

# HIGH SECURITY CONTACT

## SWITCH MODELS HSC-1 • HSC-2 HSC-TP-1 • HSC-TS-1

### INSTALLATION, OPERATION AND INSTRUCTION MANUAL



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## GENERAL DESCRIPTION

The model HSC, a High Security Contact switch is listed by Underwriters Laboratories, Inc. and Underwriters Laboratories of Canada for monitoring the open or closed position of safe and vault doors. The switch includes design features, which makes it highly defeat resistant in critical environments.

## FEATURES

- Triple-biased, SPDT (Form C) reed alarm switches in the switch unit with a magnet array in the magnet unit, makes the defeat of the switch with an external magnet virtually impossible.
- DPDT Model HSC-2 has two separate triple-biased SPDT (Form C) reed alarm circuits in the switch unit, which may be used in place of two separate switch units.
- Magnetic field tamper output added to further resist defeat with an external magnet or magnet array assembly.
- Hidden pry tamper, SPST (Form A) alarm switch output.
- Remote test option available. (Models HSC-1-TS and HSC-1-TP)
- For indoor / outdoor use.
- Lead type-8 foot flexible stainless steel armored cable.
- Narrow housing allows for mounting on narrow door frames
- Grey powdercoat aluminum housings with protective end caps.

## SPECIFICATIONS

- **Dimensions:** 4 5/16" W x 1" H x 29/32" D
- **Switch Contact Rating:** 100 VDC max. switching voltage  
250 mA max. switching current  
3 Watts max. power rating

**Warning:** Each electrical rating is an individual maximum and must not be exceeded.

(Example: 250 mA at 12VDC, 60mA at 50VDC, 30mA at 100VDC)

- **Tamper Contact Rating:** 100 VDC max. switching voltage  
250 mA max. switching current  
3 Watts max. power rating

**Warning:** Each electrical rating is an individual maximum and must not be exceeded.

(Example: 250 mA at 12VDC, 60mA at 50VDC, 30mA at 100VDC)

- **Ambient temperature range:** -31°F (-35°C) to 151°F (66°C)
- **Optional Accessory:** (L) Bracket-HSC Mounting

## ORDERING INFORMATION

HSC-1	SPDT	Stk. No. 2020350
HSC-2	DPDT	Stk. No. 2020360
HSC-1-TP	SPDT w/Remote Test on Protective Loop	Stk. No. 2020370
HSC-1-TS	SPDT w/Remote Test on Supervisory Loop	Stk. No. 2020380
	(L) Bracket-HSC Mounting	Stk. No. 5160248
	Spacer Bracket	Stk. No. 5160260

## MOUNTING AND INSTALLATION

**Warning: The High Security Contact switch unit and magnet were manufactured and tested as a set. They must be installed as a set to insure proper operation.**

Locate the desired mounting location of the switch unit (preferably at the top of a door frame as far as possible from the hinges.) In planning for mounting of the HSC, note that the switch and magnet must be oriented correctly. The switch and magnet must be aligned in the same plane and be at a defined operating distance apart. Note the I.D. groove along the side of each housing. Position the switch and magnet so that the I.D. grooves are facing each other and the end of the magnet aligns with the end of the switch.

The maximum and minimum operating distance (gap distance) is the distance at which the unit will report secure. If the magnet is too close to the switch unit or too far away, the unit will alarm. The gap distance for the HSC is approximately .20"-.60". However, environmental conditions and the type of surface mounting material and its thickness may slightly alter the actual gap distance and the minimum distance at which the gap starts for your particular installation. For best reliability, it is recommended that the unit be mounted at the midpoint of the actual gap distance of the unit.

The HSC-2 (DPDT) model with two switch circuits are mechanically and electronically isolated from each other and may switch at slightly different gap distances. For best reliability of both switch circuits, use the midpoint gap distance of switch circuit #2 to mount the HSC-2 switch.

