



MANUAL FOR MODEL MP300 to MP700 ELECTRIC MOTOR DRIVEN FIRE PUMP CONTROLLERS

Starting Serial No. "NA "

This manual provides General Information, Installation, Operation, Maintenance and System Set-Up Information for METRON Model MP300 through MP700 Electric Motor Driven Fire Pump Controllers.

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PART I: GENERAL INFORMATION

The basic function of the model MP Fire Pump Controller for electric motor driven fire pumps is to automatically start the fire pump electric motor upon a drop in pressure in the water main, or from a number of other demand signals. This controller provides alarm and/or alarm shutdown protection for various motor and power failures. Stopping of the motor after the demand period is over may be either manual or automatic. This controller also includes an automatic weekly test starting feature.

PART II: FUNCTIONS

Equipment is provided in the Controller to provide the following functions:

- A. Automatic Starting From:
 - a. Drop in water line pressure
 - b. Operation of optional remote start switches, such as remote start switch, deluge valve switch, fire alarm switch, etc.
 - c. Weekly test timer
- B. OID – Operator Interface Device - Provided for display of alarm functions, system pressure, 3 phase AC volts, 3 phase motor current and alarm conditions, etc. Includes LEDs for Indication of Auto, Test, and Manual modes. Also features a 4 line by 20 character LCD for display
- C. Alarms and Signal Lights - Three (3) Standard LED lights are provided to give visual signals for; **"Power On"**, **"System Fault"**, and **"Phase Reversal"**. When a transfer switch is supplied, Three (3) additional LED lights are provided for **"Transfer Switch in Normal"**, **"Transfer Switch in Emergency"** and **"Emergency Iso Sw Open"**. Additional **"Pump Room Alarms"** are displayed on the OID as text messages. The most recent Event is displayed with additional events visible by using the Up and Down Arrow keys on the OID. An audible alarm horn is mounted on the front of the cubicle for sounding in the event of failure. Terminals are provided for remote failure indication of the following:
 - "Power Available"**
 - "Phase Reversal"**
 - "Pump Running"**
 - "Controller Not in Auto"**
- D. A data logger is provided as standard to record system pressure along with numerous alarm conditions and system events. The data can be displayed on the OID or can be downloaded to a PC through the RS485 port provided on the main system board. Data is stored on an SD Memory card. This card contains individual pressure files with each file containing one days worth of pressure data. Each file is of the PressXXX.txt format. Each entry is stamped with the date and time and system pressure at that time. The Events.txt file contains all of the logged events with each event stamped with date and time. The SD memory card can be removed and files transferred directly to a PC using appropriate memory card reader. The controller will continue to operate normally with the SD card removed. There will, however, be a visual and audible alarm when the card is removed. Events and pressure data will continue to be logged while the card is missing. The memory cards should be replaced within 12 hours to ensure that no data is lost.
- E. A weekly test timer is supplied to automatically start the pump any set day of the week, at a set time of day, and a preset run time. See System Config Screen 106.
- F. **"Start"** Push button – A green push button is provided on the exterior of the cabinet to manually start the pump. When this button is pressed, the motor will continue to run until it is stopped using the Stop push button.
- G. **"Stop"** Push button - A red pushbutton is provided on the exterior of the cabinet to stop the pump in Automatic only after starting causes have returned to normal. This returns the controller to the automatic position. In the Manual mode this will also stop the pump after starting via the Start push button.
- H. Cabinet - A heavy gauge steel cubicle encloses the controller. The OID, the key operated Auto-Off-Manual (AOM) Selector Switch and manual start pushbuttons are mounted on the outer door. A key for the AOM switch is stored in a break-glass housing on the door of the cabinet. An additional key is located inside the cabinet.

PART III: OPERATION OF THE CONTROLLER

- A. When the controller is in the **"Auto"** mode, the main circuit breaker and isolation switch are in the **"On"** position, the controller is in standby condition ready to start the pump automatically. A green pilot **"Auto"** LED On the OID will illuminate in this mode. Also, the Power On light should be ON indicating that all power is available and the controller is ready to start the pump.

When the water pressure drops below a level, which is set in System Config Screen 101, the Controller will actuate the starting sequence based on the Model of the controller selected in Screen 301. If the pump fails to start after a set time delay (Screen #103), the **"Pump Failed to Start"** message will show on the LCD, and the alarm horn will sound. In addition, the **"System Fault"** light will illuminate.

The panel is wired so that optional remote start switches may be used, such as Deluge Valve, Remote Start pushbutton, Fire Alarm switches, etc. The Deluge Valve Switch Option (Screen #124), is a normally closed switch that when opened starts the pump similar to the pressure drop start. In addition, when "Supervisory Power Failure Startup" feature is enabled (System Config Screen 116), the Controller will automatically start the pump upon loss of a Separate 120VAC Supervisory Power, after an adjustable time delay (System Config Screen 117).

If the pump stops while running, and there is still an auto start demand, the control will attempt to restart the pump. If the pump fails to start the **"Pump Failed to Start"** message will show on the LCD and the alarm will sound. If, while the pump is operating, the motor current exceeds a set overload value (Screen #319), the **"Motor Overload"** message will show on the LCD and the alarm will sound indicating motor overload.

The Controller may be configured as either **"Manual"** or **"Automatic"** stop as required (System Config Screen 104). **"Manual"** stop is set as standard. When Automatic stop is enabled the stop timer is preset at the factory to 10 minutes. Longer time settings can be set in System Config screen 105. When "Automatic Stop" is disabled, the pump will continue to run even though the pressure switch or other remote starting switch returns to its normal position. The pump can be stopped immediately only by pressing the stop button or by pressing the **Off** mode button. If set up for **"Automatic"** stop, the pump will be stopped automatically upon restoration to normal of whatever demand switch started the pump providing it has run at least 10 minutes or longer as set in System Config screen 105. If the demand period was less than the time set on the auto stop timer, the pump will continue to run until the timer times out and then will stop.

- B. When the **"Test"** mode button is pressed for two or more seconds, the pump will be started by causing a drop in water pressure if the Solenoid Drain Valve Option (Screen #108) is selected. If the Solenoid Drain Valve Option is set to NO, the unit will start automatically similar to the Deluge Valve switch start feature. Failure alarm circuits will be operative in the **"Test"** mode. This method of starting provides a test of the Controller, thereby assuring proper operation when required. The pump will run continuously in this position until the **"Stop"** push button is pressed or the Mode selector switch is turned to the **"OFF"** position.
- C. Periodic Self Testing - The Weekly Test Start Timer can be set to give test runs on any day of the week and time of day desired. A timing element is incorporated in the controls so that when the pump starts in this manner, it will run for a definite time before it shuts down. See System Config Screens 109 through 112 to set the starting time and length of pump running. See item B. above. The Weekly test feature will also use the Solenoid Drain Valve option to start the pump if it is enabled as described in B. above. If Screen #113 (Stop Motor During Test on Alarm) is set to Yes, the motor will be stopped should any alarm condition occur during the weekly test operation.
- D. Provision for sequential starting is accomplished by the use of adjustable time delay on pressure drop starting or "Deluge Valve" starting. On Multiple Pump installations these timers are set sequentially and progressively longer in time to prevent more than one (1) pump from starting simultaneously with another pump. Failure of the lead pump to start will not prevent subsequent pumps from starting. The time delay on starting is set in System Config Screen 103.
- E. **Emergency Manual Operation:** Emergency manual operation is provided in case of failure of control circuitry. This lever is manually moved to the "On" position and must be manually latched in the "ON" position or it will return to "Off" when released. The lever should be moved from the "Off" position to the "On" position in as quickly a motion as possible to prevent burning the contacts. The circuit breaker should be turned off to disconnect the circuit before releasing emergency lever. This lever is for emergency use only. A mechanical interlock switch is connected to the emergency lever to operate the contactor electrically when all circuitry is functioning properly. This is provided to prevent inadvertent slow closing of contactor and burning of contacts.
- F. **Series MP400 Primary Resistance Start:** There are two contactors supplied along with a set of starting resistors. The starting contactor is connected in series with the resistors to reduce the voltage to the motor for a preset time. After this preset time delay (See Screen #314) the main contactor will close in parallel with the starting contactor and resistors and thus apply full voltage to the motor. If the motor is not connected for this test, there will be no voltage drop across the resistors and full voltage will appear at the output terminals of the contactors as soon as the starting contactor closes.

