FD140 Bid Submittal
BR124078EN

Eaton DPCT Fire

Touchscreen based diesel fire pump controllers



Powering Business Worldwide

Product Description

The DPCT Fire features an advanced, 7" color touchscreen that utilizes the same design philosophy as the EPCT series controller.

Designed solely with the consumer in mind, the DPCT Fire enables technicians to commission the fire pump controller faster; troubleshooting is made easier and is more effective through the use of on-screen history filtering and diagnostic monitoring.

The controller can be ordered with many functional options to cater to the customers' needs. These include additional output relays, MODBUS communications, and a secondary 4-20mA device card.

Product Features

Touchscreen Display

General

Speed of commissioning, configuration and troubleshooting are critical to businesses today more than ever. Through the use of a 7" touchscreen, users can easily program all site specific setpoints through an intuitive menu structure, view all critical system information, and troubleshoot quickly and accurately via on-screen diagnostics.

Commissioning Simplified

The Startup tab features all controller related commissioning tasks such as: Quick Setup, Manual/Automatic Starts, and Test Alarms.

UL Type Rating

The touchscreen display has been tested in accordance with UL and achieves a type 4X rating.

Programming Menu

Startup tab

This tab system enables the user to complete all controller related commissioning tasks. Each sub-menu within the Startup tab guides the user through step-by-step, intuitive screens to quickly and effectively complete the startup and commissioning process.

Panel Setup tab

All variables relating to the panel, such as language, date and time, nominal voltage, etc., are located in the Panel Setup tab. For all programming points within the Panel Setup tab, refer to the instruction manual: MN124018.

Help tab

The help tab provides end users service contact information from the company that commissioned the unit (if programmed), factory contact information, and a QR code to download the instruction manual onto a mobile device.

Pressure Settings tab

Contains a variety of pressure settings that may be programmed to suit site requirements. Some key settings include: Start Pressure, Stop Pressure, Low Pressure Alarm, High Pressure Alarm, Low Suction Shutdown, Low Foam Shutdown, Pressure Units, and the ability to calibrate the transducer.

Timer Values tab

This tab system contains the programming point for all fire pump controller related timers. These timers are: Minimum Run Time, Sequential Start Time, AC Power Failure, AC Power Failure Start, and Weekly Engine Test Timer.

Alarm Setpoints tab

There are four (4) programmable alarm points within this tab system: Source Voltage Alarm Settings, Battery Voltage Alarm Settings, Transducer Fail Engine Start, and Abort Engine Test.

Inputs/Outputs tab

The I/O board is capable of accepting ten (10) custom inputs that can be programmed for twenty (20) predefined conditions. The output relays can be programmed for sixty-one (61) separate conditions. Additional relays can be added through the use of a single or multiple optional relay boards.

History/Statistics/Diagnostics tab

This tab system allows the customer/technician to view historical data, controller statistics, controller diagnostics, and startup information. To assist, the controller can filter for specific events or between certain dates to speed up troubleshooting.

I/O Board

Power Supply

The redesigned I/O board incorporates both the I/O functionality along with the engine connections. It is capable of accepting 12VDC to 24VDC battery voltage and 120VAC to 240VAC utility voltage.

Customer Input Connections

Connection terminals are provided at the right of the I/O board for external customer connections that can be programmed through the touchscreen display.

Output Relays

The I/O board features three (3), 250VAC, 8A, 2 Form-C relays and one (1) 250VAC, 10A, 2 Form-C relays designated for the following: Common Alarm, Low Fuel, Auto Mode, and Engine Run. Each relay socket has a surface mount LED to indicate the relay's coil status.

Optional Boards

The controller can accept up to four (4) additional option boards: optional relay board, MODBUS communication board, and a secondary 4-20mA device board. The controller has provisions to allow future optional boards to be added with plug-and-play functionality.

Battery Chargers

AC Power Supply

The battery chargers are designed to work with 120VAC-240VAC, 50/60Hz; the battery chargers will automatically switch according to the incoming voltage.

DC Ouput

The battery chargers can output either 12VDC or 24VDC user selectable via a dipswitch located on the battery chargers. The chargers are capable of operating either lead acid or nickle-cadium battery types.

