Sensor Phase Change Harness Installation

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Qualified Persons

⚠ WARNING

Only qualified persons who are knowledgeable in the installation, operation, and maintenance of overhead and underground electric distribution equipment, along with all associated hazards, may install, operate, and maintain the equipment covered by this publication. A qualified person is someone who is trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from nonlive parts of electrical equipment
- The skills and techniques necessary to determine the proper approach distances corresponding to the voltages to which the qualified person will be exposed
- The proper use of special precautionary techniques, personal protective equipment, insulated and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment

These instructions are intended ONLY for such qualified persons. They are not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

Read this Instruction Sheet

NOTICE

Thoroughly and carefully read this instruction sheet and all materials included in the product's instruction handbook before installing or operating the 6800 Series Automatic Switch Control. Familiarize yourself with the Safety Information and Safety Precautions on pages 4 through 5. The latest version of this publication is available online in PDF format at **sandc.com/en/support/product-literature/**.

Retain this Instruction Sheet

This instruction sheet is a permanent part of the 6800 Series Automatic Switch Control. Designate a location where this publication can be easily retrieved and referred to.

Proper Application

⚠ WARNING

The equipment in this publication must be selected for a specific application. The application must be within the ratings furnished for the selected equipment.

Special Warranty Provisions

The standard warranty contained in S&C's standard conditions of sale, as set forth in Price Sheets 150 and 181, applies to the S&C 6800 Series Automatic Switch Control, except that the first paragraph of the said warranty is replaced by the following:

(1) General: The seller warrants to the immediate purchaser or end user for a period of 10 years from the date of shipment that the equipment delivered will be of the kind and quality specified in the contract description and will be free of defects of workmanship and material. Should any failure to conform to this warranty appear under proper and normal use within 10 years after the date of shipment, the seller agrees, upon prompt notification thereof and confirmation that the equipment has been stored, installed, operated, inspected, and maintained in accordance with the recommendations of the seller and standard industry practice, to correct the nonconformity either by repairing any damaged or defective parts of the equipment or (at the seller's option) by shipment of necessary replacement parts. The seller's warranty does not apply to any equipment that has been disassembled, repaired, or altered by anyone other than the seller. This limited warranty is granted only to the immediate purchaser or, if the equipment is purchased by a third party for installation in third-party equipment, the end user of the equipment. The seller's duty to perform under any warranty may be delayed, at the seller's sole option, until the seller has been paid in full for all goods purchased by the immediate purchaser. No such delay shall extend the warranty period.

Replacement parts provided by the seller or repairs performed by the seller under the warranty for the original equipment will be covered by the above special warranty provision for its duration. Replacement parts purchased separately will be covered by the above special warranty provision.

Warranty of the S&C 6800 series control is contingent upon the installation, configuration, and use of the control or software in accordance with S&C's applicable instruction sheets.

This warranty does not apply to major components not of S&C manufacture, such as communication devices. However, S&C will assign to the immediate purchaser or end user all manufacturer's warranties that apply to such major components.

Warranty of equipment/services packages is contingent upon receipt of adequate information on the user's distribution system, sufficiently detailed to prepare a technical analysis. The seller is not liable if an act of nature or parties beyond S&C's control negatively impact performance of equipment/services packages; for example, new construction that impedes radio communication, or changes to the distribution system that impact protection systems, available fault currents, or system-loading characteristics.

Understanding Safety-Alert Messages

Several types of safety-alert messages may appear throughout this instruction sheet and on labels and tags attached to the 6800 series control. Familiarize yourself with these types of messages and the importance of these various signal words:

⚠ DANGER

"DANGER" identifies the most serious and immediate hazards that will likely result in serious personal injury or death if instructions, including recommended precautions, are not followed.

⚠ WARNING

"WARNING" identifies hazards or unsafe practices that can result in serious personal injury or death if instructions, including recommended precautions, are not followed.

⚠ CAUTION

"CAUTION" identifies hazards or unsafe practices that can result in minor personal injury if instructions, including recommended precautions, are not followed.

NOTICE

"NOTICE" identifies important procedures or requirements that can result in product or property damage if instructions are not followed.

