

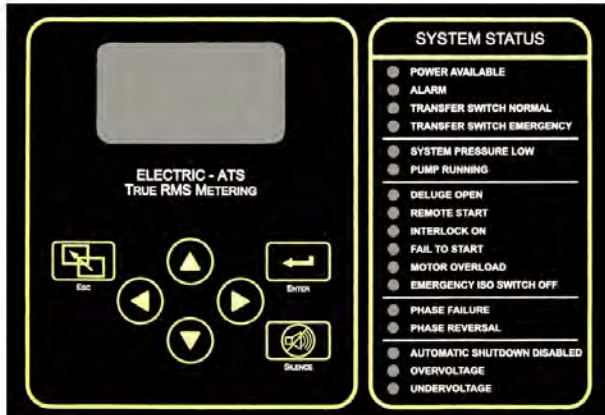
# FTA740 SINGLE PHASE LIMITED SERVICE CONTROLLERS

STANDARD SUBMITTAL PACKAGE

***Firetrol***<sup>®</sup>

NOTE: The drawings included herein are for standard controllers.  
Actual "as built" drawings may differ from those seen here.

# FTA740 Single Phase Limited Service Electric Fire Pump Controllers Product Description



**Description**—Firetrol® FTA740 Single Phase Limited Service Controllers are intended for use with small electric motor driven fire pumps where the capacity of the power source permits full voltage starting. Full voltage is applied to the motor as soon as the controller is actuated. The controller monitors, displays and records fire pump system information.

Limited Service Controllers may be used where they are acceptable to the authority having jurisdiction.

**Approvals** – Firetrol® fire pump controllers are listed by Underwriters’ Laboratories, Inc., in accordance with UL218, *Standard for Fire Pump Controllers*, and CSA, *Standard for Industrial Control Equipment*. 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 Thermal-Magnetic circuit breaker for assigned horsepower and voltage
- 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)
  - 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 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 enclosure (IEC IP22)
- 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

# FTA740 Single Phase Limited Service Electric Fire Pump Controllers Specifications

## Main Fire Pump Controller

The main fire pump controller shall be a factory assembled, wired and tested unit and shall conform to all the requirements of the latest edition of NFPA 20, Standard for the Installation of Stationary Pumps for Fire Protection and NFPA 70, National Electrical Code.

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

## Starting Method

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 components shall be housed in a NEMA Type 2 (IEC IP22) drip-proof, wall mounted enclosure.

## 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 controller shall not be less than:  
10,000 Amperes RMS Sym. at 200-240V

If the available fault current of the system exceeds these ratings, the controller shall be available with a withstand rating as shown below:

65,000 Amperes RMS Sym. at 200-240V

## Circuit Breaker

The controller shall include a thermal magnetic circuit breaker. The 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 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 controller shall be suitable for use as service equipment.

## 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.

## Ammeter/Voltmeter

The fire pump controller operator interface shall be capable of displaying true RMS digital motor voltage and current measurements. 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.

## Digital Status/Alarm Messages

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

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

## LED Visual Indicators

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

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

## Data Logging

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

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

### 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.

### 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.

### Serial Communications

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

### 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)  $\pm 1$  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.

### Seismic Certification

The controller shall be certified to meet or exceed the requirements of the 2006 International Building Code and

the 2010 California Building Code for Importance Factor 1.5 Electrical Equipment for Sds equal to 1.88 or less severe seismic regions. Qualifications shall be based upon successful tri-axial shake-table testing in accordance with ICC-ES AC-156. Certification without testing shall be unacceptable. Controller shall be clearly labeled as rated for installation in seismic areas and a Certificate of Conformance shall be provided with the 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.

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

The fire pump controller software shall be automatically upgradable 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.

The controller shall be a Firetrol brand.

