



Mark IIx6 Electric Fire Pump Controller

Submittal Package

FTA1500

Primary Resistor Starting

STANDARD WITHSTAND RATINGS 200–600V – 100,000 Amps RMS Sym.	
INTERMEDIATE WITHSTAND RATINGS 200–600V – 150,000 Amps RMS Sym.	
HIGH WITHSTAND RATINGS 200–600V – 200,000 Amps RMS Sym.	
LINE VOLTAGE	MOTOR HORSEPOWER
200	□ ---
208	□ ---
220–240	□ ---
380–415	□ ---
440–480	□ 125–150
550–600	□ 125–150

(DRAWINGS INCLUDED IN THIS PACKAGE ARE FOR STANDARD CONTROLLERS. ACTUAL “AS BUILT” DRAWINGS MAY DIFFER FROM THOSE SEEN HERE).

Firetrol, Inc.

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Publication SBPI500-53 Rev. J

Firetrol Mark IIxG Electric Fire Pump Controller

FTA1500 – Primary Resistor 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 primary resistor starting of the fire pump motor having the horsepower, voltage, phase and frequency rating shown on the plans and drawings.

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)

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.

1.3 Withstand Ratings (Short Circuit Current Ratings)

All controller components shall be front mounted, wired and front accessible for maintenance. The minimum withstand rating of the controllers shall not be less than 100,000 Amps RMS Symmetrical at 200-600 Volts*. If the available system fault current exceeds these ratings, the controllers shall be supplied with a withstand rating of 150,000 or 200,000 Amps RMS Symmetrical, as required.

*Note: 100,000 Amp withstand rating not available in some larger horsepower. Consult factory for details.

1.4 Isolation Switch and Circuit Breaker

The controller shall include a motor rated combination isolating disconnect switch/circuit breaker, mechanically interlocked and operated with a single, externally mounted handle. When moving the handle from OFF to ON, the interlocking mechanism shall sequence the isolating disconnect switch ON first, and then the circuit breaker. When the handle is moved from ON to OFF, the interlocking mechanism shall sequence the circuit breaker OFF first, and then the isolating disconnect switch.

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 of the circuit breaker. The controller door shall have a locking type handle and three point cam and roller vault type hardware. The circuit breaker trip curve adjustment shall be factory set, tested and sealed for the full load amps of the connected motor. The circuit breaker shall be capable of being

field tested to verify actual pick up, locked rotor, and instantaneous trip points after field installation without disturbing incoming line and load conductors.

1.5 Operator Interface

The fire pump controller shall feature an operator interface with user keypad. The interface shall monitor and display motor operating conditions, including all alarms, events, and pressure conditions. All alarms, events, and pressure conditions shall be displayed with a time and date stamp. The display shall be a 128x64 Backlit LCD capable of customized graphics. The display and interface shall be NEMA rated for Type 2, 3R, 4, 4X, and 12 protection and shall be fully accessible without opening the controller door. The display and user interface shall utilize multiple levels of password protection for system security. A minimum of 3 password levels shall be provided.

1.6 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.

1.7 Digital Status/Alarm Messages

The digital display shall indicate text messages for the status and alarm conditions of:

- Motor On
- Local Start / Off Delay Time
- Fail to Start
- Over Voltage
- Emergency Start
- Motor Overload
- Disk Near Full
- Sequential Start Time
- System Battery Low
- Locked Rotor Trip
- Motor Over 320%
- Disk Error
- Pressure Error
- Minimum Run Time
- Remote Start
- Under Voltage
- Over Frequency
- Drive Not Installed
- Printer Error

The Sequential Start Timer and Minimum Run Timer/Off Delay Timer shall be displayed as numeric values reflecting the value of the remaining time.

1.8 LED Visual Indicators

LED indicators, visible with the door closed, shall indicate:

- Power Available
- Remote Start
- Transfer Switch Emergency
- Phase Reversal
- Motor Overload
- Overvoltage
- Alarm
- Pump Running
- Transfer Switch Normal
- Interlock On
- Emerg. Iso. Switch Off
- Undervoltage
- System Pressure Low
- Deluge Open
- Phase Failure
- Fail To Start
- Automatic Shutdown Disabled

1.9 Data Logging

The digital display shall monitor the system and log the following data:

- Motor Calls/Starts
- Total Controller Pwr On Time
- Min/Max System Pressure
- Last Locked Rotor Trip
- Max Starting Currents
- Min/Max Voltage per Phase while idle (not running)
- Min/Max Voltage per Phase during Run
- Pump Total Run Time
- Last Pump Start
- Last Phase Fail/Reversal
- Min/Max Frequency
- Max Run Currents
- Min Voltage per Phase during Start

2.0 Event Recording

Memory – The controller shall record all operational and alarm events to system memory. All events shall be time and date stamped and include an index number. The system memory shall have the capability of storing 3000 events and allow the user access to the event log via the user interface. The user shall have the ability to scroll through the stored messages in groups of 1 or 10.

2.1 USB Host Controller

The controller shall have a built-in USB Host Controller. A USB port capable of accepting a USB Flash Memory Disk shall be provided. The controller shall save all operational and alarm events to the flash memory on a daily basis. Each saved event shall be time and date stamped. The total amount of historical data saved shall solely depend on the size of the flash disk utilized. The controller shall have the capability to save settings and values to the flash disk on demand via the user interface.

2.2 Serial Communications

The controller shall feature a RS485 serial communications port for use with 2 or 4 wire Modbus RTU communications.

2.3 Solid State Pressure Transducer

The controller shall be supplied with a solid state pressure transducer with a range of 0–300 psi (0–20.7 bar) ± 1 psi. The solid state pressure switch shall be used for both display of the system pressure and control of the fire pump controller. Systems using analog pressure devices or mercury switches for operational control will not be accepted. The START, STOP and SYSTEM PRESSURE shall be digitally displayed and adjustable through the user interface. The pressure transducer shall be mounted inside the controller to prevent accidental damage. The pressure transducer shall be directly pipe mounted to a bulkhead pipe coupling without any other supporting members. Field connections shall be made externally at the controller coupling to prevent distortion of the pressure switch element and mechanism.

2.4 Controller Operation

A digitally set On Delay (Sequential Start) timer shall be provided as standard. Upon a call to start, the user interface shall display a message indicating the remaining time value of the On Delay timer.