The optimum midpoint of the gap distance can be determined by the following recommended installation method:

1. With the switch located and magnet oriented correctly on the mounting surface, monitor the closed loop wires of the switch. Slowly advance the magnet toward the switch until the circuit closes and mark the mounting surface at the leading edge of the magnet housing.
2. Continue to slowly advance the magnet toward the switch until the circuit opens and once again mark the mounting surface at the leading edge of the magnet housing.
3. Position the leading edge of the magnet at the midpoint of the two marks.
4. Use the supplied switch and magnet templates (See figure 5) to mark the mounting holes.
5. Pre-drill the pilot holes for #8 or M4 mounting screws (not supplied).
6. For High Security Certified Safe and Vault applications a pry tamper is required. For these applications, also use the switch template to mark the pry tamper screw location.
7. Pre-drill a .125 dia. pilot hole for the #6 pry tamper screw. Install the supplied #6 oval head pry tamper screw flush to the mounting surface. The flush screw head yields the correct height to actuate the pry tamper switch on the back of the switch unit.
8. Mount the switch and magnet units using #8 or M4 mounting screws (not supplied).
9. Connect leads as shown in wiring diagrams per figure 1 and check for proper operation.

## OPERATION

The following operating features and conditions exist with the switch and magnet units in its secured condition (positioned, mounted, and wired correctly):

- Triple Biased Switch Operation - The three biased switches will be in the closed position when the switch is in its secured condition. Opening of the door or removal of the switch unit or magnet unit will cause an alarm condition.
- Pry Tamper Operation - The pry tamper switch will be in the closed position when the switch is in its secured condition (depressed by tamper screw). Removal of the switch unit from the mounting surface will cause a tamper alarm condition.
- Magnetic Tamper Operation - applying an external magnet in an attempt to defeat the switch will operate a normally closed switch causing a magnetic tamper alarm condition.
- Remote Test Operation (Models HSC-1-TS and HSC-1-TP Only) - applying 12 VDC, 12 mA max. current to the remote test (black) wires, will operate a normally closed test switch. This will cause an alarm condition on the HSC-1-TP model and a tamper alarm condition on the HSC-1-TS model.

## WIRING

**Warning: A color code wire designation is located on the wire ends. Be sure to label wires before shortening lead lengths.**

