

5800 Series

Automatic Switch Controls



**FLEXIBLE
INTELLIGENT
AUTOMATION**

For Overhead, Pad-mounted, or Submersible Switches



Shipped ready for installation on pole or pedestal, or for integration into pad-mounted equipment, the 5800 Series Automatic Switch Controls combine sophisticated automatic control schemes with RTU functions, data logging, and advanced communications capabilities in one integrated package.

The 5800 Series is available for overhead, pad-mounted, and submersible switch applications:

- ◆ *Model 5801*
For a single switch.
- ◆ *Model 5802*
For two switches.
- ◆ *Model 5803*
For three switches.

Automatic Control

The 5800 Series Automatic Switch Control lets switches automatically sectionalize the feeder based on factors such as overcurrent, loss of voltage, and phase imbalance. You can automate one, two, or three switches, depending on the model you choose.

The controls are available with, and can be upgraded to, EnergyLine's award-winning IntelliTEAM® Automatic Restoration System. Multiple switch controls work together as a team, using peer-to-peer communications, and quickly transfer load to minimize the number of customers affected by a fault or outage. The teams use true distributed intelligence; no central processing or SCADA is required. The IntelliTEAM system works with both line switches and reclosers, and each team may include different types of switches and controls.

Data Logging

The switch control has extensive data logging capabilities. Voltage, current, and kVARs are logged every 15 minutes for one week, along with one month's worth of daily maximum and minimum voltage, current, kVARs, and power factor. (With the IntelliTEAM system, the only data logged is one week of daily highs/lows.) Overcurrent and voltage loss event information, fault magnitude and duration data, and equipment diagnostics are also recorded. A crystal-controlled, temperature-compensated clock provides accurate timestamping of real-time data.

The data gathered at the switch location is invaluable for analyzing problems on the circuit, troubleshooting, and planning. Access to this information lets you start optimizing the performance of your installation.

With IntelliTEAM, data logging is especially useful for determining the exact sequence of events during a team reconfiguration, and for comparing the information with substation data.

Remote Operation

EnergyLine's completely integrated design lets you identify and isolate faults and restore service – with or without a SCADA master station. EnergyLine provides factory- or field-installed communications devices for the system of your choice, as well as several communications protocols.

Field Proven Design

You have the security of EnergyLine's field proven microprocessor-based technology, with electronics manufactured in an ISO 9002-certified facility. Thousands of EnergyLine controls are being used by hundreds of utilities.

Features

Flexible Communications

The switch control has three communications ports: two SCADA ports (for remote operation), and a DB9 faceplate connector (for local monitoring and configuration). The switch control can service SCADA requests even while you are connected locally with a computer.

EnergyLine supports the 5800 Series switch controls with a variety of communications hardware options and software protocols. The hardware options are:

- ◆ Schlumberger's UtiliNet®
- ◆ Schlumberger's CellNet®
- ◆ MDS
- ◆ Modems (Bell 202, CDPD, or Hayes™-compatible)
- ◆ Cellular transceivers
- ◆ Fiber optic transceivers
- ◆ Itron®
- ◆ Motorola® Darcom™
- ◆ Other (contact EnergyLine)

Radios and modems may be factory-mounted inside the switch control to save on installation costs.

DNP 3.0 is the standard protocol in the 5800 Series controls. Other protocol options are:

- ◆ Landis & Gyr Telegyr 8979
- ◆ PG&E SCADA (Cooper 2179)
- ◆ Other (contact EnergyLine)

You can upgrade the software or change protocols in the field using IntelliLINK™ Setup Software, EnergyLine's Windows®-

based program for interfacing with the control locally. This gives you a simple migration path to new protocol implementations.

Compatible with a Wide Range of Switches

The 5800 Series Automatic Switch Controls are compatible with the following switches:

- ◆ S&C Scada-Mate®
- ◆ S&C automated Omni-Rupter®
- ◆ S&C PME
- ◆ S&C PMH
- ◆ S&C Vista™
- ◆ Trayer Interrupter
- ◆ Trayer Motopak
- ◆ Cooper GWC
- ◆ Cooper "F" switch
- ◆ Cooper NOVA™
- ◆ Cooper VFI
- ◆ Joslyn VBM
- ◆ Other (contact EnergyLine)

Signal Processing & Overcurrent Fault Detection

The switch control's operating voltages and currents are true RMS readings, with accuracy of 0.5% over the entire temperature range. Phase angle accuracy is $\pm 1^\circ$.

The switch control is configured specifically for fault detection. Fault magnitude, duration, and inrush restraint setpoints can be configured for each application.

Automatic Sectionalizing

EnergyLine's 5800 Series switch controls have automatic sectionalizing capabilities that can improve circuit reliability when coordinated with a source-side reclosing device. The control can help reduce the number of customers with loss of service and pinpoint the faulted line section.

