

*Motorpact™  
Medium Voltage Motor Controller*

Innovative solutions that deliver  
high performance and reliability



## *A tradition of trusted innovation*

*For one hundred years, the Square D® brand has provided leading edge power and control solutions that not only help our customers operate safely and efficiently, but help them to improve their business. With the line of Motorpact™ Medium Voltage Motor Controllers, we're proud to say we've done it again.*

*Designed and manufactured to tackle the toughest power and process control challenges, our motor controllers feature industry-first innovations that provide unmatched performance, high reliability, low maintenance and exclusive technologies.*



## Take a look at the advantages . . .

### Protection Focus

- Safety interlock (prevents the opening of the high voltage compartment door, unless the isolation switch is open and grounded)
- Grounded position on isolation switch
- Encased isolation switch eliminates line side shutters
- Compartmentalized enclosure design
- Available with arc resistant enclosure
- Available with cable grounding switch

### Reliability

- Isolation switch and cradle assembly consist of molded housings and conductor castings allowing fewer bolted connections and parts
- Third-party certified by KEMA and UL
- Transparent Ready with real-time access to meter readings and other data
- Rugged 11-gauge construction

### Ease of Use

- Low voltage control and metering at eye level
- Easily accessible cable terminations
- Isolation switch has viewing window at eye level (light optional)
- Provisions for easy electrical testing
- Modular design can be shipped in up to 5-bay shipping splits
- Available with front or rear access

### Reduced Maintenance

- Vacuum contactor is capable of 2.5m mechanical operations
- Vacuum contactor is connected via a rail with an insertion and removal system and is lightweight at less than 61 lbs (27 kgs) for 450 A and 76 lbs (34 kgs) for 720 A
- Isolation switch with maintenance-free contacts capable of 5000 operations
- Available with thermal diagnosis system
- Main bus bar mounted directly on switch (fewer bolted connections)

### Compact Footprint

- Ideal for retrofit applications
- Allows maximum use of available space

### Codes and Standards

- NEMA ICS 3
- UL347
- ANSI C19.7
- IEC 60470
- EEMAC G14-1, Arc Resistant (optional)
- ANSI C37.20.7, Arc Resistant (optional)
- IEC 62271-200, Arc Resistant (optional)

### Applicable Certification

- cULus, KEMA Labs to IEC requirements

### Controller Applications

- Motor starting
- Transformer feeders
- Capacitor bank feeders

### Designed with Optional Accessories You Can Use

- Sepam Series 20/40/80 Protective Relays
- DT1 Thermal Busbar Monitoring System
- Transparent Ready enabled real-time web pages for Powerlogic devices
- Fuselogic fuse tripping and monitoring system
- Cable ground switch
- Live line Indicators
- Lightning Arresters
- Power Factor Correction Capacitors
- Incoming Section
- Voltage Transformer Section



Whatever your application, wherever you are in the world, the Motorpact™ Medium Voltage Motor Controller meets your needs.

# The difference is in the details

Compartmentalized design provides a greater level of protection by preventing inadvertent access as line, load, and control compartments are isolated from each other.

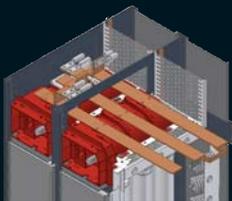
- Provides added protection from accidental exposure to voltage
- Available in NEMA 1 and 1A construction.
- Available with arc resistant design of cubicle: 25 kA 1 second; 50 kA 0.25 second



Full voltage controllers or main contactor section are available in three widths 14.75", 20" or 29.5"



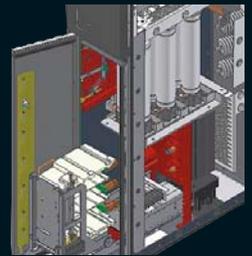
Modular design can be shipped in up to 5-bay shipping splits



Main horizontal power bus is contained within the standard 90-inch controller height.

Main bus bar mounted on switch terminals

Main bus up to 3000 Amps



Easy access and removal of contactor

- Drawout Design
- Drawout rail system inserts and removes contactor from primary stabs, requiring no special tools
- Lightweight at less than 61 lbs (27 kgs) for 450 A and 76 lbs (34 kgs) for 720 A
- Control is provided through a self aligning automatic secondary plug
- Contactor is separate from primary fuses

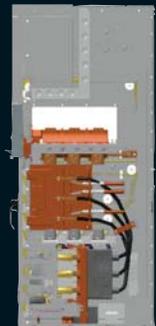
Easy access to low voltage compartment at eye level

Optional cable ground switch mechanically interlocked with main switch



Encased non-load-break isolation switch saves time and expense with maintenance-free main contacts and ground switch contacts for the life of the switch.