Three-step Charge

The battery chargers are designed with a three-step charging system to optimize the charging cycle. Bulk mode will deliver up to 10A charging until the batteries reach approximately 90% capacity. Over charge will reduce the charging current to 1.5A and will hold until the batteries reach 99% capacity. Float mode will trickle charge the batteries to keep them at 99%-100%.

Other Components

Drain Valve Solenoid

All DPCT Fire controllers are equipped with a drain valve solenoid used for manual or automatic engine tests.

External USB Port

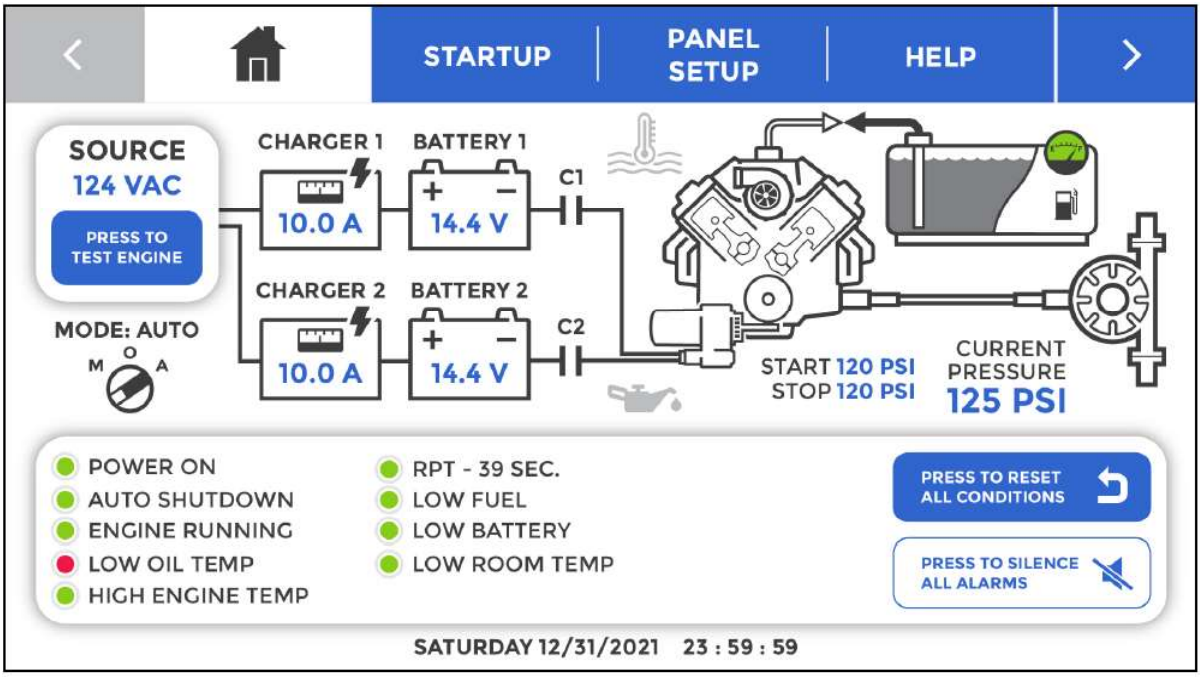
The USB port allows the user to download historical messages, statistics, diagnostic information, startup file, and current controller configuration to any USB device with FAT 16 or FAT 32 formatting.

Enclosures

The DPCT Fire controllers come standard with UL type 2 (drip-proof) enclosures. Optional enclosures are available and include: type, 3, 3R, 4, 4X, and 12.

Standards & Certifications

All DPCT Fire diesel fire pump controllers meet or exceed the requirements of Underwriters Laboratories and Underwriters Laboratories Canada [UL218], Factory Mutual, CE mark (optional), U.B.C./C.B.C. seismic requirements, and are built to the latest edition of NFPA 20 standards.



