



# Power Break® II Circuit Breaker Accessories

## Shunt Trip

### Introduction

The Shunt Trip module, shown in Figure 1, can be installed in 800–2000 ampere frame Power Break® II circuit breakers. This module allows the breaker to be tripped electrically from a remote location.

In addition to providing a trip signal to the breaker, the Shunt Trip accessory module can be set up to interact with other Power Break II accessories. DIP switches on the rear of the breaker Trip Unit can configure the Shunt Trip accessory to activate a Bell Alarm–Alarm Only accessory or a Bell Alarm with Lockout accessory when a Shunt trip occurs. The Accessory Configuration section below describes how this can be done.

The catalog numbers for the Shunt Trip for various voltage applications are listed in Table 1.

Catalog Number	Voltage Rating <sup>①</sup>	Peak Inrush Current, A <sup>②</sup>	Nominal RMS Current, mA
SPST024	24 Vac 24 Vdc	1.5	140
SPST048	48 Vac 48 Vdc	1.5	110
SPST120	120 Vac 125 Vdc	1.5	85
SPST208	208 Vac	1.5	50
SPST240	240 Vac 250 Vdc	1.5	40

<sup>①</sup> 24–240 Vac devices are rated for 50/60 Hz.

<sup>②</sup> Peak inrush current is present for 2–6 ms after activation. This number is provided so that fuses and supplies can be chosen appropriately.

Table 1. Catalog numbers and voltages for the Shunt Trip.

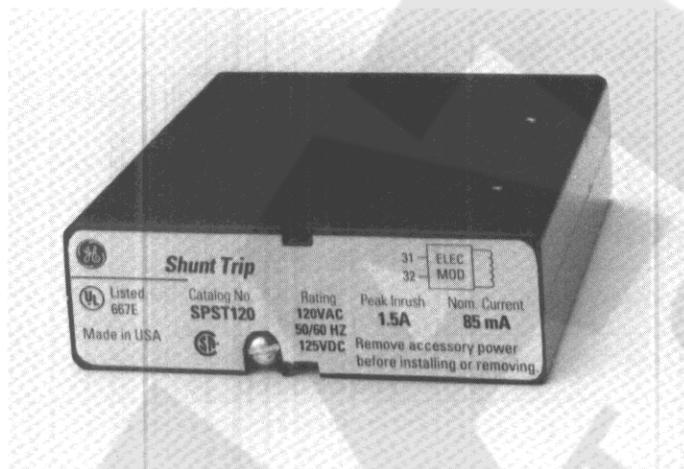


Figure 1. Shunt Trip.

### Operation

Apply control voltage to terminals 31 and 32 of the terminal strip on the right side of the breaker to trip the circuit breaker. The Shunt Trip will cause the circuit breaker to trip when the control voltage is greater than 75% of the dc-rated value or 55% of the ac-rated value.

### Installation

**WARNING:** Before installing any accessories, turn the breaker off, disconnect it from all voltage sources, and discharge the charging springs.

**AVERTISSEMENT:** Avant d'installer tout accessoire, mettre le disjoncteur en position OFF, le déconnecter de toute tension d'alimentation, et décharger les ressorts d'armement.

The Shunt Trip is installed in the accessory compartment through the front of the circuit breaker in the position shown in Figure 2.

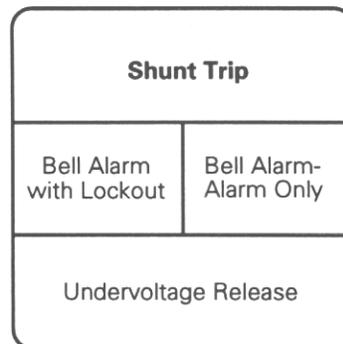


Figure 2. Accessory compartment on front of circuit breaker, with Shunt Trip slot indicated.

Use the following procedure to install the Shunt Trip into the Shunt Trip slot of the accessory compartment:

1. Open the hinged door over the accessory compartment and Trip Unit.
2. To remove an existing accessory module, loosen the accessory locking screw and pull the module out with the Rating Plug Removal Tool (catalog number TRTOOL).
3. Insert the Shunt Trip module into the proper slot, as illustrated in Figure 3. The Shunt Trip module is keyed for the correct slot in the accessory compartment. If the module cannot be fully seated in the compartment, check that the compartment position is correct.

