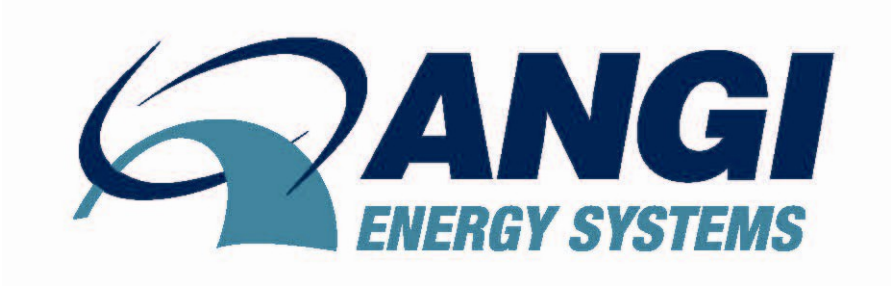

MAINTENANCE MANUAL
ANGI SERVICE

MASTER CONTROL PANEL (MCP)
CompactLogix Control Software Version 1.0

ANGI Energy Systems
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1. SPECIFICATIONS

Compressor Control Panel

Control System ANGI MCP	CompactLogix Control System
CompactLogix Power Supply Output	24 VDC @ 10.0 Amps
CompactLogix Power Supply Input	100-240 VAC, 50/60 Hz
Maximum Temperature	55° C

CompactLogix Parameters

Software Package	RSLogix 5000 19.00
Software Version	ANGI MCP CompactLogix Version 1.0
Networks	Ethernet, RS-232

CompactLogix Program Outline

Main Routine	Jump to subroutine logic
A_IO_Buffer	Map local inputs and outputs to alias names
B_Signal_Conditioning	On and off delay timers for any digital inputs
C_Analog_Scaling	Scale analog inputs
D_Safety	ESD and Gas Detector logic
E_Start_Conditions	Start compressor run commands
F_Lead_Lag	Compressor Lead Lag control logic
G_Buffer_Seq_Panel	Start compressors on dispenser demand control logic
H_De_Fuel	De-Fueling Panel control logic
I_Dispenser_Priority_Filling	Dispenser Priority control logic
J_Time_Scheduler	Time/Date and Time Scheduler logic
K_Temp_Compensation_Target	Calculate dispenser target fill pressure control logic
M_Modbus_Comm	Dispenser Modbus control logic
V_Email_Out	Email fault notification control logic
V_Producer_Consumer_Data	Producer Consumer control logic
W_HMI	HMI Indicators and Force control logic

CompactLogix Controller

X_Outputs ..... Output control logic

Y_Messages ..... Messaging logic

Z_Fault_Messages ..... Fault messaging logic

2. IMPORTANT INFORMATION

USER MODIFICATION

ANGI must authorize all modification to this equipment. Any unauthorized modification to this equipment and or software will void the warranty.

CAUTION !

MODIFICATION MAY DAMAGE THE EQUIPMENT AND CAUSE BODILY INJURY

DISCLAIMER

ANGI disclaims any responsibilities what-so-ever to the customer or to any person for injury or damage to, or loss of, property or value resulting from the use of its products which have been subjected to misuse, accidents, misapplied, repaired by unauthorized person, or improperly installed.

NOTICE: This manual is as current as possible at the time of printing and is subject to change without notice. For information not covered in this manual or further clarification, contact ANGI Customer Service.

CONTRACTOR OR INSTALLER: Leave this manual with the Unit station after installation is complete.

CUSTOMER: Retain this manual for future reference.

3. INTRODUCTION

This manual contains information on the operation and maintenance of ANGI CompactLogix Master Control Panel, MCP, used in vehicle re-fueling applications. ANGI CNG Compressor Stations are designed for continuous duty, unattended operation. This compressor station compresses natural gas to a discharge pressure of 4500 psig at the specified inlet pressure.

The Master Control Panel is controlled by an ANGI CompactLogix control system. It provides automated compressor control commands, site operation, sequenced valve operation, shut down limit monitoring, and fault annunciation.

The ANGI CompactLogix MCP provides controller, networking, I/O and operator interface capabilities using a visual graphic display screen. The CompactLogix PLC has Serial and Ethernet communication ports. The controller includes embedded features such as CompactFLASH® and Web Server. The PLC can use either the Ethernet or Serial port for programming, debugging, monitoring and network administration from a PC with Rockwell RSLinx, and RSLogix 5000 programming software installed.

RSLogix 5000 programming software is used with the CompactLogix PLC for ladder logic, network configuration for global digital and analog data, and monitoring other controllers in the system. The operator can upload, download, monitor and debug to any controllers on the network.

Factory Talk View Studio programming software is used for the PanelView Plus HMI display touch screen design. The software will create a communication path over Ethernet to pass data to the CompactLogix PLC. It is also capable of communicating to multiple controllers to display site data at the Master Control Panel.

4. CONTROL SYSTEM OVERVIEW

The Master Control Panel, MCP, was developed by ANGI to provide complete site control functions required to allow fully automatic, unattended operation. The CompactLogix controller provides fault code annunciation and Alarm History for quick fault recovery.

The Master Control Panel will monitor the status of all compressors, dispensers, storage, and site conditions. When a dispenser has a demand for filling the valve will open to allow gas to flow from storage. At this time one or more compressors will start to direct fill to the dispensers to allow optimized fueling times. When the dispenser demands are satisfied the compressed gas will be directed to fill storage. The control of gas is directed through sequence valve panels by the master control panel. All setup and site control can be modified at the Master Control Panel through the HMI touch screen or key switches on the door of the Master Control Panel.

The Emergency Shutdown, ESD, is monitored by the ESD control relay located in the Master Control Panel. ESD is active when the ESD relay is de-energized. The ESD pushbutton, located on the panel, may activate an ESD. Also Gas Detectors that sense a High Gas Alarm will activate an ESD. Once ESD is active, the Emergency Shutdown stops all compressor operations. The PLC activates an ESD fault screen and may illuminate a Fault lamp. Activate the ESD Reset key switch and return the controller to normal operation.

5. LOCAL / REMOTE COMPRESSOR OPERATION

At the Master control panel there are key switches for each compressor that control ON and OFF and LOCAL and REMOTE for each compressor.

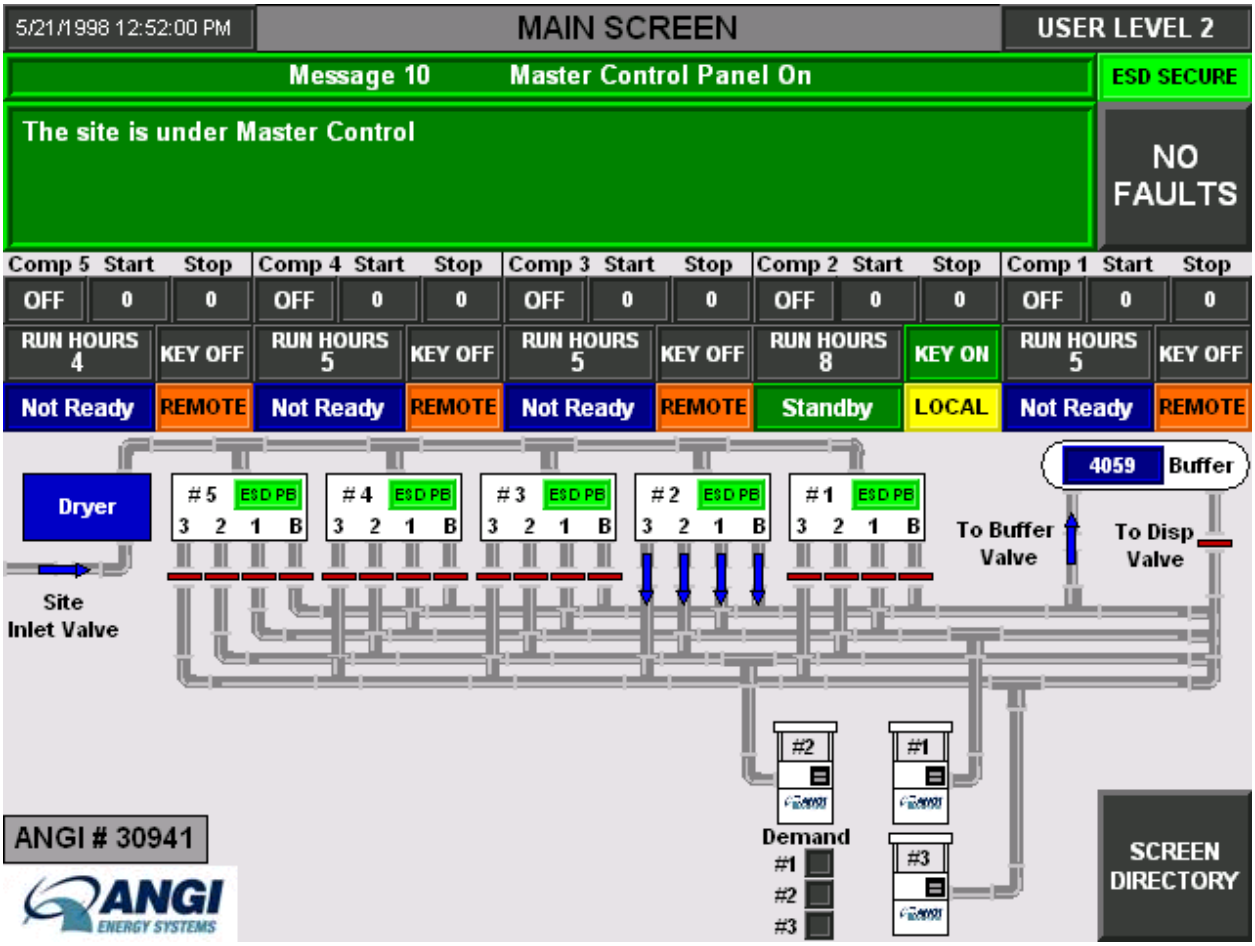
The ON/OFF key switches offer a single point to either turn on or off any compressor. Both the MCP ON/OFF key switch and the CCP ON/OFF key switch must be in the on position for the compressor to run.

