

# Specifications

### Conditions of Sale

**STANDARD:** The seller's standard conditions of sale set forth in Price Sheet 150 apply, except as modified by the "SPECIAL WARRANTY PROVISIONS," and "WARRANTY QUALIFICATIONS" sections in this specification bulletin.

### SPECIAL TO THIS PRODUCT:

**INCLUSIONS:** S&C 6801M Automatic Switch Operators are fully integrated, microprocessor-based operators that let you apply sophisticated automatic control schemes and SCADA functionality to a variety of overhead distribution switches. By combining electromechanical components with remote terminal unit (RTU) functionality, control circuitry, and communications into a single package, installation flexibility and reliability are increased, and cost is reduced. 6801M Switch Operators monitor the operation of the switching cycle and can automatically take corrective action in the event of stuck, frozen, or welded contacts, thus protecting the switch from partial operation.

6801M Automatic Switch Operators are suitable for automating all S&C Alduti-Rupter® Switches and S&C convertible disconnects in all voltage ratings up to 69 kV and current ratings, and they provide full normal operating life for these devices.

6801M Switch Operators have been mechanically tested with, and determined suitable for operating with, some devices not manufactured by S&C—both overhead-distribution switches and disconnects. Other switches and disconnects also may be suitable for power operation with 6801M Switch Operators. Please contact the nearest S&C Sales Office for details regarding the fault-closing ratings of non-S&C switches.

6801M Switch Operators are available for both reciprocating and rotating-drive switches. IntelliLink® Setup Software provides fast, easy, and precise setup. The efficient power supply delivers temperature-compensated battery charging to maximize battery life. Detailed information on battery and power-supply status is available at the faceplate display and is accessible at remote locations in communication device-equipped controls.

### Radio Faulted Circuit Indicators

When equipped with optional radio-faulted circuit indicators, 6801M Switch Operators can isolate faults without the need for line post current and voltage sensors. Sectionalizing is based on a signal from the faulted circuit indicators, followed by loss of control power.

### Automatic Sectionalizing

When voltage and current sensors are installed, a 6801M Switch Operator can automatically sectionalize a feeder based on such factors as overcurrent, loss of voltage, and phase unbalance. One control can automate one switch, and multiple controls can be programmed to communicate with each other using the optional IntelliTeam® SG Automatic Restoration System, which allows multiple switch controls and switch operators to work together in teams using peer-to-peer communication and quickly transfers load to minimize the number of customers affected by a fault or outage. The system uses distributed intelligence; no central processing or SCADA is required (though fully supported). Different types of switches, reclosers, and controls can be included in the same team.

Utility personnel can communicate with 6801M Switch Operators to identify and isolate faults and restore service—with or without a SCADA master station. Distributed Network Protocol (DNP) 3.0 is the supported protocol, and two S&C-approved radios can be installed inside the enclosure—one for the automation network and one as a SCADA getaway radio. An S&C SpeedNet™ Radio or a fiber-optic modem are the recommended communication devices for use with the IntelliTeam SG Automatic Restoration System.

6801M Operators provide true RMS voltage and current readings. Over the operating temperature range of  $-40^{\circ}\text{F}$  ( $-40^{\circ}\text{C}$ ) to  $158^{\circ}\text{F}$  ( $70^{\circ}\text{C}$ ), current readings are accurate to  $\pm 0.5\%$  full scale, with a resolution of 1 ampere, RMS; voltage readings are accurate to  $\pm 0.5\%$  full scale, with a resolution of 0.1 Vac. Phase-angle readings are accurate to  $\pm 1^{\circ}$  at 5% of full-scale current, with a resolution of  $\frac{1}{8}^{\circ}$ . The current sensor input range is 0 to 800 amperes, RMS. 6801M Operators are configured specifically for fault detection. The overcurrent fault detection range is 0 to 4000 amperes, RMS, and overcurrent readings are accurate to  $\pm 0.5\%$  full scale, with a resolution of 1 ampere, RMS.

6801M Operators continuously monitor control voltage and enclosure temperature. Daily maximum and minimum values are logged, as are time-averaged values at user-selected intervals.

In 6801M Operators furnished with optional voltage and current sensing, voltage, current, kvars, kW, and phase angles are included in the daily maximum and minimum and time-averaged records. Overcurrent, loss-of-voltage, fault-magnitude and duration data and equipment diagnostics are also recorded. A crystal-controlled, temperature-compensated real-time clock provides time-stamping of the data. The optional GPS feature provides time-stamp accuracy to 1 ms. With IntelliTeam SG-equipped controls, data logging is especially useful for determining the sequence of events during a team reconfiguration and for comparing switch information with substation data.



