Power Break® II Circuit Breaker Accessories

Undervoltage Release 480 & 600 Vac

Introduction

The Undervoltage Release (UVR) accessory, shown in Figure 1, can be installed in 800–4000 ampere frame Power Break® II circuit breakers. This accessory trips the circuit breaker when the input control voltage drops to 35–60% of its rated value and prevents an open breaker from closing until the input control voltage is greater than 80% of the rated value.

In addition to providing a trip signal to the breaker, the UVR accessory can be set up to interact with other Power Break II accessories, when used with a MicroVersaTrip Plus™ or MicroVersaTrip PM™ Trip Unit. DIP switches on the rear of the breaker Trip Unit can configure the UVR accessory to activate a Bell Alarm–Alarm Only accessory or a Bell Alarm with Lockout accessory when a UVR trip occurs. The Accessory Configuration section below describes how this can be done. If the breaker is equipped with a Power+™ Trip Unit, it is configured so that only protection trips will activate a Bell Alarm–Alarm Only or Bell Alarm with Lockout.

The catalog numbers for the UVR for 480 and 600 Vac applications are listed in Table 1. Voltage and current ratings in Table 1 are given at the input of the transformer. The voltage and current ratings at the input of the UVR accessory are equal to that of the SPUV120AC accessory. Input voltage is 120 Vac, peak inrush current is 3 A, and the nominal RMS current is 80 mA.

Operation

Apply control voltage to the primary of the supplied step-down transformer. The secondary of the transformer is connected to terminals 29 and 30 of the terminal strip on the right side of the breaker.

WARNING: 480 Vac and 600 Vac Undervoltage Release accessories must be used with the supplied step-down transformer.

AVERTISSEMENT: Les modules de déclenchement à manque de tension 480 Vac et 600 Vac doivent être utilisés avec le transformateur abaisseur de tension qui est fourni.

When the applied control voltage is above 80% of the UVR's rated value, the breaker can be closed. When the voltage drops to 35–60% of the rated value, the UVR will trip the breaker.

Figure 1. Undervoltage Release.

Catalog Number	Voltage Rating①	Peak Inrush Current, mA②	Nominal RMS Current, mA
SPUV480AC	480 Vac	750	20
SPUV600AC	600 Vac	600	16

① Rated for 50/60 Hz. Rating is 120 Vac without step-down transformer.

② 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 Undervoltage Release.

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 toute accessoire, mettre le disjoncteur en position OFF, le déconnecter de toute tension d'alimentation, et décharger les ressorts d'armement.

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

Use the following procedure to install the UVR accessory into the UVR slot in the accessory compartment of the circuit breaker:

1. Open the hinged door over the accessory compartment and Trip Unit.
2. To remove an existing accessory, loosen the accessory locking screw and pull the accessory out with the Rating Plug Removal Tool (catalog number TRTOOL).

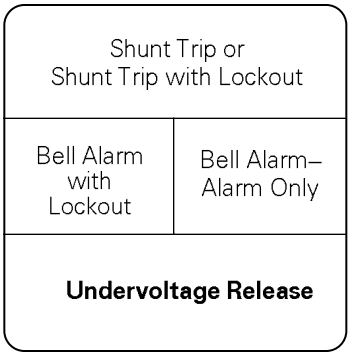

Figure 2. Accessory compartment on front of circuit breaker, with Undervoltage Release slot indicated.

3. Insert the UVR accessory into the proper slot, as illustrated in Figure 3. The UVR accessory is keyed for the correct slot in the accessory compartment. If the accessory cannot be fully seated in the compartment, check that the compartment position is correct.

Figure 3. Inserting the Undervoltage Release into the accessory compartment.

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

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. If the breaker is equipped with a MicroVersaTrip Plus or MicroVersaTrip PM Trip Unit, the UVR accessory can be configured to activate installed Bell Alarm–Alarm Only or Bell Alarm with Lockout accessories when a UVR trip occurs, with the procedure described in the Accessory Configuration section.
6. Mount the supplied step-down transformer near the circuit breaker.
7. Connect the control wiring for the UVR to the primary side of the transformer, marked as the H-numbered terminals. Table 2 lists the correct transformer primary taps.

Catalog Number/ Control Voltage	Primary Connections	Secondary Connections
9T58K0042 / 480 V	H1, H4①	X1, X2
9T58K0062 / 600 V	H1, H4	X1, X3

① A jumper must be placed from H2 to H3.

Table 2. Primary and secondary connections for step-down transformers.

8. Connect the secondary side of the transformer, marked as the X-numbered terminals, to terminals 29 and 30 of the terminal block on the right side of the breaker. Table 2 lists the correct transformer secondary taps.

WARNING: 480 Vac and 600 Vac Undervoltage Release accessories must be used with the supplied step-down transformer.

