

# Source-Transfer Application Guide

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# Introduction

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## Qualified Persons

### **WARNING**

The equipment covered by this publication must be installed, operated, and maintained by qualified persons who are knowledgeable in the installation, operation, and maintenance of overhead electric power distribution equipment along with the associated hazards. A qualified person is one who is trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from non-live 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 the special precautionary techniques, personal protective equipment, insulating 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

Thoroughly and carefully read this instruction sheet before programming, operating, or maintaining your S&C Model 6802 Automatic Switch Control. Familiarize yourself with the safety information on page 3. The latest version of this instruction sheet is available online in PDF format at [sandc.com/Support/Product-Literature.asp](http://sandc.com/Support/Product-Literature.asp)

## Retain this Instruction Sheet

This instruction sheet is a permanent part of your S&C Model 6802 Automatic Switch Control. Designate a location where you can easily retrieve and refer to this publication.

## Warranty

The standard warranty contained in S&C's standard conditions of sale, as set forth in Price Sheet 150, applies to the S&C Model 6802 Automatic Switch Control and its associated options except that the first paragraph of said warranty is replaced by the following:

**(1) General:** Seller warrants to 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 ten 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 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 seller's option) by shipment of necessary replacement parts.

This warranty does not apply to major components not of S&C manufacture, such as batteries and communication devices, as well as hardware, software, resolution of protocol-related matters, and notification of upgrades or fixes for those devices. However, S&C will assign to immediate purchaser or end user all manufacturers' warranties that apply to such major components.

**Understanding  
Safety-Alert Messages**

There are several types of safety-alert messages which may appear throughout this instruction sheet as well as on labels attached to the S&C Model 6802 Automatic Switch Control. Familiarize yourself with these types of messages and the importance of the various signal words, as explained below.

**⚠ DANGER**

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

**⚠ WARNING**

“WARNING” identifies hazards or unsafe practices which *can* result in serious personal injury or death if instructions, including recommended precautions, are not followed.

**⚠ CAUTION**

“CAUTION” identifies hazards or unsafe practices which *can* result in minor personal injury or product or property damage 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 S&C Headquarters at (773) 338-1000; in Canada, call S&C Electric Canada Ltd. at (416) 249-9171.

**NOTICE**

Read this instruction sheet thoroughly and carefully before installing or operating your S&C Model 6802 Automatic Switch Control.



**Replacement  
Instructions and  
Labels**

If you need additional copies of this instruction sheet, 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.

The S&C Model 6802 Automatic Switch Control can be easily configured for a source-transfer application that operates two S&C Scada-Mate® or Scada-Mate CX™ Switches. Only one 6802 Switch Control is required for source-transfer when peer-to-peer communication with other switch controls is not required. IntelliTeam® SG Automatic Restoration System software can be used for the 6802 Source-Transfer Application. IntelliTeam SG automatically handles multiple events, and can transfer multiple times—back and forth to whichever source is available. Figure 1 shows the two FIC connectors on the bottom of the enclosure.



**Figure 1. Dual FIC connectors on the S&C Model 6802 Automatic Switch Control for source-transfer application.**

## Site Information

Before installation or configuration of the S&C Model 6802 Automatic Switch Control, review the *Installation and Operating Instructions*, and the *Setting Phase and Ground Overcurrent Levels* Instruction Sheet 1045-530, available at the S&C Website [sandc.com](http://sandc.com). Familiarize yourself with the features, procedures, warnings, settings, operation, and troubleshooting. The control can be configured in the shop prior to installation or after installation at the site.

You need to collect basic information about the circuit and location where the equipment will be installed.

- Obtain the total clearing curves for the preferred- and alternate-source circuit breakers or other upstream fault-clearing devices, along with other relay settings, such as reclose times, number of trips, type of trips (instantaneous or delayed), and reset times.
- Determine if there are any capacity constraints on either source that should prevent transfer under certain loading conditions.
- Ensure that the voltage sensors on both switches face the substation side of the line.
- Obtain the sensor calibration sheets shipped with the switches. Record the switch serial numbers.
- Verify that you have the correct software for this switch control application.