- Offers physical isolation (barrier) between busbar compartment and load compartment
- Prevents access to load compartment until open and grounded visible contacts
- Provides positive open/ground and close positions
- Switch is encased in an arc resistant and flame retardant housing with the line side stabs isolated
- No shutters required to isolate line side stabs
- Standard viewing window for position indication with optional interior light



Front and rear access to cable terminations

Bottom and top cable entry

Full height cable compartment

## Available Controller Types

### Full Voltage Controllers

- Squirrel Cage
- Latched Controller

### Reduced Voltage Controllers

- Motorpact Soft Start™
- Autotransformer



*Reduce Energy Costs.  
Increase Equipment  
Utilization. Improve  
Critical System  
Uptime.*

**Transparent  
Ready™**

Web-enabled Power & Control

Motorpact MV Motor Controllers are available ready-to-connect to existing Ethernet network (web-enabled). The technology is called “Transparent Ready™ web-enabled power and control” and is designed to easily and affordably deliver valuable power system information to any authorized PC through a local area network. All of this via a standard web browser, such as Internet Explorer™. To connect, users just need a network IP address and a PC with a web browser. No additional hardware or software is needed.

The Transparent Ready user interface is easy to learn because it runs on an existing browser. After a simple security logon, the main menu shows all the pages available. Users don’t need to learn new software, so training time is reduced to zero!

Transparent Ready Motorpact Motor Controllers also deliver information that helps reduce energy costs and production losses caused by unscheduled maintenance and emergency downtime. And it is easy and affordable.

### Main Metering Status

Transparent Ready Motorpact Motor Controllers allow users to view meter readings in real time, without having to walk the entire facility. Plus, users can access a running minimum/maximum history, which can help users spot abnormal conditions.

## *Full Voltage Controller*

Used for full-voltage starting and stopping of AC motor applications at 2300 V and above, this controller provides:

- Motor overload and short circuit protection in one package
- Incoming line connection
- Control power transformer (115 volt secondary)
- Magnetic three-pole vacuum contactor (Mechanically latched types are also available.)
- Run-Test Circuit

## *Reduced Voltage Autotransformer Controller*

Providing the highest torque per ampere of line current, this controller provides:

- An inherently closed transition type, to full voltage running
- Voltage taps, which permit the adjustment of starting voltage, allowing the customer to adjust the starting voltage to suit the system capabilities
- Acceleration times up to 30 seconds for medium duty, making it suitable for a long starting period
- Motor current is greater than line current during starting, which produces positive acceleration of the motor load and reduces the demand on the system

## *Reduced Voltage Soft Start Controller*

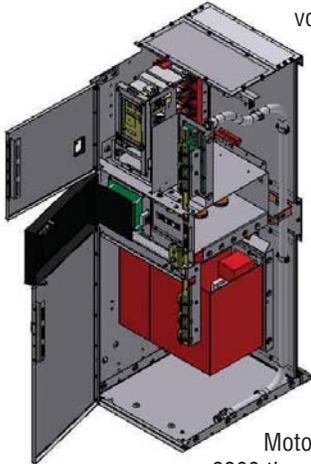
Motorpact Reduced Voltage Soft Start™ (RVSS) Motor Control units provide:

- Pre-engineered, integrated motor control package for reduced voltage starting and soft stopping
- Allow customer to fine tune the starting parameters to meet a wide variety of unique load conditions
- Offers a better alternative to traditional reactor or autotransformer type reduced voltage starters



## Motorpact Reduced Voltage Soft Start™ (RVSS)

The Motorpact RVSS is a microprocessor-based controller that provides the benefits of reduced current inrush (and resulting voltage drop) and reduced mechanical shocks that can result from starting a motor across the line. The SCR Power Modules (one for each phase) are used to provide smooth acceleration and deceleration control of a three-phase AC induction motor. Control algorithms are incorporated controlling motor voltage, current, and torque output to ensure smooth rotation throughout the starting ramp without mechanical instability at the end of starting. The Motorpact RVSS uses voltage ramp with current limit to control motor torque performance. The torque control provides accurate and repeatable acceleration and deceleration. This feature allows for linear speed ramp without tachometer feedback and reduces the temperature rise of the motor.



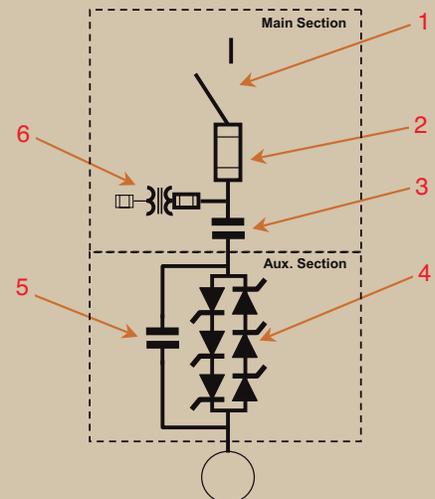
Motorpact RVSS units are available from 2300 through 7200 volts with horsepower ranges to 5000HP. The RVSS is available as a stand-alone starter or can be incorporated in a lineup with other Motorpact units. The NEMA 1 or NEMA 1 Gasketed units are totally enclosed, dead front construction offering a high level of protection. Arc Resistant enclosures providing a degree of protection (Type B) around the perimeter, for enhanced equipment and personnel protection is also available.