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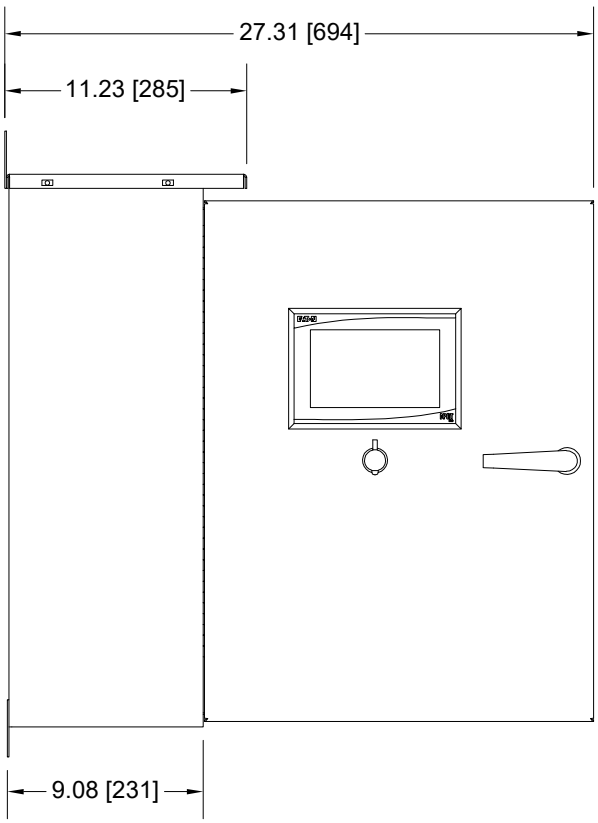
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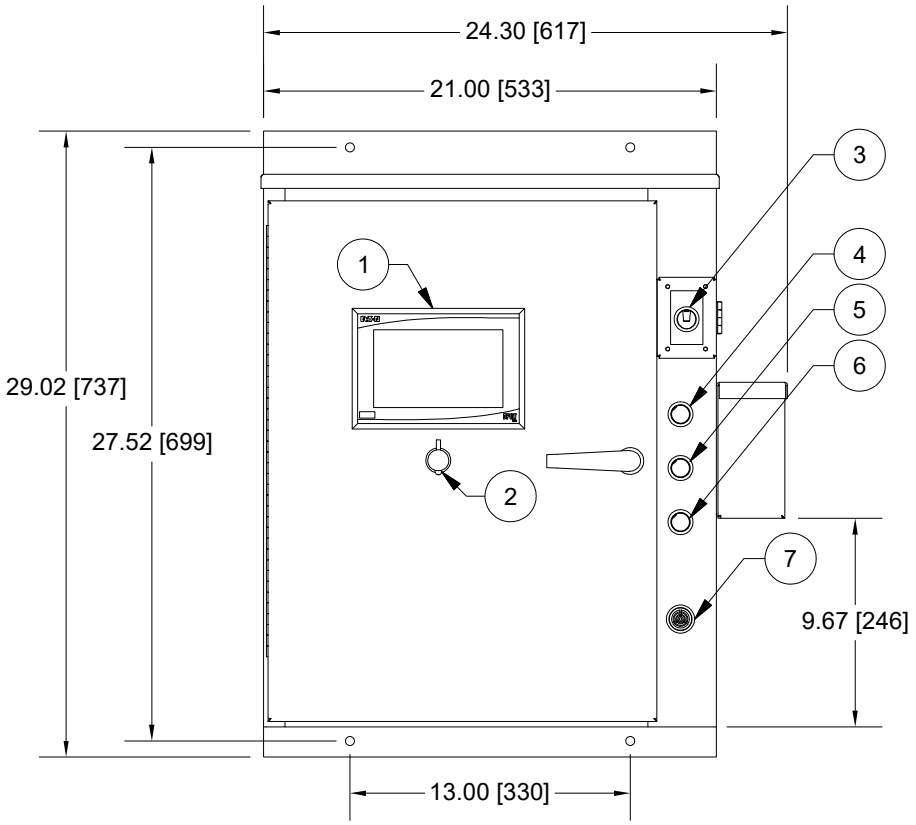
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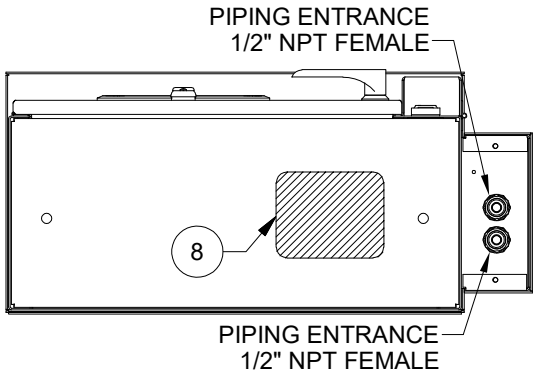
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DPCT FIRE
DIMENSIONAL DRAWINGS - TYPE 2, 3, 3R, 4, 4X, 12