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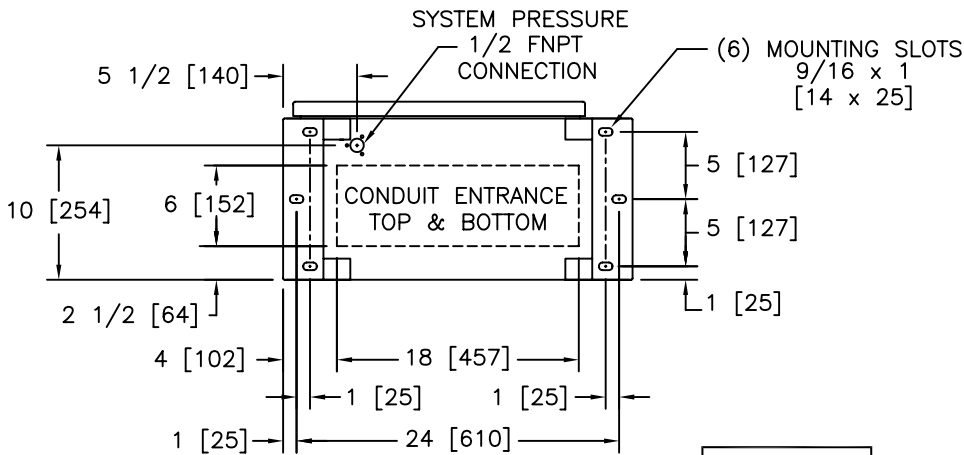
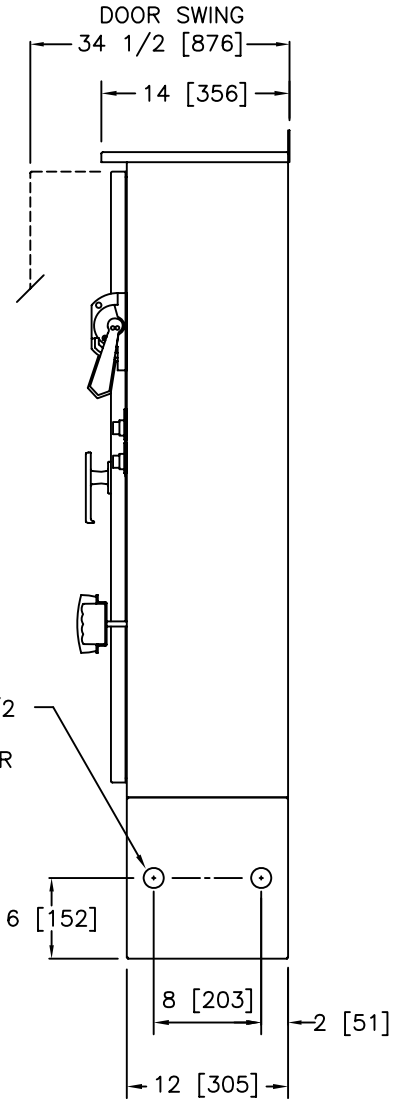
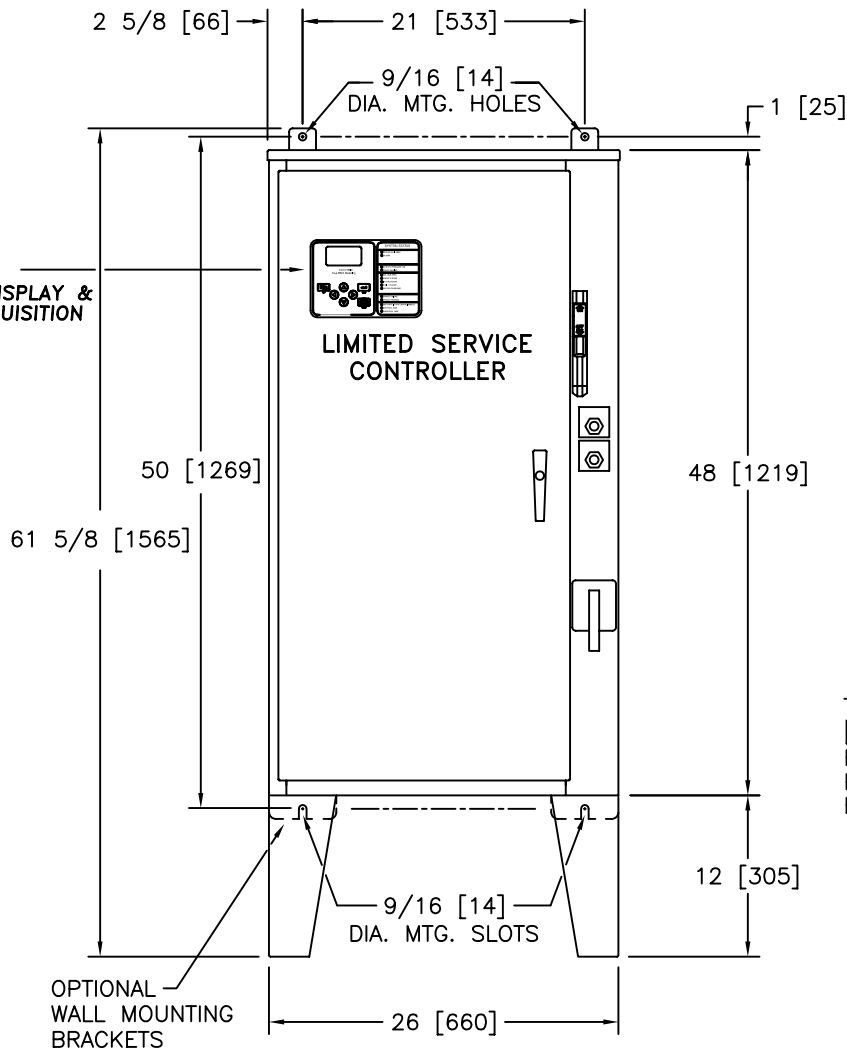
[Firetrol.com](http://Firetrol.com)

