

Limited Service Controller

For Electric Motor Driven Pumps



Limited Service Controllers with Automatic Transfer Switch



Series MP30 with MTS - Combined Manual and Automatic

Metron MTS Automatic Transfer Switches provide operation of Limited Service Pump motors from an alternate source of power when the normal source fails. These transfer switches are a part of the Limited Service pump controller; although mounted in a separate compartment, they are factory assembled, shipped and installed as a part of the controller.

The combination Limited Service controller/ transfer switch is listed by Underwriters Laboratories and meets all the latest requirements of NFPA 20 Standard for Installation of Centrifugal Fire Pumps. Use of this controller must be acceptable to the authority having jurisdiction.

The MTS Automatic Transfer Switch is a mechanically held double throw switch with a fast acting drive mechanism. Operating coils are momentarily energized from the source to which the load is being transferred. The switch is interlocked electrically and mechanically to prevent both services from feeding the load at the same time.

The transfer switch is capable of manual (non-electrical) operation.



Hubbell Industrial Controls, Inc.
Metron Fire Pump Control Division

Standard and Optional Features

Standard Features

Operator Interface Device (OID) with LED Annunciator and Digital Display



- NEMA Type 2 drip proof metal freestanding enclosure
- Operator Interface Device (OID) with 4 lines by 20 character display with large character backlit Liquid Crystal Display (LCD) capable of being read in both direct sunlight or dark lighting conditions
- 10 pushbuttons for easy screen navigation, LED lamp test, alarm reset, controller test and horn silencing
- Removable labels to allow for easy field language changes
- All controller settings are programmable through the OID. All features are enabled or disabled through the OID, no jumpers or external wires are needed which allows easy field modification
- The system status data is displayed on the OID. The displayed items include: System Pressure, Phase to Phase (AB, BC, AC) Voltage, Phase Current (A, B, C), Current Time and Date, System Events and Notifications such as Remote Start, Local Start etc., Number of Starts, Total Motor Run Hours, Time Remaining on Sequential Motor Start and Motor Stop Timers, Status of Automatic Stop Setting
- Auxiliary alarm functions displayed on the OID LCD screen
- Audible horn with silence feature for silencable alarms
- Lamp test feature
- Foreign languages selectable through the OID
- Microprocessor based logic with real time/date clock capable of running a minimum of 14 days without AC power connected to controller
- SD Memory card used to record pressure log, event log, and auxiliary user programs. Pressure log is stored in separate comma delimited ASCII text files with each file containing data for one day. The SD card is removable and can be read by any PC equipped with an SD card reader.
- Input and output status LED's provide visual indication of each discrete input's or output's on/off status
- One RS485 Serial Port
- MODBUS Communication Protocol via RS485 port
- Service Entrance Rated
- Automatic Transfer Switch: UL Listed for Fire Pump Service, sized at least 115% of motor full load current and shall conform to all requirements of NFPA 20 Chapter 10. It shall be installed in a barriered compartment of the fire pump controller. The complete assembly, controller and transfer switch, shall be shipped as a single unit.
- The Transfer Switch shall be supplied with a special circuit to prevent higher than normal starting currents when transferring from one source to the other. This circuit shall deactivate the fire pump motor five (5) seconds prior to transfer in either direction.
- Alternate Source Isolation Switch: Externally operable, quick break type sized at least 115% of motor full load current. Auxiliary contacts on the isolation switch shall be inter-wired with the engine start contacts to prevent starting of the engine should the isolation switch be in the open position. Shall be front mounted and wired for ease of maintenance and allowing the unit to be mounted flush against a wall.



HIGH VIBRATION
 GAS DETECTION
 EMERGENCY POWER ON
 PUMP ROOM DOOR AJAR
 LOW INTAKE

Data logging:

The controller includes two (2) separate data logs for storing system data that is readable through the OID or copied to a computer equipped with an SD card reader. The 2 data logs are as follows:

Pressure Log: The pressure log provides a continuous pressure record for 30 days. The pressure log samples shall be time and date stamped and stored in a permanent non-volatile SD memory card. The pressure log can be searched by each sample, by minute, or by hour through the OID.

