# Accessories

## Internal accessories

Spectra RMS™ internal accessories are common to all products in the Spectra RMS product family, including circuit breakers, Mag-Break motor circuit protectors and molded case switches. They are interchangeable between frame sizes, i.e., the 24 Vdc/24 Vac shunt trip – SAST3 – can be installed in any of the four basic frames from the type SE150 to the type SK1200. In addition, Spectra RMS internal accessories are designed to be installed in pockets accessible from the front of the circuit breaker.

**No disassembly of the circuit breaker case is required.**

These unique characteristics – interchangeability, commonality and installation without violation of case integrity – provide the user with the optimum combination of reliability, standardization and parts reduction. **All Spectra RMS accessories are UL Listed for field installation**.

The left-hand circuit breaker accessory pocket accepts an actuator, shunt trip or undervoltage release plus a bell alarm switch. The right-hand pocket is used for auxiliary switches. All accessories are supplied with 36-inch long, #18AWG 105°C 300V minimum insulated leads. Side and rear wire channels allow accessory leads to be led to the left, right or back of the breaker within the dimensions of the breaker envelope.

## Shunt trip

The shunt trip is used to trip (open) the circuit breaker by remote control. Spectra RMS shunt trips are UL Listed for field installation, meeting UL requirements for operation at 55% of rated ac voltage and 75% of rated dc voltage for use on ground fault systems.

A momentary application of control power is recommended to activate the shunt trip coil. An integral pulsing circuit is used within the shunt trip's electronics to prevent the coil from being damaged from maintained control power. If maintained control power (latching relay) is used in lieu of momentary application of control power, use a bell alarm contact in series with the shunt trip's control power for the SE/SF breakers or an auxiliary switch in series with the shunt trip's control power for the SG/SK breakers. Failure to wire the bell alarm or aux switch in series could result in a 1 to 2 second delayed response if the breaker is re-closed while the shunt trip is continuously energized.

## Electrical data

**Table. 12.1** Shunt trip device electrical characteristics

| Catalog Number | Rated Nominal Voltage | | Current, mA | |
|---|---|---|---|---|
| | AC | DC | Inrush | Cont. |
| SAST1 | 120 | 125 | 500 | 6 |
| SAST2 | 240 | 250 | 400 | 5 |
| SAST5 | — | 12 | 1000 | 800 |
| SAST3 | 24 | 24 | 300 | 10 |
| SAST4 | 48 | 48 | 300 | 1 |

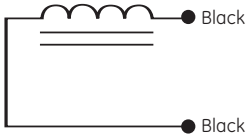



**Fig. 12.1** Wiring diagram, shunt trip

## Undervoltage release

The undervoltage release trips the circuit breaker when control voltage drops to less than 35% to 70% of its rated voltage. Optional time delay units from 100 to 1,000 milliseconds allow the user to minimize nuisance tripping. The time delay may be switched off to provide an instantaneous undervoltage trip. In the event an attempt is made to reclose the circuit breaker while the undervoltage condition is still present, the undervoltage release device will prevent breaker contact closure; i.e., it's a "kiss-free" design.

The "kiss-free" feature requires that if a breaker is in the OFF position and the toggle handle is being held in the off position, such as by a motor operated mechanism, and a trip command from a shunt trip or undervoltage release (UVR) causes the breaker mechanism to trip, the following steps must be completed to turn on the breaker:

1. restore control power to UVR if applicable
2. move toggle handle to ON position (breaker will not close)
3. move handle back to reset (OFF) position
4. move handle to ON to close

## Electrical data

**Table. 13.1** Undervoltage release electrical characteristics

| Catalog Number | Rated Nominal Voltage | | Peak Current, mA |
|---|---|---|---|
| | AC | DC | |
| SAUV1 | 120 | 125 | 200 |
| SAUV2 | 240 | 250 | 200 |
| SAUV3 | 24 | 24 | 100 |
| SAUV4 | 48 | 48 | 100 |

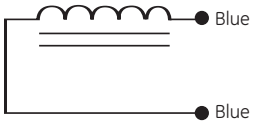
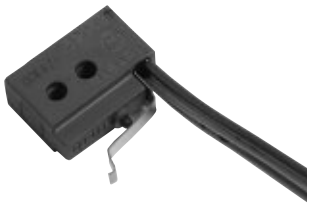



**Fig. 13.1** Wiring diagram, undervoltage release

## Actuator

All Spectra circuit breakers are supplied with a factory installed actuator in the left-side accessory pocket. The actuator is removed when installing either a shunt trip or undervoltage release. The catalog number for a replacement actuator is SACTUATOR.

## Bell alarm switch



The bell alarm switch is used to signal breaker trip status to other accessories (e.g., external alarm devices, indicating lights, relays or logic circuits) for remote indication and interlocking applications. It is installed on the actuator or shunt trip or undervoltage release. The switch operates when the breaker is tripped as a result of its protective functions, or as the result of the operation of a shunt trip or undervoltage release. The switch is *not* actuated as a result of normal breaker "On-Off" operation.

The bell alarm switch is available with one single-pole double-throw (SPDT) element in either of two ratings: with control power duty contacts suitable for 120-240 Vac and 48-125 Vdc application, or low-impedance contacts for signal-level circuits such as dc pilot circuits and programmable logic controllers. Signal-level contacts are gold-plated and are suitable for 5-30 Vac or Vdc.

