

# *Kyle DC Motor Operator Control*

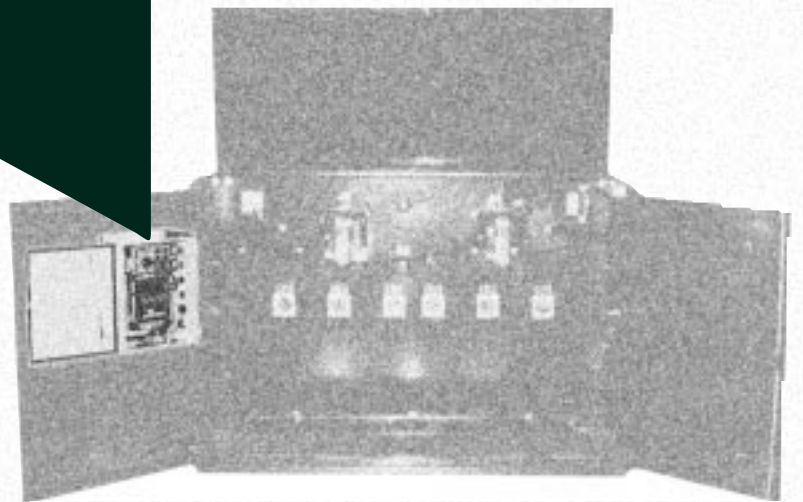


## *Features Include:*

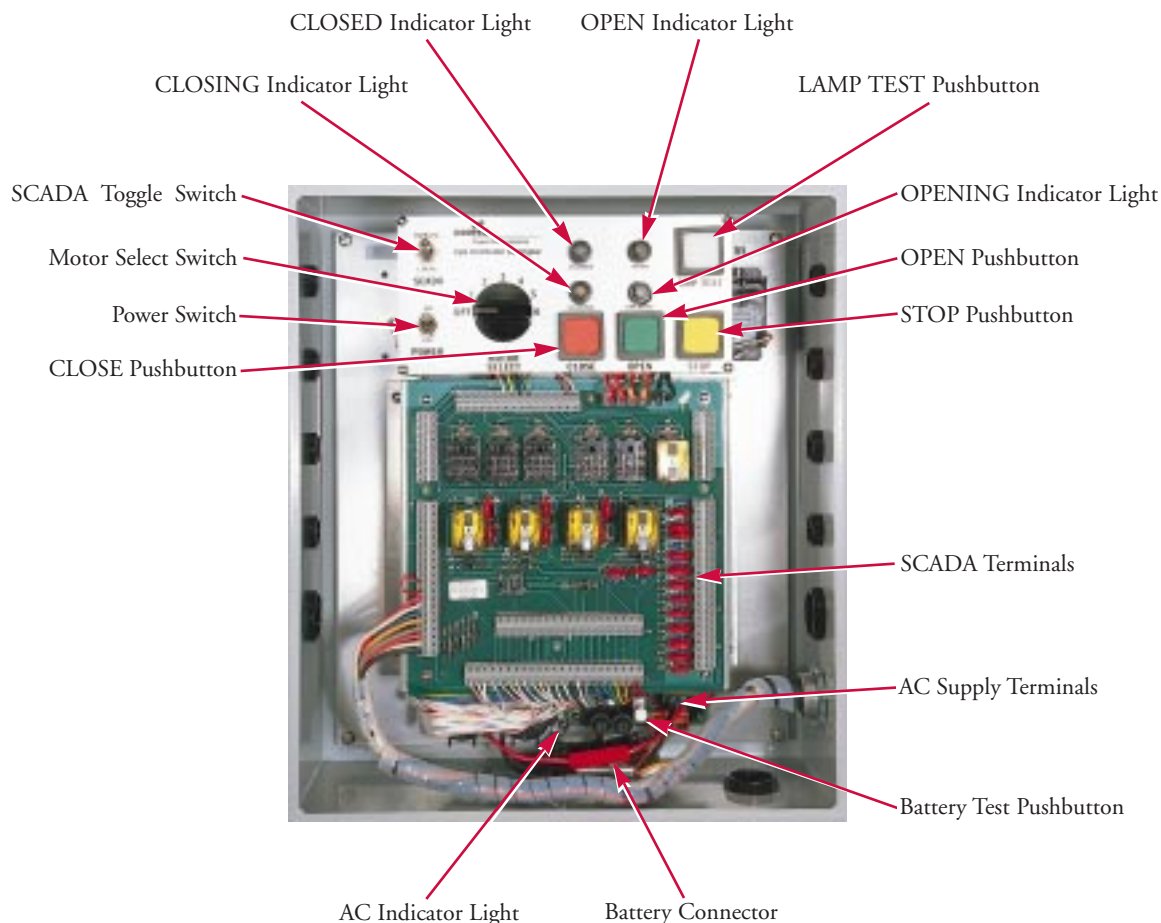
- ✓ SCADA or Control Panel Operation
- ✓ Operates up to Six Motors
- ✓ Dual 120Vac Source Compatible
- ✓ DC Design for Continued Operability with Loss of AC

