ADM0™ Advantages

The ADM0 incorporates the following critical features that are essential for automation reliability. No other motor operator offers all of these important traits.

**Dual Power Source for the Motor**

The ADM0 operates on the motor from 100 to 480 VAC at primary power sources. It uses the battery as a backup. Since the motor operator uses AC as its primary power source, the motor operator will run as long as AC is present even if the battery is weak. AC and battery power are supplied to the motors so as the motor operator will complete an operation without hesitation even if AC is lost during the operation. This feature maximizes the reliability of the motor operators.

**Automatic Battery Testing**

The battery is monitored almost continuously using a “smart” circuit. A 12 amp load is applied to the battery every five minutes and the battery voltage is measured with the battery charger off. The test duration is very short so the testing is done automatically, there is no need for the customer to implement a system to periodically perform a battery test.

**Automatic Load Disconnect**

Under the battery loads of the radio and RTU, battery voltage will only affect the AC load. AC loads are dropped when the automatic load disconnect threshold voltage is reached. This feature is especially important when extreme causes exceed load of AC, as many batteries can be ruined when the load exceeds the capacity of the battery. The automatic load disconnect prevents deep discharge of the battery, which cause damage and necessitate battery replacement.

**Stall-Out Timer with Auto-Reset**

If the motor operator is stalled (because of ice or switch mechanical problems) the stall operation will occur before the fuse blows. The control circuit stops and another operation command can be accepted after the timer is reset. The stall-out timer prevents the blowing of a fuse during multiple attempts to break ice. A blown fuse would make the unit inaccessible and require field service.

**No-Go Function**

When the battery voltage threshold for No-Go is met (after the low battery voltage alarm), the motor operator is disabled. The No-Go function prevents underpowered and inaccurate switch operation. A No-Go status is delivered through the RTU.

**Motor Status Indications**

Several ADM0 status indications are reported back through the RTU. Among the status indications are overhead switch position, horizontal status position, manual handle position, remote handle position, and RTU and radio status. All 16 status indications are located via LEDs on the ADM0 control board. Other status indications can be added if the ADM0 is capable. The ADM0 also has the capability to invert the status indications by changing the position of a Dip Switch.

**Dual Charger System**

On transmission class ADM0 models, the battery can be charged from either AC source or a solar source when the ADM0 is supplied with the optional solar charging board.

**Safety Features**

The ADM0 is designed for public safety as well as operation protection safety. The RTU is supplied with a protective cover so that the rotating decoupling device protects the motor operator during manual operation, enhancing operator safety. The BT units are supplied with a protective cover so that the rotating decoupling device protects the motor operator during manual operation, enhancing operator safety. The ADM0 incorporates several “smart” electronic circuit features. An electronic timer is built into the circuit for locked switch conditions caused by ice or contact welds. After a prescribed duration of the stall-out timer, the motor circuit is disabled. A relay is activated to disconnect the battery from the motor, the motor circuit is disabled. A relay is activated to disconnect the battery from the motor.

The smart circuits automatically check battery voltage every five minutes by disconnecting the charge and placing a resistance load on the battery. If the battery is weak, the fuse will blow. If the fuse does not blow, the fuse is in place. The electronic timer then resets, allowing repeated motor operation attempts.

**Options**

- Auto-Actuate™ options for transfer switch without special RTU programming
- 150 amp-hour capacity battery pack for solar applications
- Stainless steel enclosure
- Stainless steel mounting plate
- 132 volt battery pack
- 3 breakers for connecting the ADM0 to AC power source and voltage and current sensors
- Battery pack for TS transfer switch (after the low battery voltage alarm), the motor operator is disabled. The No-Go function prevents underpowered and inaccurate switch operation. A No-Go status is delivered through the RTU.

**Other Information**

- Detailed technical specifications are available upon request
- Customized outline drawings are provided to capture customer specifications under one style number for easy ordering.
**Automated Distribution Motor Operators (ADMO)**

**Application**

The Cleveland/Price Automated Distribution Motor Operator (ADMO) is designed for remote opening and closing of group distribution and transmission switches. It is available in five models to match all switching requirements.

**General Description**

The ADMO is electrically operated and has provision for manual operation. The mechanism in motor-driven and does not use hydraulic in its operation. A single 12-volt, 33-amp-hour battery supplies power to the operator's motor, as well as the customer's radio and disconnecting fuses. An electronic control module provides charger power, the battery can typically maintain RTU operations for 15 hours. Without AC source, a solar panel can be wired directly to the ADMO's optional solar input terminals on the BT-T, BT-TF, and BR-T models. A regulating charger is part of the ADMO's electronic control module for solar applications. The solar charging system has a 75-amp capacity.