# S&C 6801M Automatic Switch Operators

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A PC operating Windows® 7 or 10 can be connected via a DB9 or USB faceplate connector. IntelliLink Setup Software is used to view real-time data, manage set points, troubleshoot, and download historical data for reports. Set points and data can also be accessed remotely using S&C IntelliLink® Remote Setup Software.

## Shots to Lockout

The selectable shots-to-lockout feature prevents the source-side protective device from reclosing into a fault multiple times.

## Single-Phase Voltage-Loss Protection

6801M Operators protect three-phase loads from single phasing by automatically opening the switch or disconnect if the phases become unbalanced. The operators can be programmed to automatically reclose when stable three-phase voltage returns.

## Three-Phase Voltage-Loss Protection

6801M Operators automatically open the switch or disconnect upon extended three-phase voltage loss.

## Hot Line Tag

A Hot Line Tag can be set with either a SCADA command or with a configurable button on the faceplate. It can only be cleared by the command type used to set it.

**EXCLUSIONS:** An S&C 6801M Automatic Switch Operator does not include voltage or current sensors, a communication device, an antenna, or antenna connections.

For non-IntelliTeam SG applications, S&C may be able to furnish and install in the Model 6801M Automatic Switch Operator, or make a provision for, a customer-specified communication device *not* listed in Table 4 on pages 7 and 8. S&C will need to evaluate the physical and electrical requirements of the communication device and its performance characteristics and conduct qualification testing to verify its suitability for the desired application. Refer to the nearest S&C Sales Office for scheduling information. S&C cannot furnish or install any communication device for which the supplier requires S&C to offer Tier I (i.e., “help desk”) support.

Only S&C’s Omni-Rupter® Switches with option -R4 can be installed with 6801M Operators. The Omni-Rupter Switch option -M requires use of the -R4 option.

**SPECIFICATION DEVIATIONS:** Refer to Table 3 on pages 3 through 6.

**SPECIAL WARRANTY PROVISIONS:** The standard warranty contained in seller’s standard conditions of sale, as set forth in Price Sheet 150, applies to S&C 6801M Automatic Switch Operators, except that the first paragraph of said warranty is replaced by the following:

**(1) General:** The seller warrants to the immediate purchaser or end user for a period of two 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 two 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 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 QUALIFICATIONS:** Warranty of S&C 6801M Automatic Switch Operators is contingent upon the installation, configuration, and use of the operator 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 batteries, communication devices, and remote terminal units. However, S&C will assign to the immediate purchaser or end user all manufacturers’ warranties that apply to such major components. S&C does not warrant that the switching-device ratings will be unaffected by the use of the 6801M Automatic Switch Operator. Contact S&C to discuss possible limitations. S&C’s Power Systems Solutions can provide validation testing services if desired. Contact S&C for a quotation.

**END USER LICENSE AGREEMENT:** The end user is granted a nontransferable, non-sublicensable, nonexclusive license to use the LinkStart Connection Management Software, IntelliLink Remote Setup Software, IntelliTeam SG Automatic Restoration Software, Automatic Sectionalizing Software, and/or other software furnished with 6801M Automatic Switch Operators only upon acceptance of all the terms and conditions of the seller's end user license agreement set forth in Price Sheet 155.

## How to Order

To order:

1. Select the catalog number of the desired 6801M Automatic Switch Operator from Table 1.
2. Add the suffix for the software type from Table 3.
3. Add the suffix for the enclosure option from Table 3.
4. Add the suffix(es) for any other options desired from Tables 2, 3, 4, and 6.
5. Add the suffix(es) for gateway applications, if required, from the Table 4 on pages 7 and 8.
6. Select the catalog number for any accessories from Table 5 on page 8.

**Table 1. S&C 6801M Automatic Switch Operators**

Device	Control Power	Switch Drive	Catalog Number
6801M Automatic Switch Operator <sup>①</sup>	90 to 264 Vac, 50/60 Hz or 100 to 370 Vdc	Reciprocating	6801M-10
			6801M-10-GPS▲
		Rotating	6801M-20
			6801M-20-GPS▲

① Communication device, antenna, and antenna connections are not included.

▲ Includes GPS module in the front panel and requires a GPS antenna suffix “-T9” in Table 3 on page 6.

**Table 2. Optional Software**

Software	Catalog Number
IntelliTeam® II Automatic Restoration System Software License. Use this license for 6801M Automatic Switch Operators operating in an IntelliTeam II system with IntelliRupter® PulseCloser® Fault Interrupters, IntelliNode™ Interface Modules, 5800 Series Automatic Switch Controls, 6800 Series Automatic Switch Controls, and Universal Interface Modules. This license includes an IntelliTeam Designer Slot at no charge that must be entered as a separate line item. The slot allows an easy upgrade to the IntelliTeam SG Automatic Restoration System at a later date. Requires an IntelliTeam II-qualified communication device from Table 3.	008-007106-04◆
IntelliTeam Designer Slot. Included in above license.	008-007006-03

◆ The 008-007106-04 license should not to be confused with IntelliTeam SG Automatic Restoration System operating in IntelliTeam II mode.