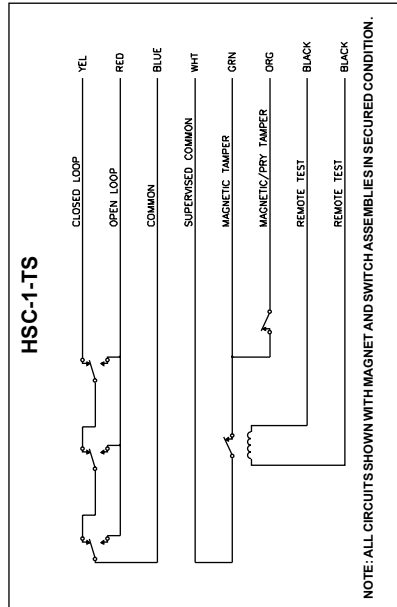
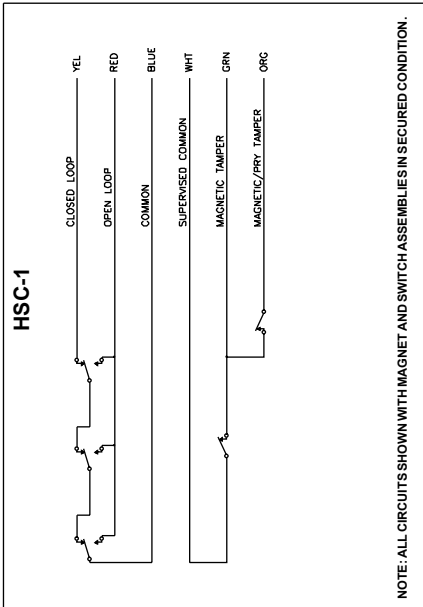
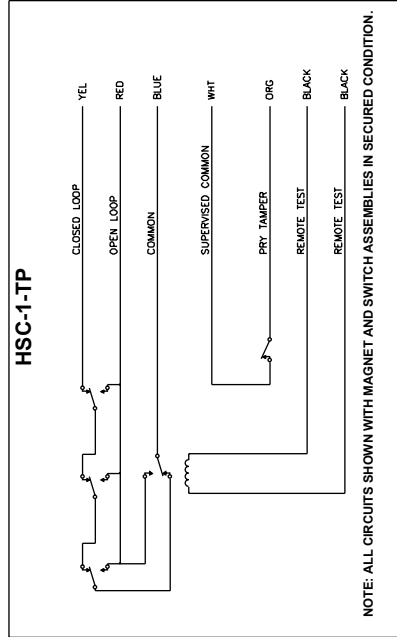
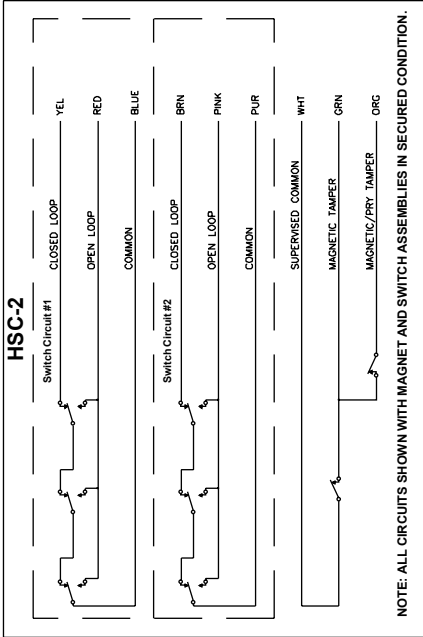
If the alarm system provides for a 24-hour supervision circuit, connect the magnetic and pry tampers to that circuit. This wiring configuration will signal an alarm condition when the switch unit is tampered with, whether the door is open or closed. Figure 2a. shows an example of this wiring configuration.

If the alarm system does not provide for a 24-hour supervision circuit, connect the magnetic and pry tampers in series with the switch in the alarm protective circuit. This wiring configuration will create an alarm condition when the switch unit is tampered with, but only when the door is closed in the secure position. Figure 2b. shows an example of this wiring configuration.

Either configuration of connecting the HSC supervisory circuits complies with Underwriters' Laboratories' UL 681 installation standards.

# WIRING DIAGRAMS

Figure 1.



# HSC-1 WIRING CONNECTION TO THE EVD-M AND EVD-1 (POTTER ELECTRONIC VIBRATION DETECTOR SYSTEM MODELS)

Figure 2a.