- G. **Series MP420 Part-Winding Start:** There are two contactors for part-winding start. The start contactor will close immediately on demand and the other will close after a preset transition time delay (See Screen #314). Full voltage will be present at the output of both contactors.
- H. **Series MP430 Wye-Delta Open Transition:** There are three contactors for wye-delta starting. The start contactor and the shorting contactor will close immediately on demand. This connects the motor leads in the wye configuration. After the transition time delay the shorting contactor opens and the run contactor closes, thus connecting the motor windings in the delta configuration. The motor will now run at full speed and deliver rated horsepower to the load.
- I. **Series MP435 Wye-Delta Closed Transition:** The operation of the Series MP435 is almost the same as the Series MP430. There is an additional resistor contactor and a set of transition resistors which provides power to the motor windings during transition from the wye connection to the delta connection. After the transition time delay this contactor closes, which connects the resistors to the motor windings. After the resistor contactor closes the shorting contactor opens, which in turn allows the run contactor to close, thus connecting the motor windings in the delta configuration. The motor will now run at full speed and deliver rated horsepower to the load.
- J. **Series MP450 Autotransformer Start:** There are three contactors for autotransformer starting. The start (autotransformer) contactor and the autotransformer neutral contactor will close immediately on demand. This connects the motor leads through the autotransformer to reduce the voltage to the motor. After the transition time delay the run contactor closes and then the start contactor and autotransformer neutral contactor open, thus connecting the motor to full voltage. The motor will now run at full speed and deliver rated horsepower to the load.
- K. **Series MP700 Solid State Soft Start:** There are two contactors for solid state soft starting. The solid state starter line contactor will close immediately on demand and ramp the motor up to speed depending on the solid state starter configuration parameters. After the transition time delay the run contactor closes and bypasses the solid state starter, thus connecting the motor to full voltage. The motor will now run at full speed and deliver rated horsepower to the load. When the stop command is received and the controller is set up for the ramp stop option (Screen #106) the motor will ramp down in speed over a fixed time delay (Screen #107) until it stops.

Note: When using the emergency manual start handle, the soft start unit may display an "OCF" fault condition. This is normal. The unit is not malfunctioning. When the proper stop sequence is used according to paragraph E above, the fault condition will be cleared and the soft start unit will be ready for a normal start.

PART IV: INSTALLATION AND TEST PROCEDURE

A. INSTALLATION

The Fire Pump Controller has been assembled and wired at the factory in accordance with the highest workmanship standards. All circuits and functions have been thoroughly tested to assure correct operation when properly installed. The installer should be completely familiar with the external hookup of the pump junction box to the terminal bar in the Controller. All local electric codes should be used for proper installation, wiring and grounding of the controller prior to startup.

A weekly test drain solenoid valve may be provided to relieve water pressure to the pressure transducer thus initiating the start sequence. This test simulates an actual start demand. Since the Controller operates the drain valve only momentarily, a small amount of water is drained off. The water pressure sensing line to the Controller from the pump must be thoroughly flushed before connection to the Controller in order to remove chips, particles, or other matter, that could enter the plumbing components in the Controller.

Controllers configured with "**Automatic Stop**" enabled may be changed to "**Manual**" stop by disabling this feature in System Config Screen 104. If deluge valve switches are to be used for starting, enable the Deluge Valve Option in Config Screen 121 and connect the remote normally closed switch to terminals 74 and 111.

B. TEST PROCEDURE

All of the following tests should be made on each unit after installation. If each test is satisfactory, the operator may place the control switch in "**Auto**" mode and depend upon the panel operating properly when required. Also, any one or all of these tests may be carried out at any time after installation, if so desired. **NOTE: If the Supervisory Power Failure Start Option has been Enabled (Screen #116) and 115 Volts A.C. is not connected to Controller, the "System Fault" light will illuminate and the controller will start automatically after a time delay. The 115VAC must be turned on to prevent the pump from starting.**

Phase Reversal Alarm – Upon initial power up, if a phase reversal alarm should sound, the following process can be used to correct the alarm. If a test of the motor rotation indicates that the motor is turning opposite of the correct direction, the motor

leads must be reversed to cure the condition. Turn the controller circuit breaker and isolation switch off and verify that incoming power on the load side of the controller isolation switch has been disconnected. Then reverse any two of the motor leads. If there are multiples sets of motor leads, i.e. Part Winding start or Wye-Delta start, then both sets of leads must be reversed. Be certain to change the same set of wires at the two contactors. Then turn the controller isolation switch and circuit breaker back on and check for correct rotation of the motor and then follow the procedure below to correct the Phase Reversal alarm.

If the motor is turning the correct direction but there is a Phase Reversal alarm then this can be corrected as follows. Press the Config button on the front of the OID. Press the Config (2) button again to access the User Preferences Setup screens. Press the Up arrow key once. The OID should then read "223 User Preferences – Reversed Phase". Press the Change/Enter button. The system will then ask for a password. Enter 1111 and then press enter. Press the Up or Down arrow key to change the setting in the lower left hand corner of the screen from "No" to "Yes" then press the Change/Enter button. After a few seconds the "Phase Reversal" LED will reset. Also, press the Silence\ Reset button for approx. 3 seconds to silence the audible alarm.

INPUT/OUTPUT STATUS INDICATOR LIGHTS

Light Emitting Diodes (L.E.D.) lights have been installed on the microprocessor module to indicate the status of each input and output terminal. Status indication for the standard functions is given below:

<u>Terminal Number</u> <u>(Microprocessor Func #)</u>	<u>L.E.D. (light) "ON" Indication</u>
(Out 02)	Circuit Breaker Shunt Trip
(Out 03)	Start Contactor relay (if applicable)
(Out 04)	Run Contactor relay
(Out 05)	Start signal to Soft Start (Model MP700 only)
(Out 06)	Power to Soft Start (Model MP700 only)
(In 01)	Emergency Start lever activated
(In 02)	Start Pushbutton
(In 03)	Stop Pushbutton
(In 04)	Start Contactor closed
(In 05)	Run Contactor closed
(In 06)	Transfer Switch position (if applicable)
(In 07)	Transfer Switch ready to transfer (if applicable)
(In 08)	Transfer Switch Emergency Iso Switch Open (if applicable)

a. AUTOMATIC STARTING TESTS:

1. Place Mode selector switch in "**Auto**" position.
2. Bleed off pressure in system until pressure drops below the low set point.
3. Pump should start automatically and continue to run after pressure rises above the high set point, if arranged for "**Manual**" stop. If arranged for "**Automatic**" stop, pump will continue to run for time set on Auto Stop Timer and then stop.
4. Press the "**Stop**" push button to stop the pump.
5. Repeat tests for each demand switch such as deluge valve (if enabled), remote start, etc.

b. PERIODIC WEEKLY START TEST:

1. Pressure must be up and all other demand switches de-activated.
2. When the current day and time of day matches the settings in System Config screens 107 and 108, the solenoid drain valve will energize (if enabled and supplied, see screen #108) and the pump will start. It will continue to run for the amount of time set and then stop automatically.

c. SETTING PROGRAM WEEKLY TEST TIME: System Config screen 109 through 112.

