

Product Description

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Introduction

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 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 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

NOTICE

Read this instruction sheet thoroughly and carefully before installing or operating S&C 5800 Series Automatic Switch Controls. Familiarize yourself with the Safety Information page 3. 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 your 5800 Series Automatic Switch Control. Designate a location where you can easily retrieve and refer to this publication.

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.

Warranty

The warranty and/or obligations described in S&C's Price Sheet 150 "Standard Conditions of Sale-Immediate Purchasers in the United States" (or Price Sheet 153, "Standard Conditions of Sale-Immediate Purchasers Outside the United States") plus any special warranty provisions, as set forth in the applicable product-line specification bulletin, are exclusive. The remedies provided in the former for breach of these warranties shall constitute the immediate purchaser's or end user's exclusive remedy and a fulfillment of the seller's entire liability. In no event shall the seller's liability to the immediate purchaser or end user exceed the price of the specific product that gives rise to the immediate purchaser's or end user's claim. All other warranties, whether express or implied or arising by operation of law, course of dealing, usage of trade or otherwise, are excluded. The only warranties are those stated in Price Sheet 150 (or Price Sheet 153), and THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY EXPRESS WARRANTY OR OTHER OBLIGATION PROVIDED IN PRICE SHEET 150 (OR PRICE SHEET 153) IS GRANTED ONLY TO THE IMMEDIATE PURCHASER AND END USER, AS DEFINED THEREIN. OTHER THAN AN END USER, NO REMOTE PURCHASER MAY RELY ON ANY AFFIRMATION OF FACT OR PROMISE THAT RELATES TO THE GOODS DESCRIBED HEREIN, ANY DESCRIPTION THAT RELATES TO THE GOODS, OR ANY REMEDIAL PROMISE INCLUDED IN PRICE SHEET 150 (or PRICE SHEET 153.)

**Understanding
Safety-Alert Messages**

Several types of safety-alert messages may appear throughout this instruction sheet and on labels attached to the communication and control unit. 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 <i>will likely</i> result in serious personal injury or death if instructions, including recommended precautions, are not followed.


⚠ WARNING
“WARNING” identifies hazards or unsafe practices that <i>can</i> result in serious personal injury or death if instructions, including recommended precautions, are not followed.

⚠ CAUTION
“CAUTION” identifies hazards or unsafe practices that <i>can</i> result in minor personal injury if instructions, including recommended precautions, are not followed.

NOTICE
“NOTICE” identifies important procedures or requirements that <i>can</i> 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 5800 Series 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.

IntelliTeam II System Overview

S&C 5800 Series Automatic Switch Controls with the IntelliTeam II Automatic Restoration System enable Scada-Mate® Switching Systems, Omni-Rupter® Switches, Remote Supervisory Vista® Underground Distribution Switchgear, and pad-mounted distribution switches, or a combination of these, form teams to provide fast, fully automatic fault isolation and service restoration. Up to two automatic switch positions of the pad-mounted gear can be used and configured independently to provide further flexibility for the transfer process. Using peer-to-peer communication and distributed intelligence, team members protect a line segment by monitoring the feeder(s) for voltage loss and fault conditions, sharing information (both within the team and between teams) and making decisions on how to pick up load safely and effectively. With the IntelliTeam II system, complex configurations with multiple alternate sources can be implemented.

System Features

Distributed intelligence—The team does not require a SCADA master station for circuit reconfiguration, though the IntelliTeam II system is compatible with SCADA systems using the DNP protocol.

Automatic load transfer—Team members can transfer load from the normal source to an alternate source to provide power to as many customers as possible. Teams coordinate automatic operations to prevent overloading a feeder during transfer operations. Each team can have multiple alternate sources.

Return to Normal—When this feature is enabled, the team members return the circuit to its normal configuration automatically when stable three-phase voltage is restored to the faulted line segment.

Ready status on LCD screen—The faceplate LCD screen shows “RDY” when the team is ready to take action, even after a transfer event has already taken place. It indicates there are no errors, faults, battery problems, or team communication problems present.

Safety and reliability features—The IntelliTeam II system is designed to avoid operational problems, such as opening a switch when current is above the load-break rating. Features that help to ensure team safety include the ability to limit the number of line segments picked up by a team, updated loading information, logic preventing extended parallel circuits, and sensitivity to the needs of utility personnel operating the control or switch manually.

