record the overcurrent protection and protective relay set points for future reference.

NOTE: Trip units as received may have settings that are undesirable for the specific application. Ensure that settings are appropriately adjusted before energizing the breaker.

Operation

The circuit breaker status is indicated by ON/OFF markings, universal I/O symbols, and an indicator window that shows red for ON, yellow for TRIP, and green for OFF. The corresponding handle positions are illustrated in Figure 2. To close the breaker from the OFF position, move the handle to the ON position. To close the breaker from the TRIP position, first move the handle to the OFF (reset) position, then back to the ON position.

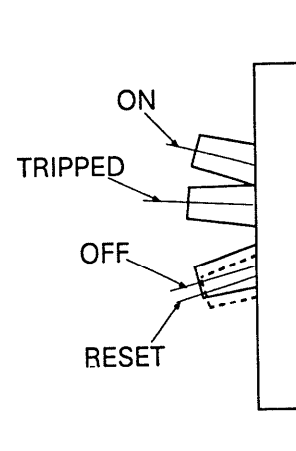A Push-To-Trip button is provided for convenience in testing the mechanical operation of the breaker.

Figure 2. Handle positions for ON, TRIPPED, OFF, and RESET.

Maintenance

It is recommended that the following operations be performed annually:

WARNING: Danger of electrical shock or injury. Turn off power ahead of equipment before attempting to service.

IMPORTANT: Danger d'electrocution. Couper l'alimentation avant d'affectuer toute action d'entretien.

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1. Turn off the power to the equipment being serviced.

2. Clean the surfaces of the breaker and surrounding area of any dirt, soot, or other debris.

3. Inspect the breaker for any signs of damage.

4. Operate the push-to-trip button and toggle handle several times to exercise the mechanism and test the mechanical operation of the breaker.

5. Check all overcurrent protection and protective relay settings for correct values as established for the system.

6. If any sign of damage is found, or the mechanism has a sluggish or sticky operation, or the trip unit display flashes "ERR," replace the circuit breaker.

The circuit breaker is sealed and contains no user-serviceable parts. Opening the breaker will void any and all warranties.

External Accessories

The following external accessories are available for Spectra RMS SG-Frame breakers. Catalog numbers and other ordering information for these accessories may be obtained from your authorized GE distributor.

- Plug-in base, Bolt-on base
- Back-connected studs
- Padlocking devices
- External handle operators
- Motor operators
- Mechanical interlock

These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency that may be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the purchaser's purposes, the matter should be referred to the GE Company.

GE Electrical Distribution & Control