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**EMERSON. CONSIDER IT SOLVED.™**

MARK II  
DIGITAL DISPLAY &  
DATA ACQUISITION  
SYSTEM

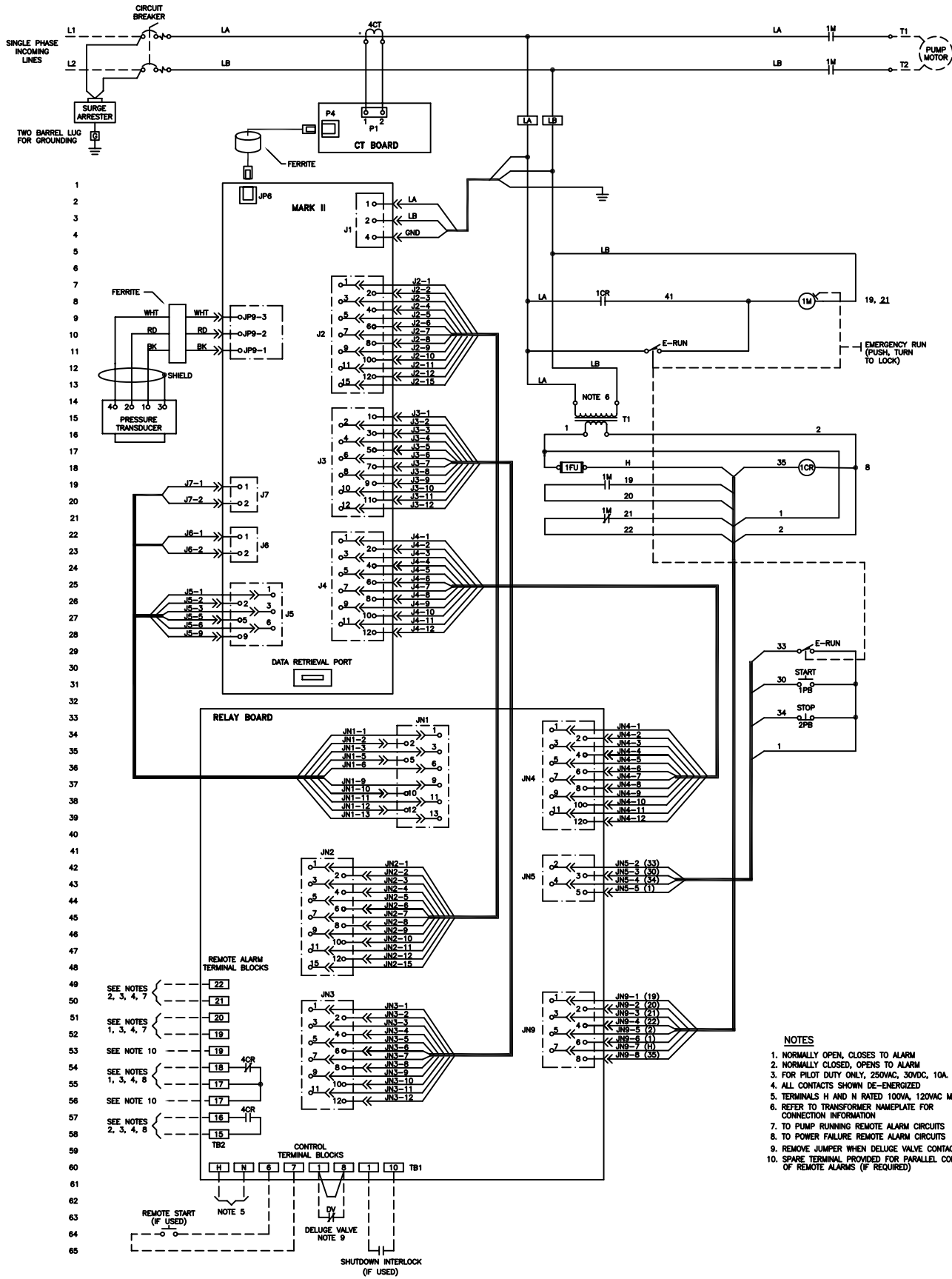


APPROXIMATE  
SHIPPING WEIGHT  
**200 [91]**

DO NOT INSTALL IN AMBIENT TEMPERATURES  
BELOW 41°F [5°C].  
ALL DIMENSIONS - INCHES [MM]  
SHIPPING WEIGHT - POUNDS [KG]  
DIMENSIONS SHOWN ON THIS DRAWING ARE  
APPLICABLE FOR NEMA TYPES 2/3R/4/4X/12

**Firetrol®**

PROJECT NAME:				REV. TO SHEET	ECN NO.	BY	APP.	DATE
DIMENSIONS AND SHIPPING WEIGHT				FTA740				
SINGLE PHASE LIMITED SERVICE FIRE PUMP CONTROLLER								
				 THIRD ANGLE PROJECTION				
DRAWN BY	TEF	DATE	06/04/13	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055			ASSEM. REF. NO.	
CHECKED				PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.			COMPUTER GENERATED DRAWING	
PROJECT APPROVAL							SCALE	1:1
FINAL APPROVAL	TEF	DATE	06/04/13				DWG. NO.	A
				<b>ASCO®</b>			DD740-51	
				ASCO POWER TECHNOLOGIES, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.			DRAWING REV.	ECN NO. 242752
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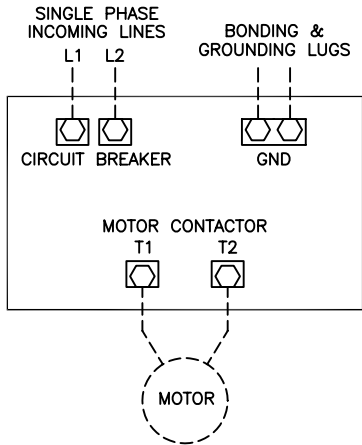