Following Safety Instructions

If you do not understand any portion of this instruction sheet and need assistance, contact your nearest S&C Sales Office or S&C Authorized Distributor. Their telephone numbers are listed on S&C's website **sandc.com**, or call the S&C Global Support and Monitoring Center at 1-888-762-1100.

NOTICE

Read this instruction sheet thoroughly and carefully before installing your 6800 Series Automatic Switch Control.

Replacement Instructions and Labels

If additional copies of this instruction sheet are needed, contact your nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

It is important that any missing, damaged, or faded labels on the equipment be replaced immediately. Replacement labels are available by contacting your nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

⚠ DANGER

The 6800 Series Automatic Switch Control operates switches applied at high voltage. Failure to observe the precautions below will result in serious personal injury or death.

Some of these precautions may differ from your company's operating procedures and rules. Where a discrepancy exists, follow your company's operating procedures and rules.

1. **QUALIFIED PERSONS.** Access to a 6800 Series Automatic Switch Control must be restricted only to qualified persons. See the "Qualified Persons" section on page 2.
2. **SAFETY PROCEDURES.** Always follow safe operating procedures and rules.
3. **PERSONAL PROTECTIVE EQUIPMENT.** Always use suitable protective equipment, such as rubber gloves, rubber mats, hard hats, safety glasses, and flash clothing, in accordance with safe operating procedures and rules.
4. **SAFETY LABELS.** Do not remove or obscure any of the "DANGER," "WARNING," "CAUTION," or "NOTICE" labels. Remove tags only if instructed to do so.
5. **MAINTAINING PROPER CLEARANCE.** Always maintain proper clearance from energized components.

⚠ WARNING

The 6800 Series Automatic Switch Control is connected to switchgear operating at primary voltage levels. High voltage may be present in the wiring going to the switch control or within the switch control during certain failures of the switchgear wiring or grounding system caused by a failure of the switch itself. For this reason, access to the switch control should be treated with the same safety precautions applied when accessing other high-voltage lines and equipment. Follow all locally approved safety procedures when working on or around this switch control.

Before attempting to access an existing switch installation, check carefully for visible or audible signs of electrical or physical malfunction. Do this before touching or operating the switch control or doing any other part of the installation. These warning signs include smoke, fire, open fuses, crackling noises, loud buzzing, etc. When a malfunction is suspected, treat all components of the installation, including the switch control and associated mounting hardware, as though elevated to primary (high) voltage.

Whenever manually reconfiguring the circuit (for example, during repairs), follow your company's operating procedures to disable **Automatic Operation** mode in the IntelliTeam® SG Automatic Restoration System. This prevents any unexpected operation of team switchgear.

The IntelliTeam® SG Automatic Restoration System can be disabled by selecting the **Prohibit Restoration** state in any team member of the team that should be disabled.

NOTICE

The printed circuit board components can be damaged by electrostatic charges. Observe electrostatic precautions when working inside a 6801 control enclosure or a low-voltage enclosure.

Required Tools

Use a cable cutter to cut plastic cable ties.

Installation Procedure

Follow these steps to install the phase change harness:

STEP 1. Remove ac control power and disconnect the battery.

STEP 2. When the control is sensor powered, disconnect the FIC connector.

STEP 3. If necessary, cut the cable tie to facilitate connection of the jumper. See Figure 1 on page 7.

STEP 4. Insert the current phase change harness between the current sensor input cable and plug P20. See Figures 1 and 2 on page 7. For the 6802 or 6803 control insert the current phase change harness between the current sensor input cables and plugs P20 and P21. See Figure 3 on page 8. The plugs cannot be installed incorrectly.

STEP 5. Insert the voltage phase change harness between the voltage sensor input cable and jack J7 on the circuit board. See Figures 1 and 2 on page 7. For the 6802 or 6803 control, insert the voltabe phase change harness between the voltage sensor input cables and jacks J4 and J5 on the circuit board. See Figure 3 on page 8. The plugs cannot be installed incorrectly.

STEP 6. Reconnect the FIC connector, if it was removed.

STEP 7. Reconnect the battery and ac control power.

