



Fully Integrated Package for Automation of Overhead Feeders

S&C Scada-Mate® Switching Systems

Outdoor Distribution, 14.4 kV through 34.5 kV

Scada-Mate Switching Systems bring these vital advantages to your system:

- **Remote fault isolation and service restoration.** Minimize the scope and length of outages.
- **System optimization.** Through remote monitoring of feeder loading and automatic reconfiguration, you can better utilize your system . . . and defer capital expenses.
- **A wide range of available control units to meet your needs.**
- **Available RTU-dependent sectionalizing schemes** can be used for stand-alone automatic line sectionalizing (for open-loop distribution systems) and automatic network sectionalizing (for closed-loop distribution systems). Upgradable to full SCADA capability at any time.



S&C Scada-Mate Switching Systems are an innovative breakthrough for automating overhead distribution feeders. All functions necessary for such applications—sensing, control, and communications—are provided in one economical, completely self-contained integrated package. The performance capabilities, operating features, and integration of functions provided by Scada-Mate Switching Systems make remote supervisory control of distribution feeders a practical and economical reality.

A complete S&C Scada-Mate Switching System includes a Scada-Mate Switch and a control unit

that provides an interface between the switch and the master-station computer or peer-to-peer communication with distributed intelligence. Installation of the switch and the control unit, plus attachment of the interconnecting control cable, are all that are required to ready the switching system for operation.

S&C Scada-Mate Switching Systems provide the ultimate in simplicity for automating distribution feeders. All components of this sophisticated package are functionally tested as a system to verify performance to customer specifications.

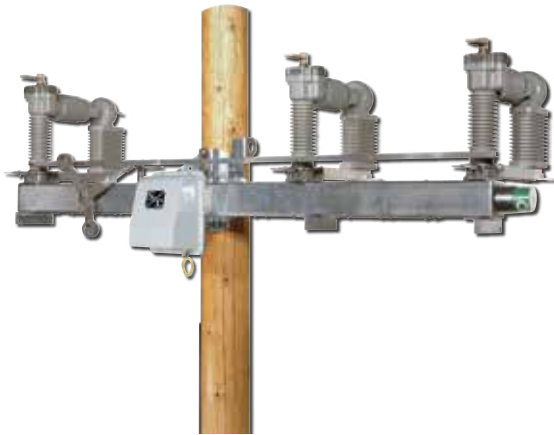
Featuring Scada-Mate, the industry's leading switch . . . designed specifically for distribution automation

S&C Scada-Mate Switches are integer style three-pole, group-operated interrupter switches available in voltage ratings of 14.4 kV, 25 kV, and 34.5 kV, with continuous and interrupting ratings of 600 amperes, and a momentary rating of 25,000 amperes. Scada-Mate Switches feature a five-time duty-cycle fault-closing rating of 20,000 amperes RMS, asymmetrical . . . the ability to close into a fault and remain capable of carrying and interrupting current is a must for any switching device used for distribution automation.

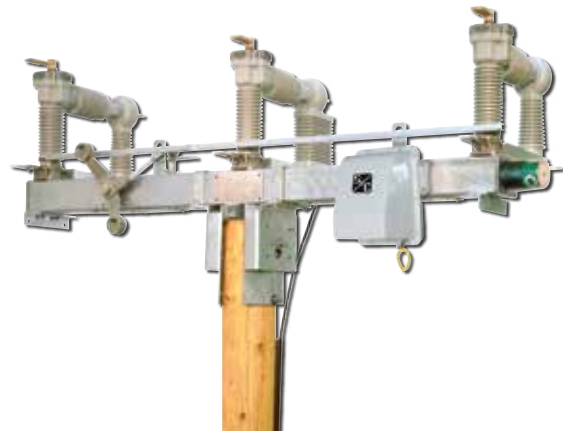
Scada-Mate Switches are available in four mounting configurations: upright, vertical, tiered-outboard, and pole-top, to accommodate the most widely used overhead-distribution line configurations.