Event Log: The event log will store up to 300 of the most current events. These events can include, but are not limited to, any of the following events/alarms:

- PUMP RUNNING
- POWER AVAILABLE
- PHASE REVERSAL
- MOTOR OVERLOAD
- REMOTE START
- LOCAL START
- PUMP ON DEMAND / FIRE CONDITION
- SYSTEM FAULT
- AUTO MODE
- MANUAL MODE
- OFF MODE
- PRESSURE TRANSDUCER FAULT
- FAILED TO START
- LOW INTAKE SHUTDOWN
- SUPERVISORY POWER FAILURE
- LOW PRESSURE
- AUTO WEEKLY TEST START
- UNDER FREQUENCY
- OVER FREQUENCY
- LOW ZONE / HIGH ZONE CONTACT
- HIGH DISCHARGE PRESSURE
- NO LOAD CONDITION
- HIGH VOLTS
- LOW VOLTS

Options

Option H: Space Heater

If the ambient atmosphere is especially damp, a space heater rated at 100 watts may be supplied to reduce moisture in the cabinet. A thermostat is supplied as standard with this option. A humidistat may be substituted if specified.

Option T: Weekly Test Start Solenoid

In some cases it may be desirable to have the electric motor run at a preset time each week for approximately 30 minutes. The controller includes a built in weekly test function. This option complements the standard function by simulating a loss of pressure. Simulation of pressure loss is accomplished by opening a solenoid valve, which reduces the system pressure below the starting pressure of the controller.

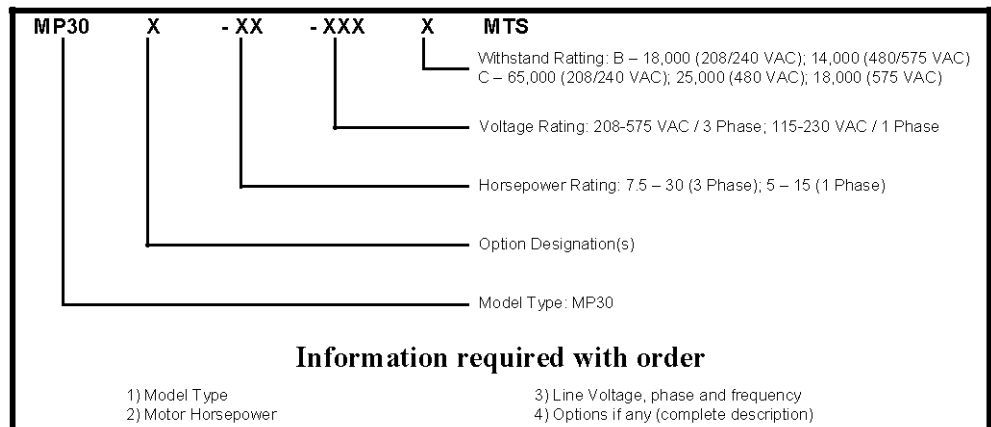
Option W: Omit Legs

For systems where the controller is mounted on a common skid with the pump and motor, the legs of the controller may be omitted, 3" (76.2mm) channels or wall mounting brackets can be supplied. If specified, lifting eyes may also be supplied.

Enclosure

The following NEMA type enclosures are also available: 3R, 4, 4X (Painted Cold Rolled Steel), 4X (304 or 316 Stainless Steel), and 12

MTS100A Power Transfer Switches		
Motor HP	Line Voltage	Catalog Number
7.5-30	208-575 VAC / 3 Phase	MTS100
5-15	115-230 VAC / 1 Phase	MTS100



Limited Service Controller

For Electric Motor Driven Pumps



Model MP30 Limited Service Across-the-line Start Electric Motor Controller with Dual Utility Transfer Switch

Specifications

The Limited Service Controller shall include the following standard features:

- NEMA Type 2 drip proof metal freestanding enclosure
- AUTO, MANUAL, TEST, and OFF mode buttons illuminated with colored LED's for controller mode operation
- Operator Interface Device (OID) with 4 lines by 20 character display with large character backlit LCD capable of being read in both direct sunlight or dark lighting conditions
- 10 pushbuttons for easy screen navigation, system test, lamp test, alarm reset, and horn silencing
- Multicolored LED's for alarm and mode annunciation
- LEDs shall be labeled with removable labels to allow for easy field modification if additional alarms and/or language changes
- All controller settings shall be programmable through the OID and shall be protected by two password levels
- All features shall be enabled or disabled through the OID, no jumpers or external wires shall be needed or allowed to activate or de-activate a feature
- The system status data shall be displayed on the OID. The displayed items shall include: System pressure, Phase to Phase (AB, BC, AC) voltage, Phase current (A, B, C), Current time and date, Number of starts, Total motor run hours, Displayed countdown timers for: Sequential motor start and motor stop, Status of Automatic Stop Setting.
- Audible horn with silence feature for silencable alarms
- Lamp test feature
- English or Spanish languages selectable through the OID
- Microprocessor based logic with real time/date clock capable of running a minimum of 14 days without AC power connected to controller and non-volatile flash memory to permanently store the continuous pressure log, event log, alarm log and all user changeable set points and system data. Battery backup of any kind not allowed.
- Input and output status LED's to provide visual indication of each discrete input's or output's on/off status
- One RS485 Serial Port
- MODBUS Communication Protocol via RS485 port
- All wiring terminals on PCB's shall be removable type
- Automatic Transfer Switch: UL Listed for Fire Pump Service, sized at least 115% of motor full