Use these instructions with software **SG6802DOInstaller-3.5.5** or a later revision.

### Step 1

Install **SG6802DOInstaller-3.5.5** software on the computer that will be used to program the 6802 Controls. IntelliLink® Software will be automatically installed.

### Step 2

Connect your computer to the switch control with a serial or USB cable. Always use battery power or a grounded, 3-wire extension cord for your computer and the ac powered switch control. Your serial or USB port may be damaged if the computer or switch control is not grounded.

### Step 3

Start IntelliLink with *Start > Programs > S&C Electric > IntelliLink*. IntelliLink will automatically connect to the 6802 Control and open the *Operation* screen.

### Step 4

On the *Setup > General > Time* screen, configure the parameters for *Daylight Savings Time Automatic Switchover, Time and Date*. On the *Setup > General* screen configure the *Physical Location* and *Cabinet Heater* settings. Ignore the *Cabinet Heater* setting if the control is not powered from a 120-Vac source, because the heater does not function with sensor power. Enter the serial number for each switch.

### Step 5

On the *Setup > General > Sensor Configuration* screen enable *Visual Disconnect* status for Scada-Mate installations. Scada-Mate CX Switches do not have a status contact for their optional visual disconnect. Enter the sensor calibration data provided for Switch 1 and Switch 2. Switch 1 is connected to the rear FIC near the mounting bracket, Switch 2 is connected to the front FIC near the enclosure door.

### Step 6

On the *Setup > General > Site-Related* screen enter the installation-dependent parameters for voltage. The *Loss-of-Voltage Threshold* setting can be increased as reliability and power quality dictate for a particular load. Please review the *Setup Instructions*. Instantaneous reclose of an upstream breaker or recloser must be considered when determining the LOV setting. A voltage loss less than 15 cycles may not be detected by a 6802 Control. To detect a 15-cycle voltage loss at the 6802 Control, do not set the *Loss-of-Voltage Threshold* any lower than 60 volts.

For a phase-to-neutral connected transformer, the *Phase Angle Offsets* should be set to zero degrees. For phase-to-neutral transformers, the *Phase Angle Offsets* should be set to 30 or 330 degrees. Verify that the *Real-Time Data* is correct. The correct settings will result in current in the normal direction and a reasonable power factor. See the *Setup Instructions* for further details.

### Step 7

On the *Setup > General > Fault Detection* screen select phase and ground fault settings according to the time-current clearing curves of the upstream fault-clearing device. Instruction Sheet 1042-572 *Setting Phase and Ground Overcurrent Levels* can assist you in determining these settings. For most installations, the *Phase Fault Detection Current Level* should be set at 90% of the minimum trip setting of the upstream recloser or breaker, and the *Fault Duration Time Threshold* should be set according to the fastest clearing time for high-magnitude faults. *Ground Fault* protection should be set to coordinate with the time-current curve of the upstream fault-clearing device. The usual setting is 100% of minimum to trip. Inrush settings should consider the connected transformer and motor kVA on the load side of the switch, and follow ANSI/IEEE guidelines.

## Step 8

Return to the *Operation* screen and click **CHANGE** to **Enable Automatic Operation**. On the *Setup > General > Automatic Operations* screen set *Features Enabled* to *Sectionalizing + Phase Loss* for both switches, or determine the most appropriate setting for your application, and enable the same feature set for both switches. Enter settings for all the other parameters. Refer to S&C Instruction Sheet 1045-530 *Setup*, or press F1 for detailed information on each parameter. Go to the *Validate/Apply* screen and click **Apply**.

## Step 9

Go to the *Setup > Communications > DNP* screen. If SCADA communication is used, enter the required parameters. Also enter a non-zero RTU address for the 6802 that matches the RTU address you enter in the next step. See Instruction Sheet 1045-530 for more information about communication settings.