Switches in the upright mounting configuration are also available with extra mounting-pole clearance. Provisions for mounting surge arresters and for dead-ending are provided as standard.

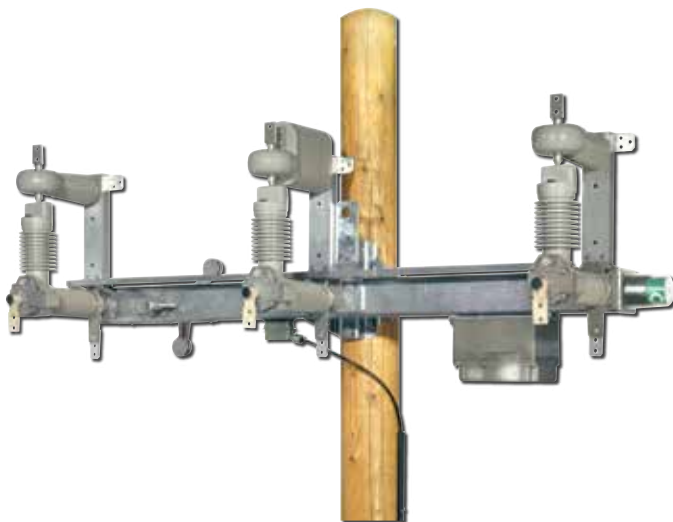
Scada-Mate Switches are factory-assembled on a single base and include an integral stored-energy operating mechanism. The high-speed linkages used to effect operation are housed within the base, and circuit making and circuit breaking are accomplished within sealed interrupters in a controlled sulfur hexafluoride (SF_6) environment. Full live-switching performance is assured under any ice conditions because circuit making and circuit breaking are accomplished internally; there are no external moving parts.



Upright mounting configuration



Pole-top mounting configuration



Vertical mounting configuration
(14.4 kV and 25 kV only)



Tiered-outboard mounting configuration

Sealed SF6 interrupters—circuit making and circuit breaking are accomplished internally with no exposed moving parts

Two S&C Current Sensors and one S&C Current/Voltage Sensor provide three-phase monitoring of line current and single-phase monitoring of system voltage. Three-phase voltage sensing is optionally available. Voltage sensors can be provided on both sides of the switch for designated normally open points on the system

Integral stored-energy operating mechanism with manual closing capability

Disconnect operating lever for hook-stick opening and closing of integral disconnect. Disconnect may be locked or tagged in the open position

Shielded control cable for low-voltage connection of switch to communication and control unit