The IntelliTeam SG Automatic Restoration System operating in IntelliTeam II mode requires an IntelliTeam SG-qualified communication device.

**Table 3. Options**

Item	Suffix to Be Added to Switch Operator Catalog Number
<b>Wi-Fi Module with Antenna</b> , for wireless setup and configuration	-A1
<b>Software Options</b>	
Hydro Quebec	-H0
Standard (no sensing)	-H1
IntelliTeam SG Automatic Restoration System	-H9
<b>Connector Options</b>	
No connectors (standard with no sensor inputs)	-M0
24-Pin FIC connector (standard with sensor inputs)	-M1
<b>Enclosure Options</b>	
Pole mounting, in a padlockable painted mild steel enclosure Rotating = 24 inch (610 mm) W × 24 inch (610 mm) H × 15 <sup>5</sup> / <sub>16</sub> inch (389 mm) D Reciprocating = 24 inch (610 mm) W × 24 inch (610 mm) H × 16 <sup>3</sup> / <sub>4</sub> inch (425 mm) D	-JB1
Pole mounting, in a padlockable corrosion-resistant stainless steel enclosure Rotating = 24 inch (610 mm) W × 24 inch (610 mm) H × 15 <sup>5</sup> / <sub>16</sub> inch (389 mm) D Reciprocating = 24 inch (610 mm) W × 24 inch (610 mm) H × 16 <sup>3</sup> / <sub>4</sub> inch (425 mm) D	-JB2

TABLE CONTINUED ►

# S&C 6801M Automatic Switch Operators

**Table 3. Options—Continued**

Item	Suffix to Be Added to Switch Operator Catalog Number	
<b>Sensors Inputs (sensors not included)</b>		
Three current/voltage CSV line post sensors①②③ (600 A: 10 V; 10000: 1)④	-K1	
Three S&C current/six voltage CSV / VS line post sensors①②③ (600 A: 10 V; 10000: 1)④	-K2	
Three Lindsey current/ voltage CVMI sensors⑤⑥ (600 A: 10 V; 10,000: 1)⑦	-K4	
Three Lindsey current/six voltage CVMI/VMI sensors⑤⑥ (600 A: 10 V; 10,000: 1)⑦	-K5	
Three Lindsey current sensors and three potential transformers (600 A:10 V or 600 A: 6 V, 120 V)	-K15	
Three Lindsey current sensors and six potential transformers (600 A: 10 V or 600 A: 6 V, 120 V)	-K16	
Three S&C CS line post current sensors ①②③ (600 A: 10 V)④	-K17	
Three Lindsey current CMI sensors⑤⑥ (600 A: 10 V)⑦	-K18	
Knife switch (visibly disconnects motor from batteries; padlockable)	-KS	
Indicator option, reversed colors for <b>Open/Closed</b> indicating lamps (green = closed, red = open)	-L1	
<b>Key interlock options, lock in open position and disconnect motor-control circuit⑧</b>		
Factory-installed key interlocks (Superior locks are standard)	-L2	
Provisions for key interlocks (Superior or Kirk locks)⑨	-L3	
<b>Foreign language labels, front panel, and screens⑩</b>	French	-L5
	Spanish	-L6
	Portuguese	-L7
	Chinese	-L8
	Arabic	-L9
<b>International crating</b> —Wood products used in packaging are either hardwood or certified by the wood manufacturer as being “heat treated” (kiln dried) to a core temperature of 133° (56°C) for a minimum of 30 minutes	-L71	
<b>Protocols</b>		
DNP 3 Level 2	-P0	
<b>IntelliTeam SG, IntelliTeam II, and SCADA communication device and mounting</b> (furnished by S&C, requires Suffix “-R98”)		
SpeedNet™ Radio	-R80	
SpeedNet SDR™ 4 Software Defined Radio⑭	-R254	
SpeedNet SDR™ 4x4 Software Defined Radio⑭	-R256	
Factory-installed and wired iS5 Comm. Inc. - iES6-Slim with 2-SFP 100-Mbps multi-mode LC transceiver 550 m, 850 nm, low-voltage (Input 9-36 Vdc)	-R287	
Factory-installed and wired iS5 Comm. Inc. - iES6-Slim with 2-SFP 100-Mbps multi-mode LC transceiver 2 km, 1310 nm, low-voltage (Input 9-36 Vdc)	-R288	
Factory-installed and wired iS5 Comm. Inc. - iES6-Slim with 2-SFP 100-Mbps single mode LC transceiver 10 km, 1310 nm, low-voltage (Input 9-36 Vdc)	-R289	
Factory-installed and wired iS5 Comm. Inc. - iES6-Slim with 2-SFP 100-Mbps single mode LC transceiver 30 km, 1310 nm, low-voltage (Input 9-36 Vdc)	-R290	
Factory-installed and wired iS5 Comm. Inc. - iES6-Slim with 2-SFP 100-Mbps single mode LC transceiver 60 km, 1310 nm, low-voltage (Input 9-36 Vdc)	-R291	
Factory-installed and wired iS5 Comm. Inc. - iES6-Slim with 2-SFP 120-Mbps single mode LC transceiver 100 km, 1550 nm, low-voltage (Input 9-36 Vdc)	-R292	
Factory-installed and wired iS5 Comm. Inc. - iES6-Slim with 2-SFP 100-Mbps single mode LC transceiver 120 km, 1550 nm, low-voltage (Input 9-36 Vdc)	-R293	
SpeedNet™ Radio and SpeedNet™ Cell Edge Gateway⑮	-R322	
<b>IntelliTeam II and SCADA communication device and mounting</b> (furnished by S&C, requires Suffix “-R98”) <sup>⑪</sup>		
Internal UtiliNet Series IV IWR Radio	-R67	
Single-Mode Dymec 5843SHRT Fiber-Optic Modem⑫	-R44	
Multi-Mode Dymec 5843HRT Fiber-Optic Modem⑫	-R45	
<b>SCADA communication device and mounting</b> (furnished by S&C, requires Suffix “-R98”) <sup>⑪</sup>		
MDS TransNET 900 Transceiver with diagnostics	-R19	
MDS NR104L IP Radio (includes serial to Ethernet device server)	-R71	
MDS SD9 Remote Radio	★	
SpeedNet™ ME Mesh End-Point Radio	-R240	
SpeedNet™ Cell Edge Gateway⑮	-R320	
<b>IntelliTeam SG, IntelliTeam II, and SCADA communication device ready for</b> (communication device furnished by customer) <sup>⑪</sup>		
SpeedNet Radio	-R88	
SpeedNet SDR 4 Software Defined Radio⑭	-R255	