- NOTES**
1. NORMALLY OPEN, CLOSING TO ALARM
  2. NORMALLY CLOSED, OPENS TO ALARM
  3. FOR PILOT DUTY ONLY; 250WAC, 30VDC, 10A. MAX. LOAD
  4. ALL CONTACTS SHOWN DE-ENERGIZED
  5. TERMINALS H AND N RATED 100VA, 120VAC MAX. LOAD
  6. REFER TO TRANSFORMER NAMEPLATE FOR CONNECTION INFORMATION
  7. TO PUMP RUNNING REMOTE ALARM CIRCUITS
  8. TO POWER FAILURE REMOTE ALARM CIRCUITS
  9. REMOVE JUMPER WHEN DELUGE VALVE CONTACT IS USED
  10. SPARE TERMINAL PROVIDED FOR PARALLEL CONNECTION OF REMOTE ALARMS (IF REQUIRED)

PROJECT NAME:		REV. TO SHEET	ECN NO.	BY	APP.	DATE
WIRING SCHEMATIC		FTA740				
SINGLE PHASE LIMITED SERVICE FIRE PUMP CONTROLLER						
DRAWN BY		DATE	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055	ASSEM. REF. NO.	COMPUTER GENERATED DRAWING	
TEF		06/04/13			SCALE 1:1	SIZE A
CHECKED			PROPERTY OF ASCO POWER TECHNOLOGIES. USE PERMITTED FOR OUR WORK ONLY. ALL RIGHTS OF DESIGN OR INVENTION ARE RESERVED.		DWG. NO.	
PROJECT APPROVAL					WS740-50	
FINAL APPROVAL		TEF	06/04/13	ASCO	DRAWING REV.	ECN NO. 242752
				ASCO POWER TECHNOLOGIES, L.P.	SHEET 1 OF 1	
				FLORHAM PARK, NEW JERSEY 07932 U.S.A.		