Enclosed one-piece base houses drive linkages for interrupters

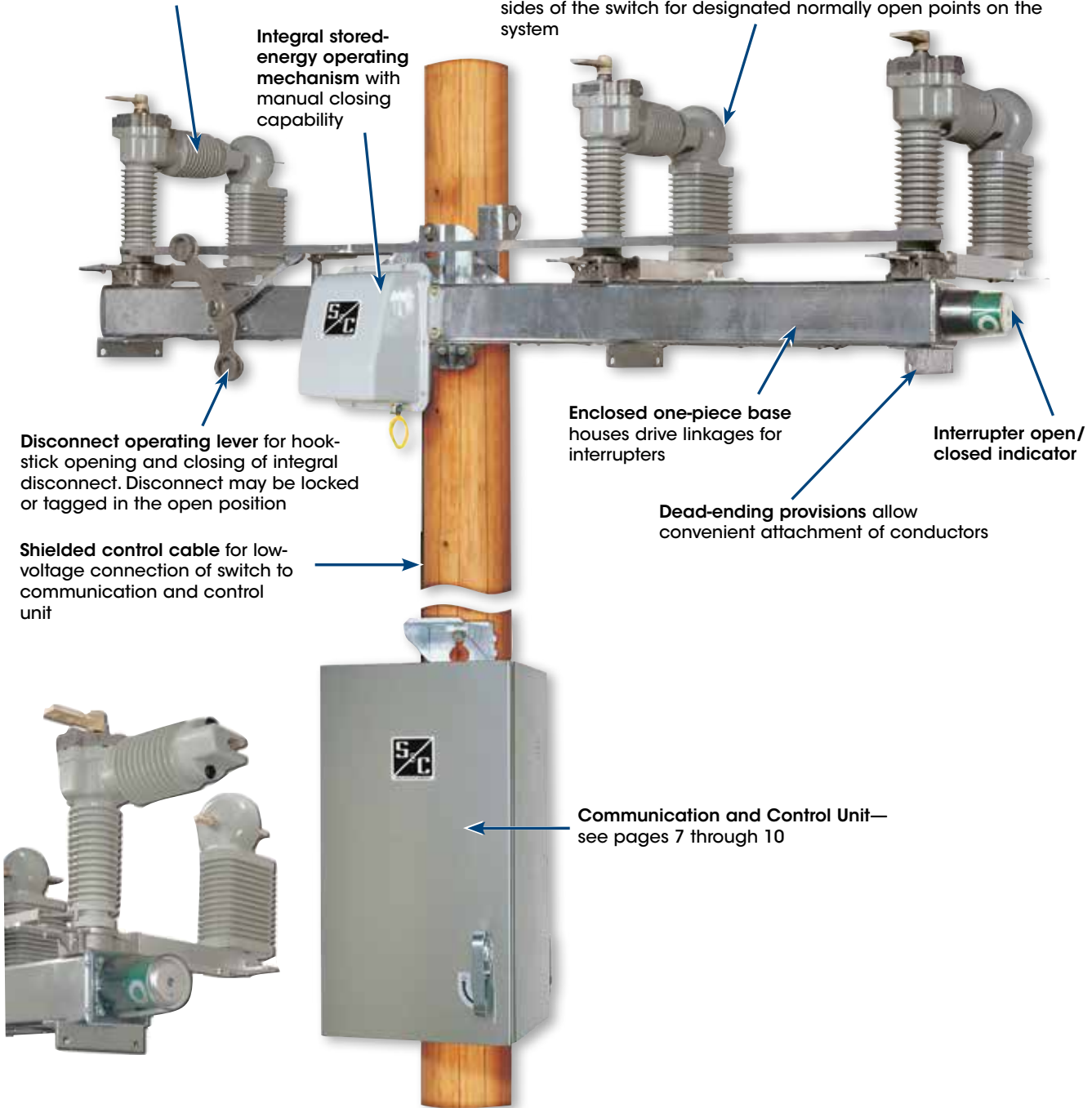
Interrupter open/closed indicator

Dead-ending provisions allow convenient attachment of conductors

Communication and Control Unit—see pages 7 through 10

A variety of options are available—wildlife protection, extension-link assemblies, and others. See page 6

25-kV Scada-Mate Switch in the upright mounting configuration



Two S&C Current Sensors and one S&C Current/Voltage Sensor are included on each Scada-Mate Switch to provide three-phase monitoring of line current and single-phase monitoring of system voltage. Sensors for three-phase voltage sensing are optionally available. Voltage sensors can also be provided on both sides of the switch for designated normally open points on the system. All sensors are of molded S&C Cypoxy® construction and serve as support insulators for the switch live parts, thereby eliminating the cost, clutter, and complexity associated with separately mounted sensors.

The voltage sensor, moreover, provides continuous battery-charging power for operating the complete automated-distribution switch installation. There's no need to install a separate distribution transformer to provide low-voltage control power.

Visible air-gap isolation of switched-open circuits—needed only when work on the feeder is required—is provided by an integral, hookstick-operated three-pole disconnect. This novel feature eliminates the need for separate single-phase disconnects and is much more convenient to use. An auxiliary switch is provided for local and remote indication of disconnect position.

Switches in the upright, tiered-outboard, and pole-top mounting configurations feature an operating mechanism with a manual-operation pull-ring, which permits non-electrical mechanical closing and opening of the interrupters in the event of a power loss. Switches in the vertical mounting configuration, on the other hand, feature an operating mechanism which permits only nonelectrical mechanical opening of the interrupters.