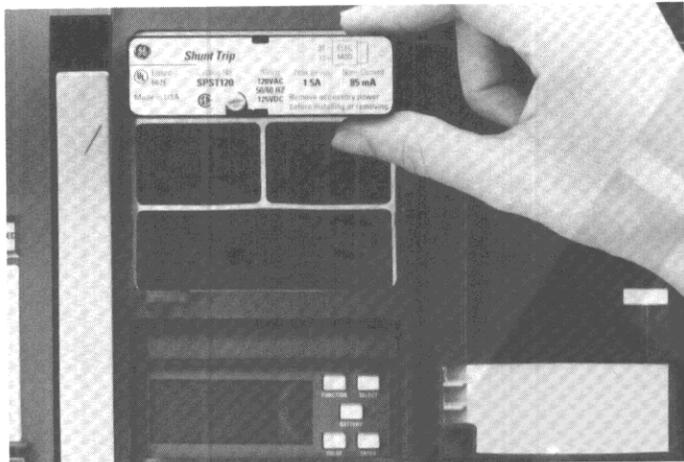


Figure 3. Inserting the Shunt Trip into the accessory compartment.

4. Tighten the locking screw on the front of the accessory until it is snug (9 in-lbs).

**CAUTION:** Overtightening the locking screw may damage or distort the case of the accessory.

**ATTENTION:** Le serrage excessif de la vis de verrouillage peut déformer le boîtier d'accessoire.

5. To reconfigure the Shunt Trip accessory to activate installed Bell Alarm–Alarm Only or Bell Alarm with Lockout accessories when a Shunt trip occurs, follow the procedure described in the Accessory Configuration section. Otherwise, continue with this procedure.
6. Connect the control wiring for the Shunt Trip to terminals 31 and 32 at the terminal block on the right side of the breaker.
7. Test the Shunt Trip to ensure proper operation, according to the procedures below.
8. Reconnect power to the circuit breaker and any other accessories.
9. Close and lock or seal the door over the accessory compartment and Trip Unit to prevent unauthorized changes to Trip Unit settings and to keep contaminants out of empty accessory slots.

## Accessory Configuration

This section only applies if Bell Alarm–Alarm Only or Bell Alarm with Lockout accessories are installed in the breaker.

The Shunt Trip accessory can be configured to activate the Bell Alarm–Alarm Only or Bell Alarm with Lockout accessories if a Shunt trip occurs. The configuration can be changed by removing the Trip Unit from the breaker, setting the DIP switches on the rear of the Trip Unit, and reinstalling the Trip Unit. Figure 4 illustrates the Trip Unit read DIP switches and their functions. Table 2 lists the switch functions and the factory settings for each.

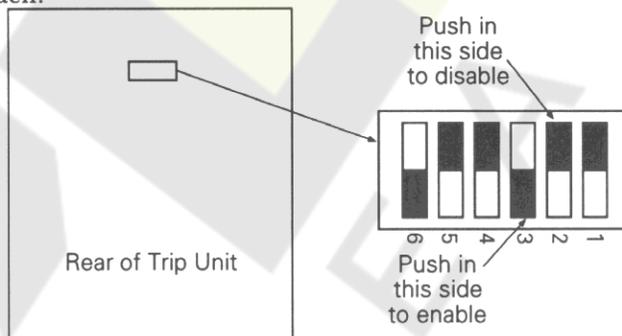


Figure 4. Accessory switch on rear of Trip Unit, showing factory settings (solid part indicates that switch is pushed in on that side).

Switch	Factory Setting	Function
1	Disabled	Shunt trip activates Bell Alarm–Alarm Only
2	Disabled	UVR trip activates Bell Alarm–Alarm Only
3	Enabled	Protection trip activates Bell Alarm–Alarm Only
4	Disabled	Shunt trip activates Bell Alarm with Lockout
5	Disabled	UVR trip activates Bell Alarm with Lockout
6	Enabled	Protection trip activates Bell Alarm with Lockout

Table 2. Accessory switch settings, including factory defaults.

### Description of Switch Settings

Following are descriptions of the effects of each accessory switch when it is *enabled*.

1. When a Shunt Trip accessory causes the breaker to trip, the contacts of the Bell Alarm–Alarm Only also change state. (The factory switch setting is *disabled*.)
2. When an Undervoltage Release accessory causes the breaker to trip, the contacts of the Bell Alarm–Alarm Only also change state. (The factory switch setting is *disabled*.)
3. When a protection trip (long-time, short-time, instantaneous, ground-fault, or protective-relay) occurs, the contacts of the Bell Alarm–Alarm Only

also change state. (The factory switch setting is *enabled*.)