Footnotes on the following page

TABLE CONTINUED ►

Table 3. Options—Continued

Item	Suffix to Be Added to Switch Operator Catalog Number
SpeedNet SDR 4x4 Software Defined Radio <sup>④</sup>	-R257
Provision only for iS5 Comm. Inc. - iES6-Slim - Customer must provide iES6-Slim with 2-SFP LC transceivers.	-R285
<b>IntelliTeam II and SCADA communication device ready for</b> (communication device furnished by customer) <sup>⑩</sup>	
Internal UtiliNet Series IV IWR Radio	-R66
Single-Mode Dymec 5843SHRT Fiber-Optic Modem <sup>⑫</sup>	-R42
Multi-Mode Dymec 5843HRT Fiber-Optic Modem <sup>⑫</sup>	-R43
<b>SCADA communication device ready for</b> (communication device furnished by customer) <sup>⑩</sup>	
SpeedNet ME Mesh End-Point Radio	-R241
MDS 9810 Radio	-R02
MDS 9710A Radio (for new systems)	-R03
MDS 9710B Radio (for existing systems)	-R04
External UtiliNet Radio	-R06
MDS Transnet 900 Radio	-R07
MDS 2710D Radio	-R27
FreeWave FGR-115RC Radio	-R30
MDS 2710 Radio	-R32
Internal MDS iNET 900 Dual Gateway: Ethernet and serial remote	-R34
FreeWave DTR-115RU Radio	-R35
FreeWave FGR-09CSU Radio	-R36

- ① Clamp-type conductor keeper.
- ② Voltages up to 34.5 kV.
- ③ Refer to S&C Specification Bulletin 1061-31 for electrical and mechanical ratings.
- ④ S&C sensors only available with listed ratios.
- ⑤ Voltages up to 46 kV.
- ⑥ Busbar style is the standard top configuration. For other top configurations contact S&C.
- ⑦ For other sensor ratios, contact S&C.
- ⑧ 6801M Automatic Switch Operators specified with IntelliTeam automation (suffix “-H9”) cannot be furnished with a Key Interlock Option (suffix “-L2” or “-L3”) because the IntelliTeam software cannot know a key interlock had been applied.
- ⑨ For other manufacturers, contact your local S&C Sales Office.
- ⑩ French is available now. Labels for the remaining language options will add 4 weeks to the lead time. Contact factory for front panel and screen availability.
- ⑪ Total maximum continuous power is 12 watts. This is the available power for all communication equipment installed in the switch operator. A maximum peak transmit of 27 watts for up to 250 milliseconds is allowed, but the average power draw must not exceed 12 watts, including a transmission peak.  
Refer to the nearest S&C Sales Office if more than one communication device is to be installed in the switch operator.
- ⑫ Two Dymec fiber-optic modems are required for use with an IntelliTeam II System, with one modem connected to each serial port. In a SCADA system only one modem is required.
- ★ Specify the appropriate catalog number suffix based on the frequency band range and application for the radio, from the following table. For example, for a 928- to 960-MHz MDS SD9 Radio for Ethernet and Serial application, specify catalog number suffix “-R216CL.”