## Step 10

Go to the *Setup > Restoration > IntelliTEAM SG > Team 1 Setup* screen. See Figure 2. Enter a *Team ID* and set *Team Logic* to **IT-II**. Adjust the *Return to Normal Timer* if you want to use that function.

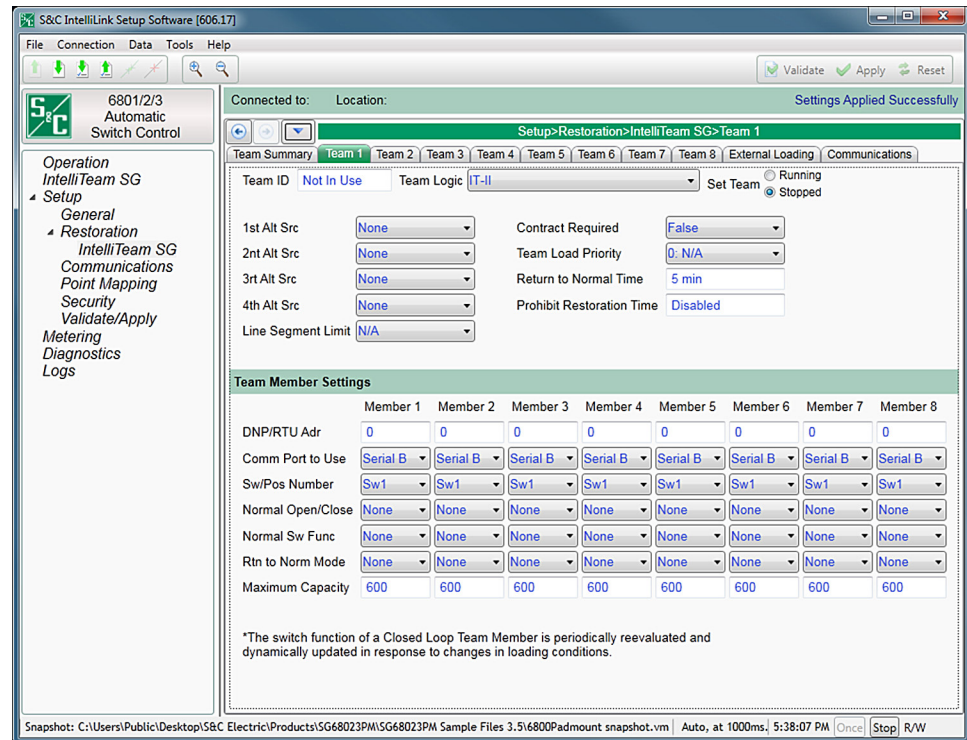


Figure 2. IntelliTeam SG Setup for Team 1.

## Step 11

Configure *Rec 1* for **Sw 1** and *Rec 2* for **Sw 2**. Switch 1 is connected to the rear FIC next to the bracket mount, Switch 2 is connected to the front FIC near the enclosure door. Enter the same *RTU Address* for both *Rec 1* and *Rec 2*; use the same *RTU Address* you entered in Step 10. Specify which switch is *Normally Closed* and which is *Normally Open*. For the *Normally Closed* switch set the *Normal Switch Function* to **Src/Sub** and the *Return to Normal Mode* to **Close**. For the *Normally Open* switch set the *Normal Switch Function* to **Tie/Sub** and set the *Return to Normal Mode* to **Close**. “Close” defines *Return to Normal* as a closed transition mode or make-before-break. At *Return to Normal* the normally closed switch will close and then the normally open switch will open—the feeders are temporarily tied together, but there is no outage.

### Step 12

Adjust *Maximum Capacity*.

### Step 13

Set the *Team Setup* to **Stopped**, if not already set to *Stopped*. Click **OK**. Then set it back to **Running** and click **OK**.

### Step 14

Wait for the control to go into the **Ready** mode by watching the LCD on the control.

### Step 15

Save a snapshot of the control data. The *Save Snapshot* command is in the *File* menu on the toolbar of the IntelliLink screen.

For further assistance, contact your local S&C Sales Office.