No other switching device on the market provides so many features and functions in one compact package.

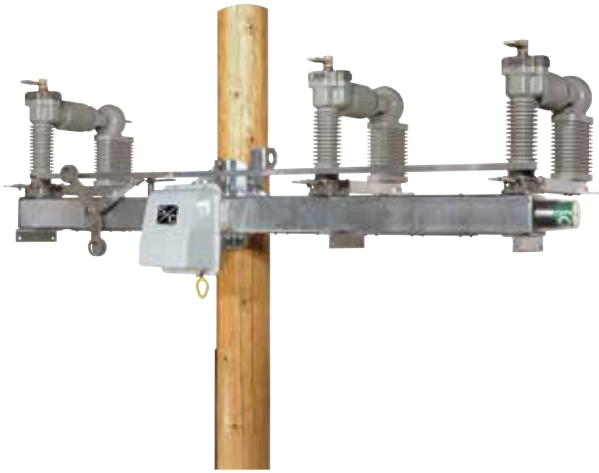


Clean and uncluttered appearance . . . sensors, control power source, and a three-phase disconnect are built-in.



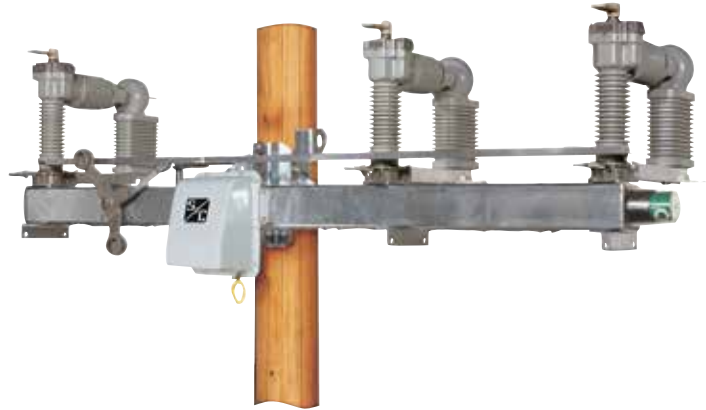
A variety of optional features is available for Scada-Mate Switching Systems to meet your specific needs . . .

Three-Phase Voltage Sensing on Jaw Side of Switch



Allows detection of voltage unbalances as well as current unbalances resulting from broken conductors and blown fuses.

Three-Phase Voltage Sensing on Both Jaw Side and Hinge Side of Switch



Specifically intended for normally open points on the system.

Liquidtight Flexible Metal Wiring Conduit



Provides the ultimate in protection for the control cable.

Wildlife Protection



Helps reduce wildlife-related nuisance outages. Made from high-strength, UV-resistant materials.

Also available—

- 25-or 45-foot shielded control cable (35 foot is standard)
- High-speed operating mechanism
- Interrupter open/closed indicator on both ends of switch base
- Extension-link assemblies
- Burdens for 69-Vac voltage sensing output (5-Vac output is standard).

Controls to match your automation objectives

A complete Scada-Mate Switching System includes a control unit that provides the interface between the switch and the master-station computer or peer-to-peer communication with distributed intelligence.

Communication and Control Unit

The custom-engineered CCU includes the following:

- A user-specified remote terminal unit, factory-installed and wired;
- A user-specified communication device, factory-installed and wired, including surge protector for a user-supplied antenna;
- A temperature-compensated constant-voltage battery charger with rechargeable, sealed-lead, starved-electrolyte battery packs, which provide power for charging and tripping the mechanism plus power for the RTU and communication device.

The charger features integral load-disconnect circuitry to prevent deep-discharge of the batteries on loss of ac source, plus alarms for loss of ac source, battery low voltage, and charger overvoltage. It also includes circuitry to effect a battery load-test feature, when used in conjunction with a suitable RTU.

In the self-powered version of the communication and control unit—CCU-SP—the battery charger is powered by the S&C Voltage Sensor. The external 120-Vac powered version of the communication and control unit—CCU-XP—features a higher-output battery charger, with unique battery management system.