The LOCAL/REMOTE key switches will allow the compressor to run without MCP control (Local mode) or when in remote mode the MCP will be selecting when and at what pressures compressors will start and stop. When in local mode all sequence panel valves will be open so there is no way to efficiently direct gas directly to a dispenser. When in Remote mode each compressor will be under the MCP control and directed on when to start, stop, and which sequence valves need to open to direct the flow of gas.

6. MASTER CONTROL PANEL DISPLAY SCREENS

The HMI contains display screens that allow the user to monitor site status. There are also warning and fault displays that offer aid in trouble-shooting and diagnostics.

6.1 MAIN SCREEN



Header – The header will be displayed on every screen. The upper left of the header will display the date and time. The middle of the header is the title of each screen. The upper right of the header displays the logged in user.

Message Display Bar – The Message Display Bar will be displayed on every screen and is directly below the header. The large section below the Message Display Bar is the Message Description bar. Both display message information and colors indication according to the machine operation:
Blue Messages – Text will prompt the operator step by step to set the machine to run in automatic mode.
Green Messages – Text will display status of the machine while it is running in automatic mode.
Yellow Messages – Text will display warning messages for analog sensor levels.
Red Messages – Text will display fault messages.

ESD Status Display – This display will indicate if the ESD circuit is secure (green) or active (red).

FAULT RESET Touch Pushbutton – This touch push button will flash FAULT RESET if there is an active fault and must be reset to clear a fault condition.

CompactLogix Controller

Site Status Display – The large area is a simple representation of the system and displays current pressures, outputs and valve functions.

Compressor Status – This will display which compressors are available and what Lead Lag status they have been assigned according to run hours.

Start and Stop pressure – Once Lead Lag status is assigned to each compressor the set start and stop pressures are assigned for each compressor.

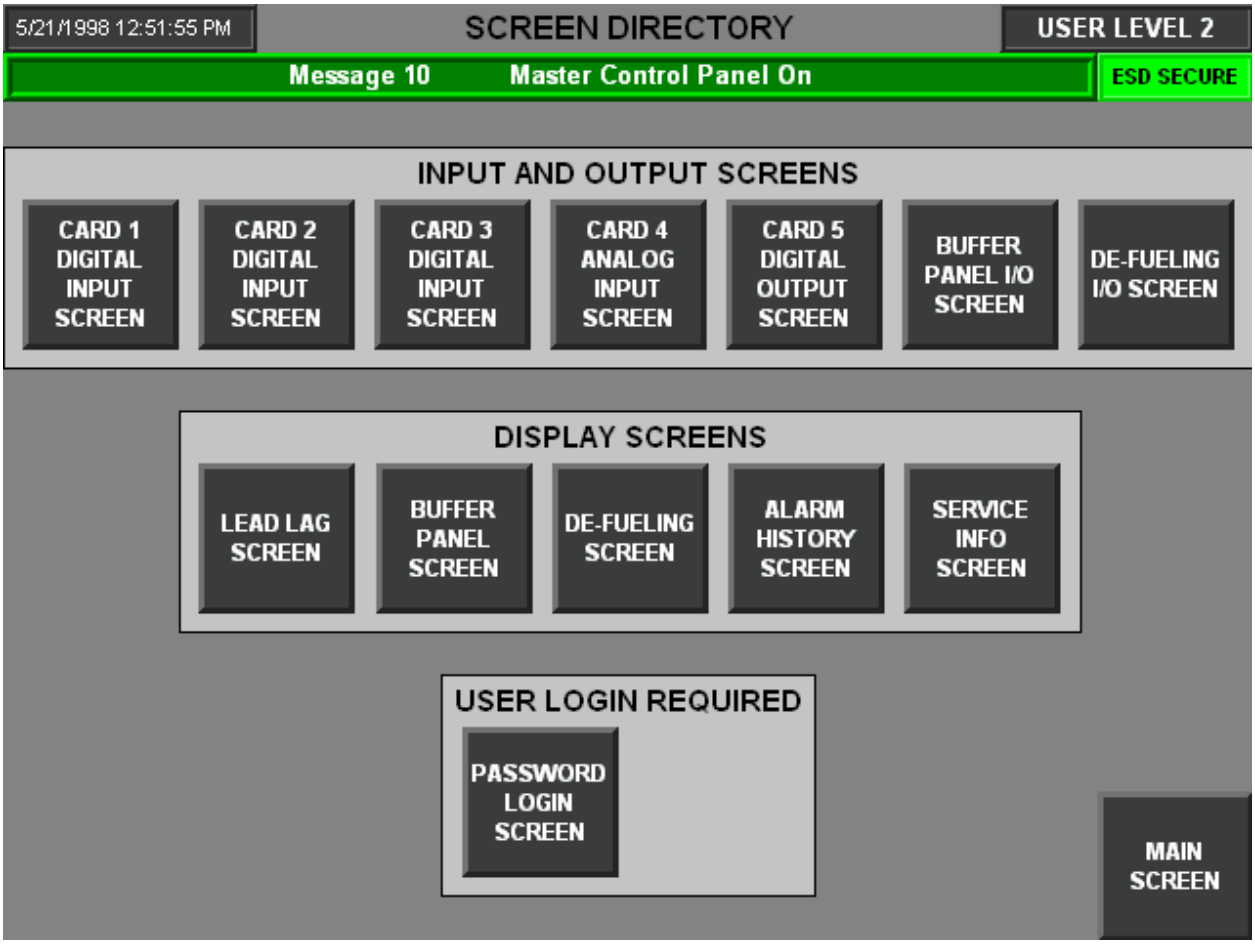
Run Hours – The current run hours for each compressor is displayed.

ON/OFF Key Switch – This displays the current MCP key switch position.

Compressor Status – This displays current status of each compressor.

LOCAL/REMOTE – This displays the current MCP key switch position.

6.2 SCREEN DIRECTORY



CARD 1 DIGITAL INPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 1 DIGITAL INPUT SCREEN and status of Card 1 digital inputs.

CARD 2 DIGITAL INPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 2 DIGITAL INPUT SCREEN and status of Card 2 digital inputs.

CARD 3 DIGITAL INPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 3 DIGITAL INPUT SCREEN and status of Card 3 digital inputs.