Frequency Band Range, MHz	Application	Suffix to be Added to Catalog Number
820 to 870	Serial	-R216AK
928 to 960		-R216CK
928 to 960, 50-kHz Channel		-R216DK
880 to 915		-R216EK
880 to 915, 50-kHz Channel		-R216FK
850 to 860 / 926 to 936, Transmit Low		-R216GK
850 to 860 / 926 to 936, Transmit High		-R216HK
820 to 870	Ethernet and Serial	-R216AL
928 to 960		-R216CL
928 to 960, 50-kHz Channel		-R216DL
880 to 915		-R216EL
880 to 915, 50-kHz Channel		-R216FL
850 to 860 / 926 to 936, Transmit Low		-R216GL
850 to 860 / 926 to 936, Transmit High		-R216HL
820 to 870	9710 Emulation	-R216AM
928 to 960		-R216CM
928 to 960, 50-kHz Channel		-R216DM
880 to 915		-R216EM
880 to 915, 50-kHz Channel		-R216FM
850 to 860 / 926 to 936, Transmit Low		-R216GM
850 to 860 / 926 to 936, Transmit High		-R216HM

TABLE CONTINUED ►

# S&C 6801M Automatic Switch Operators

**Table 3. Options—Continued**

Item	Suffix to Be Added to Switch Operator Catalog Number	
H&L Model 570 single-mode ST connectors <sup>⑬</sup>	-R137	
H&L Model 570 multi-mode ST connectors	-R138	
MDS SD9 Remote Radio	-R188	
<b>Factory installation of communication device</b>		
Furnished by S&C	-R98	
Furnished by customer	-R99	
<b>Voltage options<sup>⑭</sup></b>		
15 kV	-V15	
25 kV	-V25	
34.5 kV	-V34	
46 kV	-V46	
<b>Antenna connections (multiple types may be specified)</b>		
N-Type connector, bottom mounted, for remote antenna installation	-S2	
PolyPhaser <sup>®</sup> Surge Suppressor, N-type connector, bottom mounted, for remote antenna installation	-S3	
Ethernet surge suppressor	-S10	
<b>Antenna</b>		
900-Mhz 5-dB gain antenna, N-type male connector	-T2	
Lo Pro <sup>®</sup> Transit Antenna	-T5	
Factory-installed top-mounted GPS	-T9	
<b>Factory-installed radio-faulted circuit indicators<sup>(17)</sup></b>		
Fisher-Pierce (Joslyn), 1548 Series overhead RFCIs, 1560-3 RTU/SCADA radio receiver <sup>(18)(19)</sup>	-U1	
Horstmann, Smart Navigator RFCIs, smart receiver, for use up to 46 kV <sup>(18)(19)</sup>	-U2	
Schneider Electric, Flite116 RFCIs, G200 receiver <sup>(18)(19)</sup>	-U3	
<b>Device Ready for customer-installed radio-faulted circuit indicators<sup>(17)</sup></b>		
Fisher-Pierce (Joslyn), 1548 Series overhead RFCIs, 1560-3 RTU/SCADA radio receiver <sup>(18)(19)(20)</sup>	-U4	
Horstmann, Smart Navigator RFCIs, smart receiver, for use up to 46 kV <sup>(18)(19)(20)</sup>	-U5	
Schneider Electric, Flite116 RFCIs, G200 receiver <sup>(18)(19)(20)</sup>	-U6	
<b>Remote operation contacts and 8 NO and 8 NC auxiliary status contacts</b>		
	-W0	
<b>Power options</b>		
Ac surge protector (nominal voltage: 120 Vac, nominal discharge surge current asymmetrical: 20 kA)	-W1	
Control power input connector, with 36-foot (11-meter) external cable supplied <sup>(19)</sup>	-W3	
<b>Operating rod shrouds</b>		
Shroud for rotating-drive switch operator	-X1	
Shroud for reciprocating-drive switch	-X2	
<b>Universal joint for retrofitting</b> 6801M-20 Automatic Switch Operators to a pre-existing manual switch fitted with a pipe-drive operating mechanism	For 1 ½-inch (38-mm) IPS vertical operating pipe	-Y1
	For 2-inch (51-mm) IPS vertical operating pipe	-Y2

<sup>⑬</sup> H&L Model 570 single-mode fiber-optic transceiver can be used for IntelliTeam II applications that do not include IntelliRupter PulseCloser Fault Interrupters. Refer to the nearest S&C Sales Office for more information.