## Electrical data

**Table. 13.2** Alarm switch electrical characteristics

| Catalog Number | Contact Configuration | Contact Ratings | | | | |
|---|---|---|---|---|---|---|
| | | AC | | DC | | |
| | | Volts | Amps | Volts | Amps – Res. | Amps – Ind. |
| SABAP1 | 1 AB element | 120-240 | 5 | 48-125 | 0.50 | 0.25 |
| SABAG1 | 1 AB element, gold-plated | 5-30 | 1 | 5-30 | 1.0 | 0.50 |

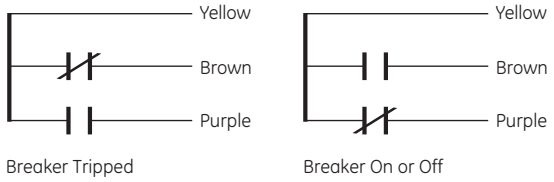



**Fig. 13.2** Wiring diagram, bell alarm switch

## Auxiliary switch

The auxiliary switch signals primary contact position (open or closed) to other accessories (e.g., indicating lights, relays or logic circuits) for remote indication, interlocking and control applications. Switch operation is independent of the method used to open or close the breaker. Auxiliary switches do not distinguish between a trip or open condition.

The auxiliary switch is available with either one or two single-pole double-throw (SPDT) elements in either of two contact ratings: control power duty contacts suitable for 120-240 Vac and 48-125 Vdc application, or low-impedance contacts for signal-level circuits such as dc pilot circuits and programmable logic controllers. Signal-level contacts are gold-plated and are suitable for 5-30 Vac or Vdc.

## Electrical data

**Table. 13.3** Auxiliary switch electrical characteristics

| Catalog Number | Contact Configuration | Contact Ratings | | | | |
|---|---|---|---|---|---|---|
| | | AC | | DC | | |
| | | Volts | Amps | Volts | Amps – Res. | Amps – Ind. |
| SAUXPAB1 | 1 AB Element | 120-240 | 5 | 48-125 | 0.50 | 0.25 |
| SAUXPAB2 | 2 AB Elements | 120-240 | 5 | 48-125 | 0.50 | 0.25 |
| SAUXGAB1 | 1 AB Element, gold-plated | 5-30 | 1 | 5-30 | 1.0 | 0.50 |
| SAUXGAB2 | 2 AB Elements, gold-plated | 5-30 | 1 | 5-30 | 1.0 | 0.50 |

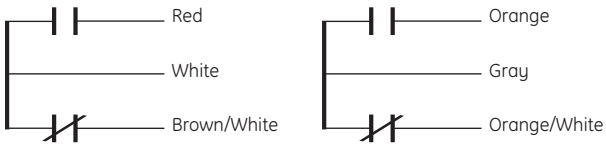


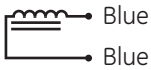

**Fig. 13.3** Wiring diagram for SAUXPAB2

## Undervoltage Release

The undervoltage release provides automatic circuit breaker tripping when there is a power loss or major dip (to 35%-70% of rated voltage) in accessory control voltage. AC devices are UL listed for 50-60 Hz. Product number SAUV1 may be used with time delay unit SPUVTD (List Price $430.00, GO-245B) (delay 0.1 to 1.0 seconds), 120 Vac input, 125 Vdc output.

| Voltage ac | Voltage dc | Peak Current (mA) | Product Number | List Price GO-135S |
|---|---|---|---|---|
| 120 | 125 | 200 | SAUV1 | **$363.00** |
| 240 | 250 | 200 | SAUV2 | **$363.00** |
| 24 | 24 | 100 | SAUV3 | **$363.00** |
| 48 | 48 | 100 | SAUV4 | **$363.00** |
| 120 | 125 | | SPUVTD | **$430.00**[1] |

[1]**GO-245B.**




All accessory contacts shown with the circuit breaker in tripped position.

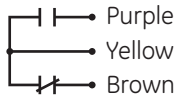
Undervoltage Release

## Bell Alarm Switch

The bell alarm switch provides remote indication of whether the circuit breaker has been tripped via open or closed SPDT switch elements, but remains unchanged during "On/Off" circuit breaker operation and during operation by the "Push-to-Trip" button.

| Switch Rating | Number of Switch Elements | Product Number | List Price GO-135S |
|---|---|---|---|
| 5A @ 240 Vac/ 0.5A @ 125 Vdc | 1 form C | SABAP1 | **$154.00** |
| Gold-Plated Contacts 0.5A @30V | 1 form C | SABAG1 | **$154.00** |

Note: UL listed at 200,000 AIC without internal accessories, 100,000 AIC with internally mounted accessories.




All accessory contacts shown with the circuit breaker in tripped position.

Bell Alarm Switch

## Actuator

All Spectra® circuit breakers are supplied with an actuator installed in the left-side pouch. The actuator is removed when installing either a shunt trip or undervoltage release.

| Description | Product Number | List Price GO-148C |
|---|---|---|
| Replacement Actuator | SACTUATOR | **$250.00** |