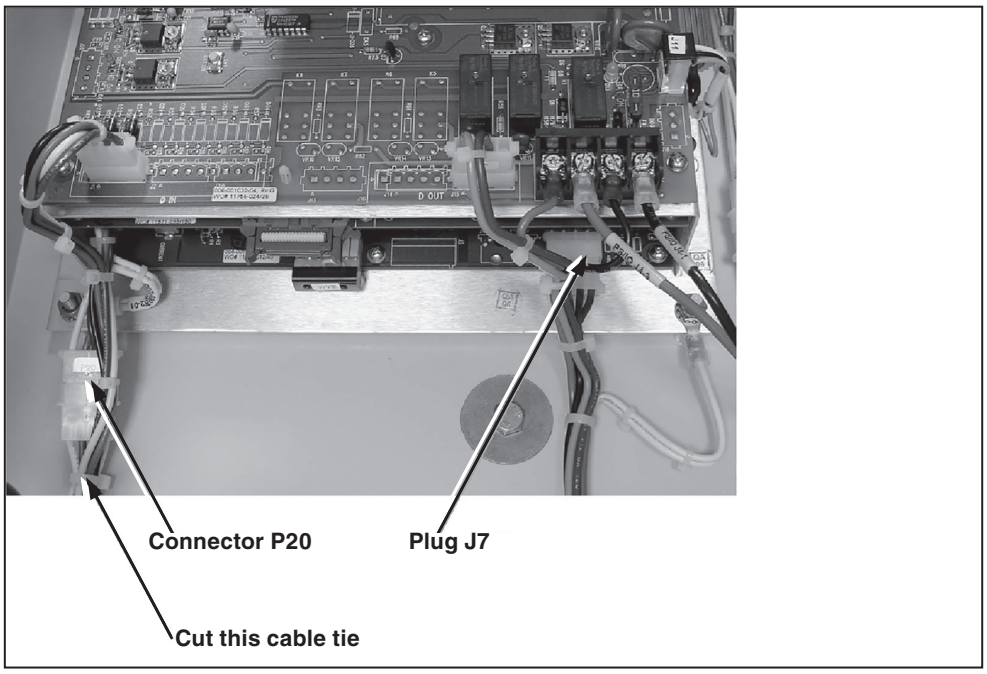

Figure 1. The current and voltage phase change harnesses are installed at these locations for a 6801 control.

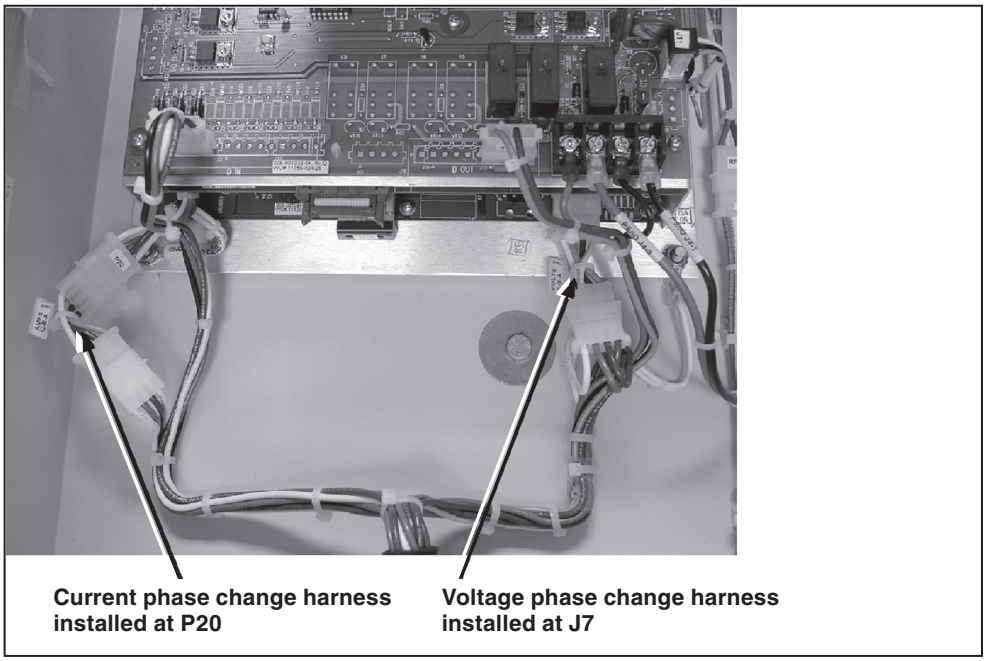

Figure 2. Both current and voltage phase change harnesses have been installed in the 6801 control.