## *Motor Operation for:*

- ✓ Vacuum Loadbreak Switch Mechanisms
- ✓ Vacuum Fault Interrupter Mechanisms



## DC Motor Operator Control Features and Benefits



### *Kyle DC Motor Operator Control.*

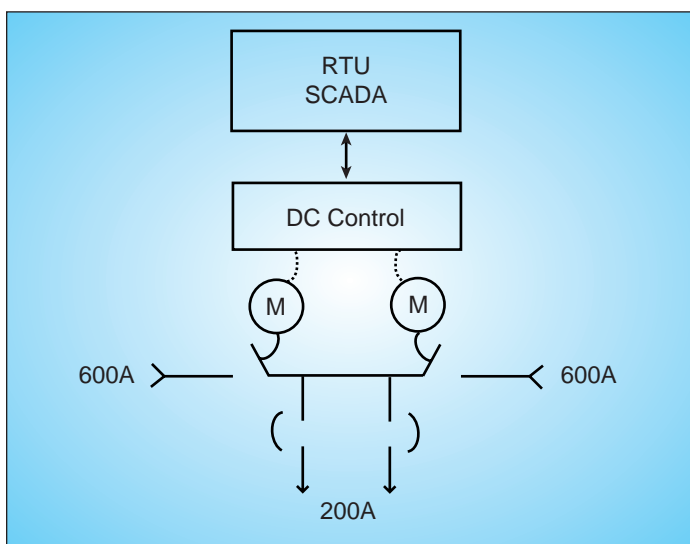
- **CLOSE** pushbutton (red) closes the selected switch or interrupter mechanism via the motor operator.
- **POWER** switch disconnects the DC Voltage to the control and motors.
- **MOTOR SELECT** switch selects the active motor for status indication and operation.
- **SCADA** (Supervisory Control and Data Acquisition) switch selects LOCAL or REMOTE operation.
- **CLOSING** indicator light (yellow) signals that the motor actuator is closing the selected switch or interrupter mechanism.
- **CLOSED** indicator light (red) signals that the selected switch or interrupter mechanism is in the CLOSED position.
- **OPEN** indicator light (green) signals that the selected switch or interrupter mechanism is in the OPEN position. It also indicates that the fault interrupter mechanism is in either the OPEN or TRIPPED position.
- **LAMP TEST** pushbutton (white) momentarily lights the four operator panel status indicator lights.
- **OPENING** indicator light (yellow) signals that the motor actuator is opening the selected switch or interrupter mechanism.
- **OPEN** pushbutton (green) opens the selected switch or interrupter mechanism via the motor operator.
- **STOP** pushbutton (yellow) stops the motor-operated opening or closing action of the selected switch or interrupter mechanism.
- **SCADA Terminals** serve as the interface for access to the remote operation features.
- **AC Supply Terminals** accept voltage from two separate 120Vac sources.
- **Battery Test** pushbutton applies a momentary load to the battery (used when measuring battery voltage).
- **Battery Connector** couples the dc battery to the control.
- **AC Indicator Light** signals that 120Vac is being supplied to the control.

## Motorized Padmounted Switchgear

All electrical and distribution systems are subject to outages and service interruptions; however, with growing emphasis on power quality, minimizing the time required for service restoration or system reconfiguration becomes increasingly important.

Padmounted switchgear used in protective schemes to solve these problems varies from manual sectionalizing and fault interrupter switchgear, to motorized SCADA-controlled switchgear, to completely automated switchgear with logic controls.