CARD 4 ANALOG INPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 4 ANALOG INPUT SCREEN and status of Card 4 analog inputs.

CARD 5 DIGITAL OUTPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 5 DIGITAL OUTPUT SCREEN and status of Card 5 digital outputs.

BUFFER PANEL I/O SCREEN Goto Pushbutton – This pushbutton will display the Buffer Panel I/O SCREEN and status of Buffer Panel Inputs and Outputs.

BUFFER PANEL I/O SCREEN Goto Pushbutton – This pushbutton will display the De-Fueling Panel I/O SCREEN and status of De-Fueling Panel Inputs and Outputs.

LEAD LAG SCREEN Goto Pushbutton – This pushbutton will display the LEAD LAG SCREEN which displays the compressor status and the current MCP settings for compressor control.

BUFFER PANEL SCREEN Goto Pushbutton – This pushbutton will display the BUFFER PANEL SCREEN which displays the state of buffer valves and status of the buffer panel.

DE-FUELING PANEL SCREEN Goto Pushbutton – This pushbutton will display the DE-FUELING PANEL SCREEN which displays the state of De-Fueling valves and status of the De-Fueling panel. It also has input settings for control over the De-Fueling process.

ALARM HISTORY SCREEN Goto Pushbutton – This pushbutton will display the ALARM HISTORY SCREEN which displays all the logged faults with time and date stamp of when the fault occurred.

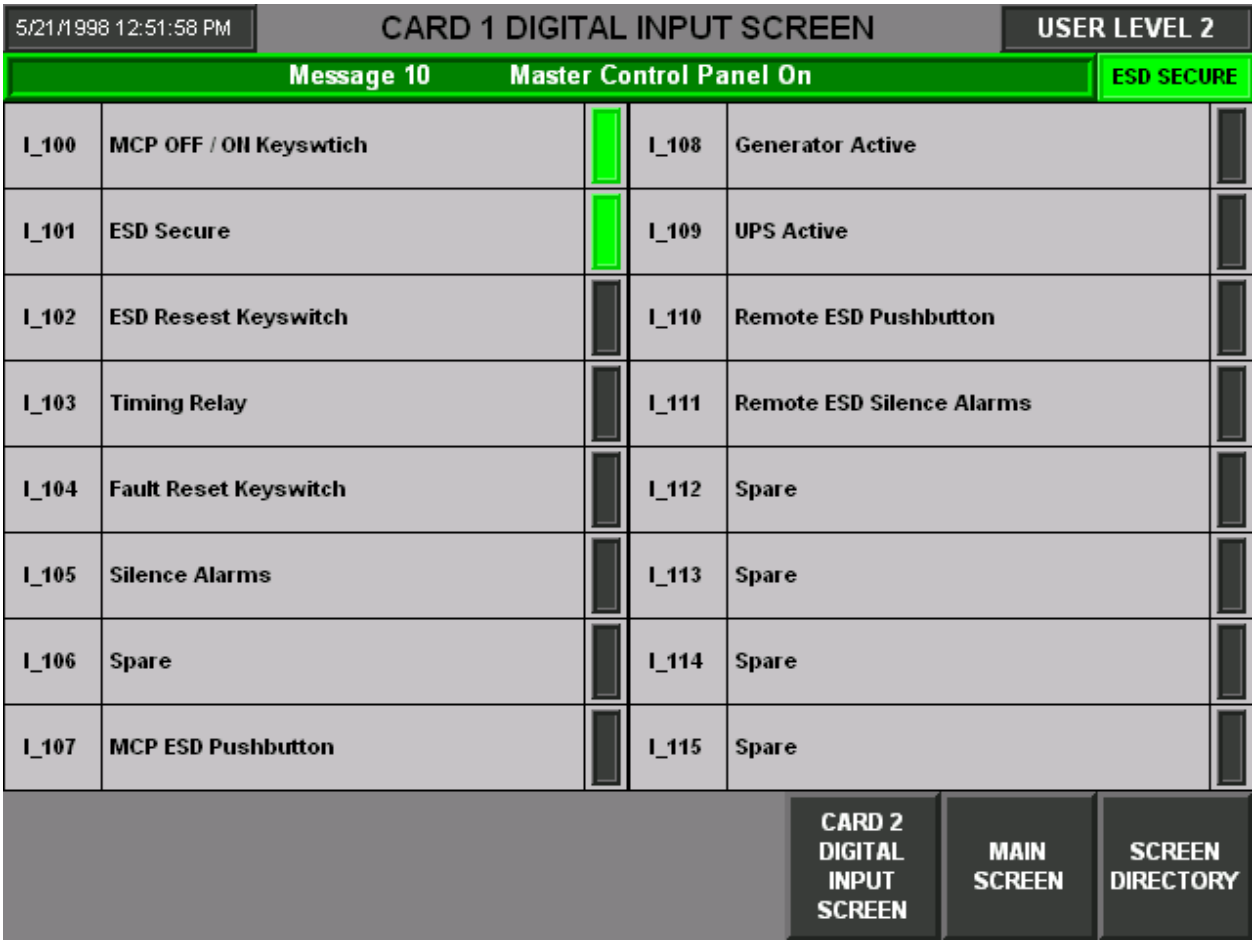
SERVICE INFO SCREEN Goto Pushbutton – This pushbutton will display the SERVICE INFORMATION SCREEN which displays the service phone number and contact information for ANGI Energy Systems.

PASSWORD LOGIN SCREEN Goto Pushbutton – This pushbutton will display the PASSWORD LOGIN SCREEN so that higher level users can perform setup screen operations.

MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

6.3 CARD 1 / CARD 2 / CARD 3 DIGITAL INPUT SCREENS

Status of Digital Inputs I_100 – I_115, I_200 – I_201, and I_300 – I_315 are displayed. When the indicator to the right of the description is green the input is high. Below only CARD 1 DIGITAL INPUT SCREEN is shown, but CARD 2 and CARD 3 DIGITAL INPUT SCREENS are similar.



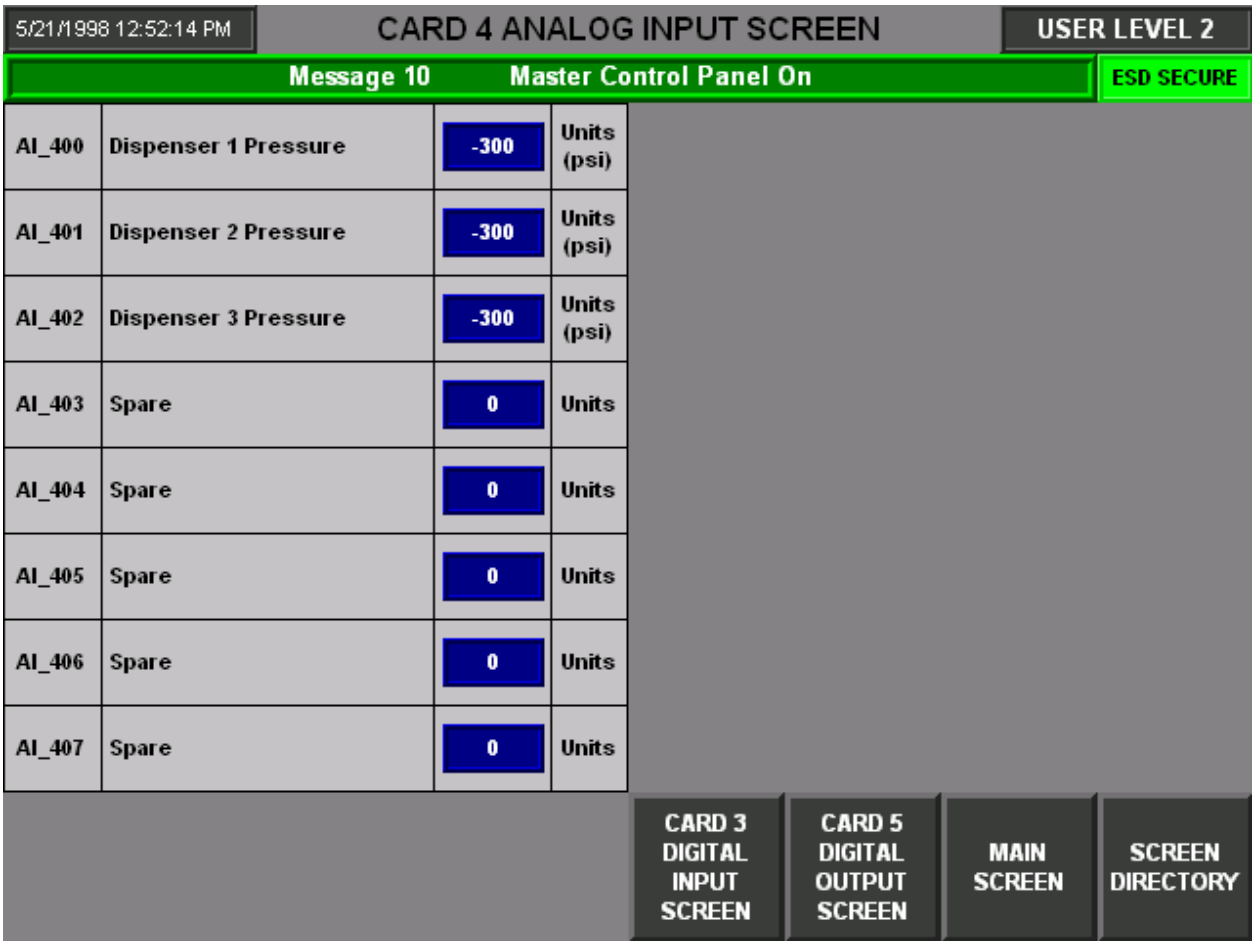
CARD 2 DIGITAL INPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 2 DIGITAL INPUT SCREEN and status of Card 2 digital inputs.

MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

6.4 CARD 4 ANALOG INPUT SCREENS

Status of Analog Inputs I_400 – I_407 are displayed on CARD 4 ANALOG INPUT SCREEN with current values to the right of the input description.



CARD 3 DIGITAL INPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 3 DIGITAL INPUT SCREEN and status of Card 3 digital inputs.

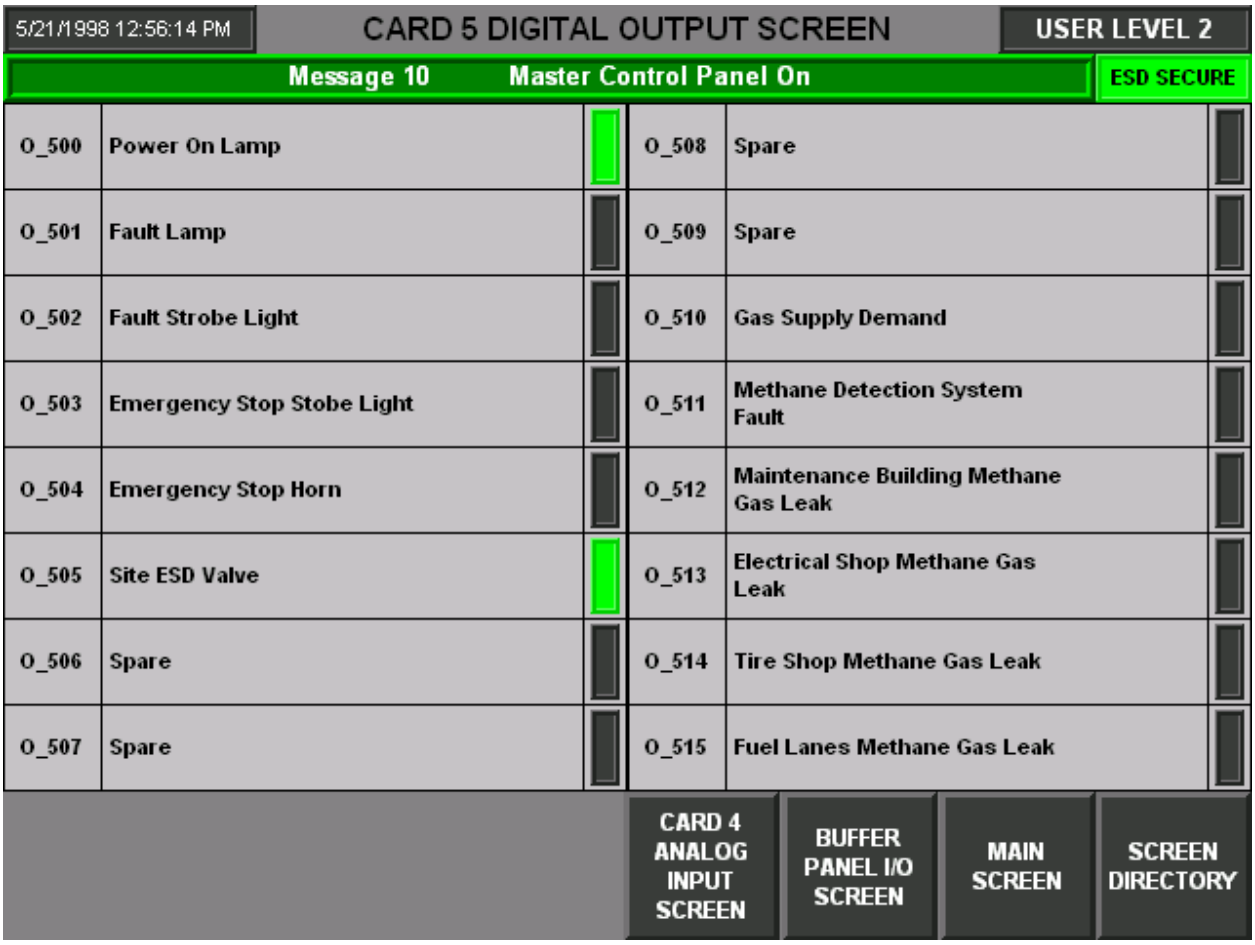
CARD 5 DIGITAL OUTPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 5 DIGITAL OUTPUT SCREEN and status of Card 5 digital outputs.

MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

6.5 CARD 5 DIGITAL OUTPUT SCREEN

Status of Digital Outputs O_500 – O_515 are displayed. When the indicator to the right of the description is green the output is high.



CARD 4 ANALOG INPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 4 ANALOG INPUT SCREEN and status of Card 4 analog inputs.

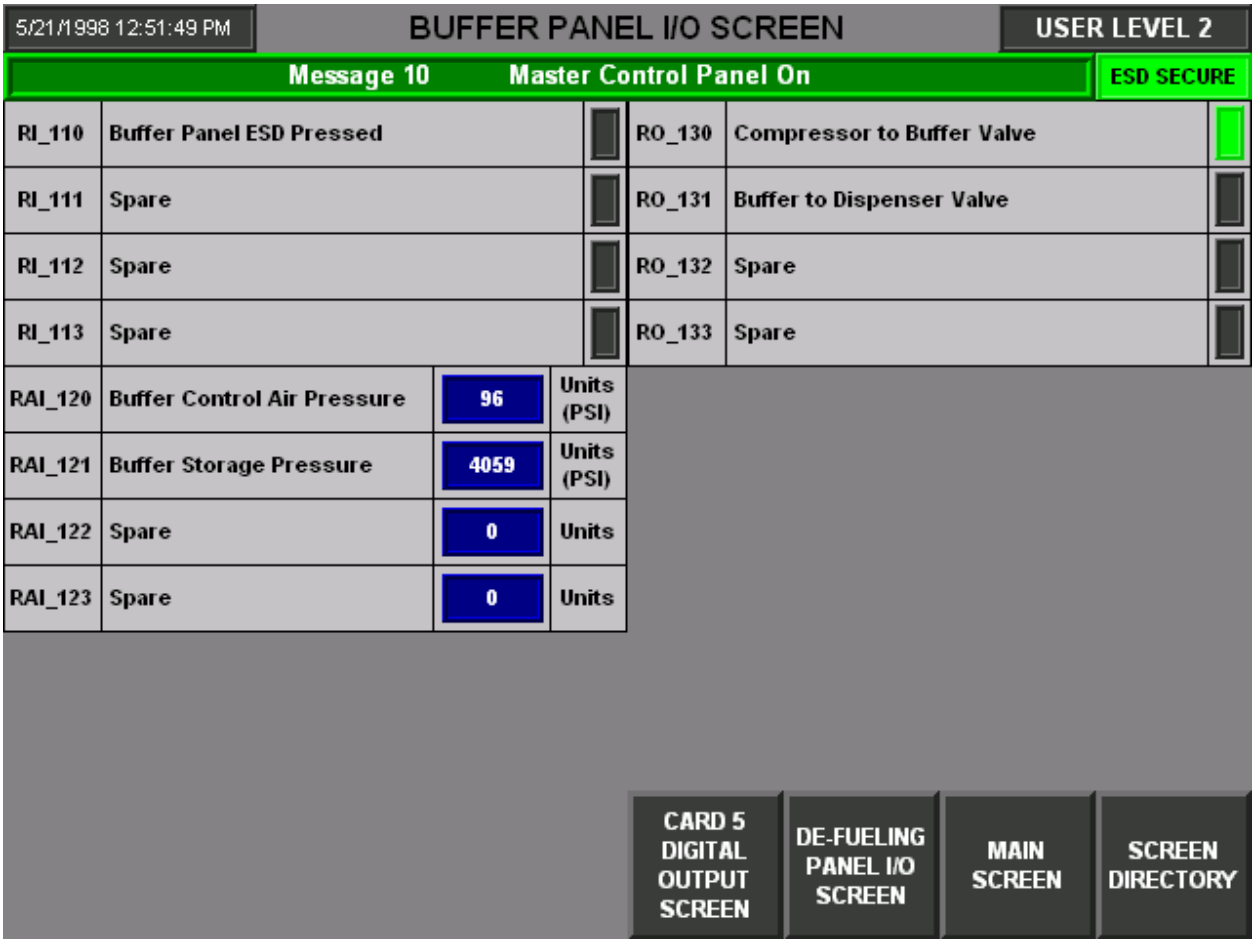
BUFFER PANEL I/O SCREEN Goto Pushbutton – This pushbutton will display the BUFFER PANEL I/O SCREEN and status of the Buffer Panel inputs and outputs.

MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

6.6 BUFFER PANEL I/O SCREEN

Status of Buffer Panel Inputs and Outputs are displayed. When the indicator to the right of the description is green the input is high. The current analog values are to the right of the input description. When the indicator to the right of the description is green the output is high.



CARD 5 DIGITAL OUTPUT SCREEN Goto Pushbutton – This pushbutton will display the CARD 5 DIGITAL OUTPUT SCREEN and status of Card 5 digital outputs.

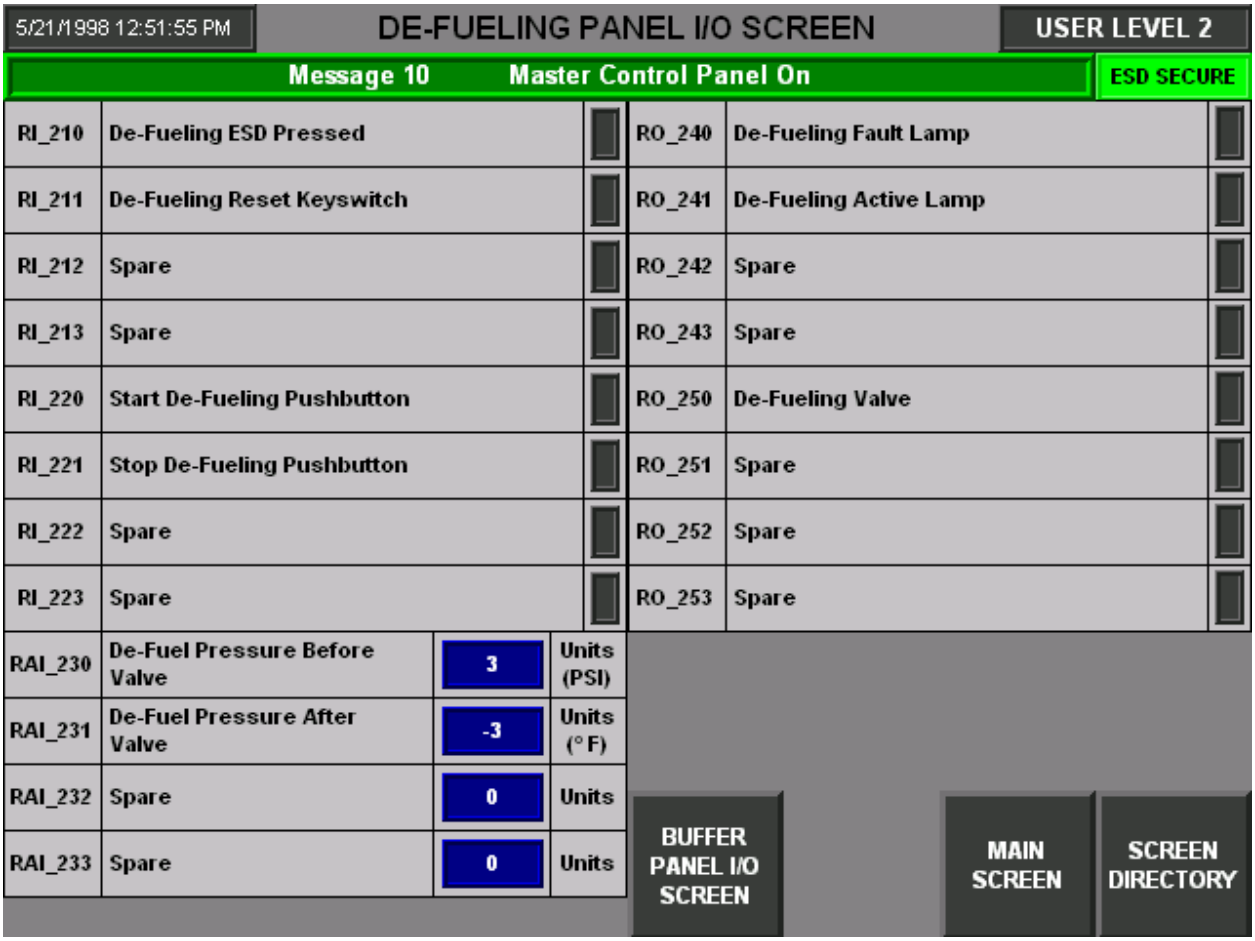
DE-FUELING PANEL I/O SCREEN Goto Pushbutton – This pushbutton will display the DE-FUELING PANEL I/O SCREEN which displays the state of De-Fueling Panel inputs and outputs.

MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

6.7 DE-FUELING PANEL I/O SCREEN

Status of De-Fueling Panel Inputs and Outputs are displayed. When the indicator to the right of the description is green the input is high. The current analog values are to the right of the input description. When the indicator to the right of the description is green the output is high.