With the IntelliTEAM system, further fault isolation and automatic circuit reconfiguration can provide full restoration of unaffected customer loads (if circuit capacity allows).

Loss of Phase

When voltage is lost on only one or two phases, the switch control can prevent damage to 3-phase equipment on the load side of the switch by automatically opening the switch. If desired, the switch control can also reclose it automatically once voltage returns.

Shots-To-Lockout

This selectable feature prevents the source-side protective device from reclosing into a fault multiple times. When the switch is open, a field technician or SCADA operator can test a potentially faulted line, and if the control sees a change from voltage present to voltage loss, it trips open the switch immediately. When coordinated with instantaneous reclose breakers, the control waits for a second transition to voltage loss before tripping the switch.

With a closed switch, shots-to-lockout limits the exposure of crews doing load-side, hot line work by opening the switch for any loss of voltage.

What is IntelliLINK™?

IntelliLINK Setup Software is EnergyLine's Windows®-based program for interfacing locally with our family of controls. You can view real-time data, manage setpoints, gather troubleshooting information, and download historical data for reports – all from screens that are easy to use and understand.

A flexible control for stand-alone, SCADA, and IntelliTEAM applications

Software Control Architecture

All of EnergyLine's utility products are designed to run under the supervision of a state-of-the-art operating system for increased reliability and maintainability. The operating system uses a high level language for a wide variety of distribution automation applications. You can select setpoint values via the user-friendly IntelliLINK Setup Software, which runs on a PC. A standard DB9 serial data port on the faceplate provides easy local communications access to the control. You can also change the setpoint values remotely via EnergyLine's WinMon® Graphic User Interface.

Power Supply/Battery System

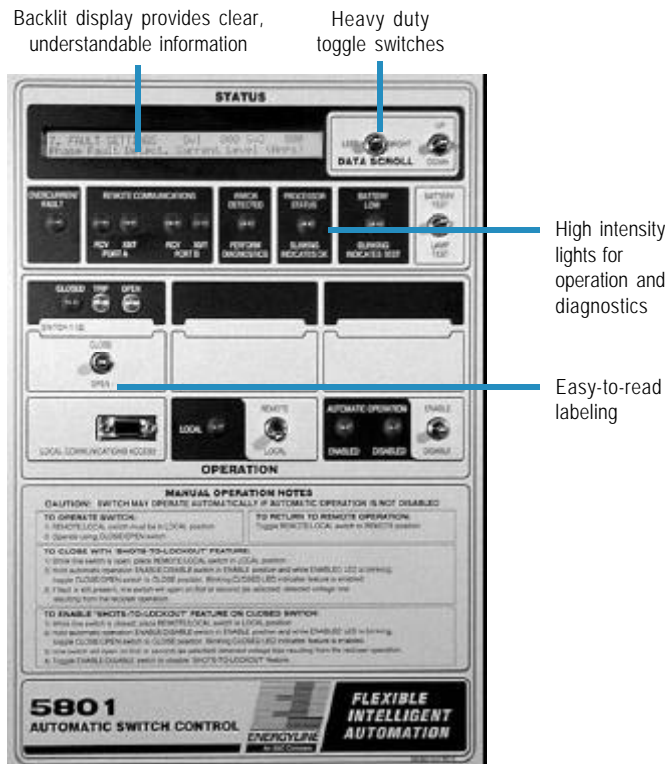
EnergyLine uses a single power supply for the entire switch installation, thereby reducing failure rates inherent in systems with multiple power supplies and multiple batteries. This highly efficient switching

power supply delivers both 12 VDC and battery charging (24 or 36 VDC) to the entire system while continuously applying a float charge to the batteries for maximum battery life. It also provides temperature-compensated battery charging and maintains a pure float application for the battery.

The switch control automatically checks the battery condition on a periodic basis and under varying loads. Detailed information on the battery and power supply condition is available via the faceplate LCD and all communications ports.

Most 5800 Series controls for S&C switches can be powered from an AC source (100-140 VAC or 200-280 VAC) or from certain sensors. If both are available, the control automatically uses AC line power, and switches to sensor power if the AC source is lost.

Other 5800 controls are powered from an external 120 VAC or 240 VAC line.