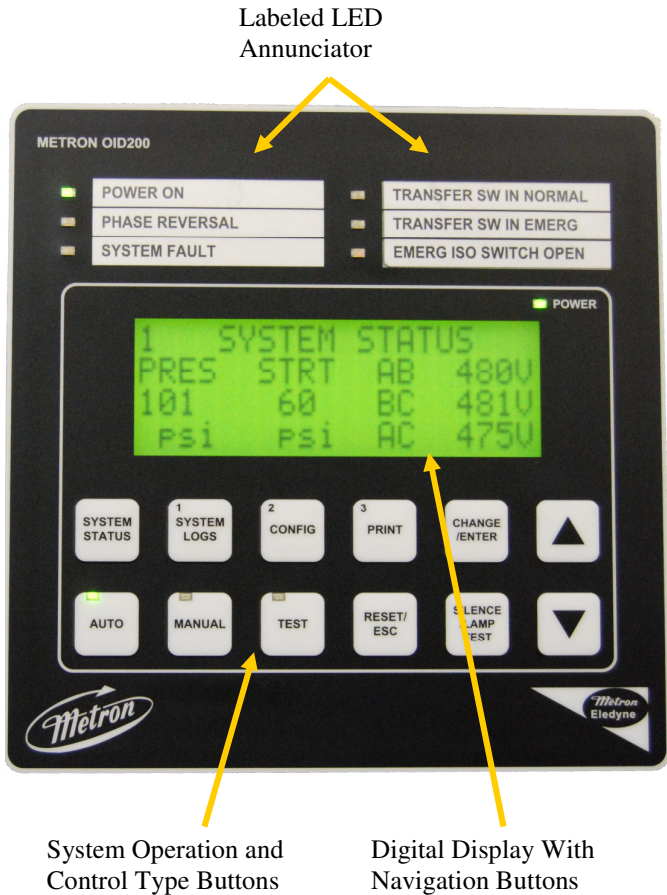
- d. **REMOTE START SWITCH CIRCUITS:** Field wiring terminals are provided on the controller so that optional remote start switches such as Remote Pushbutton Stations, Deluge Valve Switch, Fire Alarm Switches, etc., may be used to start the pump. Two (2) sets of terminals are provided. Terminals #112 and #31 are used for remote manual start push buttons (close to start). Terminals #111 and #31 are used for remote Deluge Valve Switch or other remote automatic start switches (open to start). Upon automatic start from this type of switch, the pump will be stopped either automatically after the demand switch

de-activates and Pump Auto Stop Timer times out, or manually at the Controller. Terminals #111 and #31 must have a jumper installed if a remote Deluge switch is "Enabled" but not to be used. When the controller is shipped from the factory Deluge Valve start is Disabled (System Config screen 121).

- e. **AC POWER FAILURE STARTING:** If this feature has been enabled it can be tested by disconnecting the supervisory power 115 V.A.C. to the Controller. After the preset time delay (which is specified in System Config screen 112), the Controller will commence starting of the pump. The "**System Fault**" LED will illuminate and the alarm will sound.
- f. **NORMAL OPERATION – AUTOMATIC:** Turn the Mode selector switch to the "**Auto**" position. A green "**Automatic Mode**" light will illuminate and the pump will automatically start upon drop in pressure or operation of other start switches. If the Auto Stop Timer is disabled (Manual Stop) the pump must be turned off at the Controller. When the Auto Stop Timer is enabled, upon termination of the demand signal, the pump will run for the length of time left on the Auto Stop Timer and then will stop automatically.
- g. **AN ADJUSTABLE SEQUENTIAL START TIMER IS SUPPLIED FOR MULTIPLE PUMP INSTALLATION:** Normally, the leading pump Controller will not have a delay timer and will commence starting of the pump immediately upon operation of a demand signal (other than Power Failure which is time delayed). The subsequent Controllers will have a time delay which is adjustable from 0 to 999 seconds. Each time delay should be set with progressively longer times on each subsequent pump. The recommended time interval is ten (10) to fifteen (15) seconds. This may be extended or shortened as required by the local authorities having jurisdiction.
- h. **PUMP ROOM ALARMS:** Field terminals may be provided for various inputs from pump room alarms. These alarms include: Low Pump Room Temperature, Reservoir Low, Reservoir Empty, Low Suction Pressure, Relief Valve Discharge and/or Flow Meter On etc. A maximum of twelve (12) (or nine (9) if a transfer switch is supplied), pump room alarms are available. Each auxiliary alarm is configurable so that the alarm horn may or may not sound and an event message will be displayed on the OID (if configured) when the alarm sensor contacts close. These pump room alarms can be silenced with the "Silence" push button on the OID if they have been configured as silenceable.

PART V: OPERATOR INTERFACE DEVICE (OID) USE AND NAVIGATION

The Operator Interface Device (OID) provides visual indication of the alarms, status of system parameters, and an interface to change set points to configure the controller to operate appropriately for various installation requirements.



Common Tasks Performed Using The OID

Silencing Horn: If a horn is sounding and the alarm is silenceable, a quick press of the [SILENCE/RESET/ESC] will silence the horn (less than 1 second press).

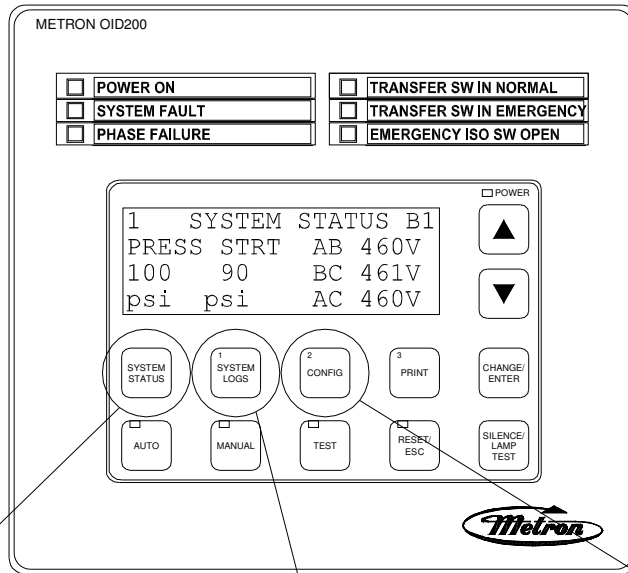
Resetting Alarms: If the alarm condition has cleared, press and hold the [SILENCE/RESET/ESC] button 2 to 5 seconds to reset alarms.

Operating Mode: LED's are provided to indicate the present mode of the controller. A green "Auto" mode or a red "Manual" mode LED is provided. If neither LED illuminated the controller is in the "Off" mode.

Test Mode: When controller is in Auto Mode, pressing and holding the [TEST] button for two or more seconds will open the pressure drain solenoid thus dropping the pressure, which causes the controller to start the pump. Pressing and releasing the [TEST] button in Manual Mode directly controls the opening and closing of the drain solenoid. The pump will not automatically start when in Manual Mode.