**Power Train**

The ADMO is driven by a universal, AC/DC-series motor that is in line with the power train. A planetary gear train is used in the motor control circuit. This gearset ensures the motor will not start during manual operation. The electronic interlock circuit is reset when the motor control circuit is reset through a status indicator.

The decoupling mechanism allows the motor operator to be operated locally or remotely. A selector switch located on the front control panel sets the operating handle interlock position. The decoupling mechanism can be used for local or remote operation of the operator for ease of access. Four auxiliary switch contacts are provided for control module input signals. Four auxiliary switch contacts are provided for control module input signals.

**ADMO Battery**

The battery supplied in the ADMO is a sealed lead-acid, which is completely sealed. It has a pressure relief valve that allows for continued gas release actions. The ADMO also facilitates on-pole maintenance and manual traffic, as well as adjacent structures. The reduced size of the ADMO provides a savings in both space and material costs.

**BT-D Torsional Motion Distribution Class**

- **Power Train**
  - Electrically interlocked with status indicator
  - Manual operation
  - Lock-out point
  - Decoupler pin
  - Selector for handler operation
  - Battery fuse
  - Thermosulator
  - Power module with battery charger
  - Input voltage: 120 V AC
  - **Charge**
    - Auxiliary switch
    - Motor
    - Stainless steel, powder coated
    - Battery cooling system
    - Battery charger
    - **Function**
      - Open door stop
      - Spare fuse
      - Stainless steel, powder coated
      - Dimensions: 35" H x 10" W x 12" D

**BT-TF Torsional Motion Distribution Class**

- **Power Train**
  - Electrically interlocked with status indicator
  - Manual operation
  - Lock-out point
  - Decoupler pin
  - Selector for handler operation
  - Battery fuse
  - Thermosulator
  - Power module with battery charger
  - Input voltage: 120 V AC
  - **Charge**
    - Auxiliary switch
    - Motor
    - Stainless steel, powder coated
    - Battery cooling system
    - Battery charger
    - **Function**
      - Open door stop
      - Spare fuse
      - Stainless steel, powder coated
      - Dimensions: 35" H x 10" W x 12" D

**BT-T Torsional Motion Distribution Class**

- **Power Train**
  - Electrically interlocked with status indicator
  - Manual operation
  - Lock-out point
  - Decoupler pin
  - Selector for handler operation
  - Battery fuse
  - Thermosulator
  - Power module with battery charger
  - Input voltage: 120 V AC
  - **Charge**
    - Auxiliary switch
    - Motor
    - Stainless steel, powder coated
    - Battery cooling system
    - Battery charger
    - **Function**
      - Open door stop
      - Spare fuse
      - Stainless steel, powder coated
      - Dimensions: 35" H x 10" W x 12" D
Automated Distribution Motor Operators (ADMO™)

Application
The Cleveland/Price Automated Distribution Motor Operator (ADMO™) is designed for remote opening and closing of group of overhead switches in distribution and transmission systems. It is available in five models to match all switching requirements.

General Description
The ADMO™ is electrically operated and has provision for manual operation. The mechanism in motor driven and does not use hydraulic in its operation. A single 10-volt, 33-amp hour battery supplies power to the motor operator, as well as customer’s radio and remote winterization units. A power module is also provided to accommodate RTU’s requiring 24 volts DC.

ADMO Battery
A single 12 volt, 33 amp-hour battery supplies power to the ADMO mechanism. The battery and charger statuses are wired to the ADMO’s electronic control module for solar applications. The solar charging system has a 30 ampere capacity. The solar charging system is local to the ADMO’s electronic control module for solar applications. The solar charging system has a 30 ampere capacity.

Power Train
The ADMO™ is driven by a universal, AC/DC series reversible motor. The motor is electronically interlocked to prevent the motor from operating during manual operation even when the unit is mounted high on the pole. The user-friendly design makes all internal components easily accessible.

Operational Characteristics
The ADMO™ has a “battery manager” charging circuit that will not disturb the position of an adjacent cam. No tools are necessary for status indication. The auxiliary switches are adjustable independently. The insulation of the printed circuit boards is conformal coated with a variety of coatings to prevent electrostatic voltages in accordance with ANSI C37.90.1 and Mil. Std. DOC-HDBK263.

Circuit Boards and Connectors
The control circuits and power circuits are located on printed circuit boards to segregate high voltage and low voltage. The printed circuit boards are conformal coated to withstand ionizing radiation. Open disk stops, disconnecting fuses, and disconnecting fuses are provided for operator safety. The handles for manual operation are removed from the circuit, the handles interlocks switch opens the motor control circuit. This circuitry ensures that the motor will not operate during manual operation. The control circuit is isolated from the AC motor circuit by a double interlock switch is reported through a status indicator.

Surge and Electrostatic Protection
A thermostatically controlled 250 watt heater is provided in all ADMO™ units. The heater runs on a 120 volt AC source. The ADMO™ has a “battery manager” charging circuit that will not disturb the position of an adjacent cam. No tools are necessary for status indication. The auxiliary switches are adjustable independently.