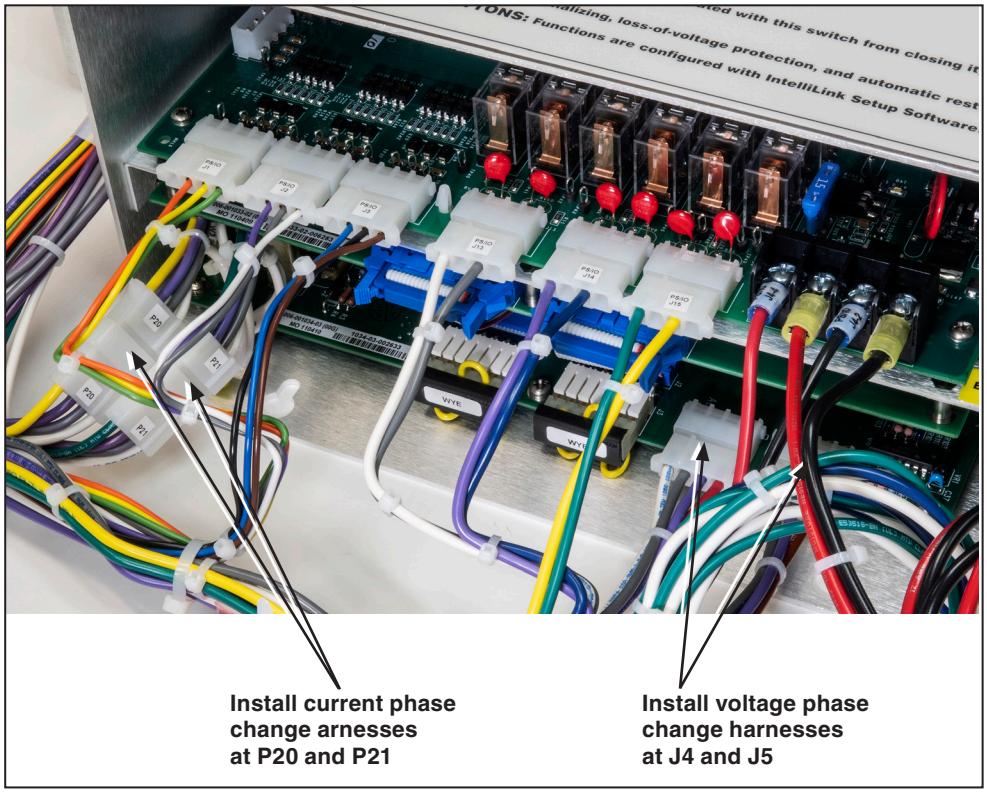

Figure 3. For 6802 and 6803 controls, the current and voltage phase change harnesses are installed at these locations.

Entering Sensor Calibration Ratios

The standard sensor wiring connections for a 6800 Series Automatic Switch Control are:

- Phase A = Pole 1
- Phase B = Pole 2
- Phase C = Pole 3

When this wiring is not suitable for the switch installation, sensor phase change harnessess can be used to change the phase/pole assignments. When sensor phase change harnesses are used, the sensor calibration ratios must be entered on the *Setup>General>Sensor Config* screen, as shown in the Table 1.

For example: When the C-B-A phase change harnesses are used, the calibration ratios must be changed on the *Setup>General>Sensor Config* screen. Pole 3 ratios must be entered in the Pole 1 column, and Pole 1 ratios must be entered in the Pole 3 column. Pole 2 does not require changing.

Table 1. Calibration entry pole locations when phase change harnesses are installed

Phase Arrangement	Pole 1	Pole 2	Pole 3
A-B-C (Standard)	Pole 1	Pole 2	Pole 3
A-C-B Harness	Pole 1	Pole 3	Pole 2
B-A-C Harness	Pole 2	Pole 1	Pole 3
B-C-A Harness	Pole 2	Pole 3	Pole 1
C-B-A Harness	Pole 3	Pole 2	Pole 1
C-A-B Harness	Pole 3	Pole 1	Pole 2