The controller shall be field programmable for manual stop or automatic stop. If set for automatic stopping, the controller shall allow the user to select either a Minimum Run Timer or an Off Delay Timer. Both timers shall be programmable through the user interface.

A nonadjustable restart delay timer shall be provided to allow the residual voltage of the motor to decay prior to restarting the motor. At least 2 seconds, but no more than 3 seconds, shall elapse between stopping and restarting the pump motor.

A weekly test timer shall be provided as standard. The controller shall have the ability to program the time, date, and frequency of the weekly test. In addition, the controller shall have the capability to display a preventative maintenance message for a service inspection. The message text and frequency of occurrence shall be programmable through the user interface.

A Lamp Test feature shall be included. The user interface shall also have the ability to display the status of the system inputs and outputs.

An Audible Test feature shall be included to test the operation of the audible alarm device.

The controller shall not start the fire pump motor under a single-phase condition. If the motor is already running when a phase loss occurs, the controller shall continue to run the motor, but still display a Phase Failure alarm.

The fire pump controller software shall be automatically upgraded through the USB port by simply inserting a flash disk with the new software. Fire pump controllers that require laptop computers, handheld equipment or specialized devices for software upgrades shall be prohibited.

2.5 Manufacturer

The controller shall be a Firetrol brand.

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Firetrol, Inc.

Publication SP1500-50 Rev. G



Mark IIx6 Electric Fire Pump Controllers

Product Description

FTA1500

Primary Resistor Starting



Description—Firetrol® FTA1500 Primary Resistance Fire Pump Controllers use resistors in the line to reduce line voltage when starting the pump motor. The controller monitors, displays and records fire pump system information.

The circuit to the motor is not opened during the transition from start to run. While starting, the motor will draw 50% of full load starting current and supply 25% of rated torque. This method of starting minimizes line disturbances and voltage drop when starting.

Approvals – Firetrol fire pump controllers are listed by Underwriters' Laboratories, Inc., in accordance with UL218, *Standard for Fire Pump Controllers*, CSA, *Standard for Industrial Control Equipment*, and approved by Factory Mutual. They are built to meet or exceed the requirements of the approving authorities as well as NEMA and the latest editions of NFPA 20, *Installation of Centrifugal Fire Pumps*, and NFPA 70, *National Electrical Code*.

Standard Features—The following are included as standard with each controller:

- Voltage surge protector
- Main Disconnect Switch sized for connected motor horsepower and voltage
- Fire pump Circuit Breaker
- Single handle Isolating Disconnect Switch/Circuit Breaker mechanism
- Motor contactor
- Emergency Manual Run Mechanism to mechanically close motor contactor contacts in an emergency condition
- Built-in Start and Stop push-buttons to bypass automatic start circuits
- Minimum Run Timer / Off Delay Timer
- Daylight Savings Time Option

- Weekly Test Timer
- Elapsed Time Meter
- Door mounted display/interface panel featuring a 128 x 64 pixel backlit LCD Graphical Display, Membrane Type User Control Push-buttons and easy to read LED Indicators for:
 - POWER AVAILABLE
 - ALARM
 - TRANSFER SWITCH NORMAL (If unit ordered with Automatic Power Transfer Switch)
 - TRANSFER SWITCH EMERGENCY (If unit ordered with Automatic Power Transfer Switch)
 - SYSTEM PRESSURE LOW
 - PUMP RUNNING
 - DELUGE OPEN
 - REMOTE START
 - INTERLOCK ON
 - FAIL TO START
 - MOTOR OVERLOAD
 - EMERGENCY ISO SWITCH OFF (If unit ordered with Automatic Power Transfer Switch)
 - PHASE FAILURE
 - PHASE REVERSAL
 - AUTOMATIC SHUTDOWN DISABLED
 - OVERVOLTAGE
 - UNDERVOLTAGE
- Digital Pressure Display
- USB Host Controller and Port
- Solid State Pressure Transducer
- Data Log
- Event Log (3000 Events)
- True RMS Metering with simultaneous 3 Phase Display of Amps, Volts, Frequency, Pressure and Alarm Messages
- Disk Error message
- Disk Near Full message
- Pressure Error message
- Motor Over 320% message
- Local Start message
- Remote Start message
- Emergency Start message
- Fail To Start message
- Undervoltage message
- Overvoltage message
- NEMA Type 2 (IEC IP22) enclosure
- Suitable for use as Service Equipment
- Each standard controller comes with user set options for:
 - Interlock Alarm
 - Low Pressure Audible
 - Low Suction
 - Pump Run
 - User Defined Input
 - Weekly Test

Product Description – Options & Modifications

SPECIAL ENCLOSURES

- E Enclosure, NEMA Type 4 (IP66), Painted Steel
- F Enclosure, NEMA Type 4X (IP66), #304 Stainless Steel, Brushed Finish
- FD Enclosure, NEMA Type 4X (IP66), #316 Stainless Steel, Brushed Finish
- FDB Enclosure, NEMA Type 4X (IP66), #316 Stainless Steel, 12 Gauge, Seam-Welded, Brushed Finish
- FDP Enclosure, NEMA Type 4X (IP66), #316 Stainless Steel, Painted Finish
- FXP Enclosure, NEMA Type 4X (IP66), #304 Stainless Steel, Painted Finish
- G Enclosure, NEMA Type 12 (IP54), Painted Steel
- T Enclosure, NEMA Type 3R (IP24), Painted Steel

CIRCUIT BREAKER OPTION

- N Intermediate withstand rating
150,000 Amps RMS Sym.
- P High withstand rating
200,000 Amps RMS Sym

Note: Intermediate and High withstand ratings may not be available for all horsepower and voltages. Consult factory for availability.