Type BR, BR-T Reciprocating Motion Distribution (Type BR) Transmission (Type BR-T)

Power Train
The ADMO™ is driven by a universal, AC/DC series reversible motor. The motor is electronically interlocked to prevent the motor from operating during manual operation even when the unit is mounted high on the pole. The user-friendly design makes all internal components easily accessible.

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**Type BR, BR-T Reciprocating Motion Distribution (Type BR, Transmission Type BR-T)**

- **Power Train**
  - The ADMO is driven by a universal, AC/DC series motor. The maintenance-free motor is wound in-house.
  - A patented dynamic braking circuit is used to eliminate any excessive reverse stopping point in both the open and closed positions.
  - The decoupling action is initiated when the correct overhead switch position is selected from the control switch assembly.

- **Charging the Battery**
  - The battery used in the ADMO is a lead acid type battery.
  - The battery is charged through a regulating charger that adds the correct amount of charge.

- **Auxiliary Switches**
  - The ADMO’s auxiliary switch assembly is located on the motor for ease of access. Four auxiliary switch contacts are available on the switch mode. The locking on-notch, reset, and open status types are used for status indication. The auxiliary switches are adjustable through 360° without preset incrementing.

**Type BT-D Torsional Motion Distribution Class**

- **Power Train**
  - The motor is an electronically actuated reversible motor. The maintenance-free motor is rated ¾ horsepower.

- **Charging the Battery**
  - A thermostatically controlled 250 watt heater is provided on separate boards to segregate high voltage and low voltage circuits.

- **Auxiliary Switches**
  - The auxiliary switch assembly is located on the motor for easy access. Four auxiliary switch contacts are available on the switch mode. The locking on-notch, reset, and open status types are used for status indication. The auxiliary switches are adjustable through 360° without preset incrementing.

**Automation Services**

- **Power Train**
  - The ADMO is driven by a universal, AC/DC series motor. The maintenance-free motor is wound in-house.
  - A patented dynamic braking circuit is used to eliminate any excessive reverse stopping point in both the open and closed positions.
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**Contact Us**
For more information on how we can help your organization, please contact us at Automation@ClevelandPrice.com or 1-888-942-0349.
The ADMO design incorporates the following critical features that are essential for automatic reliability. No other motor operator offers all of these important traits.

**Dual Power Source for the Motor**

The ADMO operator receives its power from 120 or 240V AC with a primary power source. When AC power is applied, the battery will remain charged. When the battery voltage is less than 10V, the motor operator is powered by AC only. If AC power is lost, the motor operator will switch to DC power, and will continue operating. The motor operator will remain powered by DC until the battery voltage is restored.

**Automatic Load Disconnect**

If the battery voltage is less than 10V, the motor operator will switch to DC power, and will continue operating. The motor operator will remain powered by DC until the battery voltage is restored. Under the battery loads of the radio and RTU, battery power is supplied to the motor operator. When the battery voltage is less than 10V, the motor operator will switch to DC power, and will continue operating. The motor operator will remain powered by DC until the battery voltage is restored.

**Stall-Out Timer with Auto-Reset**

If the motor operator is stalled (because of ice or switch mechanical problems) the unit stops trying to operate before the fuse blows. The control circuit is disabled. A status point is provided to verify the remote ready state. This status indication can be added if the RTU is capable. The ADMO also has the capability to invert the status indications by changing the setting of a DIP switch.

**Motor Operators for Transmission Class stations**

The ADMO incorporates the following critical features that are essential for automatic reliability. No other motor operator offers all of these important traits.

**Control Circuit**

The ADMO design incorporates several "smart" electronic circuit features. An electronic circuit is built into the control circuit for locked switch conditions caused by ice or switch mechanical problems. The electronic circuit monitors the status of the switch and provides a status point to verify the remote ready state. This status indication can be added if the RTU is capable. The ADMO also has the capability to invert the status indications by changing the setting of a DIP switch.

**Types BR, BR-TF, BT-D, BT-T, and BT-TF Motor Operators for Transmission and Distribution Automation**

- **ADM0™ Advantages**
  - The ADMO incorporates the following critical features that are essential for automatic reliability. No other motor operator offers all of these important traits.
  - **Dual Power Source for the Motor**
  - **Automatic Load Disconnect**
  - **Stall-Out Timer with Auto-Reset**

**Options**

- Auto-Actuate™ options for transfer switching without special RTU programming
- 120 amp-hour capacity battery pack for solar applications, 12VDC operating capability in cloudy weather
- Factory installation and wiring of customer's RTU and radio
- 132 amp-hour capacity battery pack for solar applications to extend operating capability in cloudy weather
- Auto-Actuate™ options for transfer switching without special RTU programming

**Other Information**

- Detailed technical specifications are available upon request
- Customized outline drawings are provided to capture customer specifications under one style number for easy ordering.