load current and shall conform to all requirements of NFPA 20 Chapter 10. It shall be installed in a barriered compartment of the fire pump controller. The complete assembly, controller and transfer switch, shall be shipped as a single unit.

- The Transfer Switch shall be supplied with a special circuit to prevent higher than normal starting currents when transferring from one source to the other. This circuit shall deactivate the fire pump motor five (5) seconds prior to transfer in either direction.
- Alternate Source Isolation Switch: Externally operable, quick break type sized at least 115% of motor full load current. Auxiliary contacts on the isolation switch shall be inter-wired with the engine start contacts to prevent starting of the engine should the isolation switch be in the open position. Shall be front mounted and wired for ease of maintenance and allowing the unit to be mounted flush against a wall.

Auxiliary alarms:

As standard the controller shall include 6 discrete auxiliary inputs, 9 form 'C' auxiliary relay outputs. These auxiliary inputs and outputs are in addition to those mandated by NFPA 20. All auxiliary inputs, outputs, and OID LED's shall be field programmable through the OID. This permits a multitude of customizable controller configurations to meet each installations unique needs without adding cost to the controller. The use of jumpers, soldering, or other external components are not allowed.

The user can select any 9 of the following auxiliary alarms that can be programmed and recorded in the event/alarm logs and annunciated with an LED and output relay contact for conditions such as:

LOW PUMP ROOM TEMPERATURE
RESERVOIR LOW
RESERVOIR EMPTY
RESERVOIR HIGH
FLOW METER ON
RELIEF VALVE OPEN
LOW SUCTION PRESSURE
HIGH PUMP ROOM TEMPERATURE
LOW FIREWATER PRESSURE
LOW PURGE PRESSURE
LOW GEAR OIL PRESSURE
HIGH GEAR OIL TEMPERATURE
HIGH VIBRATION
GAS DETECTION
EMERGENCY POWER ON
PUMP ROOM DOOR AJAR
LOW INTAKE

Data logging:

The controller shall have separate data logs for storing system data that is readable through the OID.

Pressure Log: The controller shall have a Pressure log with continuous pressure recording of 30 days of data. The pressure log samples shall be time and date stamped and stored on a removable SD card memory. The pressure log shall be searchable by each sample, by minute, or by hour. Each days entries shall be stored in a separate file on the SD card. SD memory shall be readable by any PC equipped with an SD memory card reader.

Event Log: The event log shall be capable of storing no less than 3000 events. These events shall include, but is not limited to, any of the following events/alarms:

PUMP RUNNING
POWER AVAILABLE
PHASE REVERSAL
MOTOR OVERLOAD
REMOTE START
LOCAL START
PUMP ON DEMAND / FIRE CONDITION
SYSTEM FAULT
AUTO MODE
MANUAL MODE
OFF MODE
PRESSURE TRANSDUCER FAULT
FAILED TO START
LOW INTAKE SHUTDOWN
SUPERVISORY POWER FAILURE
LOW PRESSURE
AUTO WEEKLY TEST START
UNDER FREQUENCY
OVER FREQUENCY
LOW ZONE / HIGH ZONE CONTACT
HIGH DISCHARGE PRESSURE
NO LOAD CONDITION
HIGH VOLTS
LOW VOLTS

Alarm Log: The Alarm Log shall be a separate subset of the event log and shall display the last 10 alarms recorded in the system.

Each event or alarm recorded in the either event log or alarm logs shall have the following data recorded with the event/alarm:

- Time and Date of Event or Alarm
- System Pressure
- Descriptive Text Message of the Event/Alarm
- Motor Running Status
- Phase to Phase Volts
- Phase Amps

The internal logic of the controller shall be capable of operation in a temperature range of 4.4°C to 40°C and high, non-condensing, humidity levels.

The controller shall be manufactured by Metron.