1 - DPCT TOUCHSCREEN
2 - EXTERNAL USB PORT
3 - MANUAL-OFF-AUTO SWITCH
4 - CRANK #1 PUSHBUTTON
5 - CRANK #2 PUSHBUTTON
6 - STOP PUSHBUTTON
7 - FLANGE MOUNTED BUZZER
8 - CABLE ACCESS



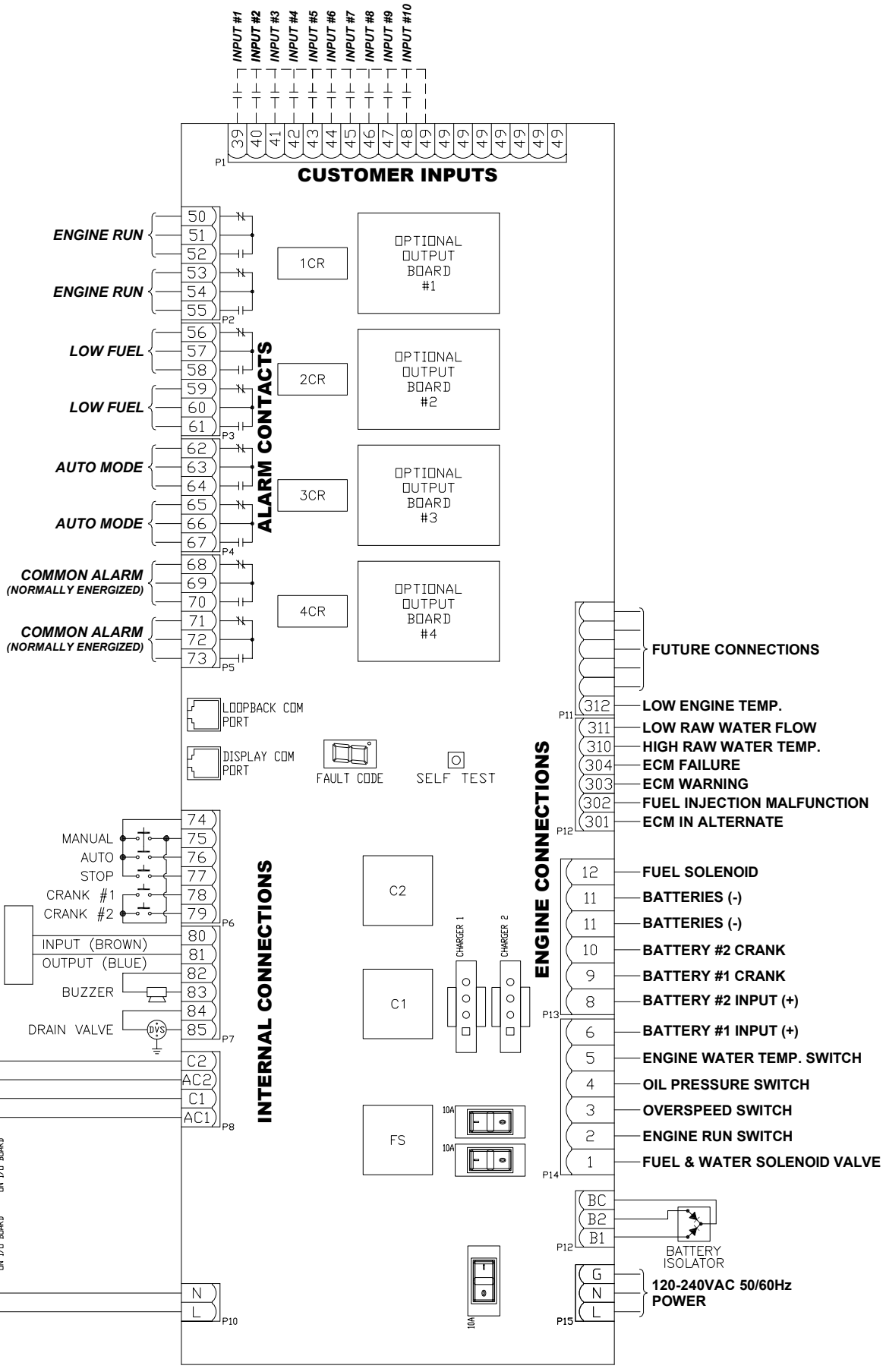
NOTES:
1 - DIMENSIONS: in [mm]
2 - ALL ENCLOSURES FINISHED IN RED
3 - STANDARD ENCLOSURE: UL TYPE 2

