

Diesel Engine Fire Pump Controllers



Firetrol *Mark II Diesel Control*

- MAIN SWITCH IN AUTO
- ALARM
- ENGINE FAIL TO START
- CHARGER MALFUNCTION
- BATTERY #1 TROUBLE
- BATTERY #2 TROUBLE
- SYSTEM PRESSURE LOW
- ENGINE RUNNING
- ENGINE COOLANT TEMP HIGH
- ENGINE OIL PRESSURE LOW
- ENGINE OVERSPEED
- LOW FUEL LEVEL

METER MENU [Up] [Down] ENTER

PRINT DISPLAY HOME [Right] SAVE TO DISK ALARM SILENCE



Diesel Engine Fire Pump Controllers General Information

Description

Firetrol® combined automatic and manual Mark II based diesel engine fire pump controllers are intended for starting and monitoring fire pump diesel engines. They are available for use with 12 or 24 volt negative ground systems using lead acid or Nickel-Cadmium batteries. The controller monitors, displays and records fire pump system information.

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* (cUL), 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*.

Enclosures

The standard enclosures are NEMA Type 2 (IEC IP11), drip-proof for installation in areas protected from direct sunlight with an ambient temperature above 41° F (5° C). Optional enclosure types include:

- NEMA Type 3R (IEC IP14), Painted Steel
 - NEMA Type 4 (IEC IP56), Painted Steel
 - NEMA Type 4X (IEC IP56), #304 Stainless Steel, Natural Finish**
 - NEMA Type 4X (IEC IP56), #304 Stainless Steel, Painted Finish
 - NEMA Type 4X (IEC IP56), #316 Stainless Steel, Natural Finish**
 - NEMA Type 4X (IEC IP56), 12 Gauge, Seam Welded, #316 Stainless Steel, Polished and Brushed Finish
 - NEMA Type 4X (IEC IP56), #316 Stainless Steel Painted Finish
 - NEMA Type 12 (IEC IP52), Painted Steel
- ** Natural Finish (Not painted, polished or brushed).

NEMA enclosures listed meet or exceed referenced IEC designations.

Features

The Firetrol Mark II fire pump controller monitors, displays and records fire pump system information. The system is standard on all diesel engine fire pump controllers. A USB Host

controller and port are also included as standard.

The door mounted display/interface panel is rated for NEMA Type 4 applications and features a 80 Character Vacuum Fluorescent Display, Membrane Type User Control Push-Buttons and easy to read LED indication of the following conditions:

- Main Switch in Auto
- Alarm
- Engine Fail to Start
- Charger Malfunction
- Battery #1 Trouble
- Battery #2 Trouble
- System Pressure Low
- Engine Running
- Engine Coolant Temp High
- Engine Oil Pressure Low
- Engine Overspeed
- Low Fuel Level



Door mounted display/interface panel

Battery Chargers

The controllers are supplied with two fully automatic, 200 amp hour, 4 step battery chargers. The chargers feature Switching Technology and 10Adc Pulse-Width Modulated Output Current. The 4 step charging cycle is as follows:

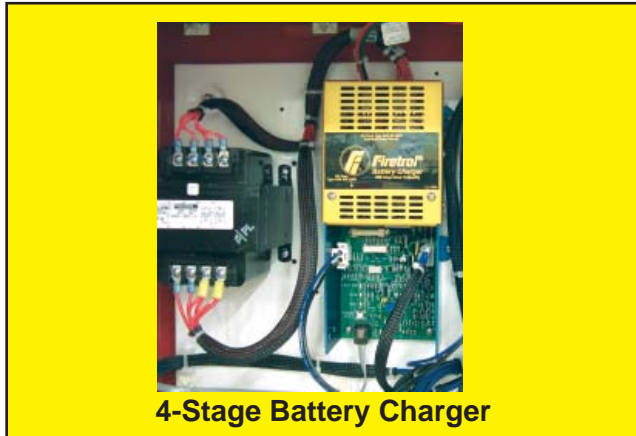
Step 1 - Qualification Stage

During this stage, the battery charger checks the batteries to insure they can accept a fast charge. It also checks for missing or defective batteries. If a missing or defective battery is detected, a fault will be given.