<sup>⑭</sup> Please see Specification bulletin 1075-31 for SDR 4 and SDR 4X4 antenna options.

<sup>⑮</sup> Please see Specification Bulletin 1072-31 for SpeedNet Radio antenna options and Specification Bulletin 1076-31 for SpeedNet Cell Edge Gateway antenna options.

<sup>⑯</sup> Please see specification bulletin 1076-31 for SpeedNet Cell Edge Gateway antenna options.

<sup>(17)</sup> Voltage options are required when specifying software options “-H0” and “-H9.” Do not specify a voltage option when ordering software option “-H1.”

<sup>(18)</sup> For radio-faulted circuit indicator by other manufacturers, contact S&C to arrange for a functional evaluation.

<sup>(19)</sup> For custom cable lengths, contact your local S&C Sales Office.

<sup>(20)</sup> Top-mount low-profile, anti-vandal, antenna included for the radio faulted circuit indicator. If an alternate antenna configuration is needed, contact S&C.

**Table 4. Options for Gateway Applications**

Item	Suffix to Be Added to Switch Operator Catalog Number
<b>Communication protocol</b>	
DNP 3.0	-XP0
<b>Communication device</b> (furnished by S&C, requires catalog number suffix "-XR98")	
Single-Mode Dymec 5843SHRT fiber-optic modem	-XR44
Multi-Mode Dymec 5843HRT fiber-optic modem	-XR45
MDS SD9 Remote Radio	▲
<b>Communication device ready for</b> (communication device furnished by customer)	
MDS 9810 Radio	-XR02
MDS 9710A Radio (for new systems)	-XR03
MDS 9710B Radio (for existing system)	-XR04
MDS 2710D Radio	-XR27
FreeWave FGR-115RC Radio	-XR30
Single-Mode Dymec 5843SHRT fiber-optic modem	-XR42
Multi-Mode Dymec 5843HRT fiber-optic modem	-XR43
MDS SD9 Remote Radio	-XR188
<b>Factory installation of communication device</b>	
Furnished by S&C	-XR98
Furnished by customer	-XR99
<b>Antenna connections</b>	
N-type connector, bottom mounted, for remote antenna installation	-XS2
PolyPhaser® Surge Suppressor, N-type connector, bottom mounted, for remote antenna installation	-XS3
Antenex NMO mounting	-XS4
PolyPhaser Surge Suppressor, N-type connector, 800-2300 MHz, for dual-band cellular antenna	-XS6
Two N-type connectors, bottom mounted; includes suppressor	-XS11

▲ Specify the appropriate catalog number suffix based on the frequency band range and application for the radio, from the following table. For example, for a 928- to 960-MHz MDS SD9 Radio for Ethernet and serial application, specify catalog number suffix "-XR216CL."

Frequency Band Range, MHz	Application	Suffix to be Added to Catalog Number
820 to 870	Serial	-XR216AK
928 to 960		-XR216CK
928 to 960, 50-kHz Channel		-XR216DK
880 to 915		-XR216EK
880 to 915, 50-kHz Channel		-XR216FK
850 to 860 / 926 to 936, Transmit Low		-XR216GK
850 to 860 / 926 to 936, Transmit High		-XR216HK
820 to 870		Ethernet and Serial
928 to 960	-XR216CL	
928 to 960, 50-kHz Channel	-XR216DL	
880 to 915	-XR216EL	
880 to 915, 50-kHz Channel	-XR216FL	
850 to 860 / 926 to 936, Transmit Low	-XR216GL	
850 to 860 / 926 to 936, Transmit High	-XR216HL	

Frequency Band Range, MHz	Application	Suffix to be Added to Catalog Number
820 to 870	9710 Emulation	-XR216AM
928 to 960		-XR216CM
928 to 960, 50-kHz Channel		-XR216DM
880 to 915		-XR216EM
880 to 915, 50-kHz Channel		-XR216FM
850 to 860 / 926 to 936, Transmit Low		-XR216GM
850 to 860 / 926 to 936, Transmit High		-XR216HM

TABLE CONTINUED ►

# S&C 6801M Automatic Switch Operators

**Table 4. Options for Gateway Applications—Continued**

Item	Suffix to Be Added to Switch Operator Catalog Number
<b>Antenna</b>	
900-Mhz 5-dB gain antenna, N-type male connector	-XT2
Lo Pro transit antenna	-XT5
Dual-band LoPro cellular antenna (824-896 and 1850-1990 MHz), 3 dBi	-XT7

