Firetrol MarkIII+ Electric Fire Pump Controller

FTA1350 - Wye-Delta Closed Transition 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 39ºF (4ºC) to 104ºF (40ºC).

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 Con-*

*trollers* Canadian Standards Association CSA-C22.2, Standard for Industrial Control

Equipment (cUL)

CE - Low Voltage Directive

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, wall

mounted enclosure with bottom entry gland plate and lifting lugs.

1.3 Withstand Ratings (Short Circuit Current Ratings)

All controller components shall be front mounted, wired and front accessible for main-

tenance. The available short circuit current ratings are shown below.

1.4 Power Components

The controller shall include a combination isolating disconnect switch/circuit breaker,

rated for not less than 115% of the motor full load current, mechanically interlocked and

operated with a single, externally mounted handle. The isolating disconnect switch/

circuit breaker shall be mechanically interlocked so that the enclosure door cannot be

opened with the handle in the ON position except by a hidden tool operated bypass

mechanism. The isolating disconnect switch/circuit breaker shall be capable of being

padlocked in the OFF position for installation and maintenance safety, and shall also be

capable of being locked in the ON position without affecting the tripping characteristics

Code

200-208V

5-150 HP

220-240V

5-200 HP

380-415V

5-350 HP

440-480

5-400 HP

550-600

5-500 HP

M - Standard

100kA

100kA

100kA

100kA

N/A

N - Intermediate

150kA

150kA

150kA

150kA

N/A

P - High

200kA

200kA

200kA

200kA

N/A

Q - Intermediate

N/A

N/A

N/A

N/A

100kA

R - Standard

N/A

N/A

N/A

N/A

50kA

Code

200-208V

200 HP

220-240V

250-400 HP

380-415V

400-500 HP

440-480

450-500 HP

M - Standard

50A

50kA

50kA

50kA

N - Intermediate

N/A

N/A

N/A

N/A

P - High

100kA

100kA

100kA

100kA

Q - Intermediate

N/A

N/A

N/A

N/A

R - Standard

N/A

N/A

N/A

N/A

of the circuit breaker.

The controller will include a voltage surge arrestor and Wye-Delta Closed Transition

motor starter.

The controller shall be equipped with a single handle, manually operated, emergency

start mechanism capable of being latched in the ON position.

1.5 Operator Interface (HMI)

The operator interface shall be a 7.0” capacitive type LCD color touch screen (HMI

technology) powered by an embedded microcomputer with software PLC logic. In-

cluded 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 phas-*

*es 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.

1.6 State and Alarm Indication

Visual indication shall be provided for the following:

Power Available • Motor Run • Periodic Test • Manual Start • Deluge Valve Start • Remote

Automatic Start • Remote Manual Start • Emergency Start • Pump On Demand/Auto-

matic Start • Pump Room Temperature • Lockout

The digital display shall visually indicate the following alarms:

* Locked Rotor Current • Fail To Start • Under/Over Current • Under/Over Voltage •

Phase Unbalance • Check Test Solenoid Valve • Weekly Test Cut-In Not Reached •

Transducer Fault • Control Voltage Not Healthy • Motor Trouble • Pump Room Alarm •

Invalid Cut-In • Phase Reversal • Power Loss • Phase Loss L1 / L2 / L3 • Low Water Level •

Pump On Demand • Low Ambient Temp. • Service Required

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

Remote Alarm contacts shall be provided for:

Power Available • Phase Reversal • Motor Run • Common Pump Room Alarm (Overvolt-

age, Undervoltage, Phase Unbalance, Low/High Pump Room Temperature) • Common

Motor Trouble (Overcurrent, Fail To Start, Undercurrent, Ground Fault)

1.7 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*



1.8 USB Host Controller

A USB port capable of accepting a USB Flash Memory Disk shall be provided for

downloading pressure and event logs.

1.9 Serial Communications

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

connector

2.0 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 sens-

ing line connection to the transducer shall be 1/2-inch FNPT. Provisions for a redun-

dant pressure transducer shall be provided.

2.1 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.

2.2 Manufacturer

The controller shall be a Firetrol brand.

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