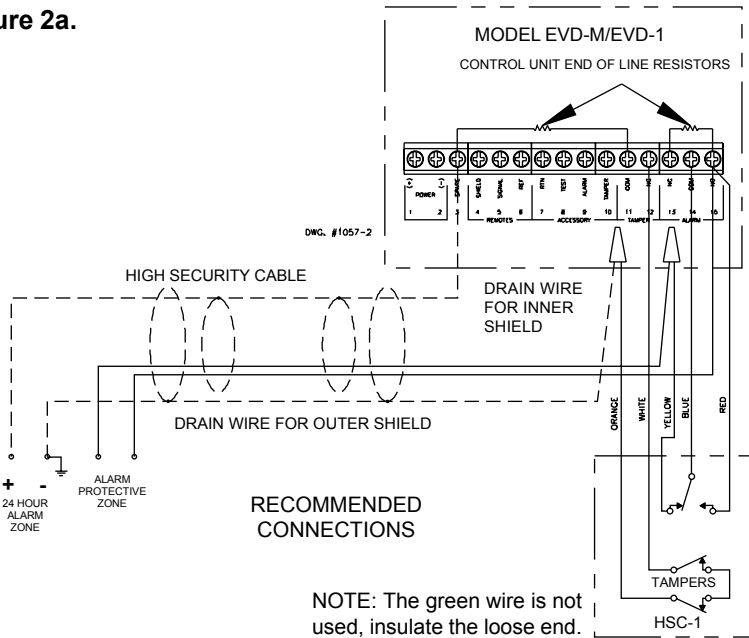
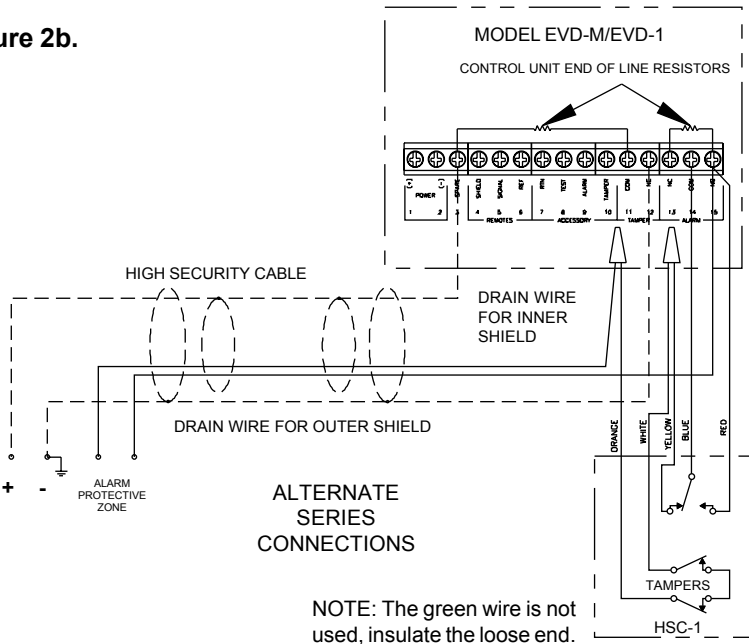
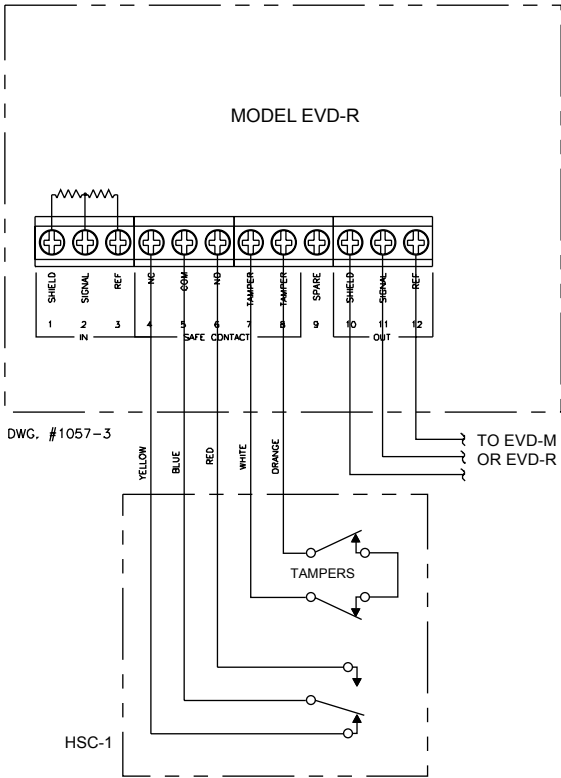


Figure 2b.



## HSC-1 WIRING CONNECTION TO THE EVD-R (POTTER ELECTRONIC VIBRATION DETECTOR SYSTEM MODEL)

Figure 3.



NOTE: The green wire is not used, insulate the loose end.



### HSC MOUNTING TEMPLATE (FULL SCALE)

Figure 5.