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REVISION	DATE	DRAWING NO.
001	08/30/22	CE16780H01

DPCT FIRE
WIRING SCHEMATIC

NOTES:
1. COMMON ALARM RELAYS ARE ENERGIZED UNDER NORMAL CONDITIONS.
2. ALL RELAY CONTACTS ARE SHOWN IN NO POWER CONDITION.
3. ALARM CONTACTS ARE RATED FOR 8A/240VAC. ENGINE RUN CONTACTS RATED FOR 10A/240VAC.
4. ALARM AND ENGINE WIRES ARE TO BE COPPER CONDUCTORS ONLY.

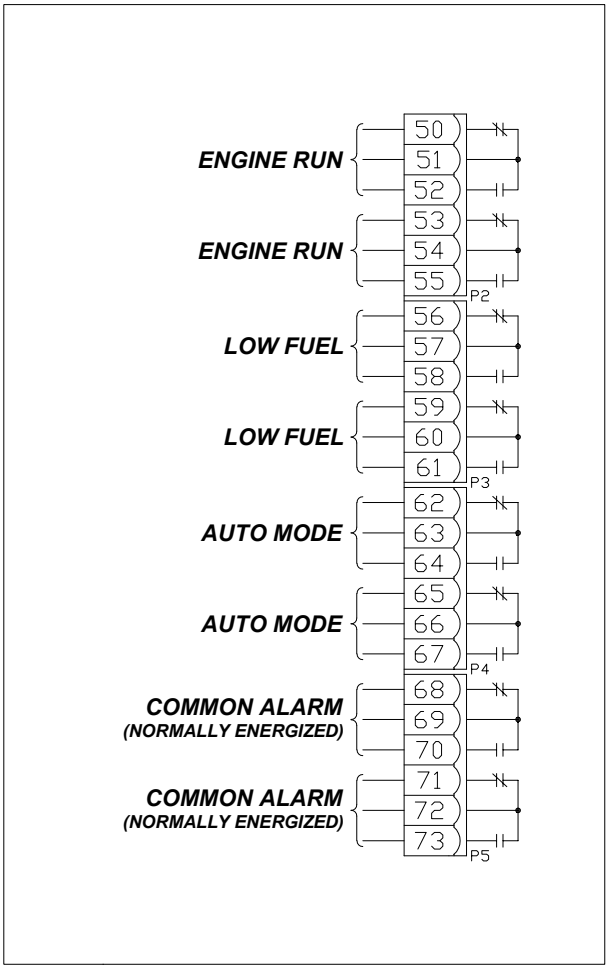


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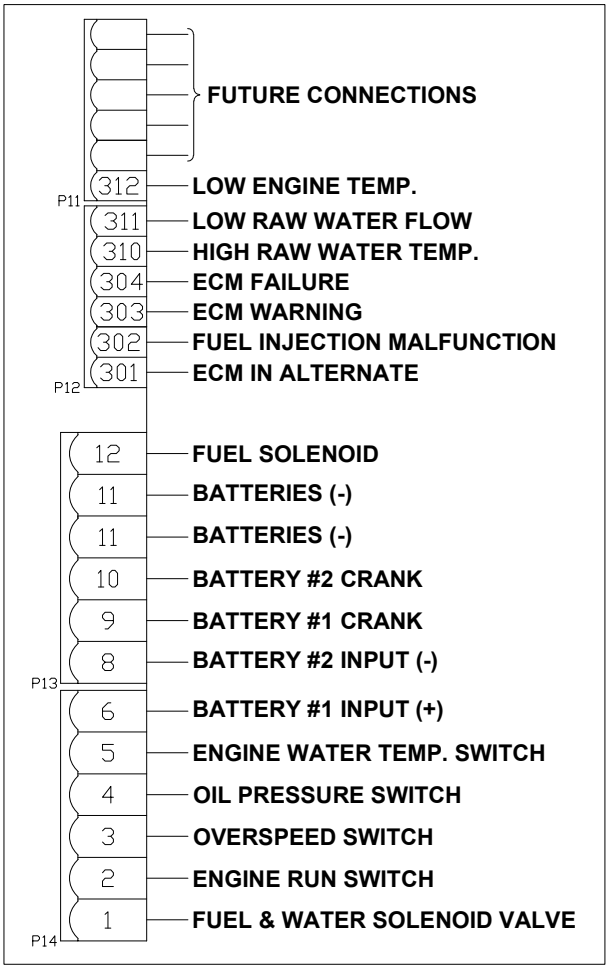
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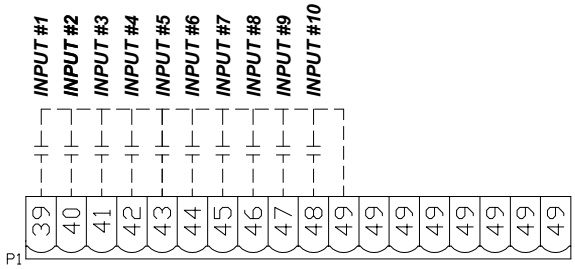
ALARM CONTACTS



ENGINE CONNECTIONS



CUSTOMER INPUTS



Technical Data and Specifications

Line Terminals (Incoming Cables)

Recommended Wire Size - AWG (mm²)	Terminal Number	Distance
I/O Board (Input-Output)		
Stranded #14 (1.63mm²)	39-49, 50-73	N.A.
Stranded #14 (1.63mm²)	Option Board Terminals	N.A.
I/O Board (Engine Connections)		
Stranded #14 (1.63mm²)	1-5, 9, 10, 12, 301-304, 310-312, L, N, G	N.A.
I/O Board (Battery Connections)		
Stranded #10 (2.59mm²)	6, 8, 11	0 - 25 feet (7.62m)
Stranded #8 (3.26mm²)	6, 8, 11	25 - 50 feet (7.62 - 15.24m)

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DPCT Fire option selection matrix

FD140
FDF14 - _____ - _____

Language	
L1	= English
L2	= French
L4	= Italian
L5	= Spanish
L6	= Portuguese
L7	= Chinese
L8	= Polish
L9	= Dutch
L11	= Turkish

DPCT Fire Options		
380	-	Supply Voltage (380V 50/60Hz) *