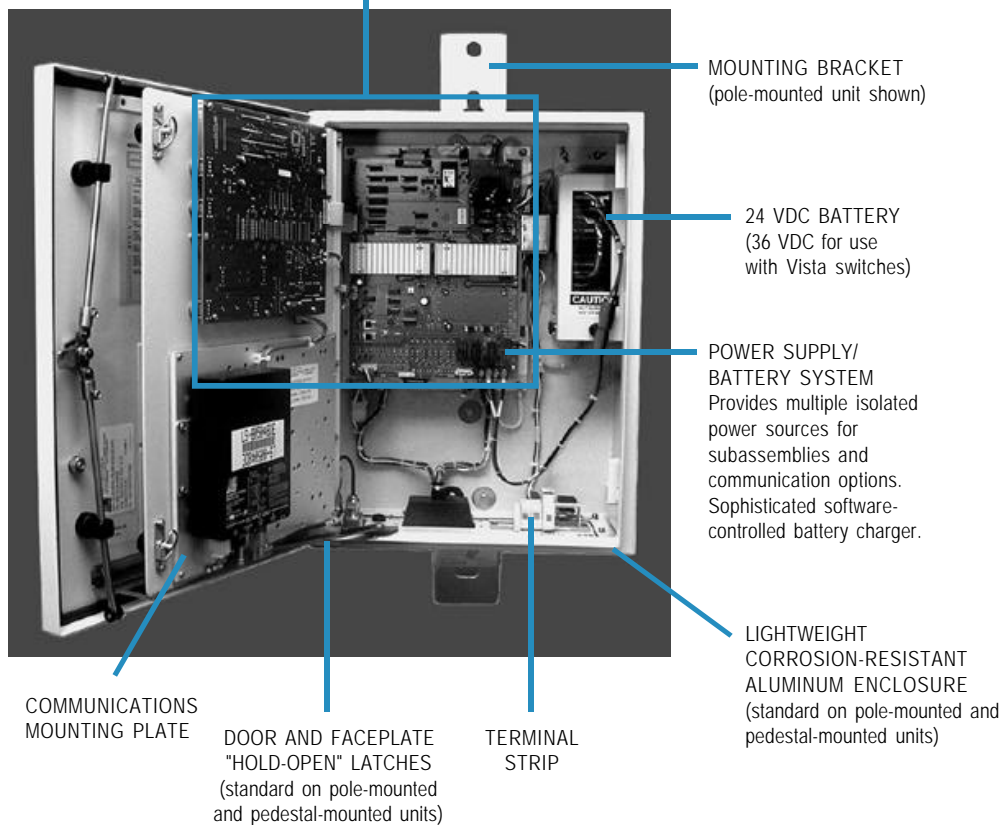
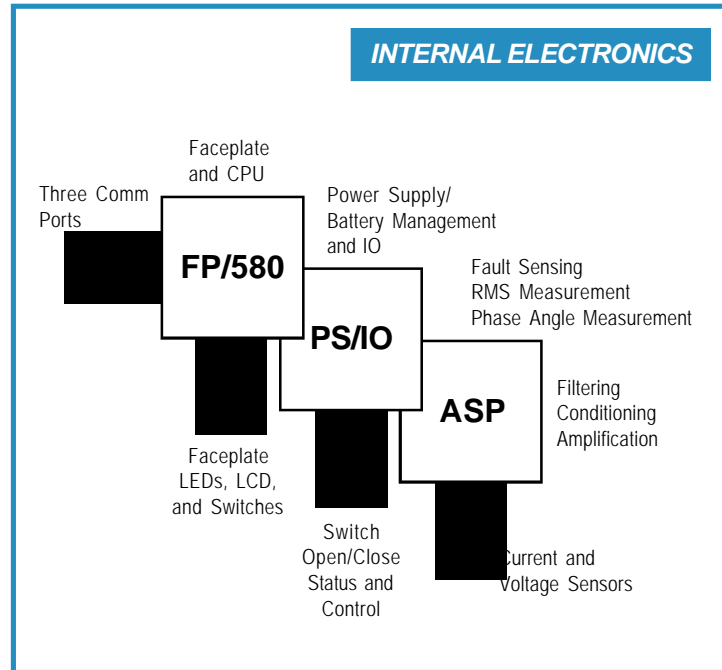
Ordering Information

The following questions will help you prepare a quotation for your order.

1. What type of switch are you using?
2. How do you plan to mount the switch control?
3. What communications protocol(s) will you use?
4. What communications hardware will you use, if any?
5. What are the antenna requirements, if any?
6. Will this control be part of an IntelliTEAM system?
7. If this is an IntelliTEAM gateway¹ control...
 - a) What communications hardware will you use for gateway communications?
 - b) What are the antenna requirements, if any?
8. What type and number of voltage and current sensors do you plan to use?
9. If you are using S&C sensors, do you want the ability to power the control from the sensors?

If you have any questions, please feel free to contact us at (510) 864-6850 or info@energyline.com.

¹ For more on IntelliTEAM gateway controls, see the IntelliTEAM brochure.