Local setup of remote team controls—When radios use the appropriate frame recognition digital chart of the world (DCW) and team member remote terminal unit addresses are set, S&C IntelliLink® Setup Software and a portable computer can be used to enter or change setpoint values for any team member on the communication network from a single control, even members of other teams. IntelliLink software can use TTY and DNP protocols.

Critical team information is available locally—IntelliLink software and the local LCD screen display critical data for all team members. Information is available for each team where the local control is a member.

Stand-alone operation fallback—If team operation is not possible, the team members operate as stand-alone sectionalizer controls.

The 5800 Series control package includes the following major components, as shown in Figure 1 and Figure 2 on page 6:

Switch Control Components

Switch control enclosure (if applicable)—The sturdy, corrosion-resistant aluminum enclosure provides weatherproof and tamper-resistant protection for the switch control components.

Switch interface connector(s)—This provides a connection point at the bottom of the switch control enclosure for cables carrying sensor data and control/status signals; often referred to as the field interface connector (FIC).

Mounting channel (S&C 5801 Control) or flanges (S&C 5802/5803 Controls)—Special mounting holes/slots make it easy to hang and align the switch control. The channel on the S&C 5801 Control is compact enough to allow the line worker to grasp the pole (instead of the enclosure) when climbing past the enclosure.

Faceplate LCD screen—This permits local, easy viewing of setpoint values and historical data without the need for a portable computer. A label supplied with each switch control helps users navigate the information easily.

Faceplate LEDs and switches—Clearly labeled LEDs provide information about the present state of the switch control. Switches permit local, manual control of the installation. On the S&C 5802/5803 Controls, each line switch can be individually controlled.

Faceplate local communication access port—This allows users to connect their computer to the switch control and use the IntelliLink software to view data, change setpoints, download logged data, and update the control software.

Faceplate retainer (Model 5801)—This holds the faceplate open while working inside the control enclosure.

Door pocket (Model 5801)—The pocket provides a convenient place to store data sheets, instruction booklets, and other installation information.

Door retainer (Model 5801)—This holds the enclosure door open while viewing and using the faceplate.

Switch control electronics modules—The modules are modularized for easy troubleshooting and replacement.

Universal communication mounting plate—This provides a solid base on which the equipment for SCADA and team communications (radio, modem, etc.) is mounted.

Communications equipment—The IntelliTeam II system uses the DNP protocol and a radio, modem, or other device for peer-to-peer communication and for two-way communication between the switch control and the SCADA master station.

Grounded ac outlet (Model 5801)—This provides an easily accessed power source for the personal computer being used. (This feature requires a connection to ac control power; it is not supported by sensor power.)