400	-	Supply Voltage (400V 50/60Hz) *
415	-	Supply Voltage (415V 50Hz) *
480	-	Supply Voltage (480V 60Hz) *
600	-	Supply Voltage (600V 60Hz) *
BS	-	Black Stallion Engine Option
CE	-	CE Marking
E1	-	NEMA 3R - Raintight Enclosure
E2	-	NEMA 4 - Watertight Enclosure
E3	-	NEMA 12 - Dust Tight Enclosure
E4	-	NEMA 3 - Water Tight Enclosure
E5	-	NEMA 4X - 304 Stainless Steel
E8	-	Tropicalization
E9	-	NEMA 4X - Painted Steel
E10	-	NEMA 4X - 316 Stainless Steel
EH	-	Engine Heater Circuit ****
EX	-	Export Crating
LO	-	Powered Louver Contacts - (1.6 Amp Max)
LO+	-	Powered Louver Contacts - (Up to 8.0 Amp)
Ni	-	Ni Cad Batteries
OP1	-	Relay Card (Four (4) One Form-C Relays; specify function)
OP2	-	MODBUS Communications Card
OP3	-	Secondary 4-20mA Device Card
P5	-	Proof Pressure Switch - ALCO - 19-250 PSI
P7	-	Low Suction Pressure Switch
P8	-	Shutdown (Requires P7 Option)
P10	-	Pressure Transducer - Sea Water
R1	-	Space Heater (120 / 220V)
R2	-	Space Heater c/w Thermostat
R3	-	Space Heater c/w Humidistat
R4	-	Low Room Temperature Switch ***
R5	-	Space Heater (Internally powered - 120V / 240V)
R6	-	Space Heater c/w Thermostat (Internally powered - 120V / 240V)
R7	-	Space Heater c/w Humidistat (Internally powered - 120V / 240V)
S1	-	Fuel Level Switch, 16 Inch
S2	-	Fuel Level Switch, 45 Inch
S3	-	Fuel Level Switch, High-Low
TBE	-	Terminal Block Enclosure **

Note: All controllers are factory set for 12Vdc operation, unless otherwise noted on the purchase order.

