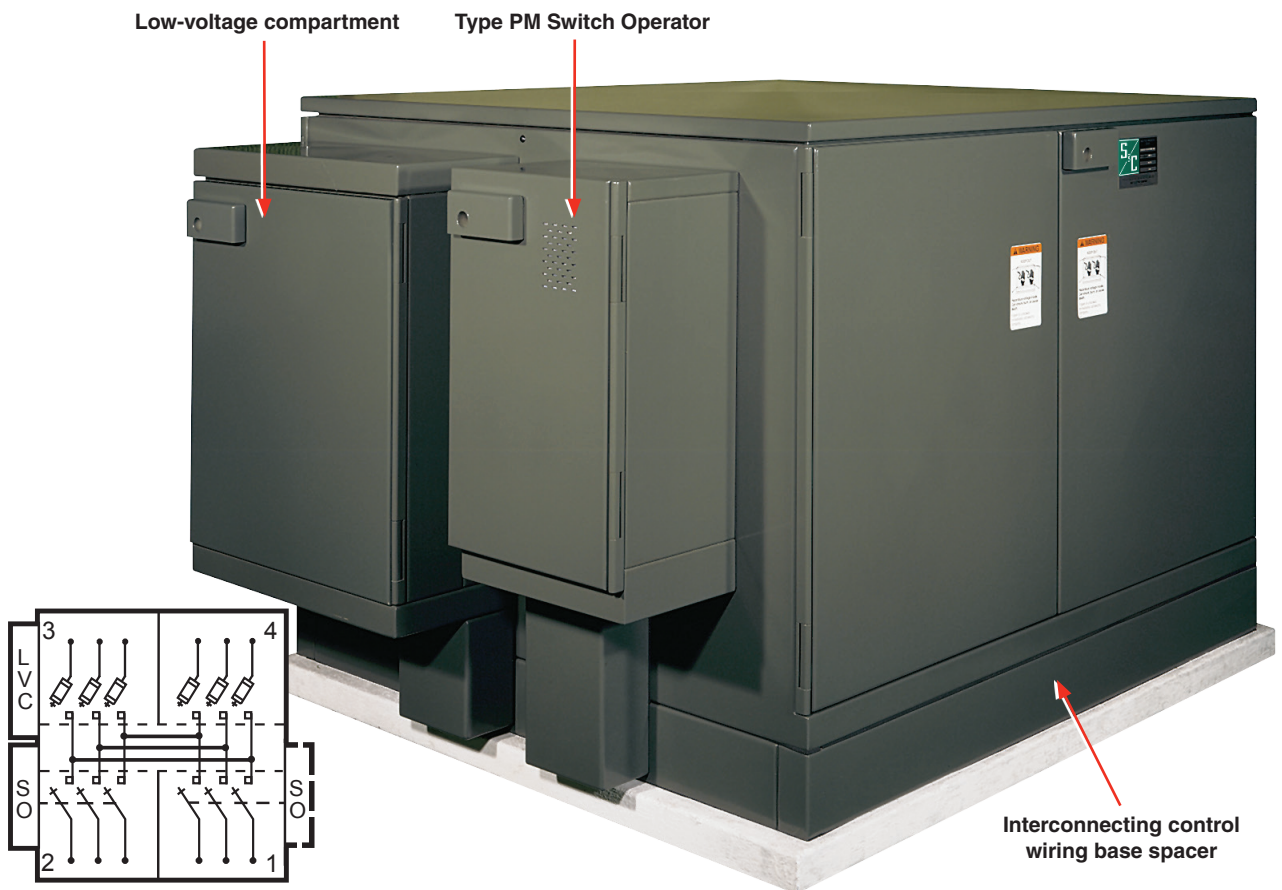


Add Remote Operation Capability to an Existing Installation of S&C Pad-Mounted Gear

The S&C Type PM Switch Operator provides remote supervisory control of Mini-Rupter® Switches in S&C Pad-Mounted Gear for automated distribution systems. Field conversion of S&C Pad-Mounted Gear from manual operation to power operation is now a practical reality.

These switch operators are available for retrofit on manual S&C PMH and PME Models already installed in the field. Remote supervisory S&C PMH and PME Pad-Mounted Gear with factory-installed Type PM Switch Operators are also available in a broad choice of configurations.



Type PM Switch Operator, low-voltage compartment, and interconnecting control wiring base spacer pictured above on a remote supervisory Model PMH-9 are available for field installation.