Specifications



5800 Series

Operating Electrical Characteristics

- ♦ Nominal operating voltage: 120 VAC or 240 VAC
- ♦ Operating voltage range: 100 to 140 VAC or 200 to 280 VAC
- ♦ Power dissipation: 10 to 120 Watts, depending on options installed

Electrical Isolation/Protection

- ♦ Insulation withstand: 2.5 kV RMS
- ♦ Surge withstand: ANSI C37.90.1
- ♦ Power line surge: ANSI C62.41
- ♦ ESD withstand: IEC 1000-4-2
- ♦ Electromagnetic emissions (conducted and radiated): FCC Part 15, Class B
- ♦ Electromagnetic compatibility: EN 61000-4-3

Fuses

- ♦ AC fuses: FNM-10, GMD-2A
- ♦ Battery fuse: ATC-10

Operating Environmental Characteristics

- ♦ Temperature: -40°C to +70°C
- ♦ Humidity: 0-95% (non-condensing)

Sensor Inputs

- ♦ True RMS voltage and current sensing
- ♦ Voltage accuracy: $\pm 0.5\%$ full scale (over temperature range); resolution: 0.1 VAC
- ♦ Current sensor input range: 0 to 800 amps RMS
- ♦ Current accuracy: $\pm 0.5\%$ full scale (over temperature range); resolution: 1 amp RMS
- ♦ Phase angle range: 0 to 360°
- ♦ Phase angle accuracy: $\pm 1^\circ$ (at 5% of full scale current); resolution: 1/8°

Overcurrent Fault Detection

- ♦ Overcurrent fault detection range¹: 0 to 4000 amps RMS
- ♦ Overcurrent fault detection method: Peak detection with sample and hold circuitry
- ♦ Overcurrent fault detection accuracy: $\pm 0.5\%$ full scale; resolution: 1 amp RMS

Battery

- ♦ Sealed lead acid
- ♦ Expected battery carryover²: 16 hours

Enclosure

	<u>Overhead</u>	<u>Pedestal</u>	<u>Pad-mounted</u>
♦ <i>Mounting</i>	Pole-mount bracket	Concrete foundation or pad	Ready for integration into low voltage cabinet
♦ <i>Material</i>	Corrosion resistant aluminum	Corrosion resistant aluminum	-
♦ <i>Dimensions</i>	24" x 18" x 9.5"	36" x 18" x 9.5"	15.875" x 15.25" x 5.84"
♦ <i>Typical weight</i> ³	58 lbs.	70 lbs.	29 lbs. [24 VDC battery]; 35 lbs. [36 VDC battery]

Memory

- ♦ Non-volatile, battery-backed RAM – 20 year expected life in powered state (10 year expected life in unpowered state)
- ♦ Does not require firmware change to upgrade software

Calendar

- ♦ Perpetual calendar – crystal controlled, temperature compensated, automatically adjusted for leap year
- ♦ User-enabled automatic holidays and daylight savings time changeover

Communications Ports

- ♦ Three RS232 connectors, 300 to 9600 baud

Communications Hardware and Protocols⁴

- ♦ Schlumberger's UtiliNet[®] or CellNet[®]; MDS; modems; cellular transceivers; fiber optic transceivers; Itron[®]; Motorola[®] Darcom[™]
- ♦ DNP 3.0 (standard); optional protocols: Landis & Gyr Telegyr 8979; PG&E SCADA (Cooper 2179); other (contact EnergyLine)

Quality

- ♦ Electronics manufactured in an ISO 9002-certified facility

¹ Consult EnergyLine for other ranges.

² Battery carryover varies with battery type, age, ambient temperature, communications option installed, and number of switch operations. Applies to both 24 and 36 VDC batteries.

³ Typical weight includes battery.

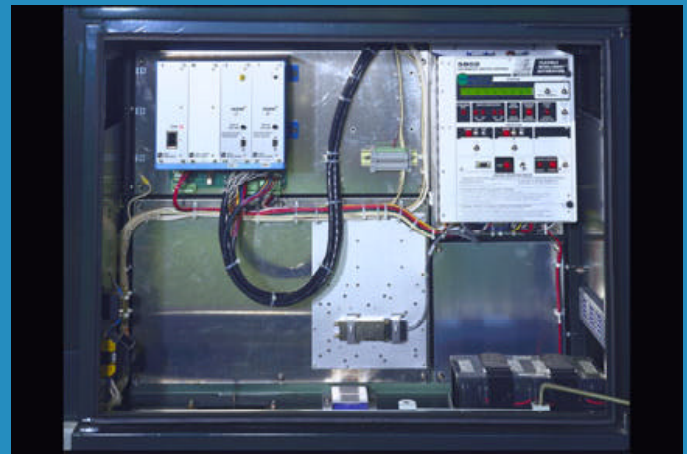
⁴ Consult EnergyLine for current list of communications hardware and protocols supported.

Information in this document is subject to change without notice.



Whether connected to overhead, pad-mounted, or submersible switches...

in stand-alone, SCADA, or IntelliTEAM system applications...



EnergyLine's

5800 Series Switch Controls

offer the intelligence and flexibility you need today and into the future.