**LINE TERMINALS—WIRE CAPACITY AND QUANTITY (CU)** <sup>1</sup>

MAXIMUM MOTOR HORSEPOWER 200–240V	WIRE SIZE (CU) PER PHASE	WIRE SIZE GROUND LUG (CU)
15	(1) #14 AWG—#1/0 AWG (1) 2.5 MM <sup>2</sup> – 50 MM <sup>2</sup>	(2) #14 AWG—#2/0 AWG (2) 2.5 MM <sup>2</sup> – 70 MM <sup>2</sup>



**MOTOR TERMINALS—WIRE CAPACITY AND QUANTITY (CU)** <sup>1</sup>

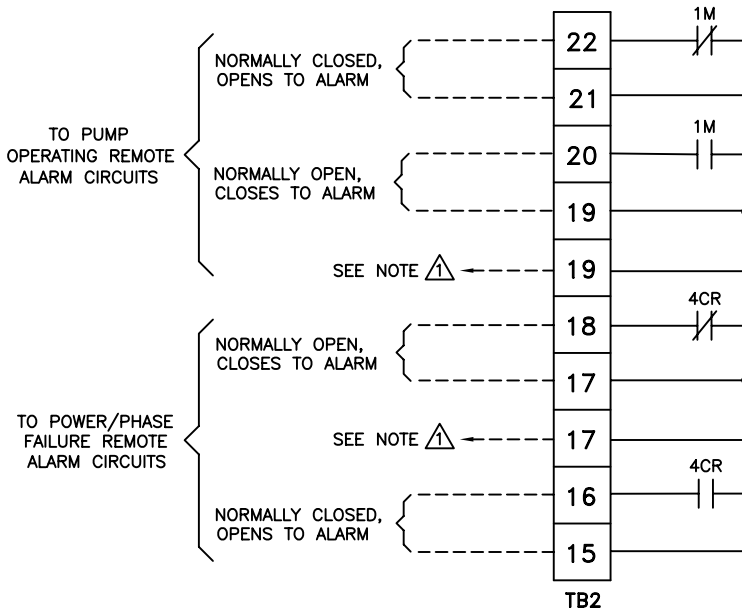
MAXIMUM MOTOR HORSEPOWER 200–240V	WIRE SIZE (CU) PER PHASE
15	(1) #6 AWG—#2/0 AWG (1) 16 MM <sup>2</sup> – 70 MM <sup>2</sup>

<sup>1</sup> FOR CORRECT WIRE SIZING, REFER TO **NATIONAL ELECTRICAL CODE**, NFPA 70.

**NOTES**

- 1— Incoming line terminals are provided to accommodate wire sizes at 125% of motor full load current per NFPA 70, *National Electrical Code*, Table 430–248, Section 695.6(c), and Table 310–16, 75° rated Copper conductors.
- 2— Motor connections shown are typical. Since motor connections vary widely, refer to the motor connection diagram for specific wiring arrangement.

**REMOTE ALARM  
TERMINAL  
BLOCKS**



PRESSURE SYSTEM  
CONNECTION  
1/2" FNPT

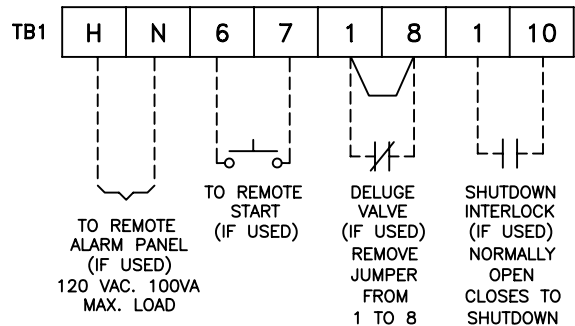
—NOTE—  
ALARM CONTACT  
RATING PILOT DUTY  
250 VAC, 30 VDC  
10 A. MAX. LOAD

△ 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 <sup>2</sup> ]	5.6 lb-in [.6 Nm]

**CONTROL  
TERMINAL  
BLOCKS**



PROJECT NAME:		REV. TO SHEET	ECN NO.	BY	APP.	DATE
FIELD CONNECTIONS		FTA740				
SINGLE PHASE LIMITED SERVICE CONTROLLER						
THIRD ANGLE PROJECTION						
BY	DATE	MANUFACTURING TOLERANCES TO BE IN ACCORDANCE WITH ASCO PROCEDURE MP-1-003. FOR PLASTIC PARTS SEE MP-1-055		ASSEM. REF. NO.		COMPUTER GENERATED DRAWING
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PROJECT APPROVAL					DWG. NO.	FC740-50
FINAL APPROVAL	TEF	06/04/13	ASCO® ASCO POWER TECHNOLOGIES, L.P. FLORHAM PARK, NEW JERSEY 07932 U.S.A.		DRAWING REV.	ECN NO. 242752
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