

Power Transfer Switches

For Electric Motor Driven Fire Pumps



Series MTS

Automatic Transfer Switch



Metron MTS Automatic Transfer Switch provide operation of electric fire pump motors from a alternate source of power when the normal source fails. They may be used with any Metron electric fire pump controller—Across the Line, Primary Resistance, Part Winding, Wye-Delta, Auto Transformer or Solid State Reduced Voltage Types. These transfer switches are an integral part of the fire pump controller. They are factory assembled, shipped and installed as a part of the controller.

The combination fire pump controller/transfer switch is listed by Underwriters' Laboratories', Factory Mutual, and meets all the latest requirements of Chapter 10 of NFPA 20 Standard for Installation of Centrifugal Fire Pumps.

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.

Under voltage sensing devices are supplied which monitor each phase of normal service. When the voltage of any phase falls below the pre-set level the transfer switch automatically transfers to the alternate source. Voltage and frequency sensing devices are provided to monitor one phase of the alternate source and will inhibit transfer to the alternate source until adequate voltage and frequency are available.

The transfer switch provides a special circuit that de-energizes the motor control circuit five (5) second prior to transfer in either direction to prevent high current transients due to an out-of-phase condition between the motor and the source to which it is being connected.

A contact is provided to actuate the engine starting circuit when normal source fails. To prevent false starts, a time delay (factory set at 1/2 to 3 seconds) is provided between normal source failure and actuation of the engine start contact.

An isolation switch ahead of the alternate source input terminals of the transfer switch is provided. When the switch is opened, auxiliary contacts in the generator start circuit prevent starting if commanded to by the transfer switch. An additional auxiliary contact on the isolation switch is provided for remote annunciation of isolation switch position.

An adjustable time delay (0-30 min.) prevents restoration to normal service for a pre-set period of time to assure normal line stabilization.

An auxiliary N.O. contact is provided for remote annunciation of transfer to emergency. This contact is operated by the transfer mechanism as a direct indication of switch position.

Pilot lights for indication of Switch in Normal position, Switch in Emergency position, and Emergency Isolation Switch in Off. Audible indication of Emergency Isolation Switch in Off is also included.

A test switch is also provided which simulates loss of normal power so that the transfer switch operation can be checked without interrupting normal service to the fire pump controller.



MP435 Fire Pump Controller with Automatic Transfer Switch

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Electric Motor Fire Pump Controller with Automatic Transfer Switch

Specifications

The 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 interwired 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 TEMP
RESERVOIR LOW
RESERVOIR EMPTY
RESERVOIR HIGH
FLOW METER ON
RELIEF VALVE OPEN
GAS DETECTION
LOW SUCTION PRESSURE
LOW HYDRAULIC PRESSURE
LOW FIREWATER PRESSURE
LOW PURGE PRESSURE
LOW GEAR OIL PRESSURE
HIGH VIBRATION
EMERGENCY POWER ON
PUMP ROOM DOOR OPEN

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:

MOTOR QUIT FAULT
MOTOR OVERLOAD
PHASE REVERSAL
PUMP FAILED TO START
LOW VOLTAGE
HIGH VOLTAGE
PRESSURE TRANSDUCER FAULT
PUMP ON DEMAND
LOW DISCHARGE PRESSURE
HIGH DISCHARGE PRESSURE
REMOTE START SIGNAL
DELUGE VALVE START
LOW PUMP ROOM TEMPERATURE
RESERVOIR LOW
RESERVOIR EMPTY
RESERVOIR HIGH
FLOW METER ON
RELIEF VALVE OPEN
GAS DETECTION
LOW SUCTION PRESSURE
LOW FIREWATER PRESSURE
LOW PURGE PRESSURE
HIGH GEAR OIL TEMPERATURE
LOW GEAR OIL PRESSURE
HIGH VIBRATION
PUMP ROOM DOOR OPEN

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.