Type PM Switch Operators

The ability to field-retrofit or factory-install Type PM Switch Operators facilitates the development of a fully automated, remotely operated, underground distribution system. Automation allows monitoring and control of distribution systems to accomplish:

- Fault detection, location, and isolation
- Reconfiguration of circuits for prompt service restoration
- Load transfer for improved balancing among main feeder circuits

The 14.4-kV Model PMH-9 shown on [page 1](#) is equipped with two Type PM Switch Operators, a low-voltage compartment for housing user-supplied communications equipment, and an interconnecting control wiring base spacer that contains all wiring from the switch operators to the low-voltage compartment.

The Type PM Switch Operator connected to the Mini-Rupter Switch in Compartment 2 contains the optional S&C Battery Charger and battery packs (suffix “-Y7”). The two series-connected, 12-Volt, 5 ampere-hour battery packs with an S&C Battery Charger supply power to the motor to charge and trip the quick-make quick-break mechanism of the switch. Operation is achieved in approximately three seconds.

The battery also supplies control power to the Type PM Switch Operator mounted on Compartment 1.

An internal control power source can be provided with the battery and charger option (suffix “-Y7”) to supply 120-Vac input to the battery charger. This input is derived from an S&C Voltage Sensor, which provides sufficient output to drive a 400-milliampere external load while recharging the battery.

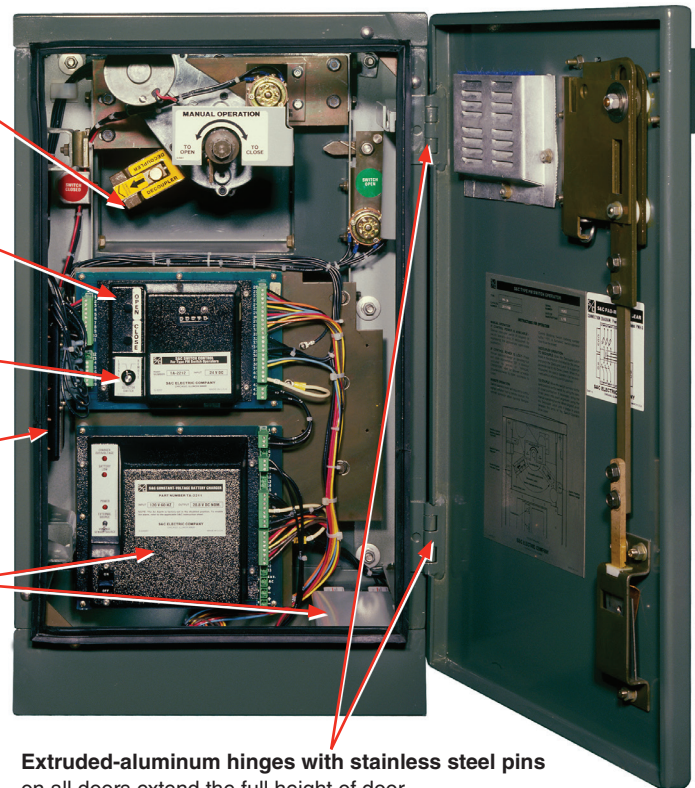
Decoupler permits switch operator operation without changing the switch position

Switch control provides logic for motor operation and includes LOCAL/REMOTE selector switch, OPEN/CLOSE pushbuttons, and **Operation** counter

LOCAL/REMOTE selector switch prevents remote operation when in **Local** mode while enabling pushbutton operation

Voltage Limiter provides protection if the secondary circuit of the voltage sensor (see image on page 4) is inadvertently opened. Both components are furnished as an option to the switch operator (suffix “-Y7”)

S&C Battery Charger with battery packs, furnished as an option (suffix “-Y7”) in the switch operators for field installation, provides power for operation of the switch operators. The charger includes alarms with REMOTE and LOCAL indication on availability of power input to the charger (field-selectable), on undervoltage output from the battery, and on overvoltage output from the charger. The battery charger also includes a load disconnect circuit to prevent deep discharge of the battery on loss of ac input



Extruded-aluminum hinges with stainless steel pins on all doors extend the full height of door

Interior view of a Type PM Switch Operator providing power operation for the Mini-Rupter Switch. Also contained within the switch operator enclosure are the optional S&C Battery Charger with battery packs and the S&C Voltage Limiter (all supplied with suffix “-YT”).

The battery charger is furnished with an alarm circuit that provides local visual status indication using LEDs, and remote alarm indication by contact change-of-state on loss of ac input to the charger (field-selectable), on overvoltage output from the battery charger, and on undervoltage output from battery. One set of contacts is provided for remote indication of an alarm condition. The battery charger also includes a load-disconnect circuit to guard against deep discharge of the battery on loss of ac input.