ANTI-CONDENSATION SPACE HEATERS

- H Space Heater, 120V Externally Powered with Circuit Breaker
- J Space Heater, 120V Externally Powered with Circuit Breaker and Thermostat
- K Space Heater, 120V Externally Powered with Circuit Breaker and Humidistat
- L Space Heater, 240V Externally Powered with Circuit Breaker
- M Space Heater, 240V Externally Powered with Circuit Breaker and Thermostat
- N Space Heater, 240V Externally Powered with Circuit Breaker and Humidistat

PRESSURE TRANSDUCERS

- B Wetted Parts Including Pressure Sensor, 600 psi (42 Bar) Fresh Water
- C Wetted Parts Including Pressure Sensor, 300 psi (21 Bar) Sea Water
- D Wetted Parts Including Pressure Sensor, 600 psi (42 Bar) Fresh Water

COMBINED AUTOMATIC POWER TRANSFER SWITCHES

- TSA FTA950 Automatic Transfer Switch, Group 5
- TSAB FTA951 Automatic Transfer Switch, J-Bypass Isolation, Group 5

ALARMS

- AC Alarm Output Contacts Extra, Pump Operating (1 Form A, 1 Form B)
- AF Alarm, Audible/Visible, Low Pump Room Temperature
- AG Alarm, Audible/Visible, Reservoir Low
- AH Alarm, Audible/Visible, Low Suction Pressure
- AM Alarm Output Contacts, Fail to Start
- AV Alarm Output Contacts, Low Pump Room Temperature (Requires option -AF)

- AW Alarm Output Contacts, Reservoir Low (Requires option -AG)
- AY Alarm Output Contacts, Low Suction Pressure (Requires option -AH)
- BW Alarm Output Contacts, Phase Failure/Phase Reversal
- BY Alarm Output Contacts, Pump Overload
- COM Alarm, Audible/Visible/Output Contacts, Low Suction Pressure with Manual Reset Option, Pressure Switch Not Included (Do Not Use Options AH or AY)
- CTS Alarm, Audible/Visible/Output Contacts, Low Suction Pressure Shutdown with Manual Reset Option and Pressure Switch (Do Not Use Options AH or AY)
- EG Alarm, Audible/Visible, Relief Valve Discharge
- EH Alarm Output Contacts, Relief Valve Discharge (Requires option -EG)
- EJ Alarm, Audible/Visible, Flow Meter On
- EK Alarm Output Contacts, Flow Meter On (Requires option -EJ)
- KH Alarm Output Contacts, Common Alarm
- JR Visible Indicator, Jockey Pump Operating
- JT Alarm, Audible/Visible, Jockey Pump Trouble
- P Alarm, Audible/Visible, Built-in 120V Supervisory System (Includes visible supervisory voltage normal indication and audible pump operating, phase failure and phase reversal indication)
- PE Alarm Output Contacts, Low System Pressure (pump on demand)
- PT Alarm, Audible/Visible, Built-in 240V Supervisory System (Includes visible supervisory voltage normal indication and audible pump operating, phase failure and phase reversal indication)

MISCELLANEOUS

- AZ Thermostat, Low Pump Room Temperature, Mounted and Wired
- ED Output Contacts, Load Shed (Selectable power source and adjustable time delay to remove non-critical loads before starting)
- EL Series Pumping Operation, High Zone Controller
- EM Series Pumping Operation, Mid Zone Controller
- EN Series Pumping Operation, Low Zone Controller
- FZX Rating, Nameplate to be marked 380-400V (Use with voltage code 'F' or 'FZ')
- IEC Marking, CE with External Wet Parts (Requires NEMA Type 12 (IP54) Enclosure as minimum)
- IECI Marking, CE with Internal Wet Parts (Requires NEMA Type 12 (IP54) Enclosure as minimum)
- MZN Neutral Lug, Service Entrance, Non-insulated Bonded to Enclosure
- PK Terminal Blocks, Extra Remote Start
- PY Output Contacts, Motor Space Heater Circuit, Externally Powered
- S Tropicalization
- USBX Data Port, External USB
- ZPA Scheduled Service Message (when factory programmed or programmed by Firetrol representative during start-up)
- ZPM Data Port, Serial Modbus RTU Over 2-Wire or 4-Wire RS485
- ZPN Data Port, Serial Modbus RTU Over Ethernet TCP/IP

Export packaging (Wooden crating to conform to IPPC Standards)

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Publication PD1500-50 Rev. L



Mark IIx6 Electric Fire Pump Controllers

Model Number Selection Guide

FTA1000 - FTA1930

FTA1000, 1250, 1300, 1350, 1500, 1800, 1930

ELECTRIC FIRE PUMP CONTROLLERS

Example: FTA1300-AM75HH-xx

Starting Method

1000 - Across-the-line (direct on line)
1250 - Part Winding (50%-50% windings)
1300 - Wye-delta (star-delta), open transition
1350 - Wye-delta (star-delta), closed transition
1500 - Primary resistor
1800 - Autotransformer
1930 - Digital Solid-state soft start/stop

Modifications

See Back

Start/Stop Options

A - Automatic start with timed permissive stop after minimum run time and manual start with manual stop, field convertible to automatic start and manual start with manual stop only
B - Automatic start and manual start with manual stop
C - Manual start and stop

Short Circuit Current Rating

M - Standard short circuit rating
100,000 Amperes RMS Sym. at 200 - 600 V
N - Intermediate short circuit rating
150,000 Amperes RMS Sym. at 200 - 600 V
P - High short circuit rating
200,000 Amperes RMS Sym. at 200 - 600 V
Q - Standard intermediate short circuit rating
65,000 Amperes RMS Sym. at 550 - 600 V
R - Standard low short circuit rating
42,000 Amperes RMS Sym. at 550 - 600 V

Three Phase Voltage

A - 220-240 Volt, 60 Hertz (230 V)
AZ - 220-230 Volt, 50 Hertz
B - 440-480 Volt, 60 Hertz (460 V)
BZ - 415 Volt, 50 Hertz
C - 550-600 Volt, 60 Hertz (575 V)
F - 380 Volt, 60 Hertz
FZ - 380 Volt, 50 Hertz
H - 208 Volt, 60 Hertz
HH - 200 Volt, 60 Hertz

Horsepower Rating

03 - 3 HP	100 - 100 HP
05 - 5 HP	125 - 125 HP
07 - 7 1/2 HP	150 - 150 HP
10 - 10 HP	200 - 200 HP
15 - 15 HP	250 - 250 HP
20 - 20 HP	300 - 300 HP
25 - 25 HP	350 - 350 HP
30 - 30 HP	400 - 400 HP
40 - 40 HP	450 - 450 HP
50 - 50 HP	500 - 500 HP
60 - 60 HP	600 - 600 HP
75 - 75 HP	700 - 700 HP

Model Number Selection Guide – Options & Modifications

SPECIAL ENCLOSURES

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- FD Enclosure, NEMA Type 4X (IP66), #316 Stainless Steel, Brushed Finish
- FDB Enclosure, NEMA Type 4X (IP66), #316 Stainless Steel, 12 Gauge, Seam-Welded, Brushed Finish
- FDP Enclosure, NEMA Type 4X (IP66), #316 Stainless Steel, Painted Finish
- FXP Enclosure, NEMA Type 4X (IP66), #304 Stainless Steel, Painted Finish
- G Enclosure, NEMA Type 12 (IP54), Painted Steel
- T Enclosure, NEMA Type 3R (IP24), Painted Steel

CIRCUIT BREAKER OPTION

- N Intermediate withstand rating
150,000 Amps RMS Sym.
- P High withstand rating
200,000 Amps RMS Sym

Note: Intermediate and High withstand ratings may not be available for all horsepower and voltages. Consult factory for availability.