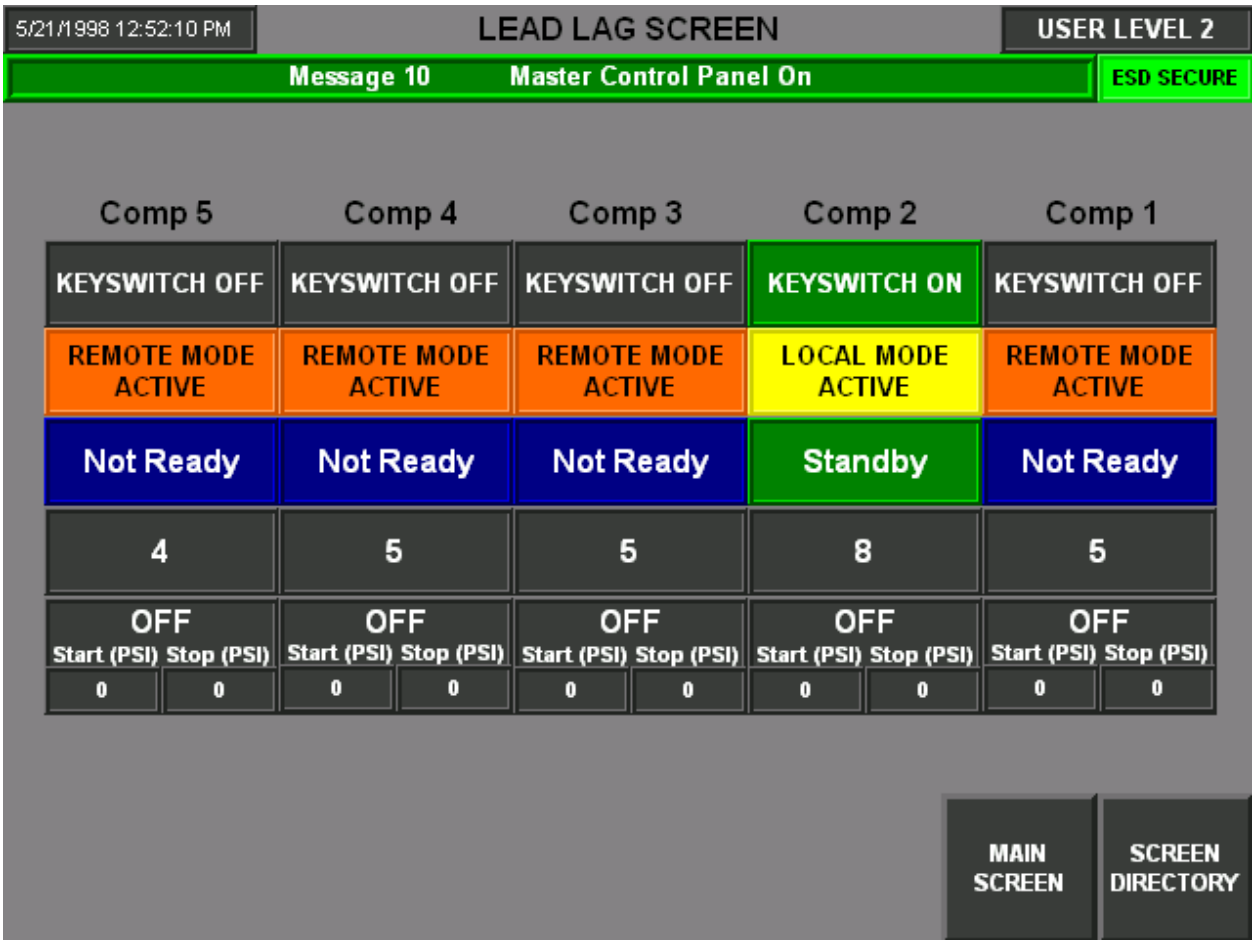
BUFFER PANEL I/O SCREEN Goto Pushbutton – This pushbutton will display the BUFFER PANEL I/O SCREEN which displays the state of Buffer Panel inputs and outputs.

MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

6.8 LEAD LAG SCREEN

The status of the Compressors and how the MCP will control them are displayed. The same information is displayed in a reduced size on the main screen.

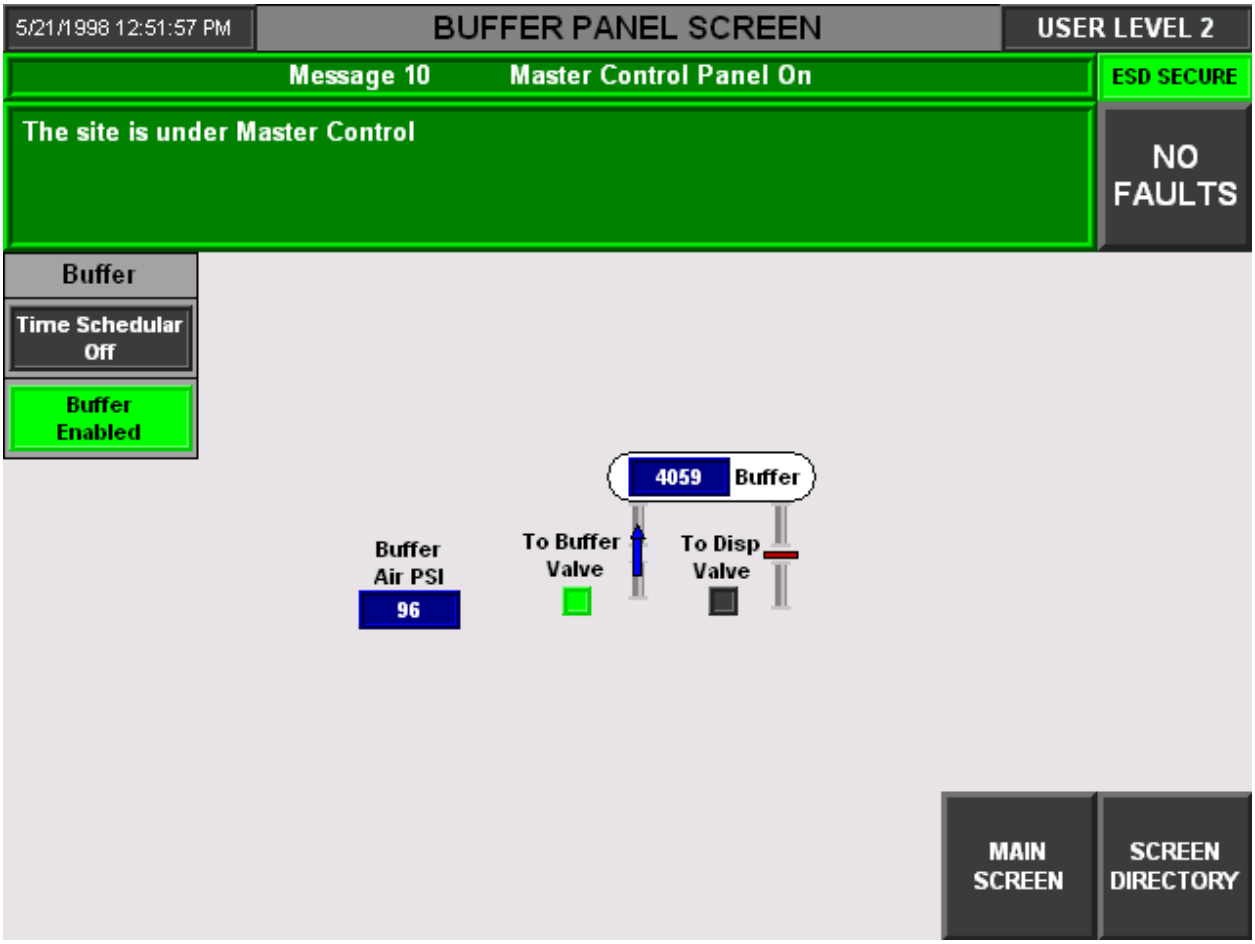


MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

6.9 BUFFER PANEL SCREEN

The status of the Buffer Panel is displayed.

