



Medium Voltage Controller

SERIES MP600

Combined Manual and Automatic



The Metron Series MP600 High Voltage Fire Pump Controllers are a modular concept system, which utilize “state-of-the-art” vacuum bottle technology. The primary control element in the MP600 is a fixed mount style vacuum bottle contactor with isolating disconnect switch. Integral to the disconnect switch are “R” rated current limiting cartridge style fuses. Space is provided for storage of three spare fuses on the rear of the outer door. Two fused potential/control transformers (PTs) are also contained within the cabinet. These transformers provide both input signals to the monitor circuits as well as control power for the MP600. For testing purposes, it is possible to supply 120VAC power directly to the control section through a built-in test receptacle and test switch.

The MP600 has both front and rear access. Front access is for easy access to the control circuits. Rear access is provided for termination of the incoming power and termination of the motor connections. Incoming power and motor connections enter through the bottom of the controller enclosure. Locked rotor motor protection is provided by the microprocessor control unit per the requirements of NFPA 20. The microprocessor control unit also provides contacts for remote alarm of phase reversal, low voltage, single phase, loss of voltage, motor tripped, and motor overload. The Operator Interface Device (OID) has LED lamps for Power On, Power Failure, System Failure, Motor Overload, and Motor Tripped. The OID also displays three phase voltage and current along with system water pressure. The standard MP600 is supplied in a NEMA type 2 enclosure which is fabricated from 12 gauge steel. Minimum floor clearance of 12 inches (304.8 mm) is provided with allowances for floor anchoring.

The MP600 is protected with two hinged removable, gasketed doors, equipped with a 3-point latch, one door for the control section and one door for the high voltage section. Access to the vacuum contactor is provided by a lockable and interlocked second door, which requires the contactor to be disengaged from the bus prior to opening the door. Control wiring and components are accessible behind their own access door. Access to control components does not require motor de-energization. A solid copper ground bus is provided through the incoming high voltage and motor termination compartments.

Controllers are completely wired, assembled, and tested at the factory before shipment and ready for immediate installation.





Standard and Optional Features



Standard Features

- » 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 allowing 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 silenceable 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 and 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

Standard Auxiliary Alarms

The controller includes as standard six (6) discrete auxiliary inputs, nine (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 Display can be field programmed through the OID.

Nine (9) of the following auxiliary alarms can be programmed and recorded in the event/alarm logs and annunciated on the OID display screen and/or output relay contact(s). These alarm conditions include:

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





Standard and Optional Features

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 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 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
- SYSTEM FAULT
- PRESSURE TRANSDUCER FAULT
- PUMP FAILED TO START
- LOW INTAKE SHUTDOWN ALARM
- SUPERVISORY POWER FAILURE
- LOW PRESSURE
- AUTO WEEKLY TEST START
- UNDER FREQUENCY
- OVER FREQUENCY
- LOW ZONE/ HIGH ZONE CONTACTS
- HIGH DISCHARGE PRESSURE
- NO LOAD CONDITION

Model Number Designation

Example: MP600-H-100-2400C

MP600 -- Model Type

- **X** -- Option Designation(s)

- **XXXX** -- Horsepower Rating: 100-1900

- **XXXX** -- Voltage Rating: 2400-6600 VAC

Information required with order: 1) Model Type 2) Motor Horsepower 3) Line Voltage, phase and frequency 4) Options, if any (complete description)

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 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.

Consult factory for additional options.

Standard Short Circuit Ratings

VOLTS	KA
2400	50
3300	50
4160	50
6600	50





Specifications

General Controller Description

The Fire Pump Controller shall be factory assembled, wired and tested as a unit and shall conform to all requirements of the latest edition of NFPA 20 and by Third Party Listed by Underwriters Laboratories (UL) and Approved by Factory Mutual (FM). The controller shall be available for 208, 230, 380-415, 480, or 575-600 volt three phase power.

Controller Equipment Features

The controller shall include the following standard features:

- » NEMA Type 2 drip proof metal freestanding enclosure
- » 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 of 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 deactivate 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), System Events and Notifications, 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
- » Foreign languages selectable through the OID
- » One RS485 Serial Port
- » MODBUS Communication Protocol via RS485 port
- » All wiring terminals on PCB's shall be removable type
- » Service Entrance Rated

- » 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

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 screens 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 log and annunciated with an OID screen and output relay contact for conditions such as but not limited to:

- LOW PUMP ROOM TEMP
- 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
- GAS DETECTION
- 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:

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

Each event or alarm recorded in the event log 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 50°C and high, non-condensing, humidity levels.

Controllers shall be manufactured by Metron - A Division of Hubbell Industrial Controls, Inc.

www.metroninc.com



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