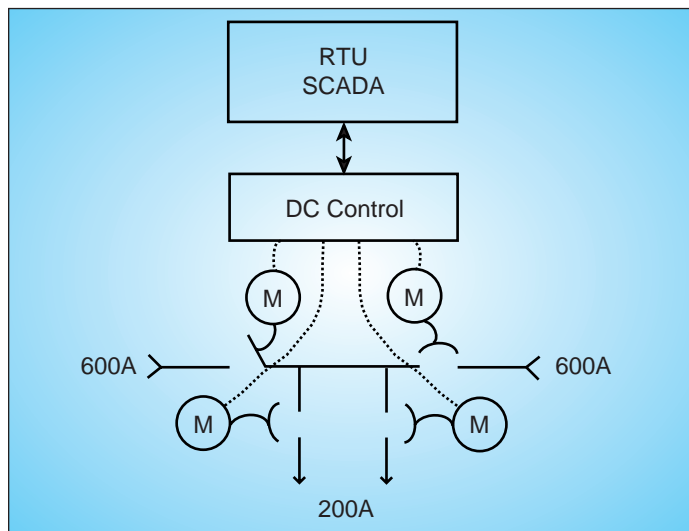
The DC Motor Control is designed for use on UD (underground distribution) systems where a motorized-sectionalizing or fault-interrupting device, operable from a remote location via SCADA, is the solution of choice.



*VFI-9 (Three-Phase Switchgear): VFI-9 with motor operated 600A vacuum loadbreak source switches and 200A manually operated vacuum fault interrupter taps.*

## Kyle DC Motor Operator Control

The Kyle DC Motor Operator Control represents an innovative approach in the application of motor operation to padmounted switchgear. The control is designed to be utilized with both the Kyle Type RVAC and Type VFI Padmount Switchgear. The control is also designed to be SCADA compatible, giving it the capability of operation from both the control panel and from a remote location via SCADA.

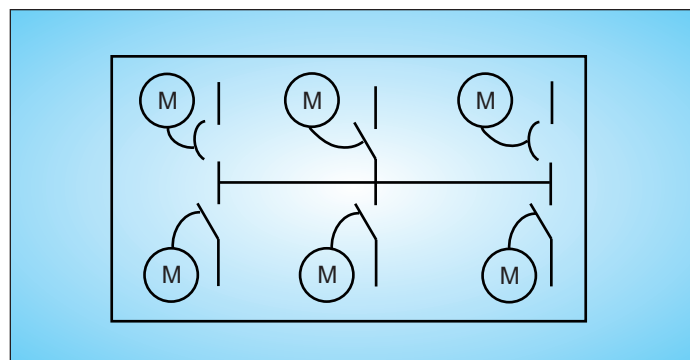


*VFI-12 (Three-Phase Switchgear): VFI-12 with a motor operated 600A vacuum loadbreak source switch, a 600A motor operated vacuum fault interrupter, and two 200A motor operated vacuum fault interrupters.*

## Controls up to Six Motor Operators

UD systems of today often require multiple three-phase feeder or three-phase tap circuits to be terminated, operated, and housed within a single padmount switchgear enclosure. The Kyle DC Motor Control is designed to operate with any combination of three-phase RVAC sectionalizing switches and three-phase VFI up to a maximum of six motorized ways per switchgear.

The DC Motor Control features a “select-before-operate” capability, in which one of six actuators must be selected via the rotary MOTOR SELECT switch or via SCADA, before motor operation is possible.



*VFI Switchgear with a combination of four motor operated vacuum loadbreak switches and two motor operated vacuum fault interrupters.*

## SCADA or Control Panel Operation

The Kyle DC Motor Control can be operated in two modes: LOCAL or REMOTE. Setting the SCADA switch to the LOCAL position allows operation of the switchgear from the control panel. Setting the SCADA switch to the REMOTE position allows operation of switchgear from a remote location via SCADA.

## Single Interface for Power and SCADA Operation

The DC Motor Control represents an innovative approach in the application of motor operation to padmounted switchgear. A single interface point is provided for interconnection of up to six dc motor operators. The same control panel also provides a single convenient interface for SCADA interconnections.

## Dual 120Vac Supply

The DC Motor Operator Control is designed for battery operation via a 24Vdc, 2.5 amp hour battery. 120Vac is required to power the voltage-temperature regulated battery charger. The control is designed to be compatible with loop-fed systems and to receive voltage from up to two separate 120Vac supply sources. In the event the preferred 120Vac is lost, the second source is automatically selected to maintain 120Vac supply to the battery charger circuit.

## DC Design for SCADA Operation

In many loop-fed protective schemes, it is necessary to reconfigure a distribution circuit, even with complete loss of power from both ac sources. The Kyle DC Motor Operator Control is designed to permit a minimum of 25 open and 25 close operations before battery recharge is required. Complete recharge is possible within 24 hours upon restoration of 120Vac.