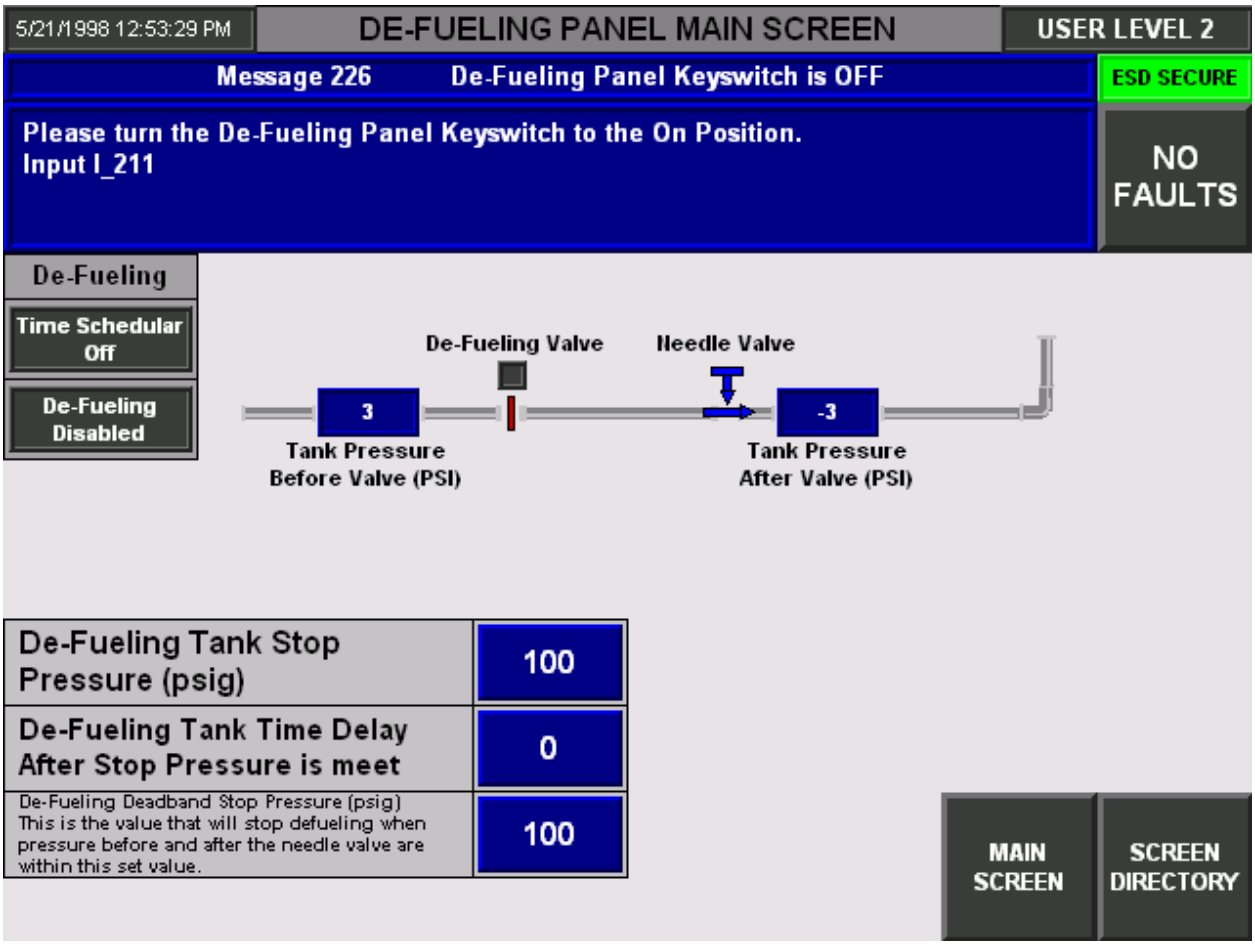


MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

6.10 DE-FUELING PANEL SCREEN

The status of the De-Fueling Panel and operation is displayed. The process of how the De-Fueling Panel operates can be modified on this screen.



MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

6.11 ALARM HISTORY SCREEN

Alarm History Screen Stores all fault messages and logs them with a time and date code. The fault list can be viewed and scrolled through using the arrows at the right of the screen.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

7. SERVICE INFORMATION SCREEN

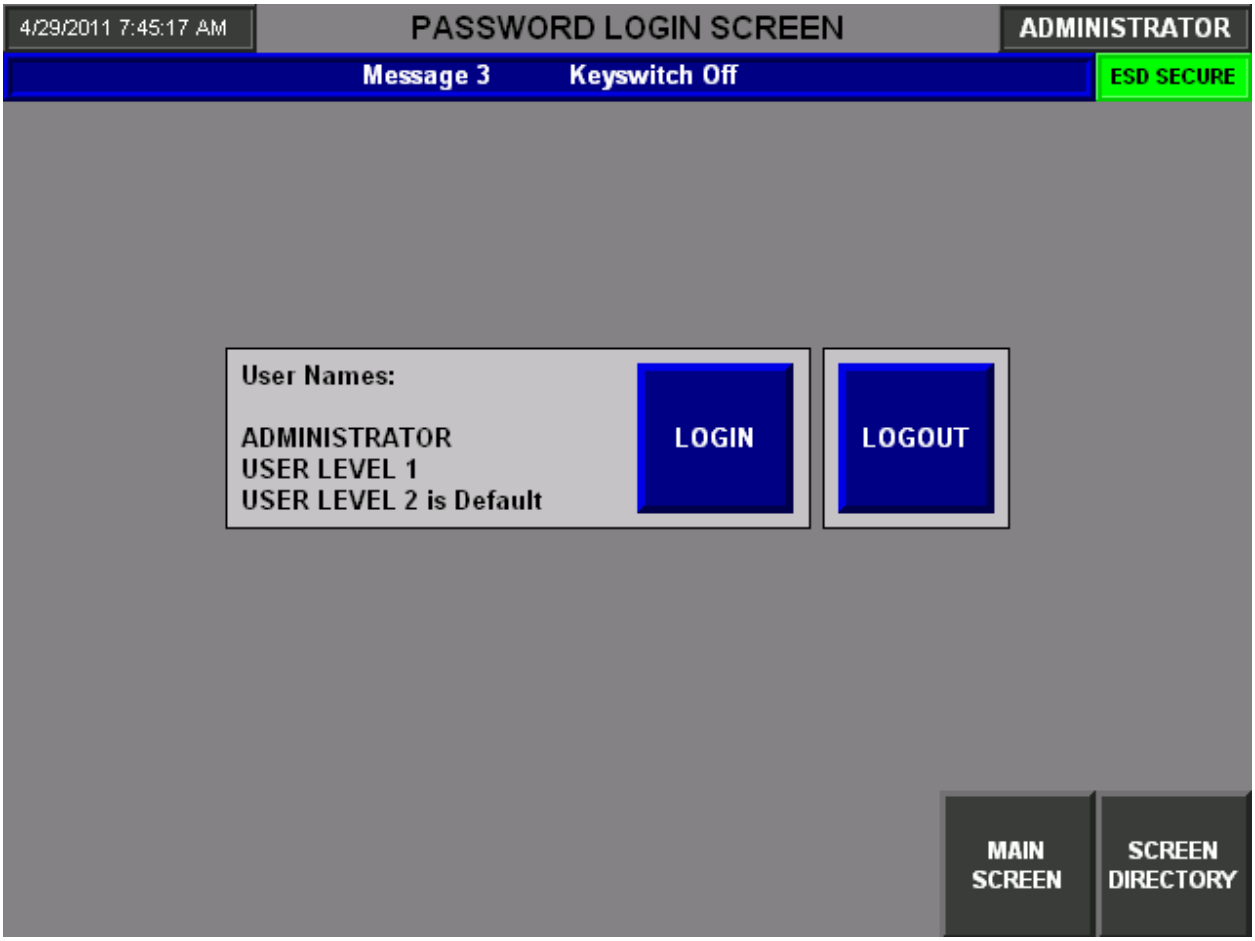
This screen displays contact information for ANGI Energy Systems.

MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

8. PASSWORD LOGIN SCREEN

This screen will allow trained personnel to enter their username and password so they have access to the compressor setup screens. To be able to access the compressor setup screens the user will need to enter the correct user name and password.



