

MPS 3000

Motor Protection Relay

The MPS 3000 is ideal for high voltage motors, large low voltage motors, and applications where full protection and advanced warning is crucial, such as in the process and chemical industries.

Monitoring three phase currents, voltages and up to 10 temperature inputs it provides the most comprehensive motor protection package.

New thermal capacity and overload calculation method as well as bias input from current imbalance (positive/negative sequence) and temperature sensors it ensure accurate modeling of motor condition.



Protection

- Max. Start Time (48)
 - Too Many Starts Level 1 (66)
 - Undercurrent Level 1 (37)
 - Undercurrent Level 2 (37)
 - Load Increase - Alarm (51L)
 - Over Current Level 1 – Jam (51R)
 - Over Current Level 2 – Short (50)
 - Thermal Capacity Level 1 (49/51)
 - Thermal Capacity Level 1 (49/51)
 - Current Imbalance Level 1 (46)
 - Current Imbalance Level 2 (46)
(Positive / Negative Sequence)
 - Under-voltage (27)
 - Over-voltage Level 1 (59)
 - Over-voltage Level 2 (59)
 - Phase loss (47)
 - Phase sequence (47)
 - Ground Fault Level during starting (50G)
 - Ground Fault Level 1 (50G)
 - Ground Fault Level 2 (50N)
 - Communication failure (3)
 - Internal failure (3)
 - External Fault 1 - interlock (86 or 94)
 - External Fault 2 - interlock (86 or 94)
 - External Fault 3 – interlock (86 or 94)
 - High Temp. Level 1, sensors 1-10 (49R)
 - High Temp. Level 2, sensors 1-10 (49R)
 - Under Power Level 1 (32L)
 - Under Power Level 2 (32R)
 - Low Power Factor (55)
- Level 1 & 2 can be used for Alarm & Trip or both for trip with different time delays

Protection function

Each protection can be designated as:

- * Alarm Fail-safe
- * Trip (or Trip Fail-safe)
- * Auto Reset
- * Panel Reset
- * Remote Reset

Inputs

- Control supply 120-230V, AC/DC
Optional 19-60VDC
- 3 phase voltage, directly up to 690V, Above 690V through PT
- Three phase currents C.T. Sec. 1 or 5A
- Ground current C.T. Sec. 1 or 5A
- 10 temperature sensors, with two types:
 - * 10 RTD-Pt100 (or CU)
 - * 6 RTD-Pt100 (or CU) and 4 Thermistors
(Programmable as NTC or PTC)
- 4 Programmable discrete inputs
- 4 Programmable Analogue Inputs 0/4-20mA. (0-1mA by special order). Selection between 20 parameters

Outputs

- 4 Programmable Relays 8A, 250VAC.
- Four Programmable Analogue Outputs, 0/4-20mA (0-1mA by special order) Selection between 20 parameter).

Emergency Start (key operated function)

Canceling the Thermal Capacity and Too Many Starts limits to allow emergency restart after fault.

Settings

Can be done through LCD and keypad on front panel, through

Display - LCD

Large LCD, 150mm x 30mm (6" x 1").
(On vertical version the LCD dimensions are slightly smaller).

Measured values (True R.M.S. at a sampling rate of 0.5msec.).

- Three phase voltage phase to phase
- Three phase voltage phase to neutral
- Current each phase
- Ground current
- Temperature / Resistance each sensor
- Energy with programmable pulse output
- Power, Reactive power, Power factor
- Minimum & Maximum RMS Average value (three phases) of Voltage, Current and Frequency

Calculated data

- Motor current in % of FLC
- Imbalanced current
- Thermal capacity
- Time to trip
- Time to start (after fault)

Statistical data

- Total run time
- Total number of starts
- Total number of trips
- Last start time period
- Last start current peak
- Energy

Fault data

- Last trip
- Last alarm
- Trip current each phase
- Trip earth fault current
- Trip voltage (each phase)
- List of last 10 trips with time stamp (Date, Hour, Minutes).

Dimensions

Type	Dimensions (mm)			Weight Kg
	W	H	D	
MPS 3000	310	135	160	3.3

Display - LEDs

- * On
- * Stopped
- * Starting
- * Running
- * Relay A
- * Relay B
- * Alarm
- * Trip
- * Internal Failure

Communication

RS 485, half duplex, MODBUS Protocol, baud rate 1200-19200 bits/sec. enables parameter change, supervision and remote resetting. 20 user-selectable parameters grouping of Actual Data.
Other protocols (plug-in board) – consult factory.

Real Time Clock

Time stamp for each fault – Date, Hour and Minute.

Fault Simulation

Simulation of voltage, currents and temperature faults enables relay testing.
This simulation Program allows testing and self-learning of the MPS 3000.

Dimensions & Weight

Horizontal: W-310, H-135, D-160, 3.3Kg
Vertical: W-135, H-310, D-160, 3.3Kg

Available types

MPS-3000/P – Protection only system
MPR-3000/C – Protection & Control System

MPS-3000/C

Similar to the MPS-3000/P except with 16 discrete inputs to enable full control (start, stop, rotation direction change, etc.)
The MPS-3000 also incorporates two additional protection functions:

- Control Circuit Open (74)
- Welded Contactor (74)