**Table 5. Accessories**

Description	Catalog Number
<b>Spare 12-Vdc, 34.6 ampere-hour battery</b> (the 6801M uses two of these batteries in series to provide the required 24 Vdc)	SDA-10911
<b>Battery charger for up to eight 24-Vdc batteries</b> (catalog number SDA-10911)	591-000190-01
<b>Fixture for setting operator Open/Close limits</b> (use when 6801M Operator is not connected to a switch)	TDA-10572
<b>Replacement front panel circuit board kit</b>	
For voltage/current sensing	SDA-11222
For non-voltage/current sensing	SDA-11223
<b>Replacement PS/IO circuit board kit</b>	
<b>6801M front panel field retrofit kit, for use in M Series Switch Operator</b> ①②③	SDA-11213
<b>6801M front panel field retrofit kit with GPS, for use in M Series Switch Operator.</b> Does not include Wi-Fi antenna and cable①②③	SDA-11214
<b>Wi-Fi module retrofit kit, for use with 6801M Automatic Switch Operator.</b> Includes Wi-Fi antenna	SDA-11215
<b>Wi-Fi module retrofit kit, for use with 6801M panel field retrofit kit, for use in M Series Switch Operator.</b>	SDA-11516
<b>iS5 Comm. Inc. - iES6-Slim industrial Ethernet switch (fully enclosed).</b> Comes with panel mount bracket, low-voltage (input 9-36 Vdc), LC connector	110-003800-01
<b>SFP 100-Mbps multimode LC transceiver 550 m, 850 nm</b>	110-003774-01
<b>SFP 100-Mbps multimode LC transceiver 2 km, 1310 nm</b>	110-003774-02
<b>SFP 100-Mbps single-mode LC transceiver 10 km, 1310 nm</b>	110-003774-04
<b>SFP 100-Mbps single-mode LC transceiver 30 km, 1310 nm</b>	110-003774-05
<b>SFP 100-Mbps single-mode LC transceiver 60 km, 1310 nm</b>	110-003774-06
<b>SFP 100-Mbps single-mode LC transceiver 100 km, 1550 nm</b>	110-003774-07
<b>SFP 100-Mbps single-mode LC transceiver 120 km, 1550 nm</b>	110-003774-08
<b>iS5 Comm. Inc. - iES22GF industrial Ethernet switch.</b> High voltage (input 130-370 Vdc or 90-264 Vac), 8 - 10/100/1000 Base TX RJ45 ports, 4 - GSFP	110-003777-01
<b>iS5 Comm. Inc. - iES22GF industrial Ethernet switch.</b> Low voltage (input 9-36 Vdc), 8 - 10/100/1000 Base TX RJ45 ports, 4 - GSFP	110-003778-01
<b>iS5 Comm. Inc. - iDS3 industrial single port RS232/422/485 to Ethernet serial device server.</b> Low voltage (input 9-36 Vdc), 1-serial port, 2-10/100 Base TX RJ45 ports	110-003779-01

① Note this kit is only a front panel upgrade kit and cannot convert an operator without sensing to an operator with sensing. To add sensing to an operator contact your local S&C Sales Office.

② A software option suffix must be specified from Table 3 on page 3.

③ Use GPS Antenna, Surface Mount, catalog number 007-001615-01, or Pole-Mounted Antenna Kit for GPS, catalog number 903-002344-01. Top-Mounted Surface-Mount GPS Antenna must be installed by S&C.

**Table 6. Options for Front Panel Field Retrofit Kits<sup>①</sup>**

Item	Suffix to Be Added to Front Panel Catalog Number	
Standard software (no sensing)	-H1	
IntelliTeam SG Automatic Restoration System (required for sensing)	-H9	
Knife switch <sup>②</sup>	-KS	
M Series Operator with a key interlock option <sup>②</sup>	-L	
Reverse color indicator option	-L1	
<b>Foreign language labels, front panel, and screens<sup>③</sup></b>	French	-L5
	Spanish	-L6
	Portuguese	-L7
	Chinese	-L8
	Arabic	-L9
DNP protocol	-P0	
PS/IO board field upgrade kit to be included with retrofit front panel field retrofit kit	-Q1	
Ac surge protector	-W1	

