Spectra RMS™ SK Frame Molded-Case Circuit Breakers

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 SKHB, SKLB, SKPB, SKHH, SKLL, and SKPP are available with a selection of rating plugs to a maximum of 1200 amperes, depending on the sensor rating.

SK-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.
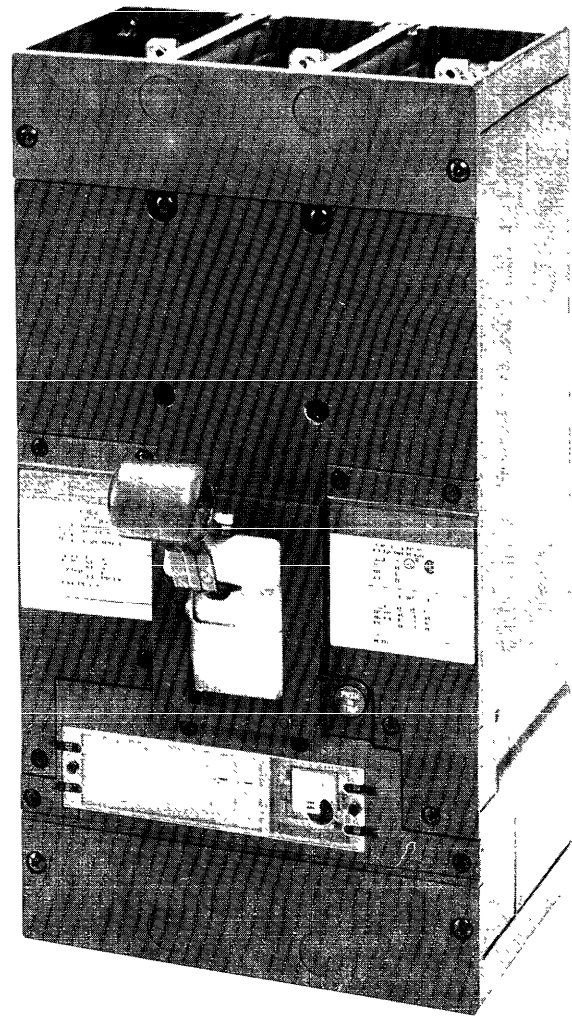
SK 1200A Frame PM breaker with a rating plug installed.

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 with 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.

SK HB 36 B A 0800

Code	Description		Function
SK	SK1200		Frame designation
HB	50 kA at 480 Vac	Standard UL	
LB	65 kA at 480 Vac	rating	
PB	100 kA at 480 Vac		Interruption rating
HH	50 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™ Communication Bus		Trip system
D	MicroVersaTrip PM trip unit with Metering and POWER LEADER Communication Bus and Protective relays		
A	LI		Overcurrent protective functions:
B	LSI		
C	LIG		L = long-time (standard)
D	LSIG		S = short-time
E	LI - CP (MicroVersaTrip Plus trip unit only)		I = instantaneous (standard)
F	LSI - CP (MicroVersaTrip Plus trip unit only)		G = ground fault CP = 24 Vdc control power
0800	800 amperes		Sensor ratings
1200	1200 amperes		

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

Example: a breaker with catalog number SKHB36BA0800 has the following features:

- SK-Frame breaker (SK)
- 50 kA at 480 Vac standard UL rating (HB)
- 3 poles, 600 Vac maximum UL voltage (36)
- MicroVersaTrip Plus trip unit (B)
- Long-time and instantaneous overcurrent protective functions (A)
- 800 ampere sensor rating (0800)

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
SRPK800B300		300
SRPK800B400		400
SRPK800B500	800	500
SRPK800B600		600
SRPK800B700		700
SRPK800B800		800
SRPK1200B600		600
SRPK1200B700		700
SRPK1200B800	1200	800
SRPK1200B1000		1000
SRPK1200B1200		1200

Table 2. SK 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,
Bell Alarm Switch	√		plus either
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 each wire termination (maximum of six lug kits).

5. Ensure that all terminals are torqued to the proper value, as listed in Table 4. Reinstall 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	Torque (in-lb) Wire-Lug	Lug-Strap	Strip Length	Number of Wire Holes	Lug Material
TCAL81	3/0 - 500 kcmil	Copper or Aluminum	375	400	1-1/2	3	Aluminum
TCAL121	250 - 500 kcmil	Aluminum	375	400	1-1/2	4	Aluminum
	250 - 350 kcmil[2]	Copper					
TCO81A	3/0 - 500 kcmil	Copper	375	400	1-1/2	3	Copper
TCO121	250 - 400 kcmil	Copper	375	400	1-1/2	4	Copper
TCAL124[1]	350 - 750 kcmil	Copper or Aluminum	500	400	1-1/2	3	Aluminum

[1] UL listing pending.
[2] Suitable for 500 kcmil for voltage-drop considerations.

Table 4. Terminal lug catalog numbers and specifications.

Spectra RMS™ SK Frame Molded-Case Circuit Breaker

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.