- A switch control with open/close push buttons, switch-position indicating lamps, disconnect closed and latched indicating lamp, local/remote switch, and operation counter.

All components are neatly packaged in a single 316L stainless-steel enclosure, simplifying installation and minimizing checkout time.

S&C Model 5801 Automatic Switch Control

The Model 5801 Automatic Switch Control is a fully integrated package that provides remote switch operation and reporting of switch status points, current, voltage, watts, and VARs over a variety of protocols.

The high-output battery charger, powered from a user-supplied 120-Vac control source or three voltage sensors, uses a unique battery management system to maintain the rechargeable, sealed-lead, starved-electrolyte battery packs. A liquid-crystal display indicates real-time data, settings, and fault events.

The 5801 Control is capable of automatic sectionalizing, overcurrent fault detection, and selectable shots-to-lockout. It also operates the IntelliTEAM® Automatic Restoration System. This unique peer-to-peer distributed intelligence system doesn't require the intervention of a system dispatcher to isolate a fault and restore service to all but the faulted line section.

All components are neatly packaged in a single corrosion-resistant aluminum enclosure.

Switch Control Unit

For applications where the RTU and communication device are to be supplied by others, in a separate enclosure, a switch control unit (SCU) can be furnished.

The SCU includes the same switch control and battery charger furnished in the CCU-SP.

Self-Powered Communication and Control Unit

Optional auxiliary battery charger float-charges extra battery packs needed for some RTUs and communication devices

Battery charger provides continuous float charge to battery packs

316L stainless-steel NEMA 4X enclosure with three-point door latch and padlockable handle

Switch control includes open/close push buttons, switch-position indicating lamps, disconnect closed and latched indicating lamp, local/remote switch, and operation counter