Lamp Test: To illuminate and check all the OID LED's and the horn, press and hold the [SILENCE/LAMP TEST] button 5 or more seconds or until all the lights turn on.

OID Screen Map



1	SYSTEM STATUS B1 PRES STRT AB 460V 110 100 BC 461V psi psi AC 460V
2	SYSTEM STATUS Phase A 125 Amps Phase B 124 Amps Phase C 125 Amps
3	SYSTEM STATUS Pump Countdown Tmr 0min Until Start 0min Until Stop
4	SYSTEM STATUS Pump run Hr 0.0 # of Starts 0 Fri12/15/05 09:51:38
5	SYSTEM STATUS Controller Power On Time: 18.5 Hrs Mon10/20/04 17:53:26
6	SYSTEM STATUS Firmware Ver SV 1.1 Commissioned Date: 10/15/04

SYSTEM LOGS
1) Event Log
2) Pressure Log

#	1 EVENT LOG System in Off Mode Occurred 10/16/04 13:15:15
---	--

#	1 EVENT DETAILS System in Off Mode Occurred 10/16/04 13:15:15
---	--

#	1 EVENT DETAILS Pressure: 83.2psi System Auto:Yes Pump Running:No
---	--

#	1 EVENT DETAILS Phase A Amps 0 Phase B Amps 0 Phase C Amps 0
---	---

#	1 EVENT DETAILS Phase AB Volt 460 Phase BC Volt 461 Phase AC Volt 464
---	--

#	2 EVENT LOG Pump Failed To Start Alarm Occurred 10/16/04 07:32:15
---	--

#	3 EVENT LOG Supvr Power Failure Alarm Cleared 10/16/04 07:09:48
---	--

| |
| |
| |

#	1 PRESSURE LOG 10/16/04 17:52:45 112 psi Skip Rate:[EACH]
---	---

#	1 PRESSURE LOG 10/16/04 17:52:30 112 psi Skip Rate:[EACH]
---	---

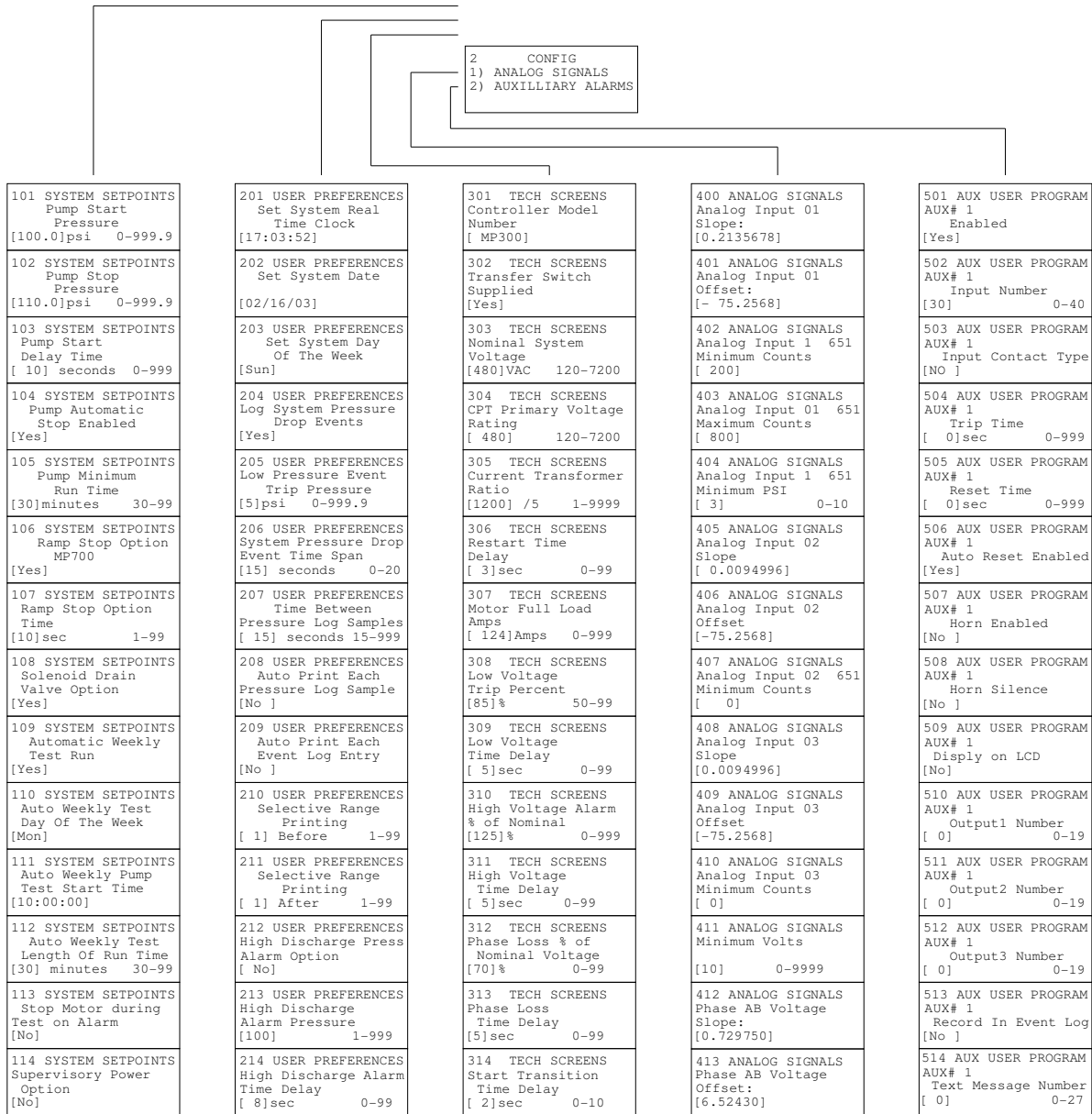
#	1 PRESSURE LOG 10/16/04 17:52:15 113 psi Skip Rate:[EACH]
---	---

| |
| |
| |

1	CONFIG
1)	SYSTEM SETPOINTS
2)	USER PREFERENCES
3)	TECH SCREENS
2	CONFIG
1)	ANALOG SIGNALS
2)	AUXILLIARY ALARMS

Continued on next page.

OID Screen Map (continued)



115 SYSTEM SETPOINTS Supervisory Power Delay Time [2] sec 0-99
116 SYSTEM SETPOINTS Supervisory Power Failure Startup [Yes]
117 SYSTEM SETPOINTS Supervisory Power Fail Start Dly Time [1]minutes 0-500
118 SYSTEM SETPOINTS Pressure Transducer Failure Pump Start [No]
119 SYSTEM SETPOINTS Shutdown On Low Intake Pressure/Lvl [No]
120 SYSTEM SETPOINTS Shutdown On Low Intake Trip Time [0]seconds 0-999
121 SYSTEM SETPOINTS Low Intake Shutdown Auto Reset [No]
122 SYSTEM SETPOINTS Low Intake Shutdown Auto Reset Time [0]seconds 0-999
123 SYSTEM SETPOINTS Pressure Switch Pump Start [No]
124 SYSTEM SETPOINTS Deluge Valve Pump Start [No]