ANTI-CONDENSATION SPACE HEATERS

- H Space Heater, 120V Externally Powered with Circuit Breaker
- J Space Heater, 120V Externally Powered with Circuit Breaker and Thermostat
- K Space Heater, 120V Externally Powered with Circuit Breaker and Humidistat
- L Space Heater, 240V Externally Powered with Circuit Breaker
- M Space Heater, 240V Externally Powered with Circuit Breaker and Thermostat
- N Space Heater, 240V Externally Powered with Circuit Breaker and Humidistat

PRESSURE TRANSDUCERS

- B 0-600 psi (0-42.25 bar) Pressure Transducer for Fresh Water Service
- C 0-300 psi (0-21.1 bar) Pressure Transducer for Copper Corrosive Service
- D 0-600 psi (0-42.25 bar) Pressure Transducer for Corrosive Service

COMBINED AUTOMATIC POWER TRANSFER SWITCHES

- TSA FTA950 Automatic Transfer Switch, Group 5
- TSAB FTA951 Automatic Transfer Switch, J-Bypass Isolation, Group 5

ALARMS

- AC Alarm Output Contacts Extra, Pump Operating (1 Form A, 1 Form B)
- AF Alarm, Audible/Visible, Low Pump Room Temperature
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- AH Alarm, Audible/Visible, Low Suction Pressure
- AM Alarm Output Contacts, Fail to Start
- AV Alarm Output Contacts, Low Pump Room Temperature (Requires option -AF)
- AW Alarm Output Contacts, Reservoir Low (Requires option -AG)
- AY Alarm Output Contacts, Low Suction Pressure (Requires option -AH)

- BW Alarm Output Contacts, Phase Failure/Phase Reversal
- BY Alarm Output Contacts, Pump Overload
- COM Alarm, Audible/Visible/Output Contacts, Low Suction Pressure with Manual Reset Option, Pressure Switch Not Included (Do Not Use Options AH or AY)
- CTS Alarm, Audible/Visible/Output Contacts, Low Suction Pressure Shutdown with Manual Reset Option and Pressure Switch (Do Not Use Options AH or AY)
- EG Alarm, Audible/Visible, Relief Valve Discharge
- EH Alarm Output Contacts, Relief Valve Discharge (Requires option -EG)
- EJ Alarm, Audible/Visible, Flow Meter On
- EK Alarm Output Contacts, Flow Meter On (Requires option -EJ)
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- PE Alarm Output Contacts, Low System Pressure (pump on demand)
- PT Alarm, Audible/Visible, Built-in 240V Supervisory System (Includes visible supervisory voltage normal indication and audible pump operating, phase failure and phase reversal indication)

MISCELLANEOUS

- AZ Thermostat, Low Pump Room Temperature, Mounted and Wired
- ED Output Contacts, Load Shed (Selectable power source and adjustable time delay to remove non-critical loads before starting)
- EL Series Pumping Operation, High Zone Controller
- EM Series Pumping Operation, Mid Zone Controller
- EN Series Pumping Operation, Low Zone Controller
- FZX Rating, Nameplate to be marked 380-400V (Use with voltage code 'F' or 'FZ')
- IEC Marking, CE with External Wet Parts (Requires NEMA Type 12 (IP54) Enclosure as minimum)
- IECI Marking, CE with Internal Wet Parts (Requires NEMA Type 12 (IP54) Enclosure as minimum)
- OSP OSHPD Seismic Certification (State of California) (Requires Option -SEI)
- MZN Neutral Lug, Service Entrance, Non-insulated Bonded to Enclosure
- PK Terminal Blocks, Extra Remote Start
- PY Output Contacts, Motor Space Heater Circuit, Externally Powered
- S Tropicalization
- SEI Marking, Seismic Certified (in accordance with IBC) (Note: Not available on model FTA1500)
- USBX Data Port, External USB
- ZPA Scheduled Service Message (when factory programmed or programmed by Firetrol representative during start-up)
- ZPM Data Port, Serial Modbus RTU Over 2-Wire or 4-Wire RS485
- ZPN Data Port, Serial Modbus RTU Over Ethernet TCP/IP