**www.clevelandprice.com**

**Cleveland/Price Inc.**

1400 N Rd, Trafford, PA 15085 (724) 864-4177

1400 N Rd, Trafford, PA 15085 FAX (724) 864-9040
Auto Actuate Control Circuit programming of the RTU or the optional Additional functions can be added to the ADMO through to perform programming for basic operator functions. control the operation and the range of motion of the motor utilizes discrete logic chips and auxiliary switches to repeated motor operation attempts.

fuse blows. The electronic timer then resets, allowing timer automatically shuts off the motor before the battery contact welding. After a prescribed duration of stall, the operation with a swing handle. The BT-T also can be operated with an electrically

momentum to engage a latching mechanism, the faster BT-TF operator should rotation with a force output of 17,000 in. lbs. For switches that require high the BT-T and the BT-TF. The BT-T operates at a speed of 3.4 seconds for 180°

he transmission class torsional ADMO operators are available in two models,™ which provides transfer switch functions.

a swing handle.

is restored, the battery is automatically reconnected. voltage drops to 11.2 volts. When AC power for charging the RTU and radio from the circuit when the battery To prevent battery damage, an "auto-disconnect" isolates the unit becomes inoperable to prevent an underpowered signal is activated. If AC is not present under "No-Go", signal is activated. If the ADMO charging circuit loses its power source, a loss of charge alarm is activated. If the charging source is test for an extended period of time, the RTU and radio will continue to draw current and thereby drain the battery. To prevent battery damage on an "auto-disconnect" operates on a principle where the battery voltage drops to 11.2 volts. When AC power for charging is restored, the battery is automatically reconnected.

Customer’s RTU

Customer’s radio

20:1 geared handcrank

Torque relief decoupler

mounting

Strap or bolt hanger

Control Circuit

For the most reliable operating system, the ADMO utilizes discrete, logic chips and auxiliary switches as components of its primary power source. The discrete components are hardwired into an unchangeable sequence of operation, eliminating thanked to perform programming for basic operator functions. Additional functions can be added to the ADMO through programming of the RTU or the optional Cleaveland Price Auto-Actuate™ which provides transfer switch functions. The ADMO design incorporates several “smart” electronic circuit features. An electronic timer is built into the circuit for locked switch conditions caused by ice or contact welding. After a prescribed duration of stall, the motor operator will automatically stop trying to operate. The circuit is designed to be safe and convenient, offering the operator a quick return to service. The electronic timer then resets, allowing the operator to resume normal operation. All loads are dropped when the ADMO is supplied with the optional solar charging system. There are no pinch-points during operation, making the ADMO a perfect linear motion from the top of the enclosure. A blown fuse would make the unit inoperable and require the operator to check the fuse location. After a prescribed duration of stall, the motor operator will automatically stop trying to operate. The circuit is designed to be safe and convenient, offering the operator a quick return to service. The electronic timer then resets, allowing the operator to resume normal operation. All loads are dropped when the ADMO is supplied with the optional solar charging system. There are no pinch-points during operation, making the ADMO a perfect linear motion from the top of the enclosure. A blown fuse would make the unit inoperable and require the operator to check the fuse location.

Options

• Auto-Actuate™ options for transfer switching without special RTU programming
• 120 amp-hour capacity battery pack for solar application
• Dual Power Source for the Motor Operator

The Battery is monitored almost continuously using a "smart" circuit. A 12-amperes load is applied to the battery every five minutes and the battery voltage is measured with the battery charger off. The test duration is very small compared to the 5-minute load applied during the testing is done automatically, there is no need for the customer to implement a system to periodically perform a battery test.

Automatic Load Disconnect

Under the battery loads of the radio and RTU, battery voltage will sag below AC battery. All loads are dropped when the automatic load disconnect threshold voltage is reached. This feature is especially important when a motor caused extended loss of AC, as many batteries can be ruined when the ADMO is supplied with the optional solar charging system. There are no pinch-points during operation, making the ADMO a perfect linear motion from the top of the enclosure. A blown fuse would make the unit inoperable and require the operator to check the fuse location.

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If the motor operator is stalled (due to ice or switch mechanical problem) the stall stops trying to operate after the fuse blows. The circuit is designed to be safe and convenient, offering the operator a quick return to service. The electronic timer then resets, allowing the operator to resume normal operation. All loads are dropped when the ADMO is supplied with the optional solar charging system. There are no pinch-points during operation, making the ADMO a perfect linear motion from the top of the enclosure. A blown fuse would make the unit inoperable and require the operator to check the fuse location.

Motor Operators for Transmission Automation

Types BR, BR-T, BT-D, BT-T, and BT-TF

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