Dual battery packs provide power for the installation



... with swing-out panel open

User-specified communication device

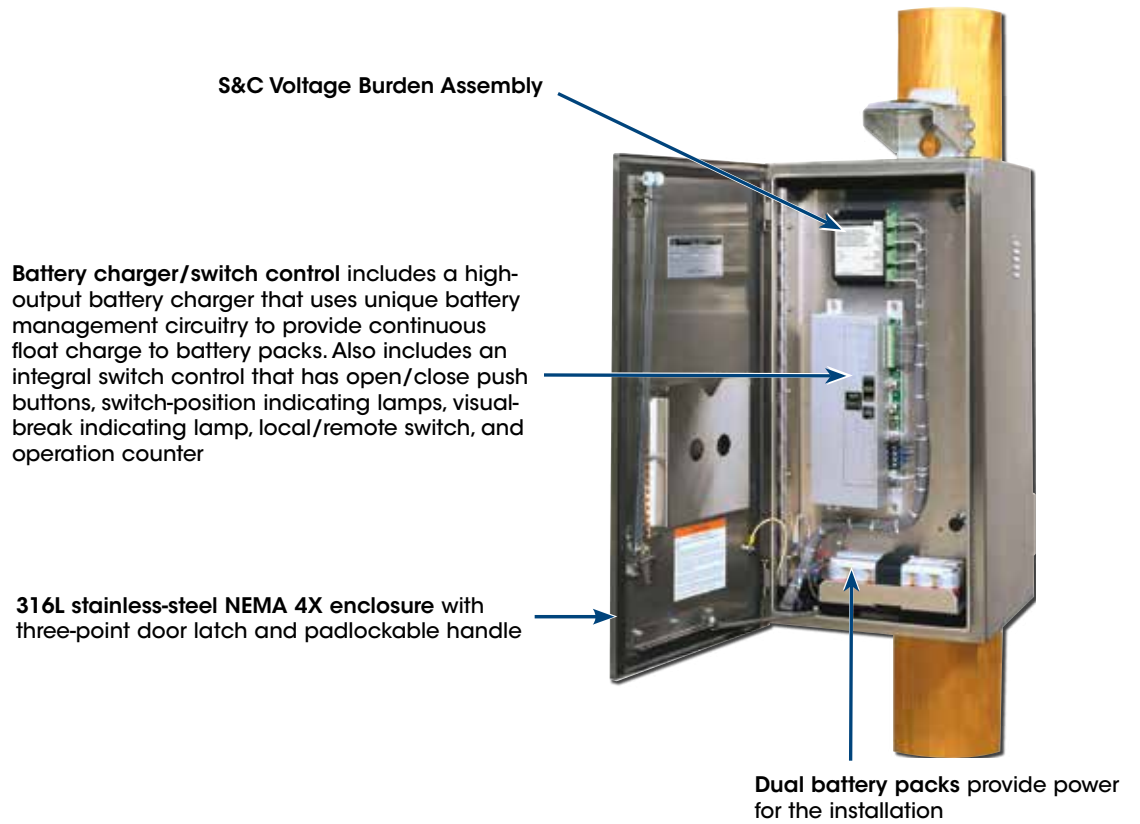
User-specified remote terminal unit

Provisions for external control source include fuses and isolation transformer

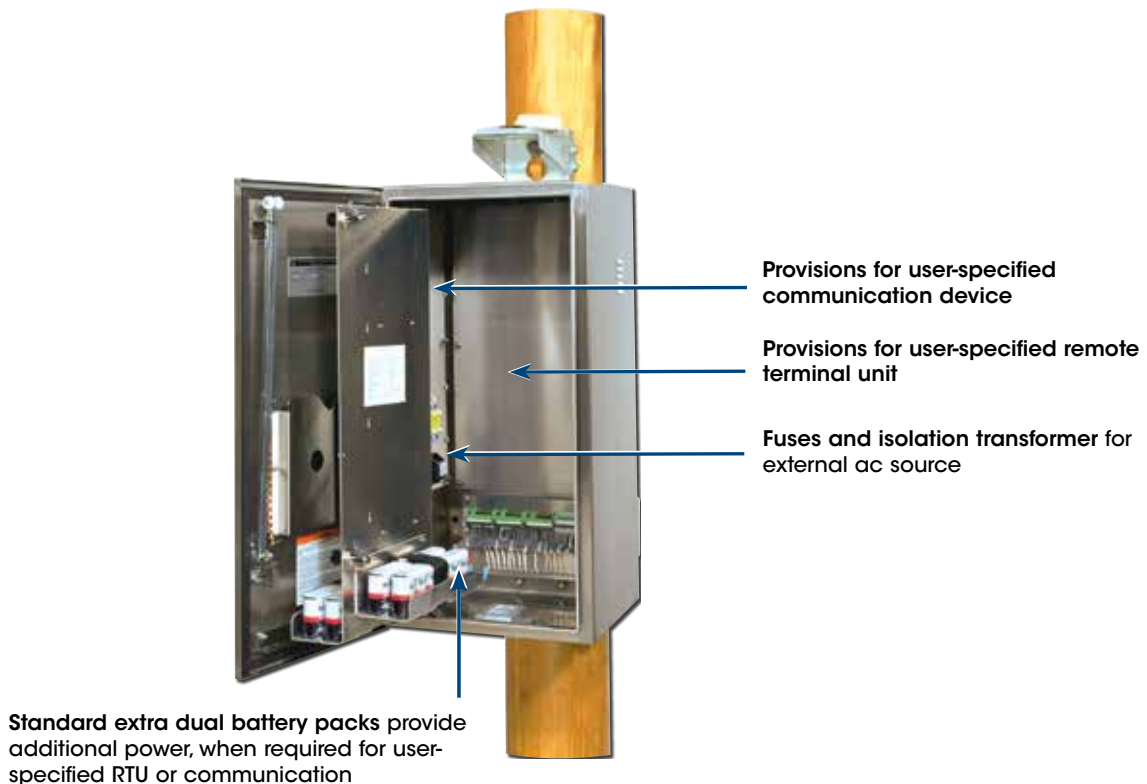
Extra dual battery packs provide additional power, when required for user-specified RTU or communication device