Export packaging (Wooden crating to conform to IPPC Standards)
FTA1000 - 1930

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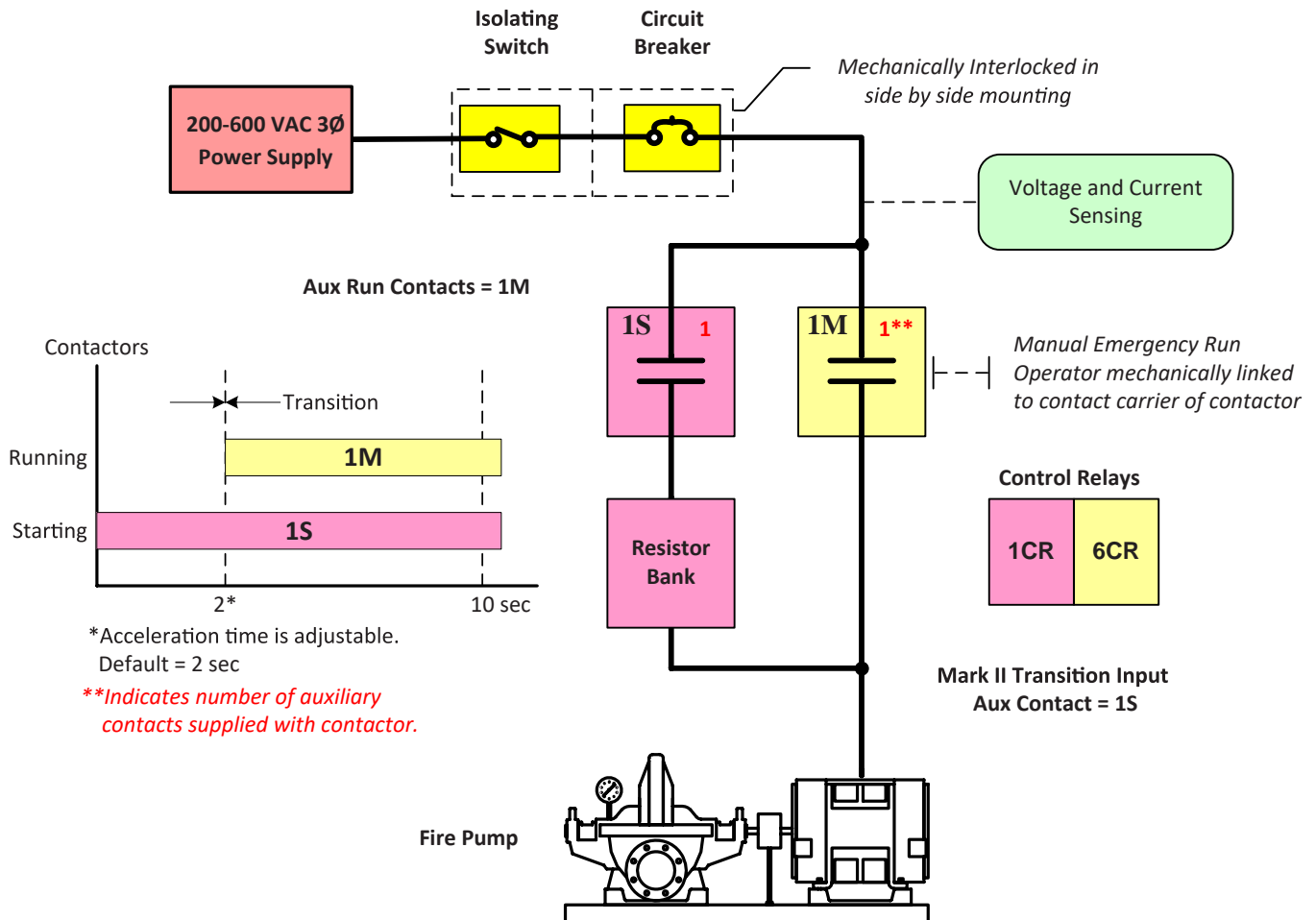
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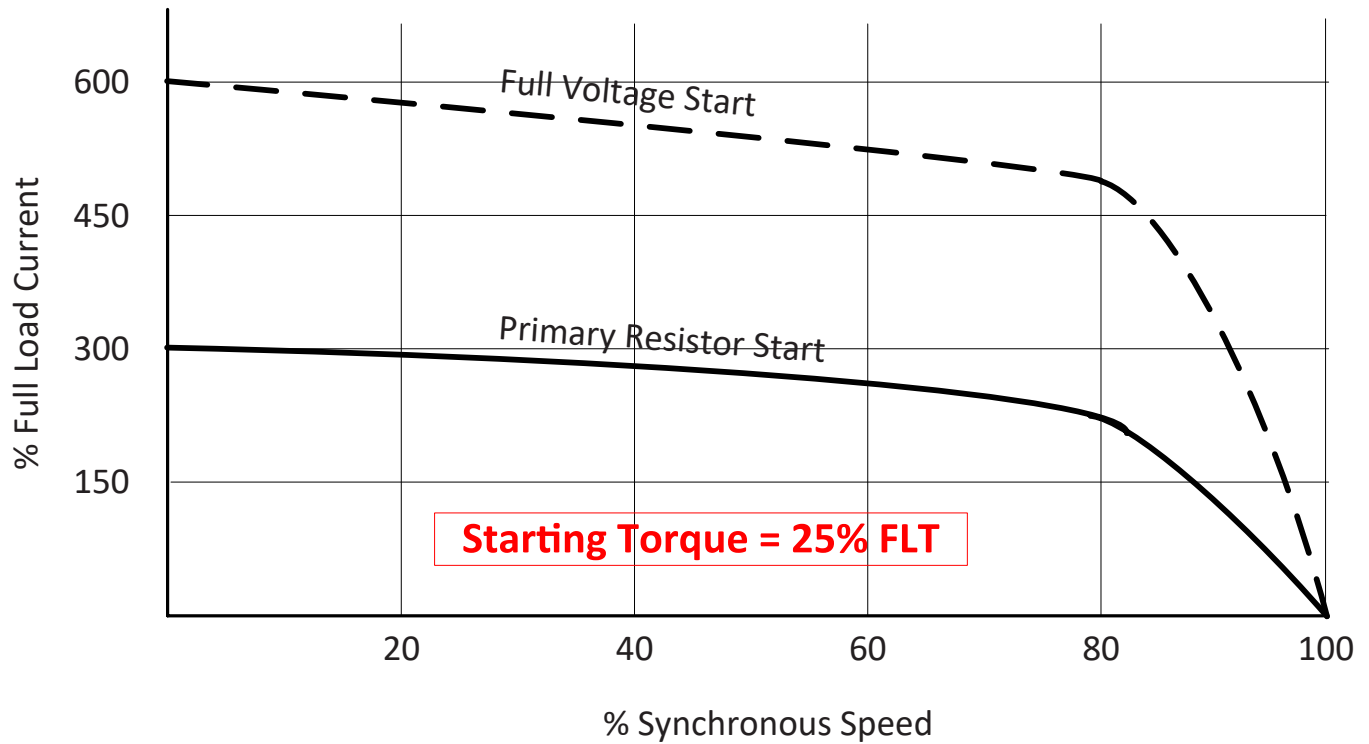
Publication SD1000-50 Rev. L