Key benefits of this controller include:

- Reduced torque during start, which:
  - Prevents damage to material in process
  - Can increase the life of machines and reduce down time
- Reduced current peaks on the supply during starting, which:
  - Reduces plant capacity requirements
  - Reduces voltage sag on installations with limited capacity
  - Eliminates side effects on other equipment driven from a weak supply
- Smooth acceleration and deceleration independent of fluctuations in motor load:
  - Ideally suited for most fans, centrifugal pumps or other variable torque loads
  - Can eliminate water hammer even on difficult pumping applications
- Advanced protection for the motor and the installation, including:
  - Starter SCR temperature
  - Shorted SCR
  - Blown Fuse Indication
  - Phase Reversal
  - Phase Imbalance
  - Overload Protection
  - Thermal Capacity
  - Under Current/Load Loss
  - Jam Protection
  - Coast-Down Deceleration
  - Starts-per-Hour Protection
  - Time Between Starts (motor cool down)
- Metering functions to determine equipment utilization:
  - Motor Load
  - Current and Thermal Data
  - Start Data
  - RTD Data
  - Kilowatts and Kilowatt Hours
  - Kilovars
  - Power Factor
  - Optional: Transparent Ready (Instant access to real-time web pages)

### Features include:

- 1 Non-Load Break isolation switch
- 2 Current Limiting Short Circuit protection
  - Class R Power Fuses
- 3 Vacuum Isolation Contactor
- 4 SCR Module (Per Phase)
  - 6 SCR, 12 SCR, or 18 SCR (Model Dependent)
  - RC Snubber dv/dt Network (Per SCR Module)
- 5 Vacuum Bypass Contactor
- 6 Control Power Transformer
  - Primary Fusing
  - Secondary Fusing



# For a system-wide solution . . .

. . . combine the Motorpact™ Medium Voltage Motor Controller with these electrical distribution and control products from Square D®.

## Protective Relays – Powerlogic® Sepam Series 20/40/80



Whether you are looking for a simple protection relay or a multifunctional, communicating protection unit for remote network management and operation, you will find the right solution in the new Powerlogic® Sepam Series 20/40/80 protection devices. Providing the best possible protection while minimizing false operation, comprehensive testing in the Sepam relay reacts to internal faults with fail-safe position switching and watchdog relay indicators. In addition, the modular design of this relay ensures that changes, such as the addition of communications, digital I/O, analog output or

temperature acquisition, can be made quickly and easily. Plus, this modularity allows the system to be reconfigured as the system grows or the requirements change.

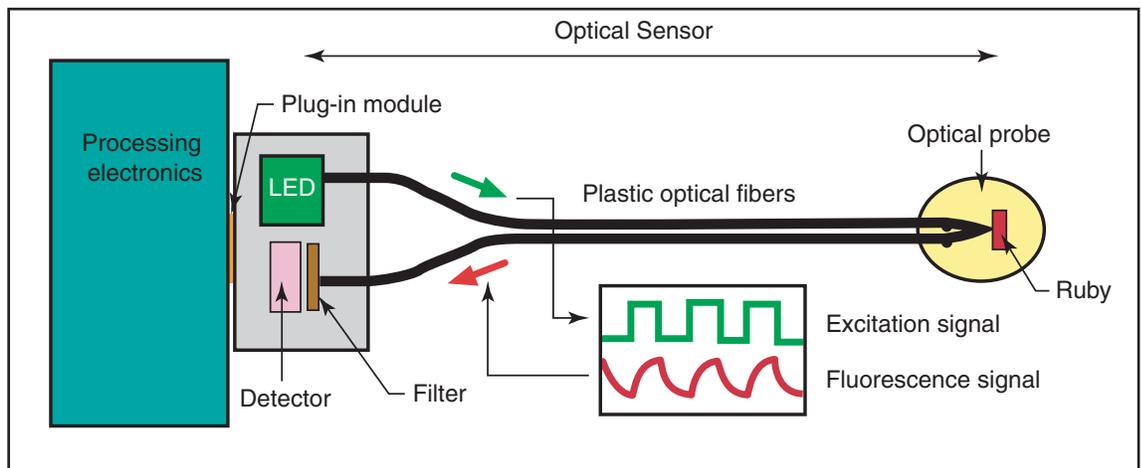
Sepam relays provide protection (against phase-to-phase and phase-to-ground short-circuits and overloads) with optional temperature monitoring (typically 1 resistance temperature detector [RTD] per motor winding + motor & load bearings + 1 RTD for ambient compensation of overload protection), 2 set points per RTD: alarm/tripping).

## Temperature Monitor DT1

The DT1 module continuously monitors power circuit temperature build-up, measuring it in relation to the ambient temperature. When overheating occurs, indicating the presence of an abnormal resistance in the power circuit, the module triggers an alarm.

The DT1 monitors conductor temperature in two 3-point zones. Each zone provides sensor inputs to the LV module. These inputs are optically isolated. Sensors are located at the Top Fuse Holders and optionally may be located at the Load Terminals. These are factory determined positions. Two alarm levels are available on the module.

### Operating principle\* of the DT1 module



\*The Schneider Electric patented system is based on sensors made of sensitive material whose fluorescence time is temperature dependent. Via a fiber optic pair, an electronic module controls the transmission of calibrated light pulses and calculates the temperature according to the pulses received in return.

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