* Standard voltage supplied: 110 / 220V 50/60Hz

** Not available for NEMA 3, 4, or NEMA 4X units.

*** When ordered with a NEMA 3, 4, or 4X enclosure, the temperature switch is shipped loose with 20 feet of wire.

****Heater circuit may decrease the ambient temperature rating of the assembly. Please contact the factory for additional information.

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DPCT Fire diesel fire pump controllers

Typical specifications

1. Approvals
   A. The Fire Pump Controller shall meet the requirements of the latest edition of NFPA 20 and shall be listed by [Underwriters Laboratories (UL)] and approved by [Factory Mutual Research (FM)] and carry the CE marking (optional) for fire pump service.

2. Starting type
   A. The controller shall be of the combined manual and automatic type designed for starting an FM approved diesel engine.

3. Ratings
   A. Temperature:
   4 to +50 deg. C (39 to +122 deg. F)

4. Construction
   A. All internal components shall be front mounted and wired for ease of inspection and maintenance. All relays shall have visual indication to show if energized. The controller shall include an LCD display to show pertinent information such as the battery voltage, charging current, system pressure, etc.
   B. The controller shall have a twin battery charger system per the requirements of Factory Mutual (FM). The battery chargers shall have reverse polarity protection and indication and be capable of recharging a discharged battery bank within twenty-four (24) hours upon application of the AC source power. The battery chargers shall automatically detect the source input voltage of 120VAC or 240VAC and shall be capable of charging either a 12VDC or 24VDC system.
   C. The controller shall come standard with breaker disconnects for the AC supply voltage and both battery connections.

5. Enclosure
   A. The controller shall be housed in a
   Type 2 (IEC IP11) drip-proof, powder coated baked finish, wall mounted enclosure.
   B. Optional enclosures:
      1. Type 3R (IEC IP14) rain-tight enclosure
      2. Type 3 (IEC IP55) water-resistant enclosure
      3. Type 4 (IEC IP66) watertight enclosure
      4. Type 4X (IEC IP66) watertight 304 stainless steel enclosure
      5. Type 4X (IEC IP66) watertight 316 stainless steel enclosure
      6. Type 4X (IEC IP66) watertight corrosion resistant enclosure
      7. Type 12 (IEC IP52) dust-tight enclosure

6. Microprocessor control
   A. The controller shall come complete with a 7", 800x480, color touchscreen. The touchscreen shall be type 4X rated.
      1. The Home tab capable of displaying system pressure, AC source voltage, battery voltages and charging currents, date, and time, configurable notifications in the notification area, displaying current start and stop set points, and visual representation of the engine and alarms.
      2. Virtual buttons to manually test the pump engine.
      3. Controller statistics screen, including:
         A. Total Powered Time
         B. Total Engine Run Time
         C. Last Engine Run Time
         D. Calls to Start
         E. Engine Starts
         F. Minimum AC Voltage
         G. Maximum AC Voltage
         H. Minimum Battery #1 Voltage
         I. Minimum Battery #2 Voltage
         J. Maximum Battery #1 Voltage
         K. Maximum Battery #2 Voltage
         L. Minimum Battery #1 Amperage
         M. Minimum Battery #2 Amperage
         N. Maximum Battery #1 Amperage
         O. Maximum Battery #2 Amperage
         P. Minimum System Pressure
         Q. Maximum System Pressure
         R. Last System Startup
         S. Last Engine Start