4. When a Shunt Trip accessory causes the breaker to trip, the contacts of the Bell Alarm with Lockout also change state. (The factory switch setting is *disabled*.)
5. When an Undervoltage Release accessory causes the breaker to trip, the contacts of the Bell Alarm with Lockout also change state. (The factory switch setting is *disabled*.)
6. When a protection trip (long-time, short-time, instantaneous, ground-fault, or protective-relay) occurs, the contacts of the Bell Alarm with Lockout also change state. (The factory switch setting is *enabled*.)

### **Procedure for Changing Switch Settings**

Change the accessory switch settings with the following procedure:

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**WARNING:** Before beginning this procedure, turn the breaker off, disconnect it from all voltage sources, and discharge the closing springs.

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**AVERTISSEMENT:** Avant de commencer cette procédure, mettre le disjoncteur en position OFF, le déconnecter de toute tension d'alimentation, et désarmer les ressorts de fermeture.

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1. Loosen the four #8-32 screws on the breaker trim-plate assembly and remove the trim plate.
2. Loosen the four #10-32 screws at the corner of the breaker cover. Remove the cover from the breaker face.
3. Pull the Trip Unit locking lever to the right, then hold the Trip Unit near the battery cover and lift it straight out of the breaker.
4. Refer to Figure 4 and Table 2 to determine the switches to be changed.
5. Push in the appropriate "Enable" or "Disable" side of the switch.

6. Confirm all switch settings before reinstalling the Trip Unit in the breaker.
7. Pull the Trip Unit locking lever to the right. While holding the lever, carefully align the connector on the rear of the Trip Unit with the connector in the breaker. Press down on the Trip Unit, while holding it near the battery cover. When the Trip Unit is fully seated, slide the locking lever back to the left.
8. Reinstall the breaker top cover and tighten the four #10-32 screws to 32 in-lbs.
9. Replace the trim plate and tighten the four #8-32 screws to 20 in-lbs.
10. Verify that the switch settings are correct by inducing breaker trips from the Shunt Trip and Undervoltage Release (if present) and checking the responses of the Bell Alarm-Alarm Only and Bell Alarm with Lockout accessories.

### **Test Procedure**

Test the Shunt Trip for proper operation with the following procedure.

1. Turn off the power to the Shunt Trip.
2. Close the breaker contacts.
3. Apply at least 55% of the rated ac voltage or at least 75% of the rated dc voltage to the Shunt Trip; the breaker should trip immediately.
4. If a Bell Alarm-Alarm Only or Bell Alarm with Lockout is present, ensure that they activate (or do not activate) as selected.

### **Trouble-Shooting**

The following guide is provided for trouble-shooting and isolating common problems. It does not cover every possible situation. Contact the ED&C Customer Support Center at 800-843-3742 if any problem is not resolved by these procedures.

Symptom	Possible Cause	Corrective Action
1. The Shunt Trip module will not insert completely into the breaker.	The module is inserted incorrectly.	Insure that the module is inserted in the correct slot, as in Figure 2, and that the label is upright.
2. The breaker will not trip when control power is applied to the Shunt Trip.	The Shunt Trip is not energized.	Check that Shunt Trip control power is applied at greater than 75% of the of the dc-rated voltage or 55% of the ac-rated voltage. Check that the module is completely inserted; reinsert if necessary.
	The installed Shunt Trip has an incorrect voltage rating. The Shunt Trip connection is poor.	Check for the proper voltage rating on the Shunt Trip. Check that the Shunt Trip module is completely inserted. Check that the Trip Unit is seated correctly. If the Trip Unit was removed to set the switches, check that it has been correctly installed; remove and reinstall, if necessary. Note that an otherwise unpowered Trip Unit would be powered up by an energized Shunt Trip accessory.
3. The Bell Alarm–Alarm Only or Bell Alarm with Lockout does not trip correctly (trips when it shouldn't or doesn't trip when it should).	The Bell Alarm–Alarm Only or Bell Alarm with Lockout configuration switches on the rear of the Trip Unit are not properly set.	Follow the procedure to remove the Trip Unit and set the switches. Check that the switches have been set correctly.
	The Bell Alarm–Alarm Only or Bell Alarm with Lockout is improperly installed.	See the Trouble-Shooting Guide for the Bell Alarm–Alarm Only in GEH-6275 or for the Bell Alarm with Lockout in GEH-6278.

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.



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