Firetrol MARK^{III+} Electric Fire Pump Controller

FTA2000 - Medium Voltage Across The Line Starting

Specifications

1.0 Main Fire Pump Controller

The main fire pump controller shall be a factory assembled, wired and tested unit. The controller shall be of the combined manual and automatic type designed for full voltage starting of the fire pump motor having the horsepower, voltage, phase and frequency rating shown on the plans and drawings. The controller shall be rated for an Ambient Temperature Operating Range of 39°F (4°C) to 104°F (40°C).

1.1 Standards, Listings & Approvals

The controller shall conform to all the requirements of the latest editions of:
NFPA 20, *Standard for the Installation of Stationary Pumps for Fire Protection*
NFPA 70, *National Electrical Code*.

The controller shall be listed by:
Underwriters Laboratories, Inc., in accordance with UL218, *Standard for Fire Pump Controllers* Canadian Standards Association CSA-C22.2, *Standard for Industrial Control Equipment* (cUL)

The controller shall be approved by:
Factory Mutual (IEC 62091)
The City of New York for fire pump service

1.2 Enclosure

The controller components shall be housed in a NEMA Type 2 (IEC IP22) drip-proof enclosure. The enclosure shall consist of 3 compartments with individual doors for the starter, power transformer and control circuits. Back, Top and Bottom removable gland plates shall be provided along with lifting lugs and a lockable handle.

1.3 Isolation Switch

The controller shall be equipped with an isolating switch and shall be operated by an external handle. The operator shall be mechanically interlocked with the medium voltage compartment door and with the contactor so that with the handle in the ON position, the mechanism shall inhibit opening or closing the isolating switch if the contactor is in the CLOSED position.

1.4 Operator Interface

The operator interface shall be a 7.0" LCD capacitive type color touch screen (HMI technology) powered by an embedded microcomputer with software PLC logic. Included shall be keypad type push-buttons for START, STOP and TEST.
The screen shall include menus for: *Home · Alarms · Configuration · History · Service · Manuals · Language*.

The HMI shall graphically display the following: *Voltage and Amperage of all 3 phases simultaneously using true RMS Technology · Motor Stopped/Running · Starting Cause · Actuation Mode · Controller Type · Shutdown Mode · Date & Time · Pump Room Temp. · System Pressure*
System pressure shall be capable of being displayed as: *PSI, kPa, Bar, Feet of Head or Meters of Water.*

The HMI shall allow programming and display of: *Cut In & Cut Out Pressure Settings · Minimum Run Timer · Sequential Start Timer · Periodic Test Timer*

The HMI allows the user to select the language of the system and download the manual or view the manual on screen.

1.5 Ammeter/Voltmeter

The fire pump controller operator interface shall be capable of displaying true RMS digital motor voltage and current measurements for all three phases simultaneously. Displays requiring push-button and selector switches to toggle between phases or current and voltage shall not be accepted.
Voltage and current shall be measured by True RMS technology to provide the most accurate measurement for all sine waves, including non-sinusoidal waveforms. Average responding meters will not be accepted.

1.6 Digital Status/Alarm Messages

The digital display shall indicate text messages for the status and alarm conditions of: Control Voltage Not Healthy • Fail To Start • Invalid Cut-In • Locked Rotor • Loss of Power • Low Ambient Temp. • Low Water Level • Motor Trouble • Phase Reversal • Under/Over current • Under/Over voltage • Phase Loss L1 / L2 / L3 • Phase Unbalanced • Pressure Transducer Fault Detected • Pump Room Alarm • Service Required • Check Test Solenoid • Weekly Test Cut-In Reached

1.7 Visual Indicators

Visual indications shall be provided for:
Power Available • Motor Run • Periodic Test • Manual Start • Deluge Valve Start • Remote Automatic Start • Remote Manual Start • Emergency Start • Pump On Demand (Automatic Start) • Low Discharge Pressure • Pump Room Temp. • Lockout

Audible and visible alarm shall be provided for: Fail To Start

1.8 Remote Alarm Contacts

Remote Alarm contacts shall be provided for:
Power Available • Phase Reversal • Motor Run • Common Pump Room Alarm (Overvoltage, Undervoltage, Phase Unbalance, Low/High Pump Room Temperature) • Common Motor Trouble (Overcurrent, Fail To Start, Undercurrent, Ground Fault)

1.9 Pressure and Event Recording

The system shall be capable of logging pressure data and operational events with time/date stamp. The system shall display operational events for the lifetime of the controller and display the pressure data in text or graphical form. The controller shall log the Date/Time of the first start-up and the controller total power on time from that date. The controller shall log first and last statistics for:
First Setup · On Time · Start Count · Last Start Time · Min/Max/Average System Pressure · Min/Max/Average Pump Room Temp. · Jockey Pump On Time/Start Count/Last Start Time · Phase to Phase Voltages with Date Stamp · Amps Per Phase with Date Stamp

2.0 USB Host Controller

A USB port capable of accepting a USB Flash Memory Disk shall be provided for downloading pressure and event logs.

2.1 Serial Communications

The controller shall feature Modbus with TCP/IP frame format and shielded female RJ45 connector

2.2 Pressure Sensing / Wet Parts

The controller shall be supplied with a solid state pressure transducer with a range of 0-500 psi calibrated for 0-300 psi (0-20.7 bar) and a run test solenoid valve. The wet parts shall be externally mounted and include a protective cover. The pressure sensing line connection to the transducer shall be 1/2-inch FNPT. Provisions for a redundant pressure transducer shall be provided.

2.3 Controller Operation

The controller shall be capable of automatic starting via pressure drop, remote start signal from an automatic device or a deluge valve. The controller can be manually started via the START push-button, the RUN TEST push-button, or a remote signal from a manual device. Stopping can be achieved manually with the STOP push-button or automatically after expiration of minimum run timer or test timer. The minimum run timer (off delay), sequential start timer (on delay) and periodic test timer shall be field adjustable and include a visual countdown on the display. A 240V test connection shall be provided with a Normal/Test selector switch for testing of the controller control circuit.

2.4 Manufacturer

The controller shall be a Firetrol brand.

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