## Switch Operation

The three-phase vacuum loadbreak sectionalizing switch supplied in RVAC and VFI switchgear is operated manually by a simple pull-to-open and push-to-close hotstick-operable handle. A motor operator, when provided, is connected to this switch handle. If necessary, the motor operator can be easily disconnected to allow manual operation. This is accomplished by removing the cotter pin and interconnecting rod which couple the motor actuator to the operator handle.



*DC Motor Actuator - Connected.*



*DC Motor Actuator - Disconnected.*

## Vacuum Fault Interrupter Operation

The three-phase vacuum fault interrupter supplied in VFI switchgear is operated manually by a simple pull-to-open, pull-to-reset, and push-to-close hotstick-operable handle. A motor operator, when provided, is connected to this handle. If necessary, the motor operator can be easily disconnected to allow manual operation by removing the cotter pin and interconnecting rod which couple the motor actuator to the operator handle.

## Modes of Operation

The DC Motor Operator Control is capable of being operated from the control panel or remotely via the SCADA interface terminals. With the SCADA toggle switch set to LOCAL, status and control operation are accessed via the control panel. With the SCADA toggle switch set to REMOTE, status and control operation capabilities are transferred to a remote location via SCADA interface terminals (see Portable Control).

## User Interface

User interface is accomplished via the operator panel. The operator panel is located inside and at the top of the control cabinet. The operator panel contains the power toggle switch, the SCADA toggle switch, the motor select knob, the operation switches, and the status indicators.



*Operator Panel.*

## Optional Accessories

### Simultaneous Indication for SCADA

To read status in either LOCAL or REMOTE modes, a motor must first be selected. For some SCADA applications, it may be necessary to monitor the status of each motor-operated mechanism simultaneously. In these cases, an additional stage of auxiliary contacts for each actuated mechanism may be required, and an optional interface, separate from the control, may be necessary (consult factory for details).

### Electrical Interlocks

The DC Motor Operator may be supplied with the capability for user-specified electrical interlocking, to meet local safety requirements or to conform to preferred operational practices. For these applications, an additional stage of auxiliary contacts and logic relays may be required (consult factory for details).

### Provisions

The DC Motor Control and operators are designed to be compatible with Kyle Type RVAC and VFI switchgear\* which has modifications or provisions to accommodate the control and actuators. Provisions include modified internal linkages; auxiliary switches; mounting provisions for the control, actuator, cables, and connectors; PT's if required; and semaphores for motor operated vacuum fault interrupter mechanisms. The motors are mounted to the switchgear tank frontplate and are enclosed by the cable compartment, which has a minimum depth of 30 inches.

\* Consult factory to confirm compatibility.

## Portable Control

The DC Motor Control can be optionally equipped with an accessory which allows the control to be operated (with the SCADA switch set to LOCAL) from an additional portable control panel. The EXTENDED CONTROL accessory and cable allow the control to be operated from a distance of up to 200 feet. The portable control and cable are connected to the switchgear-mounted DC Control via a separable plug connector (consult factory for details).



*Extended Control Accessory.*

## AC Motor Control

For applications where dc operation is not the option of choice, an ac option for the control and motor operator can be supplied (consult factory for details).

## Additional Product Information

For additional product information, refer to the following Cooper Power Systems' publications:

- DC Motor Operator Control Installation and Operation Instructions S285-80-1
- Type RVAC Vacuum-Break Switch Catalog 285-50
- Type VFI Vacuum Fault Interrupter Bulletin 91041

## Ordering Information

For a complete motor-operated switchgear unit, order:

**KPMC** - Basic DC Control and Operator(s)

	X - Supply Voltage (1 = 120Vac)	Y - Number of Operators (1 - 6)
KPMC	1	2

**KPMC12** - This accessory catalog number specifies that the switchgear be provided with a DC Control (120Vac source compatible) and two motor operators.

Include above information with normal catalog ordering information at time of switchgear order (consult factory for details).

Note: The DC Motor Control and Operators are compatible with Kyle Type RVAC and VFI Switchgear designed with the appropriate provisions (see Provisions).

Consult factory if ordering motor operator kits for retrofit applications. Provide the catalog number and serial number of the switchgear along with the required quantity and intended location of the motor operator(s).

For additional product and application information, contact your local Cooper Power Systems' sales engineer, or write to:

Cooper Power Systems  
P.O. Box 1640  
Waukesha, WI 53187

**COOPER** Power Systems

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