Mark IIx6 Electric Fire Pump Controllers

General Starting Configuration FTA1500 Primary Resistor Starting





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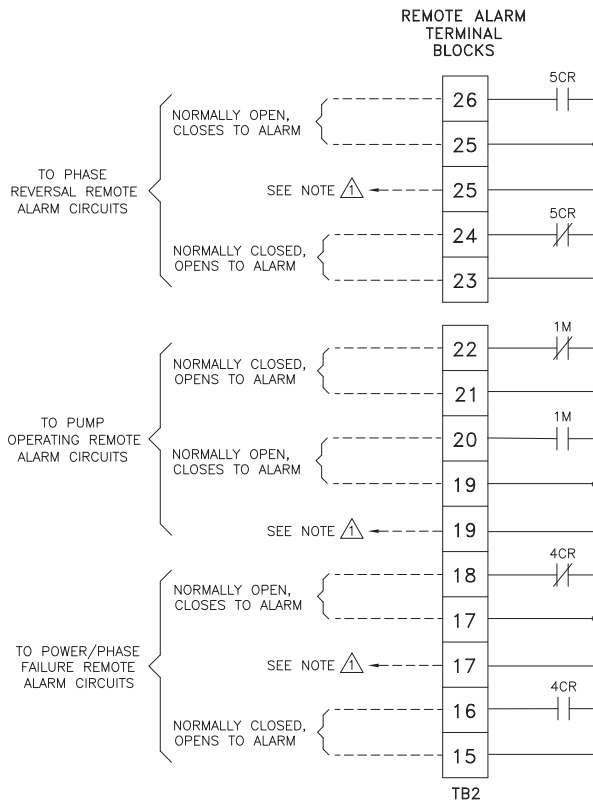


Mark IIxG Electric Fire Pump Controllers

Field Connections

FTA1500

Primary Resistor Starting

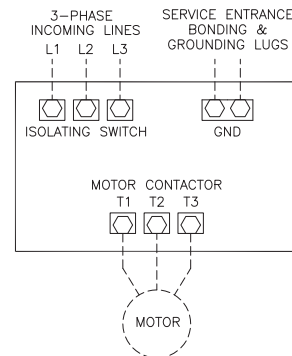


⚠ SPARE TERMINALS PROVIDED FOR PARALLEL
CONNECTION OF REMOTE ALARMS (IF REQUIRED)

NOTE: TERMINALS FOR CUSTOMER CONNECTIONS REQUIRE
3.5MM SLOTTED SCREW DRIVER

TERMINAL TIGHTENING TORQUE		
TERMINAL TYPE	WIRE SIZE	TIGHTENING TORQUE
CONTROL AND ALARM TERMINALS	#14-12 AWG [2.5-4 MM ²]	5.6 lb-in [.6 Nm]

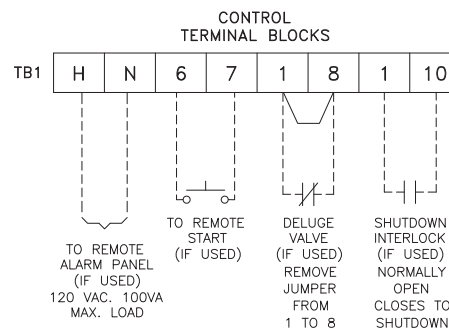
—NOTE—
ALARM CONTACT
RATING PILOT DUTY
250 VAC, 30 VDC
10 A. MAX. LOAD



NOTES

- 1- Incoming line terminals are provided to accommodate wire sizes at 125% of motor full load current per NFPA 70-2008, **National Electrical Code**, Table 430-250, Section 695.6(c), and Table 310-16, 75° rated Copper conductors.
- 2- Controller is phase rotation sensitive. Incoming lines L1, L2 and L3 must be in ABC, right hand rotation sequence for proper operation of the phase monitor.
- 3- Motor connections shown are typical. Since motor connections vary widely, refer to the motor connection diagram for specific wiring arrangement.
- 4- For incoming line terminals and motor terminals field wire capacity refer to drawing FC1500-51

NOTE: USE COPPER CONDUCTORS ONLY FOR ALL CONNECTIONS



PRESSURE SYSTEM
CONNECTION
1/2" FNPT

	SIZE A	BY	DATE
	DRAWN BY	TEF	05-04-02
	FINAL APPROVAL	TEF	05-04-02



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UPDATED TITLE BLOCK		B	281057	JMW	TEF	10-02-19
ADD NOTE FOR COPPER CONDUCTORS ONLY, UPDATED LOGO & TITLE BLOCK		A	226253	JC	TEF	12-09-09
REVISION DESCRIPTION		REV	ECN NO	BY	APP	DATE
FIELD CONNECTIONS		FTA1500		DRAWING NUMBER		
PRIMARY RESISTOR FIRE PUMP CONTROLLER				FC1500-50		
		DWG REV	B	ECN NO	281057	SHEET 1 OF 2

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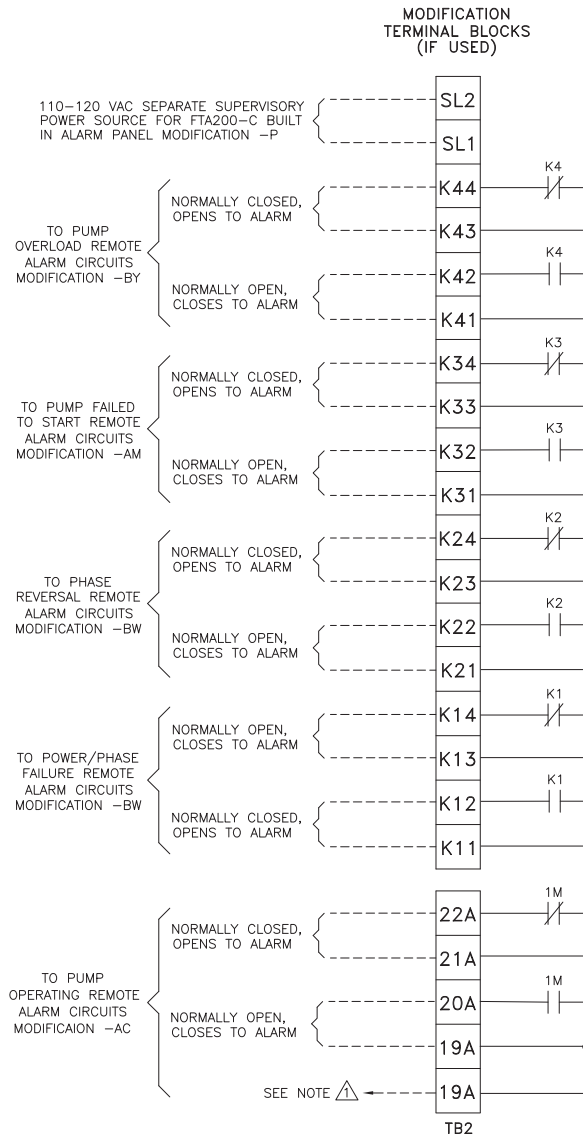