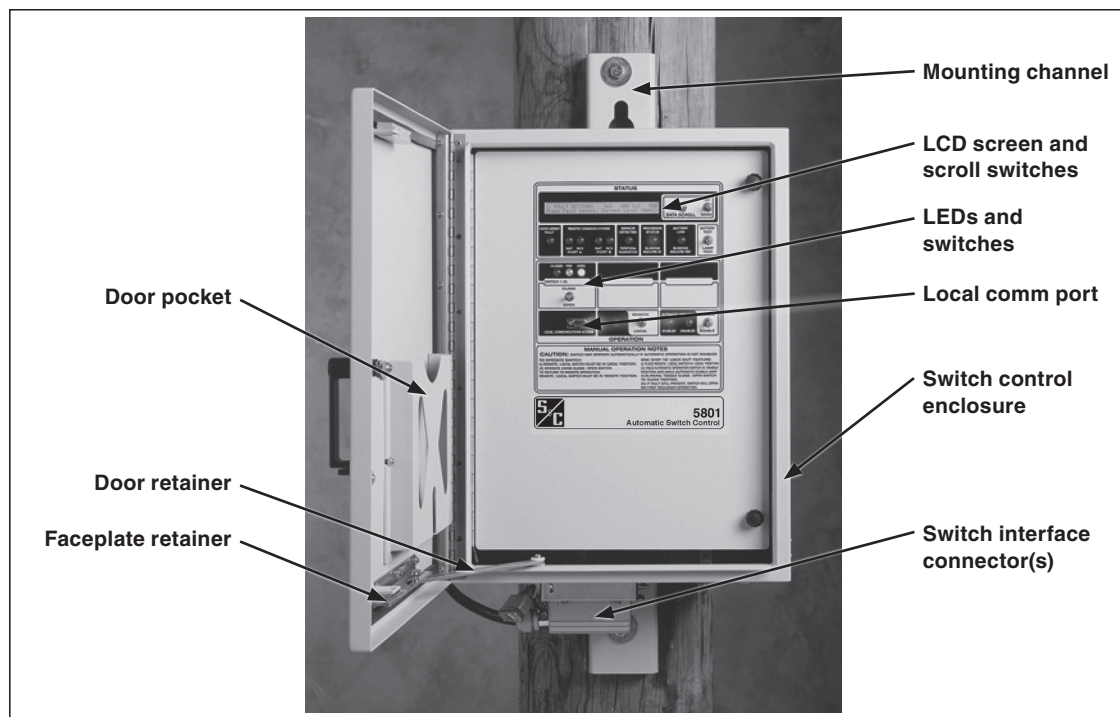


Figure 1. Model 5801 Switch Control with enclosure door open.

5800 Series Automatic Switch Control Overview

Control software—The application resides in the switch control and manages the moment-by-moment functioning of the installation. Users can easily update the software with the IntelliLink software update utility). Version upgrades are handled through software uploads, and users will never need to exchange computer or memory integrated circuits.

IntelliLink software—This software is used to verify and change all setup and configuration parameters, monitor real-time operating data, perform troubleshooting, create reports, and export data for use in spreadsheets. It is installed on a Microsoft® Windows® personal computer.

Switch Control Features

Dependable quality—Electronics are manufactured in an ISO 9002-certified plant.

Tough and reliable—The control is designed to withstand the difficult environmental and electrical conditions found in electric distribution applications.

Rugged, well-proven core electronics design—Microprocessor, memory, and all related components are based on technology developed for S&C's full range of control products, with units in the field since 1985.

Data-logging capabilities—This is useful for both stand-alone and communications-oriented applications.

Flexible communications—The control includes a local communications port for a personal computer and two DNP ports for communication with other IntelliTeam controls or SCADA.

Setpoint control of most operating parameters—Automatic operation options, address information, and other operating parameters can be viewed and changed as needed.

Non-volatile memory—Programming, setpoints, and data are stored in permanent, non-volatile memory for maximum reliability.

Accurate clock—The crystal-controlled clock provides accurate timestamping of real-time data.

Electrical isolation designed for the application—All power supplied to external devices, switch motors, wetting voltage for external digital inputs, and external sensor conditioning circuitry is isolated by opto-couplers and can withstand a surge of 2500 volts RMS for one minute.

Highly efficient, computer-controlled power supply/battery charger system—The system provides battery charging (24 or 36 Vdc, depending on the switch in use) and other voltages from a single source for the switch control, switch, and communications equipment. Fully temperature-compensated charging, accurate measurement of battery voltage, and response predictions (for heavy loads) yield maximum battery life and minimal required maintenance. The switch control regularly tests the battery, lighting a faceplate LED and setting a SCADA alarm when a new battery is required.

Battery back-up power—The control provides power for critical components even during complete ac power loss.

Automatic line-sectionalizing feature—When combined with a source-side reclosing device, the control can assist in the speedy isolation of faults. This minimizes service loss for the maximum number of customers.

Phase-Loss Protection—This minimizes single-phase damage to customer equipment when voltage is lost on only one or two phases.