215 USER PREFERENCES Low Discharge Press Alarm Option [No]
216 USER PREFERENCES Low Discharge Alarm Pressure [100] 0-999
217 USER PREFERENCES Low Discharge Alarm Time Delay [8]sec 0-99
218 USER PREFERENCES No Load Amps % of FLA [5] 0-99
219 USER PREFERENCES No Load Time Time Delay [8]sec 0-99
220 USER PREFERENCES LCD Back Light Mode 0=Always on [0] 1=Power Save
221 USER PREFERENCES Language Select [English]
222 USER PREFERENCES Change User Password Level 1 [****]
223 USER PREFERENCES Reversed Phase order (1-3-2) [No]
224 USER PREFERENCES Save Aux alarms to SD memory card [No]
225 USER PREFERENCES Load Aux alarms from SD memory card [No]

315 TECH SCREENS Single Phase Alarm % of FLA [5]% 0-99
316 TECH SCREENS Single Phase Loss Time Delay [5]seconds 0-99
317 TECH SCREENS Motor Run % of FLA [20]% 0-99
318 TECH SCREENS Use Motor Current for Pump Running Sig [Yes]
319 TECH SCREENS Overload Alarm % of FLA [125]% 100-199
320 TECH SCREENS Overload Alarm Time Delay [3]sec 0-99
321 TECH SCREENS Start on Single Phase Loss [Yes]
322 TECH SCREENS Motor Run Amps Time Delay [5]sec 0-99
323 TECH SCREENS Motor Start Time Delay [10]sec 0-99
324 TECH SCREENS Under Frequency % of Nominal [25] 0-99
325 TECH SCREENS Under Frequency Time Delay [5]sec 0-99
326 TECH SCREENS Over Frequency % of Nominal [25]% 0-999
327 TECH SCREENS Over Frequency Time Delay [5]sec 0-99
328 TECH SCREENS Alarm log 31/2 Event log 50/ 4 Pr. log 0/29333
329 TECH SCREENS System Commissioned Date [00/00/00]
330 TECH SCREENS Change Tech Password [*****]
331 TECH SCREENS Password Logout Time [5]min 1-15

414 ANALOG SIGNALS Phase BC Voltage Slope: [0.729750]
415 ANALOG SIGNALS Phase BC Voltage Offset: [6.52430]
416 ANALOG SIGNALS Phase AC Voltage Slope: [0.729750]
417 ANALOG SIGNALS Phase AC Voltage Offset: [6.52430]
418 ANALOG SIGNALS Minimum Amps [10] 0-9999
419 ANALOG SIGNALS Phase A Amps Slope: [2.9635]
420 ANALOG SIGNALS Phase A Amps Offset: [36.9270]
421 ANALOG SIGNALS Phase B Amps Slope: [2.9635]
422 ANALOG SIGNALS Phase B Amps Offset: [36.9270]
423 ANALOG SIGNALS Phase C Amps Slope: [2.9635]
424 ANALOG SIGNALS Phase C Amps Offset: [36.9270]
ANALOG INPUT COUNTS 649 1176 1221 0 0 0 0 0 0 0
Daughter board counts 649 1176 1221 0 0 0 0 0
425 ANALOG SIGNALS Set Volts/Amps Slope Offset to Fact Dflt[Yes]

The [SYSTEM STATUS], [SYSTEM LOGS], and [CONFIG] buttons navigate the user to the top screen of a column of similarly grouped screens or menus.

SYSTEM STATUS: The [SYSTEM STATUS] button can be pressed at any time to return the screen to the home System Status screen #1. System Status screens display the real time information variables about the pump system.

SYSTEM LOGS: The [SYSTEM LOGS] button displays the System Logs menu. Once the menu is displayed, buttons with numbers on them can be used to enter the selected data log. See the following page for details on navigating the System Logs.

CONFIGURATION: The [CONFIG] button displays the Config menu which groups the different types of set points that configure the system to operate in the desired manner. Use the [UP] and [DOWN] buttons to scroll between the two menu screens. Buttons with numbers on them can be used to enter the selected configuration screen group. See the System Setpoint Definitions section for descriptions on the functionality of each set point.

SYSTEM STATUS	1 SYSTEM STATUS B1 PRES STRT AB 460V 110 100 BC 461V psi psi AC 460V	1 SYSTEM LOGS	SYSTEM LOGS 1) Event Log 2) Pressure Log	2 CONFIG	1 CONFIG 1) SYSTEM SETPOINTS 2) USER PREFERENCES 3) TECH SCREENS 2 CONFIG 1) ANALOG SIGNALS 2) AUXILLIARY ALARMS
1 SYSTEM LOGS	2 SYSTEM STATUS Phase A 125 Amps Phase B 124 Amps Phase C 125 Amps 3 SYSTEM STATUS Pump Countdown Tmr 0sec Until Start 0min Until Stop 4 SYSTEM STATUS Pump Run Hrs: 5.3 # Of Starts: 8 Mon 10/17/04 17:53:26 5 SYSTEM STATUS Controller Power On Time 18.5 Hrs 10/15/04 17:53:26 6 SYSTEM STATUS Firmware Ver SV 1.1 Commissioned Date: 11/15/02	2 CONFIG	# 1 EVENT LOG System in Off Mode Occurred 10/16/04 13:15:15 PRESSURE LOG 10/16/04 17:52:45 112 psi Skip Rate:[EACH]	1 SYSTEM LOGS	101 SYSTEM SETPOINTS Pump Start Pressure [100.0]psi 0-999.9 201 USER PREFERENCES Set System Real Time Clock [17:03:52] 301 TECH SCREENS Controller Model Number [MP300]
		3 PRINT	See the following page for an example of scrolling through the Alarm, Event, and Pressure Logs	2 CONFIG	
				1 SYSTEM LOGS	401 ANALOG SIGNALS Analog Input 01 Slope: [0.21346771]
				2 CONFIG	501 AUX USER PROGRAMS AUX# 1 Enabled [Yes]

SYSTEM LOGS: The Model MP Electric controller has three separate data logs; 1) alarm log, 2) event log, and 3) pressure log. The alarm log is a subset of the event log and only displays the last ten alarms that have occurred or cleared. The event log records all alarm and system function type events

**1
SYSTEM
LOGS**

SYSTEM LOGS
1) Event Log
2) Pressure Log

SYSTEM LOGS: The [UP] and [DOWN] arrow buttons can be used to scroll through the three data logs. The [CHANGE/ENTER] button enters and exits the alarm/event details in either the Alarm or Event logs. In the Pressure Log the [CHANGE/ENTER] button changes the skip rate used to scroll through the logged pressure readings.

**1
SYSTEM
LOGS**

```
# 1 EVENT LOG
  System in Off
  Mode Occurred
  10/16/04 13:15:15
# 1 EVENT DETAILS
  System in Off
  Mode Occurred
  10/16/04 13:15:15
# 1 EVENT DETAILS
  AB V 460    A 32
  BC V 461    B 32
  AC V 460    C 33
# 1 EVENT DETAILS
  Pump Running: Yes

# 2 EVENT LOG
  Pump Failed To
  Start Alarm Occurred
  10/16/04 07:32:15
# 3 EVENT LOG
  Superv Power Failure
  Alarm Cleared
  10/16/04 07:09:48
```

**CHANGE/
ENTER**

**2
CONFIG**

```
PRESSURE LOG
10/16/04 17:52:45
112 psi
Skip Rate:[EACH ]
PRESSURE LOG
10/16/04 17:52:30
112 psi
Skip Rate:[EACH ]
PRESSURE LOG
10/16/04 17:52:15
113 psi
Skip Rate:[EACH ]
```

Printing System Log Data: The following applies if a printer has been connected to the RS485 port using the appropriate cable. When the [PRINT] button is pressed when looking at data in one of the three logs, a menu for what is to be printed is displayed. Pressing [1] prints just the alarm/event/pressure reading currently being displayed. Pressing [2] prints a range of data before and after the currently displayed alarm/event/pressure reading currently displayed. The range can be changed in the User Preferences setpoints 210 and 211. When the print button on the OID is pressed, data will be sent to the PC via the port you have connected to.