NOTE: The SKPB and SKPP Frames (100 kA, 480 V) have a longer terminal cover for the upper (line) end. The top portion of this cover *must be installed* after cable or bus installation. *Do not substitute* the shorter lug cover.

IMPORTANT: Un caches-bornes plus long est spécifique au bout supérieur des disjoncteurs SKPB et SKPP (100 kA, 480 V). Le haute de ce cache-bornes doit être monté après d'installer le câble ou le bus. Ne substituez pas un cache-bornes plus court.

Use the following steps for installing cables and terminal covers for SKPB and SKPP Frame breakers.

- Attach the bottom part of the lug cover with two captive screws.
- Attach the cables to the lugs, referring to Table 4 for the proper strip lengths and terminal torques. Ensure that the stripped end of each cable is fully seated in its lug. If busbar connections are used, torque them to 400 in-lbs.
- Attach the large top lug cover with four captive screws connecting to the breaker and two captive screws to the lower lug cover.

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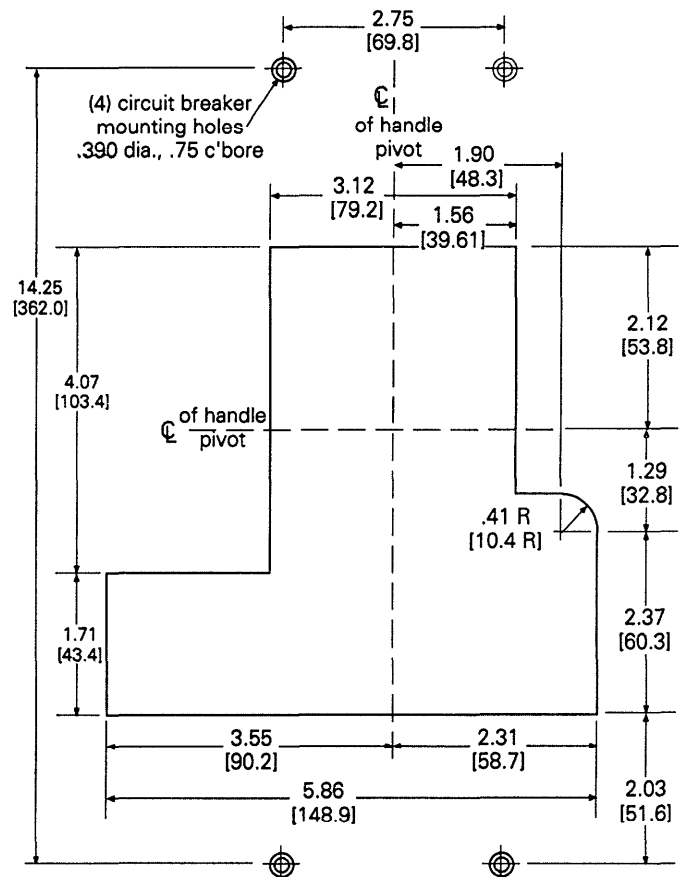
Figure 1. Mounting hole and escutcheon cutout pattern (in/[mm]).

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

Cat. No.	Application	Kit Description
SKMSK1	Mounting plate with tapped holes	Four 5/16-18 x 1-1/4 screws and lock washers
SKMSK2	Mounting plate with clearance holes	Four 5/16-18 x 1-3/4 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		Single Branch
Panelboard – Spectra Series		AMC3KMFP
Switchboard – Spectra Series class 1 and 2		AMC3KMFP
Switchboard AV1, AV2	800 A	SK85PK
	1200 A	SK125PK
Switchboard – AV5		Contact Factory
Switchboard – AV3		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.

Type①	Catalog Number
NEMA 1 (indoor)	TK4V1200F (flush) TK4V1200S (surface)
NEMA 3R (outdoor)	TK4V1200R
NEMA 12 (oil-tight & dust-tight)	SK1200J
Neutral Bar	TNIA 400 (400A) TNIA 600 (600A) TNIA 800 (800A) TNIA1200 (1200A)

① Enclosures do not apply to 100%-rated breakers with ampere ratings over 800 amperes.

Table 7. GE enclosure types and catalog numbers.

Spectra RMS™ SK Frame Molded-Case Circuit Breaker

Installation Instructions

Setup and Adjustment

The Spectra RMS MicroVersaTrip® Plus and MicroVersaTrip PM trip units are digital, rms sensing, and electronic with an LCD 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.
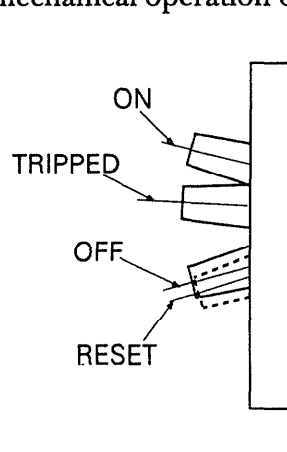

Figure 2. Handle positions for ON, TRIPPED, OFF, and RESET.

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 time 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 SK Frame breakers. Catalog numbers and other ordering information for these external accessories may be obtained from your authorized GE distributor. (Accessories identified with an asterisk [*] require removal of the handle extension.)

- Mounting kits
- 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