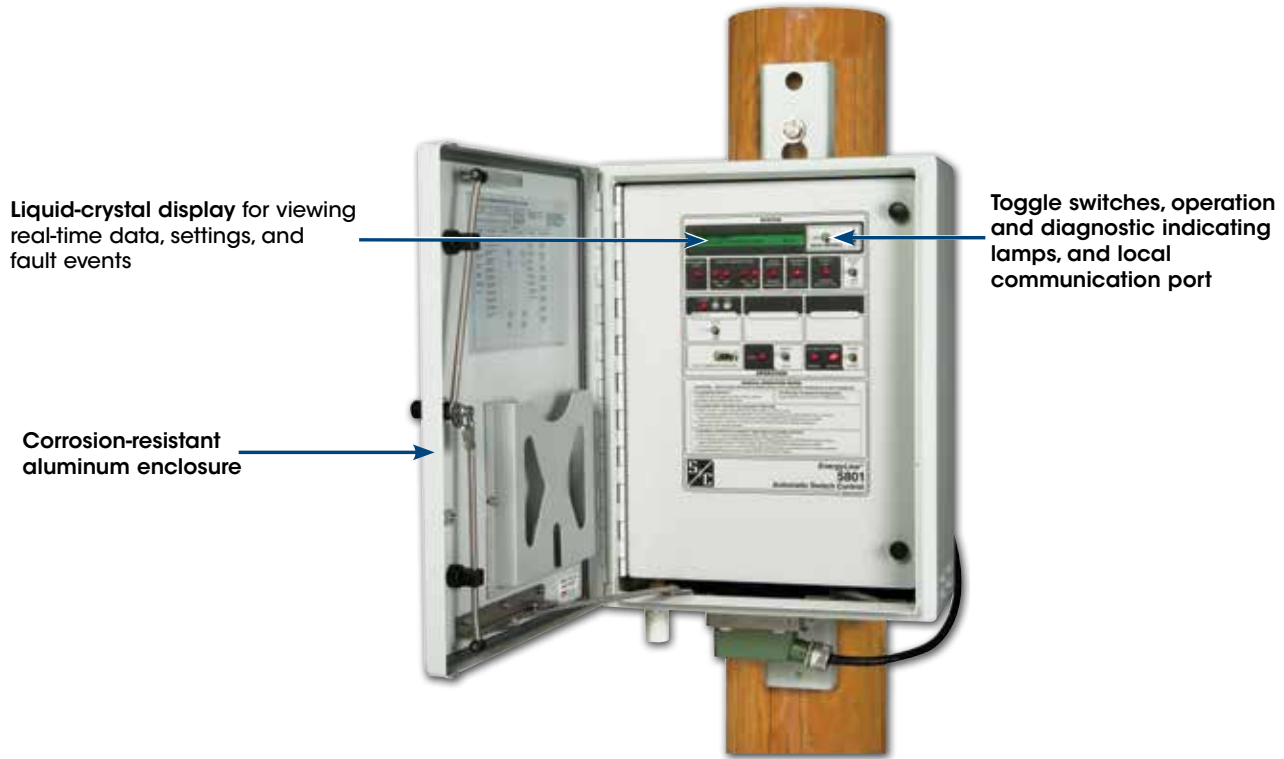
Externally Powered Communication and Control Unit