Typical Event Log Message Printout

```
#1  EVENT LOG
Superv Power Failure
Alarm Occurred On
10/16/04 07:32:15
```

3 PRINT

```
PRINT OPTIONS
1) PRINT THIS EVENT
2) PRINT EVENT RANGE
   10 BEFORE,10 AFTER
```

```
#1  EVENT LOG
    AC Power Restored
      Occurred On
      11/16/02 07:32:15
#2  EVENT LOG
    AC Power Restored
      Occurred On
      11/16/02 07:32:15
```

Typical Event Details Printout

```
#1  EVENT LOG
Superv Power Failure
Alarm Occurred On
10/16/04 07:32:15
```

CHANGE/ENTER

```
#1  EVENT DETAILS
Superv Power Failure
Alarm Occurred On
10/16/04 07:32:15
```

3 PRINT

```
PRINT OPTIONS
1) PRINT THIS EVENT
2) PRINT EVENT RANGE
   10 BEFORE,10 AFTER
```

```
#1  EVENT DETAILS
AB V 460      A  32
BC V 461      B  32
AC V 460      C  33
```

```
# 1  EVENT DETAILS
Pump Running: Yes
Pressure: 118 psi
```

```
#1  EVENT DETAILS
    AC Power Restored
      Occurred On
      11/16/02 07:32:15
AB V 460      A  32
BC V 461      B  32
AC V 460      C  33
Pump Running:Yes
Pressure: 118 psi

#2  EVENT DETAILS
    AC Power Restored
      Occurred On
      11/16/02 07:32:15
AB V 460      A  32
BC V 461      B  32
AC V 460      C  33
Pump Running:Yes
Pressure: 118psi
```

Typical Pressure Log Printout

```
PRESSURE LOG
01/01/03 17:52:45
600 psi
Skip Rate:[EACH ]
```

3 PRINT

```
PRINT OPTIONS
1) PRINT THIS ENTRY
2) PRINT ENTRY RANGE
   10 BEFORE,10 AFTER
```

```
PRESSURE LOG
01/01/03 17:52:30
599 psi
Skip Rate:[EACH ]
```

```
PRESSURE LOG
01/01/03 17:52:45
600 psi
01/01/03 17:52:30
599 psi
01/01/03 17:52:15
599 psi
01/01/03 17:52:00
601 psi
```

CONFIGURATION SCREENS: All parameters that control the operation of the controller can be viewed and changed within the Configuration set point screens. Each set point is protected by a user password to prevent unauthorized changes. The system set points are separated into five different group

s.

2 CONFIG	1 CONFIG	1) SYSTEM SETPOINTS (Level 1 password): These setpoints adjust the conditions for starting and stopping the pump.
	1) SYSTEM SETPOINTS 2) USER PREFERENCES 3) TECH SCREENS	2) USER PREFERENCES (Level 1 password): These setpoints adjust settings not related to pump operation.
	2 CONFIG	3) TECH SCREENS (Level 2 password): These setpoints are for factory/technician purposes only and are used to fine tune special systems.
	1) ANALOG SIGNALS 2) AUXILLIARY ALARMS	1) ANALOG SIGNALS (Level 2 password): These setpoints calibrate the analog pressure, voltage and amp readings.
		2) AUXILLIARY ALARMS (Level 2 password): These 12 user programs are used to setup any auxiliary signals that need to be monitored.

Changing Values:

- 1) Navigate to the configuration set point screen that contains the value that needs to be changed.
- 2) Press [CHANGE/ENTER]. If a password has not been entered for a while, the "ENTER PASSWORD" screen will be displayed. Use the [1] [2] and [3] buttons to enter the appropriate password.
- 3) Once the correct password level has been attained, the "CHANGE VALUE" screen for the value to be changed will be displayed. An underscore cursor will appear beneath the first digit on the entry.

Use [UP] or [DOWN] arrow buttons to scroll the value of the digit with the cursor. Press [CHANGE/ENTER] to accept each digit's entry. The cursor will move to the right so the next digit can be changed. Pressing [RESET/ESC] or the [SYSTEM STATUS] button will exit change mode without changing the original value.

Example of how to change a setpoint value:

<p>101 SYSTEM SETPOINTS Pump Start Pressure [100.0]psi 0-999.9</p>	<p>CHANGE/ ENTER</p>	<p>ENTER PASSWORD: **** █</p>	<p>101 CHANGE VALUE Pump Start Pressure [60] psi 0-999</p>
---	--------------------------	---------------------------------------	--

Press the [1], [2], or [3] keys to enter the password.

Press the [UP] and [DOWN] arrow keys to change each digit at the cursor, press [CHANGE/ENTER] to accept the digit and move the cursor to the right. Press [SILENCE/RESET/ESC] to escape the change value screen and to keep the original value.

Printing Configuration Setpoints: The following applies if a printer has been installed or a PC is connected to the RS232 com port using a null modem cable. When the [PRINT] button is pressed while looking at a configuration setpoint screen, a menu for what is to be printed is displayed. Pressing [1] prints just the set point screen currently being displayed. Pressing [2] prints all the set points in the section of set points currently displayed. Pressing [3] prints all the set point screens of all five set point sections.

NOTE: when printing all set points, only Aux#01 User Programs 501 through 515 will be printed. To print any of the remaining eleven aux alarm settings, press [PRINT] when inside the appropriate Aux alarm and select [2] for “2) PRINT 500 SETPTS.” The 501 through 515 Aux User Programs for that aux alarm will be printed.

```
101 SYSTEM SETPOINTS
    Pump Start
    Pressure
[ 60] psi      0-999
```

```
3
PRINT
```

```
PRINT OPTIONS
1) PRINT THIS SETPT
2) PRINT 100 SETPTS
3) PRINT ALL SETPTS
```

Typical Configuration Setpoint Printout

```
101 SYSTEM SETPOINTS
    Pump Start
    Pressure
[ 60] psi      0-999

102 SYSTEM SETPOINTS
    Pump Stop
    Pressure
[ 90] psi      0-999

103 SYSTEM SETPOINTS
    Pump Start Delay
    Time
[ 10] seconds  0-999
    “      “
    “      “
    “      “

509 AUX USER PROGRAMS
Aux Alarm #01
Display on LCD
[NO]

510 AUX USER PROGRAMS
Aux Alarm #01
Output1 number
[ 0]          0-19

    “      “
```