The Type PM Switch Operator connected to the Mini- Rupter Switch in Compartment 1 of the Model PMH-9 receives control-power input from the battery packs in the switch operator on Compartment 2. The interconnecting control wiring base spacers are available for PMH models to provide all the necessary low-voltage wiring for switch operator connection to the low-voltage compartment. Alternately, multiconductor cable is available as an accessory, permitting the user to make all necessary connections.

A low-voltage compartment is mounted on the Model PMH-9 adjacent to Compartment 3. This compartment is for installation of user-supplied communications equipment (e.g., remote terminal unit, radio, and transducers). The conduit and interconnecting wiring between the low-voltage compartment and Type PM Switch Operator is to be furnished and installed by the user unless an interconnecting control wiring base spacer is supplied. Wiring within the base spacer is isolated from medium voltage by galvanized steel wire ducts.

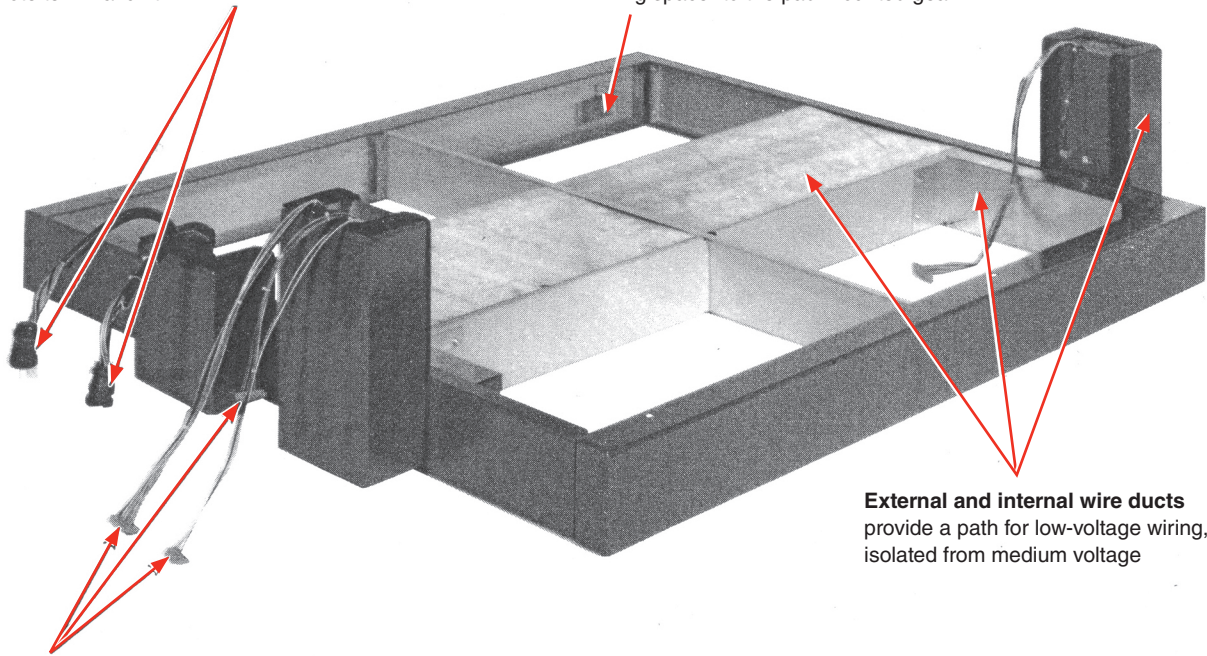
The Model PMH-9 includes split-core, closed-gap, current sensors rated 600:5 amperes that are available as an accessory. These current sensors are mounted on the medium-voltage conductors in the switch compartments and can be installed on the cables without disconnecting the terminators from the switch terminals. Wiring associated with the current sensors is furnished by the user, except when the interconnecting control wiring base spacer is supplied.

The ability to field install switch operators, to accommodate a user's communications equipment, to provide adequate control power and provisions for monitoring and sensing equipment, and to include the necessary interconnecting wiring, all within the pad-mounted gear, results in a completely self-contained package for remote supervisory control. Furthermore, the ability to field-convert installed manual pad-mounted gear makes retrofitting an underground system for power operation feasible and minimizes costs. Type PM Switch Operators thus help to ensure economic justification of automated distribution systems.