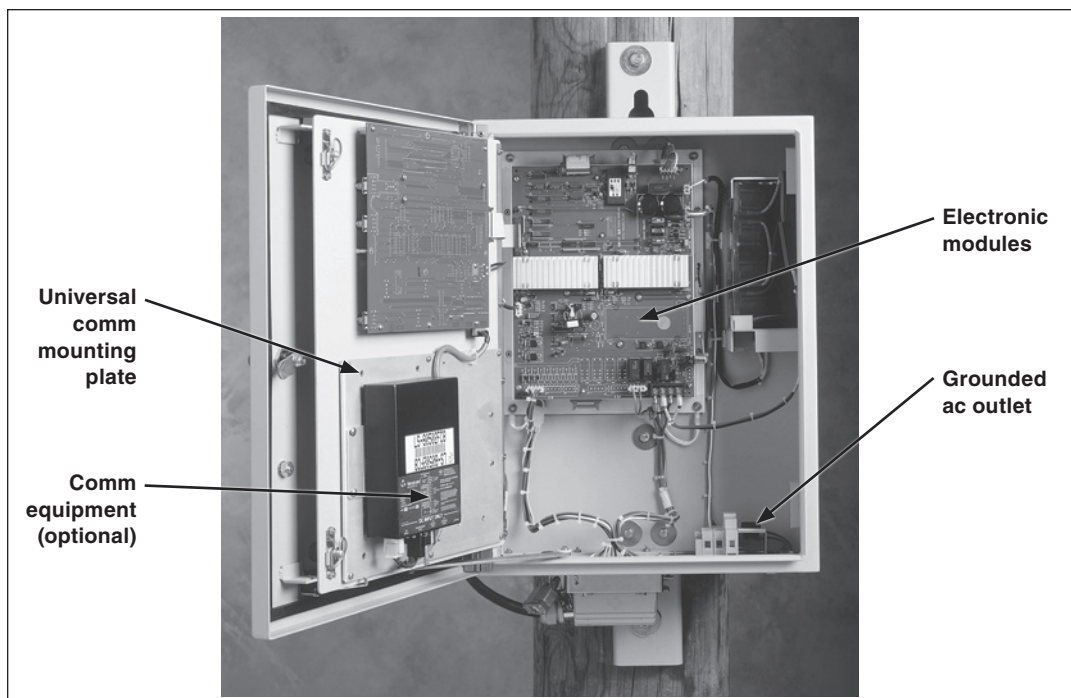


Figure 2. Model 5801 Switch Control with faceplate open.

Automatic Reclose—This function closes the switch after resumption of steady three-phase voltage following a phase loss.

Shots-to-lockout feature—Limits the number of reclose operations performed by the source-side protective device (recloser, breaker, etc.) when closing into a fault.

Reliable overcurrent fault detection—This feature includes a redundant electronic path for phase-fault current, scaled specifically for fault detection. The ground-fault current is measured with high accuracy as the analog vector sum of the three individually sensed phase currents.

Ac control power supplied by S&C sensors—Switch controls connected to most S&C switches can receive power directly from the S&C sensors (for circuits with voltage near the nominal rating of the sensors). This is especially useful where ac control power is unavailable. If both control power and sensor power are available, the switch control uses control power. If control power fails, the control automatically switches to sensor power. S&C 5800 controls without the sensor option are powered from an external 120- or 240-Vac line.

Model 5801 Additional Features

The S&C 5801 switch control also includes special features that customize it for use with overhead switches. These features include:

Custom ac voltage and current-signal conditioning—This is specifically designed and tested for use with the type of sensors in use.

Specialized enclosure wiring—The switch interface connector and internal enclosure wiring are matched to the control cable.

Switch control shipped ready to install—The switch control is modular and requires no discrete field wiring other than 120-Vac control power.

Visual disconnect—The S&C D2 visual disconnect option (disconnect closed and latched indication) for Scada-Mate Switch applications is supported both in the IntelliLink software and in the SCADA status points. When the visual disconnect is open, the switch cannot operate. The D2 option is a standard feature on R2 operating mechanisms and is an optional feature on R1 mechanisms.

Local mode reported—The control reports when the **Local** mode is selected in the pad-mount motor operator cabinet.

Model 5802/5803 Additional Features

The S&C 5802/5803 switch control also includes special features that customize it for use with multi-switch installations. These features include:

Custom ac voltage and current-signal conditioning—This is specifically designed and tested for use with up to six current and six voltage sensors, or nine current and three voltage sensors.

Specialized enclosure wiring—Internal wiring is matched to the pad-mounted switch operator and sensor cables.

Shipped ready for integration—The switch control only requires mounting in the low-voltage compartment and connection of control/status, sensor, ac power, and communication wiring. The switch control can also be factory-installed in new pad-mounted switch gear.

Separate automatic control setpoints for switches 1 and 2—Independent setpoint values and automatic features can be enabled for each switch.