PART VI: SYSTEM SET POINT DEFINITIONS

Configure System Setpoints

<p>101 SYSTEM SETPOINTS Pump Start Pressure [60] psi 0-999</p>	<p>If system pressure is at or below this setting the pump will start if the system is in Auto mode.</p>
<p>102 SYSTEM SETPOINTS Pump Stop Pressure [90] psi 0-999</p>	<p>If system pressure is at or above this setting and the pump is running in Auto mode, the pump can be stopped using the stop pushbutton or can automatically stop if auto stop is enabled in setting 104.</p>
<p>103 SYSTEM SETPOINTS Pump Start Delay Time [10] seconds 1-999</p>	<p>This time setting delays the start of the pump in Auto mode when a low pressure condition or deluge valve start signal is received. This setting is normally used for multiple pump installations where sequencing of pump starting is desired.</p>
<p>104 SYSTEM SETPOINTS Pump Automatic Stop Enabled [Yes]</p>	<p>When enabled, the pump will stop automatically after all starting demands have been satisfied. The timer set in 105 below must also time out before the pump will stop.</p>
<p>105 SYSTEM SETPOINTS Pump Minimum Run Time [10]minutes 1-99</p>	<p>The minimum run time that the pump must run before stopping automatically. Must be set to at least 10 minutes per NFPA 20. Only active if 104 above is set to Enabled.</p>
<p>106 SYSTEM SETPOINTS Ramp Stop Option Time M700 [Yes]</p>	<p>When set to "Yes" and the controller is set for Model MP700, the controller will stop the pump in a controlled ramp down over the time set in screen 107. When set to No, the controller will stop the pump and let it coast to a stop.</p>
<p>107 SYSTEM SETPOINTS Ramp Stop Option Time M700 [10] 0-99</p>	<p>The time that a Model MP700 controller will control the stopping of the motor in the ramp down mode. Note: This must be set to a time longer than the ramp stop time on the soft start unit.</p>
<p>108 SYSTEM SETPOINTS Solenoid Drain Valve Option [No]</p>	<p>The optional solenoid drain valve is used in the Manual Test Mode and the Automatic Weekly test mode to initiate starting of the pump by draining pressure off the sensing line.</p>
<p>109 SYSTEM SETPOINTS Automatic Weekly Test Run [No]</p>	<p>When this feature is enabled, the pump will start the pump at the predetermined time each week as set in the following screens and run it for the time set in screen 112.</p>
<p>110 SYSTEM SETPOINTS Auto Weekly Test Test Day Of The Week [Mon]</p>	<p>The day of the week that the pump will be started automatically each week if the option is enabled in screen 109.</p>
<p>111 SYSTEM SETPOINTS Auto Weekly Test Start Time [00:00:00]</p>	<p>The time of day that the pump will be started automatically each week if the option is enabled in screen 109.</p>

<p>112 SYSTEM SETPOINTS Auto Weekly Test Length of Run Time [10] minutes 0-99</p>	<p>The length of time the pump will run when started on automatic weekly test. Must be set for a minimum of 10 minutes per NFPA 20..</p>
<p>113 SYSTEM SETPOINTS Stop Motor During Test on Alarm. [Yes]</p>	<p>When this feature is enabled, the controller will stop the pump during the automatically weekly test or the manual test mode should any alarm occur, such as motor overload.</p>
<p>114 SYSTEM SETPOINTS Supervisory Power Option [Yes]</p>	<p>When this option is enabled, the controller will monitor a separate 120VAC power source for availability and alarm on it's failure.</p>
<p>115 SYSTEM SETPOINTS Supervisory Power Delay Time [15] seconds 0-999</p>	<p>The amount of time the controller will wait until sounding the alarm on loss of the 120VAC Supervisory power source. This is used to override momentary outages.</p>
<p>116 SYSTEM SETPOINTS Supervisory Power Failure Startup [No]</p>	<p>When this option is enabled along with the Supervisory Power Option in screen 114, the controller will start the pump on loss of the Supervisory Power after the delays set in screen 117.</p>
<p>117 SYSTEM SETPOINTS Supervisory Power Start Time Delay [1]minutes 0-999</p>	<p>The amount of time the controller will delay starting of the pump on loss of the 120VAC Supervisory power source.</p>
<p>118 SYSTEM SETPOINTS Pressure Transducer Failure Pump Start [Yes]</p>	<p>If enabled, the controller will start the pump if a failure of the pressure transducer is detected.</p>
<p>119 SYSTEM SETPOINTS Shutdown on Low Intake Pressure/Lvl [No]</p>	<p>If enabled, the controller will stop the pump when a normally closed contact closes indicating low suction pressure or low reservoir/tank level.</p>
<p>120 SYSTEM SETPOINTS Shutdown on Low Intake Trip Time [5]seconds 0-99</p>	<p>The time delay that the Low Intake condition must be active before pump will stop on the condition.</p>
<p>121 SYSTEM SETPOINTS Low Intake Shutdown Auto Reset [No]</p>	<p>If enabled, the pump will restart if there is a demand, after the Low Intake condition is cleared. If set to No, the Reset button must be pressed before the pump will restart.</p>
<p>122 SYSTEM SETPOINTS Low Intake Shutdown Auto Reset Time [5]seconds 0-99</p>	<p>The time delay that the Low Intake condition must be cleared before the pump will be allowed to be restarted automatically. This prevents cycling of the pump on and off.</p>
<p>123 SYSTEM SETPOINTS Pressure Switch Pump Start [No]</p>	<p>When this is set to Yes and a mechanical pressure switch is connected to the field terminals, the pump will start when this switch closes.</p>

124 SYSTEM SETPOINTS

Deluge Valve
Pump Start

[No]

If enabled this setting activates the logic to monitor an optional deluge valve dry contact opening (i.e. normally closed contact that opens to start pump) that will start the pump if system is in Auto mode.

Configure User Preferences

201 USER PREFERENCES Set System Real Time Clock [17:03:52]	Set the current controller clock (24 hour clock).
202 USER PREFERENCES Set System Date [12/31/99]	Set the current controller date.
203 USER PREFERENCES Set System Day Of The Week [Monday]	Set the local day of the week.
204 USER PREFERENCES Log System Pressure Drop Events [Yes]	When this feature is enabled, the controller will log the current system pressure in the event log when system pressure has dropped below the set pressure value. Typically set to "No" as not to needlessly fill up the event log.
205 USER PREFERENCES System Pressure Drop Needed to Log Event [60.0]psi 0-999	The desired pressure setting that will cause a log of system pressure in addition to the normal periodic logging of system pressure.
206 USER PREFERENCES System Pressure Drop Event Time Span [5] seconds 0-20	The amount of time the pressure must be above the pressure setting in screen 205 before the Pressure Drop Event is logged as being cleared.
207 USER PREFERENCES Time Between Pressure Log Samples [15] seconds 15-999	The frequency at which system pressure is automatically logged. Normally set to 15 seconds. Lower values will increase the number of logged pressures and fill up the memory in a shorter period of time.
208 USER PREFERENCES Auto Print Each Pressure Log Sample [No]	When set to Yes, each pressure log entry will be printed as it occurs. This should be set to No to save printer paper and wear on the printer.
209 USER PREFERENCES Auto Print Each Event Log Entry [No]	When set to Yes, each event log entry will be printed as it occurs. This should be set to No to save printer paper and wear on the printer.
210 USER PREFERENCES Selective Range Printing [1] Before 1-99	This setting will determine the start point of print range of the pressure, alarm, or event log based on which log entry is currently being viewed.
211 USER PREFERENCES Selective Range Printing [1] After 1-99	This setting will determine the stop point of print range of the pressure, alarm, or event log based on which log entry is currently being viewed.
212 USER PREFERENCES High Discharge Pressure Alarm Option [No]	This setting is used to monitor the system pressure and sound an alarm if it rises above a preset pressure.

Configure User Preferences

(continued)

213 USER PREFERENCES

High Discharge Pressure
Alarm Pressure
[185] psi 0-999

The pressure at or above which will cause a High Pressure alarm condition

214 USER PREFERENCES

High Discharge Alarm
Pressure Time Delay
[5]seconds 0-99

The amount of time the pressure must be at or above the set pressure before the alarm condition is activated.