Step 2 - Fast Charge Stage

Charges the batteries until they reach peak voltage.

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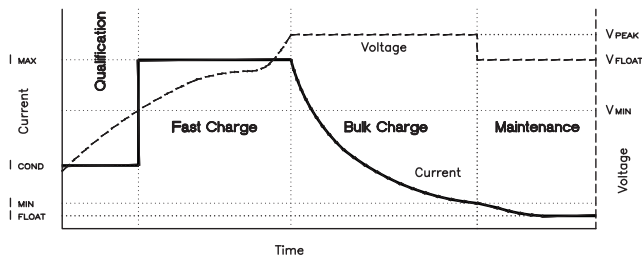
4-Stage Battery Charger

Step 3 - Bulk Charge Stage

Charges the batteries at a constant potential of peak voltage until current reaches 500mA.

Step 4 - Float Charge Stage

Trickle charges the batteries to maintain peak potential.



The battery chargers also feature the following:

- Selectable AC power voltage
- Selectable battery voltage
- Selectable battery type
- AC power fuse
- DC power fuse
- Charge cycle reset push-button

Metering

- The controller provides display of incoming AC power line voltages.
- Total engine run time may be displayed.
- Pressure is displayed in PSI or Bars in 1 psi increments (0.1 bar). The controller is supplied as standard with a 0-300 psi (0-20.7 bars) stainless steel pressure transducer for fresh water applications and optionally with a 0-600 psi (0-41.4 bars) pressure transducer. Controllers can be ordered for sea water/foam or copper corrosive applications.
- Battery voltages and charging currents are displayed on the main screen

Engine Control

The controller provides the following programmable engine control functions:

- Sequential Start Time (On Delay) - 0-60 Seconds
- Minimum Run Time - 0-60 Minutes
- Off Delay Time - 0-60 Minutes
- Weekly Test Time/Duration/Frequency
- AC Power Loss Start Delay Time - 5-300 Seconds
- Manual Stop Only - Yes/No

Pressure Recording

The system pressure may be recorded in three ways:

- User programmable pressure differential - User selects a pressure differential between 5 and 50 psi (.3 - 3.4 bars), every time the system pressure exceeds the differential, the pressure is recorded.
- Hourly - Pressure is recorded on the hour.
- If engine is running, the system pressure is automatically recorded every 15 seconds.

Data / Event Recording

Events and Alarm conditions are logged with a time/date stamp. The Mark II may be programmed to automatically adjust for daylight savings time.

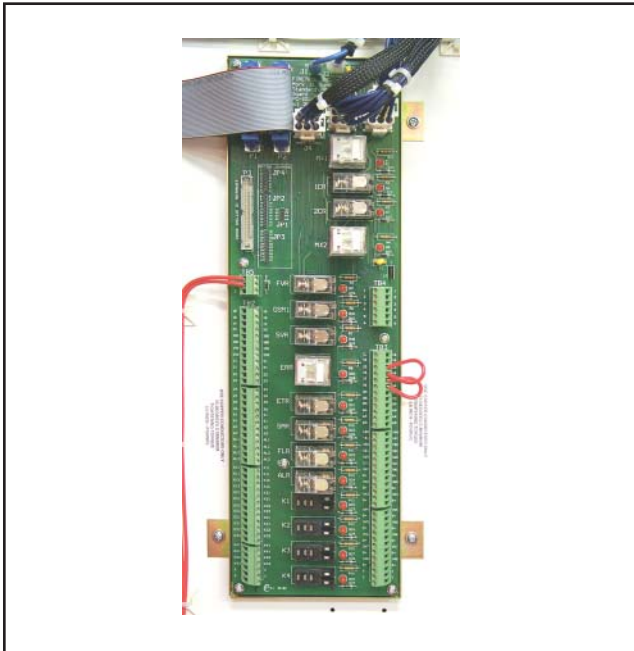
Data is recorded in several ways. The CPU Board contains a Non-Volatile Flash Memory which can record a history of the last 3000 events/alarms. These can be played back via the digital display on the front interface panel. The standard USB host controller and port allows recording of events/alarms to a Flash Memory Disk. Depending on the capacity of the flash disk utilized, the amount of data saved could easily cover the lifetime of the controller. The data is recorded in text (.txt file) format and can easily be reviewed using popular software such as Microsoft® Word® or Excel®. Data/Event recording includes any event that is reported by the Mark II. This includes the pressure recording, alarms such as low fuel level or charger failure and also events such as low system pressure, manual stop or engine running.