T. Last Engine Test
U. Last Low Oil Pressure
V. Last High Engine Temperature
W. Last Overspeed
X. Last ECM in Alternate Position
Y. Last Fuel Injection Malfunction
Z. Last ECM Warning
AA. Last ECM Failure
AB. Last High Raw Water Temperature
AC. Last Low Raw Water Flow
AD. Last Low Engine Temperature
AE. Last Low Fuel
AF. Last High Fuel
AG. Last Fuel Spill
AH. Last Fail to Start
AI. Last AC Failure
AJ. Last Charger #1 Failure
AK. Last Charger #2 Failure
AL. Last Battery #1 Failure
AM. Last Battery #2 Failure
AN. Last DC Failure
AO. Last Coil #1 Failure
AP. Last Coil #2 Failure

4. Controller diagnostics screen, including:
   A. Controller Serial Number
   B. Logic Board Firmware Version
   C. I/O Board Firmware Version
   D. I/O Board Supply Voltage
   E. I/O Board Communication
   F. Starter Coil #1 Check
   G. Starter Coil #2 Check
   H. Incoming Battery #1 Voltage
   I. Incoming Battery #2 Voltage
   J. Transducer Output Current
   K. Transducer Setpoint Current 1
   L. Transducer Setpoint Current 2
   M. All Input Status (Open or Closed) (Can be selected to override for one minute and manually change the state of the input)
   N. All Output Relay Status (Energized or De-energized) (Can be selected to override for one minute and manually energize or de-energize the relay)
   O. Test the display board's communication.
5. Archive message screen that will display up to 65,000 alarms/messages stored in the controllers' memory

B. The microprocessor logic board shall be available with a USB port for transferring of message history, controller status, diagnostics, startup and statistic files. The USB port should also allow for the updated of product firmware.

C. A Fail-to-Start alarm shall occur if the controller does not receive an Engine Run signal after six (6) crank attempts.

D. A sequential start timer and weekly test timer shall be provided as standard.

E. Source overvoltage (100-999%) and undervoltage (0-100%) sensing and alarming shall be provided as standard.

F. Where shutdown of the pump(s) due to low suction pressure is required, it shall be accomplished without the addition of a separate panel or enclosure. The display shall indicate low suction shutdown. Resetting of the condition shall be automatic or manual as selected by the user.

7. Programming Menu
   A. The programming menu shall have the ability to enable an entry password.
   B. The controller shall have eight (8) languages as a standard: English, French, Spanish, Portuguese, Turkish, Italian, Dutch, and Polish.
   C. The programming menu shall be grouped into nine (9) tabs as follows:
      1. Home
      2. Startup
      3. Panel Setup
      4. Help
      5. Pressure Settings
      6. Timer Values
      7. Alarm Setpoints
      8. Inputs/Outputs
      9. History/Statistics/Diagnostics
8. Pressure sensor
   A. A solid-state 4-20mA pressure sensor shall be provided. The pressure Start and Stop points shall be adjustable in increments of one (1) PSI.
9. Custom inputs/outputs
   A. The controller shall come standard with ten (10) programmable inputs, four (4) programmed outputs with the ability to add up to another sixteen (16) outputs via optional relay boards.
   B. The user shall be able to program the inputs/outputs through the main programming menu.
   C. The inputs shall be selectable based on the following criteria:
      1. User selected message or twenty (20) predetermined messages
      2. Link to a future relay and/or LED indicator
      3. Alarm latched until reset
      4. Normally open or closed input
      5. On and/or off-delay timer

D. The future relays shall be selectable based on the following criteria:
   1. Output based on a minimum of sixty-one (61) predetermined alarms, controller status or a custom input
   2. Latched until reset
   3. Energized under normal conditions
   4. On and/or off delay timer on the output

10. Alarm relays
   A. All relays shall be soldered on the PCB. An LED on the relay panel shall indicate the energized state of the relay. Three (3) relay contacts shall be rated @ 8A, 250VAC/30VDC and one (1) shall be rated @ 10A, 250VAC/30VDC. Two (2) sets of Form-C contacts shall be provided for each of the following:
      1. Common Alarm
      2. Auto Mode
      3. Low Fuel
      4. Engine Run

   B. The Common Alarm relay shall be energized under normal conditions.

11. Audible alarm buzzer
   A. An audible alarm buzzer, capable of being heard while the engine is operating, shall operate if Fail to Start, Hardware Malfunction or any Common Alarm condition exists.

12. Manufacturer
   A. The controller shall be of the DPCT Fire type as manufactured by Eaton Corporation.

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