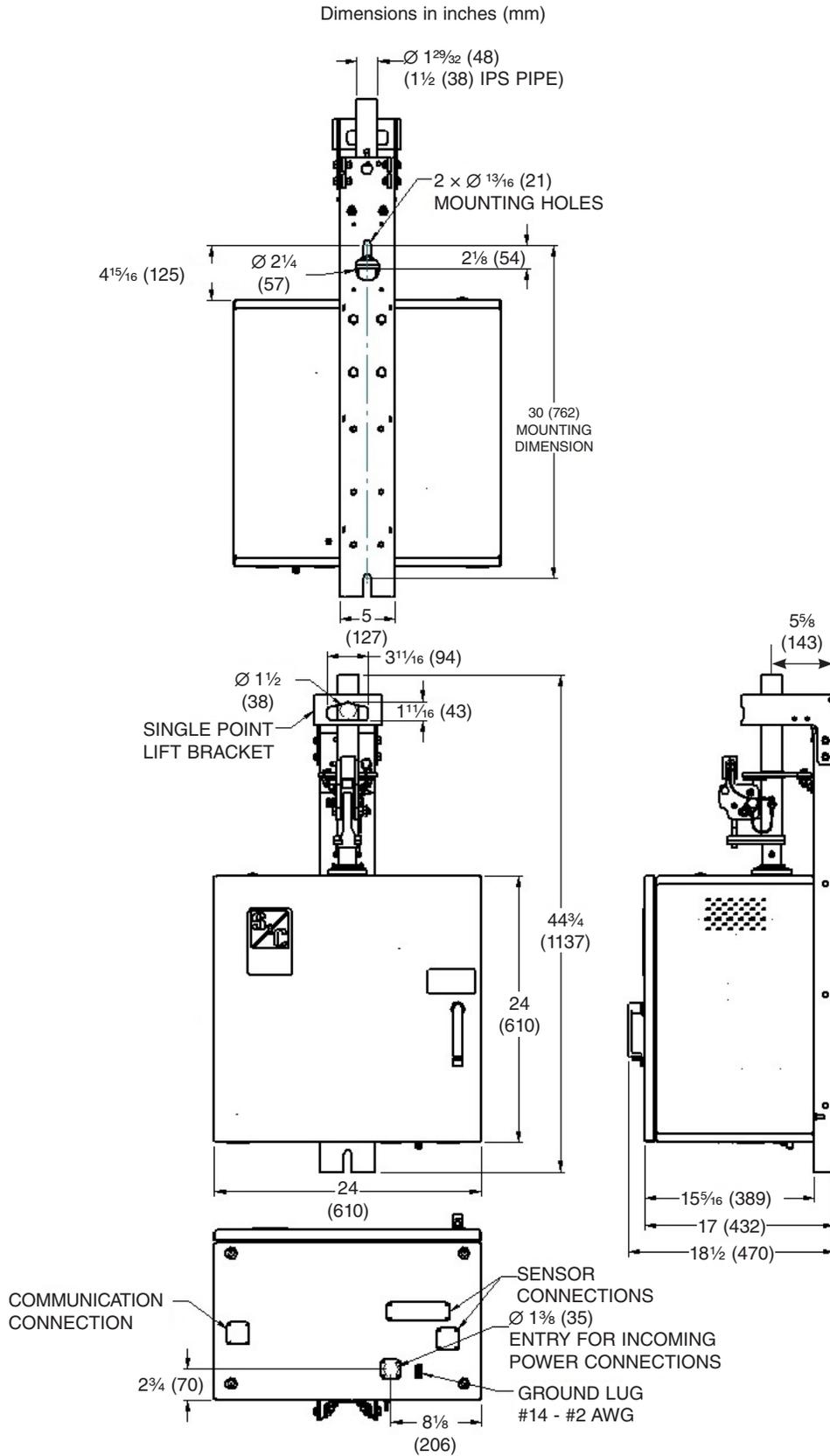
<sup>①</sup> If the existing M-Series Operator has this option suffix, add it to the 6801M upgrade kit. Note this suffix does not provide material to modify the operator.

<sup>②</sup> A PS/IO board field upgrade kit will allow monitoring of this option through DNP. Add suffix “-Q1” to the Front Panel Field Retrofit Kit to add the remote monitoring capability.

<sup>③</sup> French is available now. Labels for the remaining language options will add 4 weeks to the lead time. Contact the nearest S&C Sales Office for front panel and screen availability.

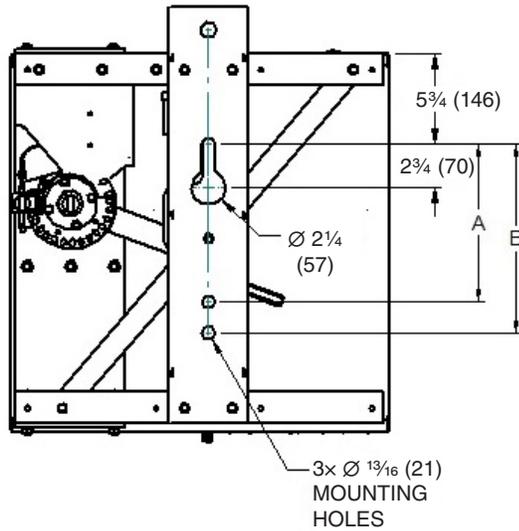
# S&C 6801M Automatic Switch Operators

## 6801M-20 Rotating 6801M Automatic Switch Operator



6801M-10 Reciprocating 6801M Automatic Switch Operator

Dimensions in inches (mm)



MOUNTING DIMENSION	DISTANCE (inches)
A	10 (254)
B	12 (305)