Mark IIxG Electric Fire Pump Controllers

Field Connections

FTA1500

Primary Resistor Starting



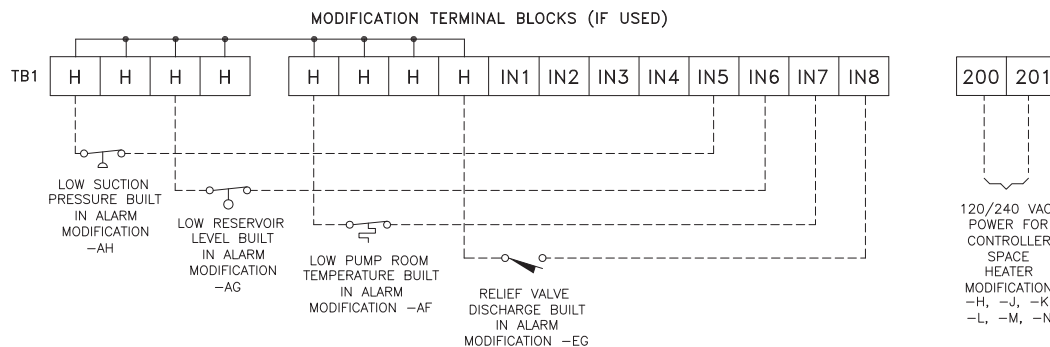
SPARE TERMINALS PROVIDED FOR PARALLEL CONNECTION OF REMOTE ALARMS (IF REQUIRED)

NOTE: TERMINALS FOR CUSTOMER CONNECTIONS REQUIRE 3.5MM SLOTTED SCREW DRIVER

TERMINAL TIGHTENING TORQUE		
TERMINAL TYPE	WIRE SIZE	TIGHTENING TORQUE
CONTROL AND ALARM TERMINALS	#14-12 AWG [2.5-4 MM ²]	5.6 lb-in [.6 Nm]

-NOTE-
ALARM CONTACT
RATING PILOT DUTY
250 VAC, 30 VDC
10 A. MAX. LOAD

NOTE: USE COPPER CONDUCTORS ONLY FOR ALL CONNECTIONS



	SIZE A	BY	DATE
DRAWN BY	TEF	05-04-02	
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FIELD CONNECTIONS		FTA1500				
PRIMARY RESISTOR FIRE PUMP CONTROLLER		DRAWING NUMBER				
		FC1500-50				
DWG REV B		ECN NO	281057	SHEET 2 OF 2		

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Mark IIx6 Electric Fire Pump Controllers

Field Connections

FTA1500

Primary Resistor Starting
Line & Motor Wire Terminal Capacity

LINE TERMINALS—WIRE CAPACITY AND QUANTITY (CU) ¹


MAXIMUM MOTOR HORSEPOWER						WIRE SIZE (CU) PER PHASE	WIRE SIZE SERVICE ENTRANCE GROUND LUG (CU) ²
200V	208V	220—240V	380—415V	440—480V	550—600V		
25	25	30	50	60	75	(1) #14 AWG—#1/0 AWG (1) 2.5 MM ² —50 MM ²	(2) #14 AWG—#2/0 AWG (2) 2.5 MM ² —70 MM ²
30	30	40	60	75	100	(1) #2 AWG—#4/0 AWG (1) 35 MM ² —100 MM ²	(2) #14 AWG—#2/0 AWG (2) 2.5 MM ² —70 MM ²
50	50	60	100	125	---	(1) #4 AWG—300 kcmil (1) 25 MM ² —150 MM ²	(2) #14 AWG—#2/0 AWG (2) 2.5 MM ² —70 MM ²
60	75	75	125	150	200	(1) #6 AWG—350 kcmil (1) 16 MM ² —185 MM ²	(2) #6 AWG—250 kcmil (2) 16 MM ² —120 MM ²
100	100	100	150	250	300	(1) 250 kcmil—500 kcmil (1) 120 MM ² —240 MM ²	(2) #6 AWG—250 kcmil (2) 16 MM ² —120 MM ²
---	125	125	200	---	350	(2) #3/0 AWG—250 kcmil (2) 95 MM ² —120 MM ²	(2) #6 AWG—250 kcmil (2) 16 MM ² —120 MM ²
250	250	250	400	500	700	(3) #2/0 AWG—400 kcmil (3) 70 MM ² —200 MM ²	(2) #6 AWG—250 kcmil (2) 16 MM ² —120 MM ²
---	---	300	500	600	---	(4) #4/0 AWG—500 kcmil (4) 100 MM ² —240 MM ²	(2) #6 AWG—250 kcmil (2) 16 MM ² —120 MM ²

MOTOR TERMINALS—WIRE CAPACITY AND QUANTITY (CU) ¹

MAXIMUM MOTOR HORSEPOWER						WIRE SIZE (CU) PER PHASE
200V	208V	220—240V	380—415V	440—480V	550—600V	
30	30	40	60	75	100	(1) #6 AWG—#2/0 AWG (1) 16 MM ² —70 MM ²
50	50	60	75	125	150	(1) #6 AWG—250 kcmil (1) 16 MM ² —120 MM ²
75	75	100	150	200	250	(1) #4 AWG—400 kcmil (1) 25 MM ² —200 MM ²
100	100	---	---	250	300	(2) #4 AWG—500 kcmil (2) 25 MM ² —240 MM ²
200	200	200	350	500	600	(2) 250 kcmil—500 kcmil (2) 120 MM ² —240 MM ²
250	250	300	500	600	700	(3) #2/0 AWG—500 kcmil (3) 70 MM ² —240 MM ²

¹ FOR CORRECT WIRE SIZING, REFER TO
NATIONAL ELECTRICAL CODE, NFPA 70.

² WHEN REQUIRED BY AUTHORITY HAVING
JURISDICTION.