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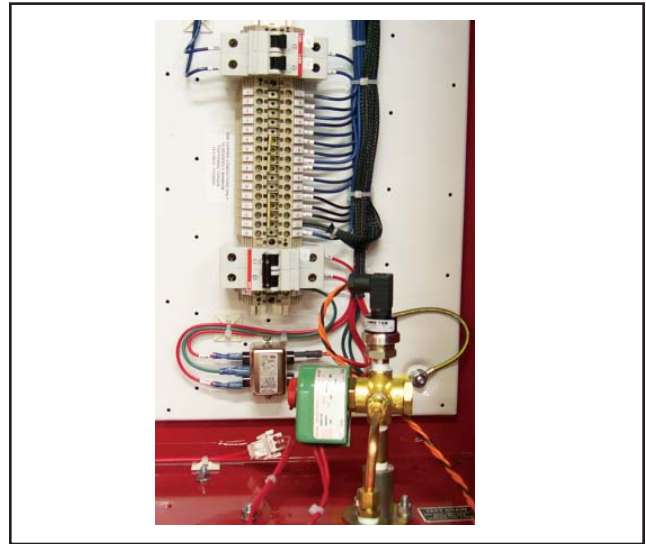
Historical Data

The controller stores historical data in a separate area of the memory from that of the Data / Event recording. The historical data may be viewed on the display, and/or saved to a USB Flash Drive. The historical data includes the following information:

- No. of call to start / No. of actual starts
- Total Engine Run Time (Hrs:Mins:Sec)
- Last Engine Run Time (Mins:Sec)
- Last Engine Start (Time and Date)
- Last High Water Temperature (Time and Date)
- Last Low Oil Pressure (Time and Date)
- Last Low Fuel Level (Time and Date)
- Last Battery Charger Failure (Time and Date)
- Last Battery Trouble (Time and Date)
- Last Engine Overspeed (Time and Date)
- Minimum Battery Voltages
- Maximum Battery Voltages
- Total Unit Run Time (Power on Time)
- Minimum/Maximum System Pressure



**Mark II Relay Board and Field Connection
Terminals**



**Engine Connection Terminal Block, Pressure
Transducer and Test Drain Solenoid**

Serial Communications

The Mark II is equipped with a RS485 serial communications port. This port can be used with 2 wire or 4 wire Modbus RTU communications or with Modbus/TCP Ethernet LAN (using our optional 5150 module). A variety of commercially available converters are available to connect to other communications protocols.

Field Connections

Inside the controller are conveniently located terminal blocks. The first terminal block provides connection to the engine terminal block using like terminal numbers for ease of installation. The second terminal block provides output contacts for engine running, engine trouble, main switch mis-set, low fuel level and common trouble. Input terminals are provided as standard for connection of remote start device, shutdown interlock, deluge valve, low pump room temperature switch, low fuel level switch, reservoir low level switch, relief valve switch, high fuel level switch and reservoir high level switch (switches provided by others).

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