215 USER PREFERENCES

Low Discharge Pressure
Alarm Option
[No]

This setting is used to monitor the system pressure and turn on the LOW PRESSURE LED and sound an alarm if it drops below a preset pressure.

216 USER PREFERENCES

Low Discharge Pressure
Alarm Pressure
[45] psi 0-999

The pressure at or below which will cause a Low Pressure alarm condition

217 USER PREFERENCES

Low Discharge Alarm
Pressure Time Delay
[5]seconds 0-99

The amount of time the pressure must be at or below the set pressure before the alarm condition is activated.

218 USER PREFERENCES

No Load Amps %
Of FLA
[10] 0-99

The % of motor full load current at which or below that will cause an event to be logged indicating a No Load Motor Condition.

218 USER PREFERENCES

No Load Time
Delay
[5]seconds 0-99

The amount of time the motor current must be at or below the set level before the event condition is logged.

220 USER PREFERENCES

LCD Back Light Mode
0=Always on
[0] 1=Power Save

Set to Always on or to Power Save if it is desired to have the backlight automatically shut off when no buttons have been pressed for a preset period of time.

221 USER PREFERENCES

Language Select
[English]

Set to English or Spanish

222 USER PREFERENCES

Change User Password
Level 1
[****]

Used to set the password necessary to access the System config screens.

223 USER PREFERENCES

Reversed Phase
Order (1-3-2)
[No]

Used to change the phase sequence sensing of the incoming power. If a Phase reversal alarm occurs on initial installation and the motor is turning the correct direction, change this setting to YES to reset the alarm indication.

224 USER PREFERENCES

Save Aux alarms
to SD memory card
[No]

Used to load auxiliary alarm configuration parameters from the SD card

225 USER PREFERENCES

Load Aux alarms
from SD memory card
[No]

Used to save auxiliary alarm configuration parameters to the SD card

PART VII: EVENT LOG MESSAGES

The following is a sample of the possible messages that could be recorded within either the alarm or event logs.

Phase Failure Alarm Occurred/ Alarm Cleared	Phase Failure declared when all three phases of the incoming power is present not within the limits set in the configuration screens.
Pump Failed to Start Alarm Occurred/ Start Alarm Cleared	Controller attempted to start pump in Auto mode but the pump failed to start (ie a pump run signal was never received). Controller must be put in OFF mode to reset this alarm.
Pressure Transducer Alarm Occurred/ Alarm Cleared	The pressure signal from the pressure transducer has fallen outside normal operating range potentially indicating a problem with the transducer or its wiring.
Stop pushbutton Pressed in	An operator pressed the Stop pushbutton.
Pump Started / running Stopped	Pump was started or stopped in either Auto or Manual mode.
Motor Lockout Sig Occurred Cleared	A remote motor lockout signal was received or cleared.
Remote Start Sig Occurred Cleared	A remote start signal was received or cleared.
System in Auto Mode Occurred	System was placed in Auto mode.
System in Off Mode Occurred	System was placed in Off mode.
System in Manual Mode Occurred	System was placed in Manual mode.
Auto Test Start Occurred	An automatic pump test sequence was started while in Auto mode by either the weekly program clock function or a user pressing the [TEST] button for 2 or more seconds
Alarm Reset Button Occurred	A user did an alarm reset by pressing and holding the [SILENCE/RESET/ESC] button for 2 to 5 seconds.
Low Pressure Start Occurred Cleared	A low pressure start was attempted because of a low pressure reading from the transducer or optional pressure switch while in Auto mode.
Low Press Condition Occurred Cleared	System pressure dropped below the start pressure or the optional pressure switch indicates a low pressure condition. This can be logged in all modes of operation.
Deluge Start Occurred Cleared	A deluge start signal was received while in Auto mode.
Controller Reboot Occurred	Power was restored to the microprocessor.
Pressure Drop Occurred Cleared	If setpoint #204 is set to yes, this event gets recorded when the system pressure drops below the setting in setpoint #205.
Low Intake Pressure Shutdown Occurred Shutdown Cleared	If the low intake shutdown option is enabled in setpoint #119, a low suction signal will stop the pump.
Auxiliary Alarm Occurred Cleared	Indicates one of the aux alarms occurred as programmed in the user programs and was set to record in the event or alarm log but the text message assigned was 0. See Aux Alarm Text List Messages below for possible auxiliary alarm messages.

PART VIII: SD CARD FILE FORMAT.

The controller is equipped with an SD (Secure Digital) memory card on the motherboard to store the Pressure log, Event log, Operators Manual in PDF format, Auxiliary Alarm configuration information and the controller drawings in PDF format. The SD card is located on the right hand edge of the motherboard and is removed by pressing in on the right edge of the card to release from the card holder. When the SD card is removed, data is still being recorded on temporary flash memory on the motherboard. Once the card is replaced, the stored data will be written back to the SD Card. When the SD card is removed, the LCD display will indicate that the card is missing and that it should be replaced. If the card is not replaced within approximately 1 minute, the alarm will sound and the System Fault LED will come on. Once the SD card is replaced, the System Fault LED will go out but the Alarm Silence button must be pressed to silence the alarm horn. The data stored on the SD card is in standard ASCII text format and can be read by a computer equipped with an appropriate SD card reader. These are readily available at any electronics store. The data on the SD card is in the following format:

Pressure Log: The pressure log provides a continuous pressure record for 30 days. The pressure log samples shall be time and date stamped and stored in permanent non-volatile SD memory card. The pressure log can be searched by each sample, by minute, or by hour through the OID.

PressXXX.txt file

Data is stored in a standard comma delimited file as follows:

07/27/07, 11:07:52, 060
 Date Time Pressure

Each file starting with "Press" contains one days worth of pressure data.

Event Log: The event log will store up to 3000 of the most current events.

Events.txt file

Data is stored in a standard comma delimited file as follows:

07/27/07 ,11:09:26 ,Pump Failed to Start ,Occurred ,.208 ,.209 ,.208
 Date Time Event Action A-B Voltage B-C Voltage A-C Voltage

.0000 ,.0000 ,.0000 ,.096 ,0 ,.003
 Phase 1 Amps, Phase B Amps Phase C Amps Pressure Pump Running Text Message #

Aux Alarm Text List Messages	
0	Auxiliary Alarm
1	Low Pump Room Temp
2	Reservoir Low
3	Reservoir Empty
4	Reservoir High
5	Flow Meter On
6	Relief Valve Open
7	Low Suction Pressure
8	High Pump Room Temp
9	Low Firewater Press
10	Low Purge Pressure
11	Low Gear Oil Press
12	High Gear Oil Temp
13	High Vibration
14	Gas Detection
15	Emergency Power On
16	Pump Room Door Ajar

List of possible internal variables used as inputs for aux alarm user programs.	
30	Pump Running
31	Power Available
32	Phase Reversal
33	Motor Overload
34	Remote Start
35	Local Start
36	Pump On Demand, Fire Condition
37	System Fault
38	Auto Mode
39	Manual Mode
40	Off Mode
41	Pressure Transducer Fault
42	Pump Failed to Start
43	Low Intake Shutdown Alarm
44	Supervisory Power Failure
45	Soft Start Fault
46	Low Pressure
47	Auto Weekly Test Start
48	Under Frequency
49	Over Frequency
50	Low Zone/Hi Zone Contacts
51	High Discharge Pressure
52	No Load Condition
53	High Voltage
54	Low Voltage