



## Type of Load

3 Phase AC induction motors

## Ambient Conditions

0 to 50°C, 0 to 90% relative humidity  
Up to 10,000' elevation (3000m) w/o derating

## LED Alphanumeric Display

High brightness 7-segment display can be seen in high ambient light conditions.  
4 digit display allows display of high values

## Power Wiring

Feed through or external CT lead feed-through

## AC Supply Voltage (Motor Voltage)

**Direct:** 200-600VAC, +/- 10% 50/60Hz  
**With 120V PTs:** 690-15, 000VAC

**Service Factor** (for NEMA design motors)  
1.00-1.30

## LED Status Lights

10 LED indicators on the front panel give relay status or quick reference for the alphanumeric display.

## Packaging

Open panel mount with DIN rail clips (IP00)

## Current Ranges

1-2000 Amps

## Current Measurement

2 window CTs on units up to 5A  
External CTs for larger ranges  
Meets NEC requirements for leg protection

## Full Function Keypad

4 quadrant navigation keys provide easy access to status information and programmable functions.

## Operator interface

Built-in, or remote mount up to 6ft (1.8m) away

## CONTROL SYSTEM

### Control Voltage

Universal control voltage supply  
85-265VAC or DC, 50/60Hz

### Programmable Output Contacts:

1 Form C (SPDT) 5A, 240VAC max., +  
1 Form A (SPST) 10A max. 1/2HP @240VAC  
33 programmable functions

### 1 Multi-function Digital Input

Dry contact input for Timer Start, Remote Start, Remote Trip.

### 24 Hr 7 Day 7 Event Time Controller

Automatic Start for use with Batch Run Timer  
1 through 7 days/week  
1 through 7 Start events per day

### Fault Reset

Manual button on display, or  
Cycle control power for remote reset

### Batch Run Timer Control

Minimum Run Timer (Resumes timing if stopped)  
or Permissive Run Timer (Only runs during time)  
Time Setting: 1-9999 minutes

## PROTECTION SYSTEM DESIGN AND ADJUSTMENTS

### Overload Protection Method

Real-time Motor Thermal Modeling uses current sensors and microprocessor to continuously calculate motor temperature.

### Learned Dynamic Reset

Overload Trip will not reset unless motor has regained enough thermal capacity based on learned motor starting profiles.

### Phase Loss/Sequence Protection

Trips on any phase under 12% of Voltage.  
Sequence selectable A-B-C, C-A-B or Off

### Over Voltage Trip

Any phase voltage over trip level  
Of or 1-10% of set voltage, w/1-20 sec. delay

### Load Monitor (True Motor Power)

Under or Over kW trip or alarm  
Off, or 20-100% motor kW, w/1-20 sec. delay

### Equipment Ground Fault Protection

Electronic Residual current protection method, no additional CTs needed  
Setting: Off, 5-90% of CT w/1-60 sec. delay

### Starts-per-Hour Lockout

Programmable maximum starts-per-hour to prevent exceeding motor limits.  
Setting: Off or 0-10 start / Hr

### Retentive Thermal Memory

Remembers the thermal condition of the motor even if control power is lost. Thermal Register is adjusted for Off-Time when power is resumed.

### Programmable Service Factor

Service Factor setting automatically adjusts other settings to compensate.  
Adjustment Range: 1.0-1.15 SF

### Over-Current Trip

Electronic Shear-Pin / Shock Relay  
Setting: Off or 50-300% FLA w/1-20 sec. delay

### Under Voltage Trip on Startup

Off, or 1-30% of set voltage  
1-180 second startup time

### Power Factor Monitor

Leading or Lagging PF, trip or alarm  
Off, or 0.01-1.00, lead or Lag w/1-20 sec. delay

### Short Circuit / Shorted Load

Peak Current quick trip (electronic fuse)  
Trip level: Off or 800-1400% FLA, with .1-.5 sec. delay

### Minimum Time Between Starts

Used with or without Start-per-Hour protection to prevent short cycling of motor  
Setting: Off or 1-60 minutes between starts

### Dual Overload Curve Settings for RV start

Start Curve can be set to Class 5-30  
Run Curve can be set to Class 5-30  
Automatic Full Speed detection and change over

### Current Imbalance Protection

Provides monitoring of phase-to-phase current levels and trips if imbalance exceeds setting.  
Setting: Off or 1-30% FLA w/1-20 sec. delay

### Under-Current Trip

Load-Loss / Loss of Prime protection  
Setting: Of or 10-90% FLA w/1-60 sec. delay

### Under Voltage Trip at Full Speed

Off, or 1-30% of set voltage  
1-20 second trip delay

### Frequency Monitor

Over or Under programmed frequency  
Trip Setting: Off, or 1-10Hz, w/1-20 sec. delay

### Restart Delay Timer

Programmable delay for restarting after a power failure for use in multiple installations.  
Setting: 0-999 sec.

### Coast-Down Timer

Back Spin or Anti-Wind Milling protection  
Prevents Restart after Stop Command  
Time Setting: Off or 1-60 min.

## METERING AND DISPLAY SPECIFICATIONS

### Amp Meter for Each Phase

Default is Phase A  
 Scroll up or down for Phases B, C and Ground  
 0-9999A (999A for Ground), +/- 2% accuracy

### Volt Meter for Each Phase

0-600V, or 1-15kV, +/- 2% accuracy.  
 Average Voltage Imbalance %

### Fault Display

Alpha abbreviated English display  
 Shows fault code plus 10 LEDs indicate phase and trip status

### Thermal Capacity Meter

Real-time display of Remaining Thermal Capacity of motor after starting or running  
 0-100%, counts up while cooling

### Elapsed Time Meter

Running time from At-Speed detection.  
 Non-Resetttable except with password  
 0-9,999,999.9 hours

### Power Metering

kW, kWhr, kVA, kVAR, or MW, MWhr, MVA, MVAR. 0-9999 units +/- 2% accuracy

### Fault Event Recorder

Records previous 3 fault trips  
 Shown on display and stored in non-volatile memory

### Remaining Time Value Displays

View values of lockout timers such as Time Between Starts or Coast-Down,  
 View process timer or time clock values

### Run Cycle Counter

Counts starts (At-Speed) for maintenance  
 Non-Resetttable except with password  
 0-99,999,999 counts

### Power Factor Metering

Leading (Inductive) or lagging (capacitive)  
 0.01-1.00 PF

### Time and Date Stamps

Fault history stored with time and date stamps from Real Time Clock. Can be cleared with password protection.

### Remote Display Mounting

Display is built-into front of unit  
 Can be remotely mounted up to 10ft. away  
 NEMA 12 display membrane kit available