THIRD ANGLE PROJECTION				SIZE A				BY				DATE								
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UPDATED LOGO AND TITLE BLOCK												A	226994	JC	TEF	12-09-09				
REVISION DESCRIPTION												REV	ECN NO	BY	APP	DATE				
FIELD CONNECTIONS												DRAWING NUMBER								
FTA1500												FC1500-51								
PRIMARY RESISTOR FIRE PUMP CONTROLLER												SHEET 1 OF 1								
LINE AND MOTOR FIELD WIRE TERMINAL CAPACITY																				
												DWG REV	B	ECN NO	281057					

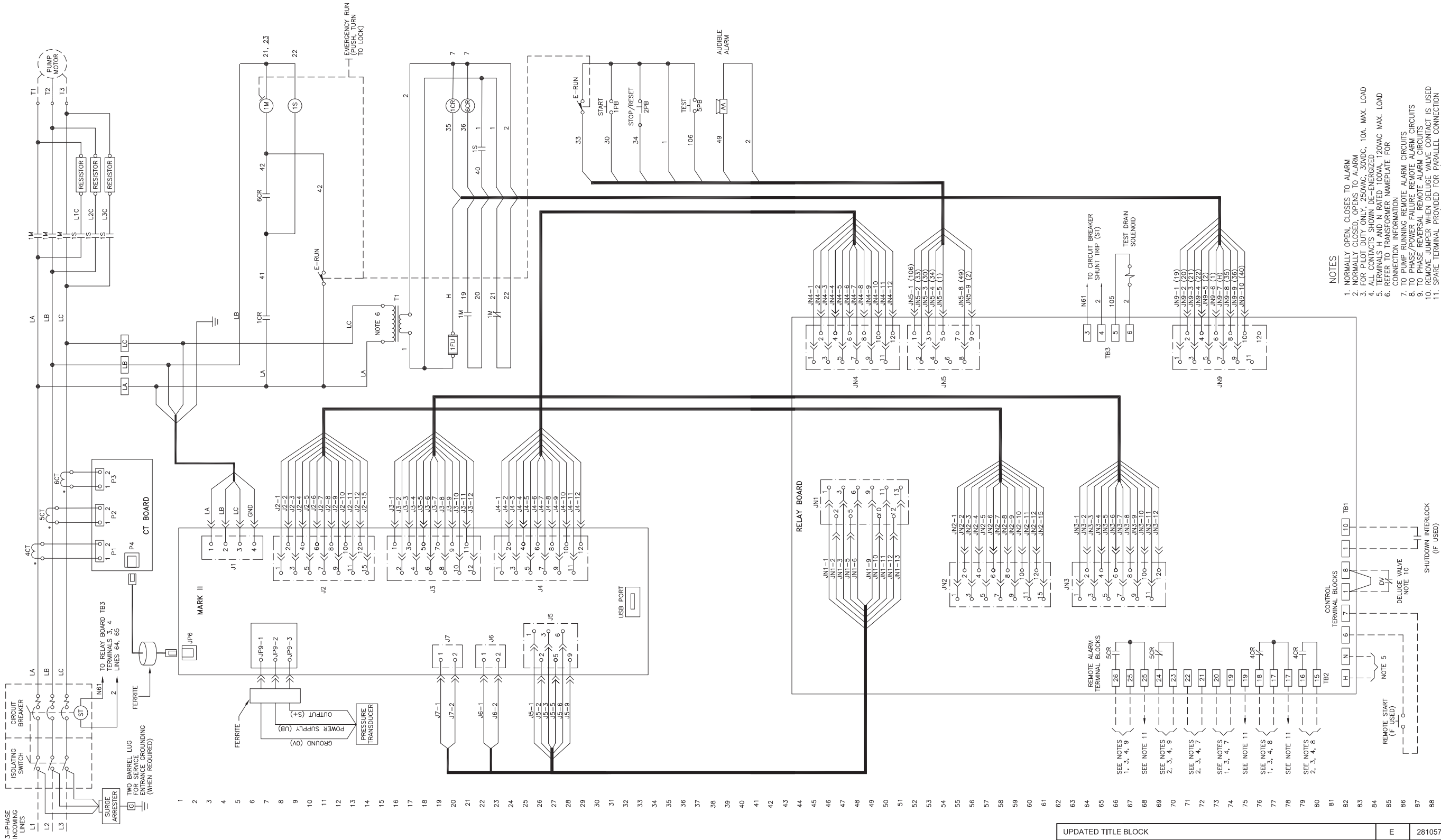
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Mark IIx6 Electric Fire Pump Controllers

Wiring Schematic
FTA1500

Primary Resistor Starting



- NOTES
1. NORMALLY OPEN, CLOSURES TO ALARM
 2. NORMALLY CLOSED, OPENS TO ALARM
 3. FOR PILOT DUTY ONLY, 250VAC, 30VDC, 10A. MAX. LOAD
 4. ALL CONTACTS SHOWN DE-ENERGIZED
 5. TERMINALS H AND N RATED 100VA, 120VAC MAX. LOAD
 6. REFER TO TRANSFORMER NAMEPLATE FOR CONNECTION INFORMATION
 7. TO PUMP RUNNING REMOTE ALARM CIRCUITS
 8. TO PUMP STOPPING REMOTE ALARM CIRCUITS
 9. TO PHASE/SEQUENCE REMOTE ALARM CIRCUITS
 10. REMOVE JUMPER WHEN DELUGE VALVE CONTACT IS USED
 11. SPARE TERMINAL PROVIDED FOR PARALLEL CONNECTION OF REMOTE ALARMS (IF REQUIRED)



SIZE	B	BY	DATE
DRAWN BY	TEF	05-10-02	
FINAL APPROVAL	TEF	05-10-02	



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UPDATED TITLE BLOCK		E	281057	JMW	TEF	10-02-19
ADDED TEST SOLENOID AND AUDIBLE ALARM		D	228528	JC	TEF	08-30-10
REVISION DESCRIPTION		REV	ECN NO	BY	APP	DATE
WIRING SCHEMATIC		FTA1500		DRAWING NUMBER		
PRIMARY RESISTOR FIRE PUMP CONTROLLER				WS1500-50		
DWG REV	E	ECN NO	281057	SHEET 1 OF 1		

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