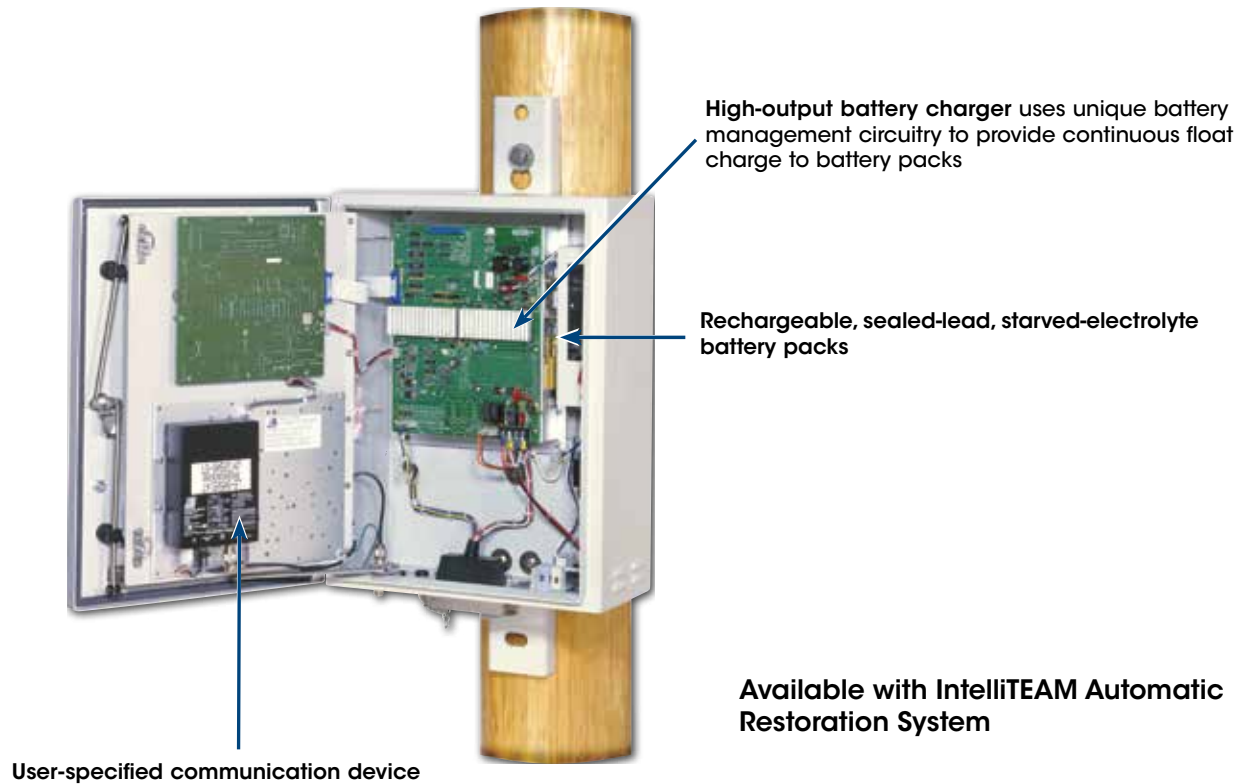
... with swing-out panel open



S&C Model 5801 Automatic Switch Control



... with swing-out panel open



Ratings

SCADA-MATE SWITCHES — 50 Hz Applications					
Ratings					
kV ^①			Amperes, RMS		Five-Time Duty-Cycle Fault-Closing, Amperes, RMS, Asym.
Min.	Max	BIL	Cont. and Interr.	Mom., Asym.	
10	15	95	630	25 000	20 000
20	24	150			
30	36	200			

① For adequate power to be available for the voltage sensors, switches must be applied on effectively grounded systems at line-to-line voltages in the range specified by the minimum and maximum voltages shown. Consult the nearest S&C Sales Office for applications on other than effectively grounded systems.

SCADA-MATE SWITCHES — 60 Hz Applications					
Ratings					
kV ^①			Amperes, RMS		Five-Time Duty-Cycle Fault-Closing, Amperes, RMS, Asym.
Nom.	Max	BIL	Cont. and Interr.	Mom., Asym.	
14.4	17.0	110	600	25 000	20 000
25	29	150			
34.5	38	200			

① For adequate power to be available for the voltage sensors, switches must be applied on effectively grounded systems at line-to-line voltages ranging from 11.43 kV through 17.0 kV for 14.4-kV switches, from 20.44 kV through 29 kV for 25-kV switches, and from 28.3 kV through 38 kV for 34.5-kV switches. Consult the nearest S&C Sales Office for applications on other than effectively grounded systems.