Type PM Switch Operators

Socket plugs are included in the low-voltage compartment, providing connections for a remote terminal unit

Nickel-plated ground-connection pad provides a means to ground the control-wiring spacer to the pad-mounted gear



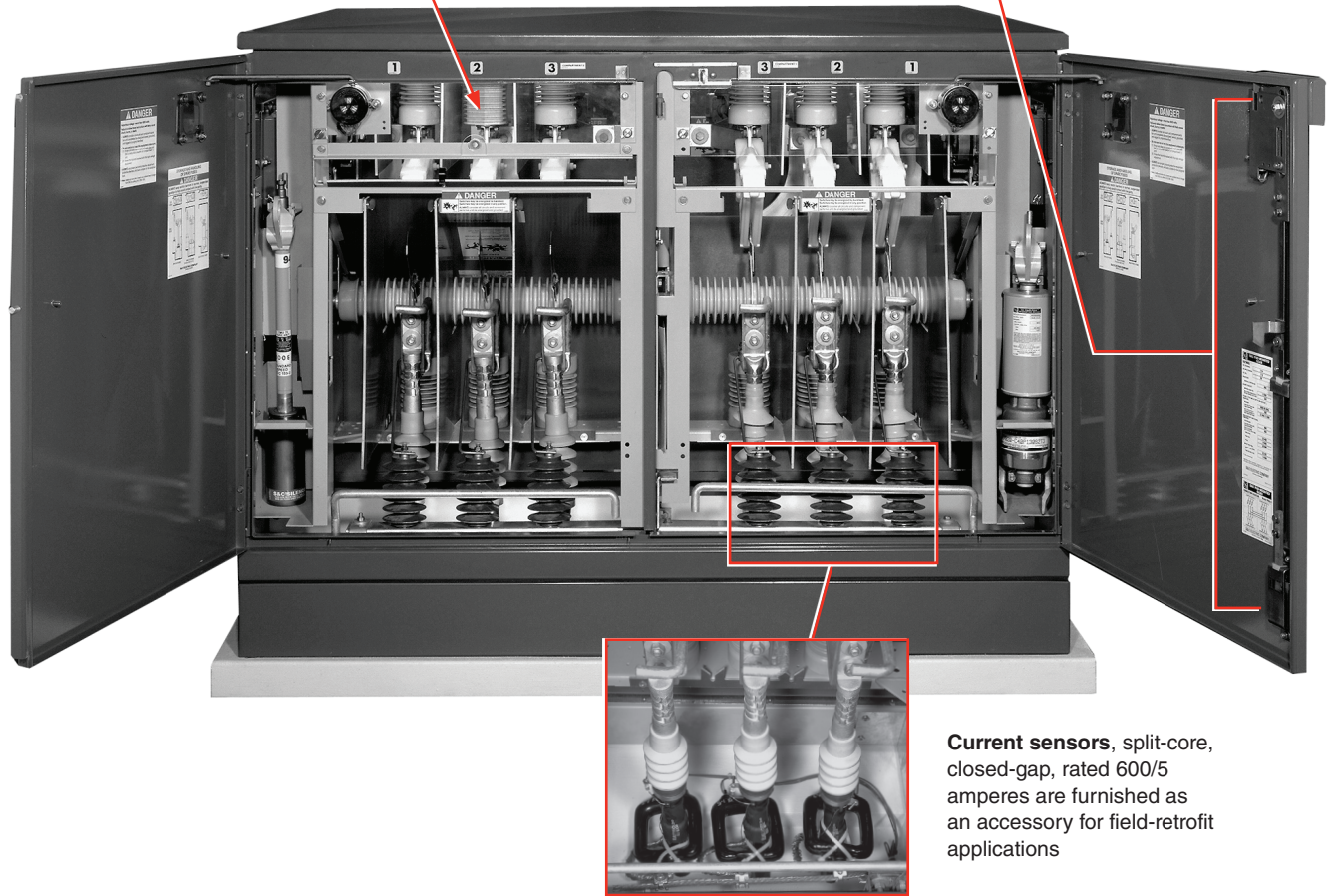
Connector plugs are included for connection in the Type PM Switch Operator and provide control power, voltage sensing, and switch control connections

External and internal wire ducts provide a path for low-voltage wiring, isolated from medium voltage

The interconnecting control wiring base spacer provides a convenient means to install complete wiring between switch operators and the low-voltage compartment while maintaining isolation from medium voltage. These spacers are available for field-installation on manual PMH models.

S&C Voltage Sensor furnished as part of an option (suffix “-Y7”) is bracket-mounted, installs in the switch compartment adjacent to the center-phase switch-support insulators, and provides control-power input to battery charger

Penta-Latch® Mechanism on all doors



Current sensors, split-core, closed-gap, rated 600/5 amperes are furnished as an accessory for field-retrofit applications

Illustrated above is the switch side of a Model PMH-9 showing an optional S&C Voltage Sensor (included with suffix “-Y7”) that has been field-installed. The inset shows current sensors, available as an accessory, that have been installed on the cables.