AVERTISSEMENT: Les modules de déclenchement à manque de tension 480 Vac et 600 Vac doivent être utilisés avec le transformateur abaisseur de tension qui est fourni.

9. Test the UVR to ensure proper operation, according to the procedures below.
10. Reconnect power to the circuit breaker and any other accessories.
11. 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, along with a MicroVersaTrip Plus or MicroVersaTrip PM Trip Unit. If the breaker is equipped with a Power+ Trip Unit, the factory default settings, listed in Table 3, can not be changed.

The UVR accessory can be configured to activate the Bell Alarm–Alarm Only or Bell Alarm with Lockout accessories if a UVR 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 3 lists the switch functions and the factory settings for each.

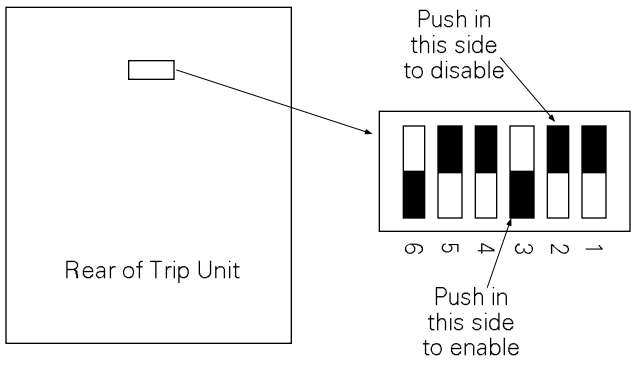

Figure 4. Accessory switch on the rear of the MicroVersaTrip Plus™ or MicroVersaTrip PM™ Trip Unit, showing the factory settings (solid part indicates that the switch is pushed in on that side).

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 3. 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:

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

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.

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 3 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-lb.
9. Replace the trim plate and tighten the four #8-32 screws to 20 in-lb.
10. Verify that the switch settings are correct by inducing breaker trips from the UVR and Shunt Trip or Shunt Trip with Lockout (if present) and checking the responses of the Bell Alarm–Alarm Only and Bell Alarm with Lockout accessories.

Test Procedure

Use the following procedure to test the UVR for proper operation.

1. Open the breaker.
2. Turn off the power to the UVR.
3. Try to manually close the breaker; the breaker should not close.
4. Apply at least 80% of the rated voltage specified on the UVR name plate to the UVR control inputs.
5. Try to close the breaker; it should close as normal.
6. If a MicroVersaTrip Plus or MicroVersaTrip PM Trip Unit is installed, check that the Trip Unit display is active (powered).
7. With the breaker closed, reduce the UVR control voltage to 35–60% of the rated voltage; the breaker should trip within 0.5 second.
8. If a Bell Alarm–Alarm Only or Bell Alarm with Lockout is present, ensure that they activate (or do not activate) as selected by the MicroVersaTrip Plus or MicroVersaTrip PM Trip Unit DIP switches.

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 UVR accessory will not insert completely in the breaker.	The accessory is inserted incorrectly.	Ensure that the accessory is inserted in the correct slot, as in Figure 2, and that the label is upright. Ensure that the accessory is completely seated and that the screw is tightened.
2.	The breaker closes when the UVR is de-energized.	The UVR lockout plunger is not engaged.	Remove the UVR accessory. Check that the lockout plunger protrudes approximately 1/4 inch out of the accessory; if it does not, replace the UVR. If the plunger length is correct, reinsert the UVR, ensuring good alignment of the accessory to the pocket. Ensure that it is completely seated, flush with the top of the pocket, then tighten the screw to 9 in-lb.
		The UVR is actually energized.	Check that the control power to the UVR is off.
3.	The breaker will not close when the UVR is energized.	The UVR solenoid is not energized.	Check that UVR control power is applied at greater than 80% of the UVR rated voltage. Check that the accessory is completely inserted; reinsert if necessary.
			Note that an otherwise unpowered Trip Unit is powered up by an energized UVR accessory.
		The transformer connections are incorrect.	Ensure that steps 6, 7, and 8 in the Installation section have been followed correctly.
4.	The breaker does not trip when UVR control power is removed.	The breaker is not closed.	Verify that the breaker is closed.
		UVR control power is actually still applied.	Check that the UVR control power has been removed or that its voltage is less than 35% of the rated value.
		The UVR trip connection is poor.	Check that the UVR accessory 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.
5.	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 back of the MicroVersaTrip Plus or MicroVersaTrip PM Trip Unit are not properly set. Note that this feature is not available with Power+™ Trip Units.	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 accessory is improperly installed.	See the Trouble-Shooting Guide for the Bell Alarm with Lockout in GEH-6278 or the Bell Alarm–Alarm Only in GEH-6275.

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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GEH-6520A 0697