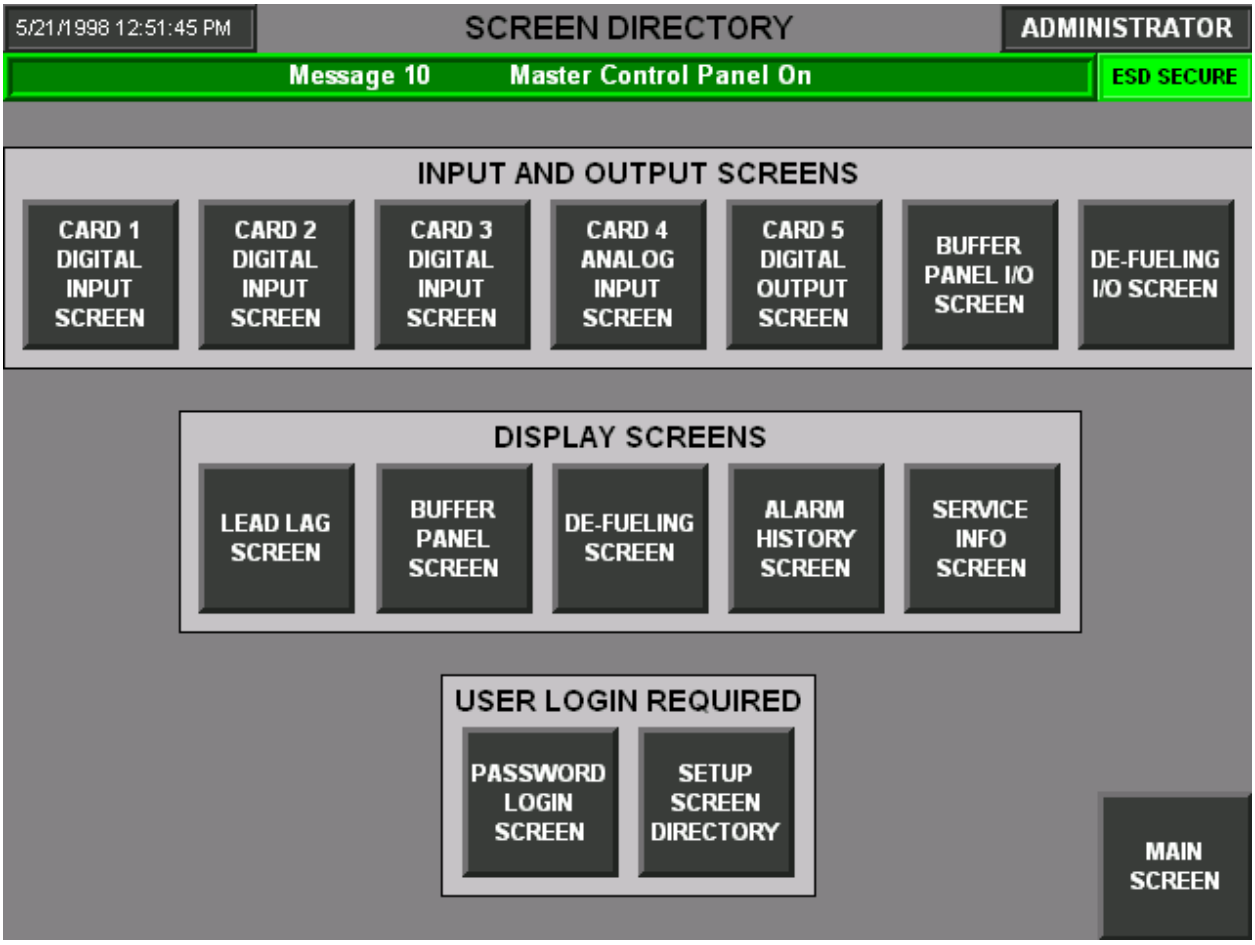
LOGIN Touch Pushbutton – This pushbutton will prompt the user to enter their user name and password. Once they enter the correct user name and password the active user name will be displayed in the upper right corner of the header on every screen. This user will be active until they press the LOGOUT touch pushbutton on this screen. USER LEVEL 2 is the default and will always be active once the LOGOUT touch pushbutton is selected.

MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

8.1 SCREEN DIRECTORY (After higher level user is logged in)

Once ADMINISTRATOR or USER LEVEL 1 has successfully logged in the SETUP SCREEN DIRECTORY Goto Pushbutton will be made visible. Note: User name has changed in the upper right corner of the header.



SETUP SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SETUP SCREEN DIRECTORY.

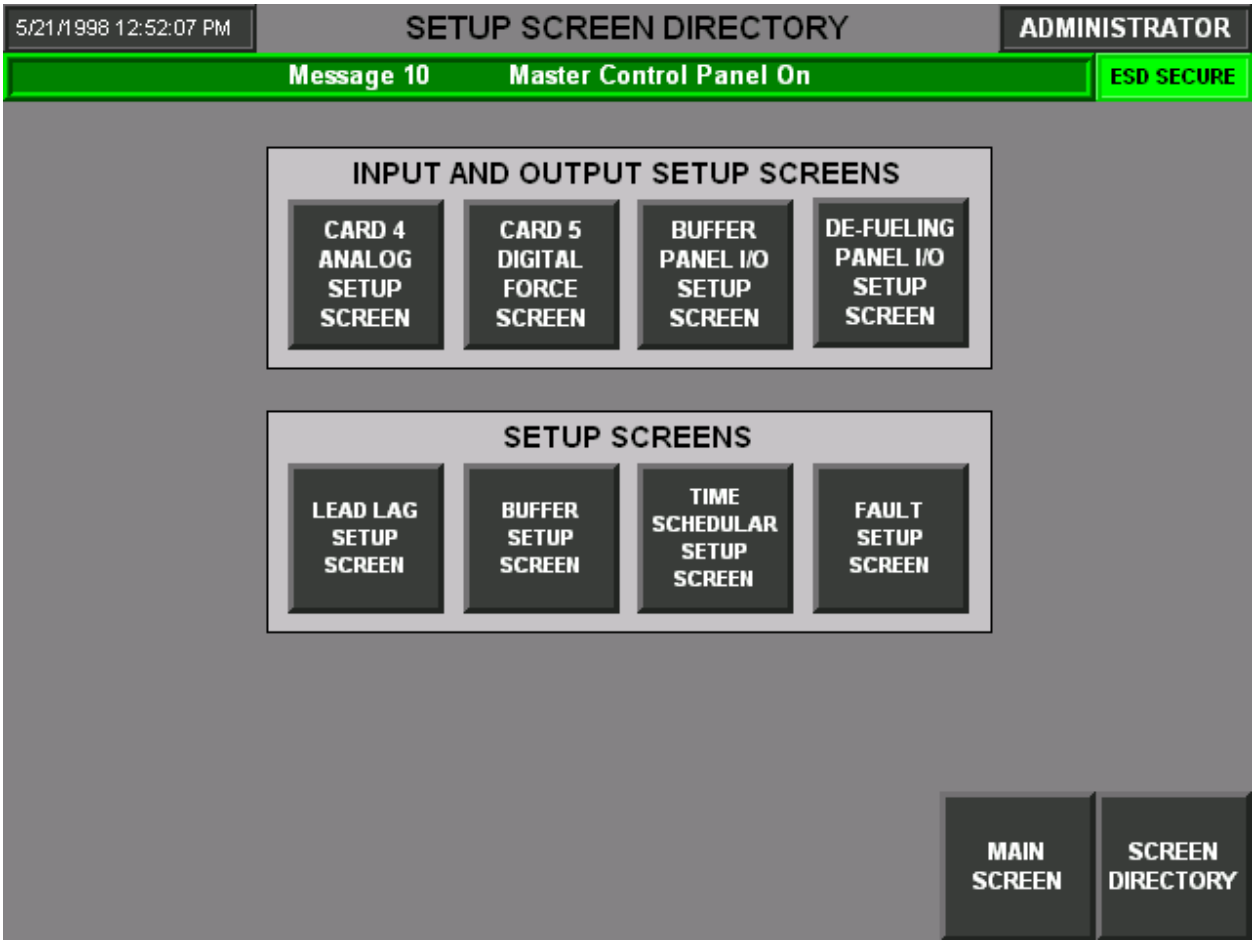
MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

9. SETUP SCREENS

Once a high level user has logged in, the user has access to the Setup Screens through the SETUP SCREEN DIRECTORY.

9.1 SETUP SCREEN DIRECTORY

From the SETUP SCREEN DIRECTORY the user can navigate to all of the setup screens used to control operation of the compressor and priority panel.



CARD 4 ANALOG SETUP SCREEN Goto Pushbutton – This pushbutton will display the CARD 4 ANALOG SETUP SCREEN.

CARD 5 DIGITAL FORCE SCREEN Goto Pushbutton – This pushbutton will display the CARD 5 DIGITAL FORCE SCREEN.

BUFFER PANEL I/O SETUP SCREEN Goto Pushbutton – This pushbutton will display the BUFFER PANEL I/O SETUP SCREEN.

DE-FUELING PANEL I/O SETUP SCREEN Goto Pushbutton – This pushbutton will display the DE-FUELING PANEL I/O SETUP SCREEN.

LEAD LAG SETUP SCREEN Goto Pushbutton – This pushbutton will display the LEAD LAG SETUP SCREEN.

BUFFER SETUP SCREEN Goto Pushbutton – This pushbutton will display the BUFFER SETUP SCREEN.

TIME SCHEDULAR SETUP SCREEN Goto Pushbutton – This pushbutton will display the TIME SCHEDULAR SETUP SCREEN.

FAULT SETUP SCREEN Goto Pushbutton – This pushbutton will display the RUN FAULT SETUP SCREEN.

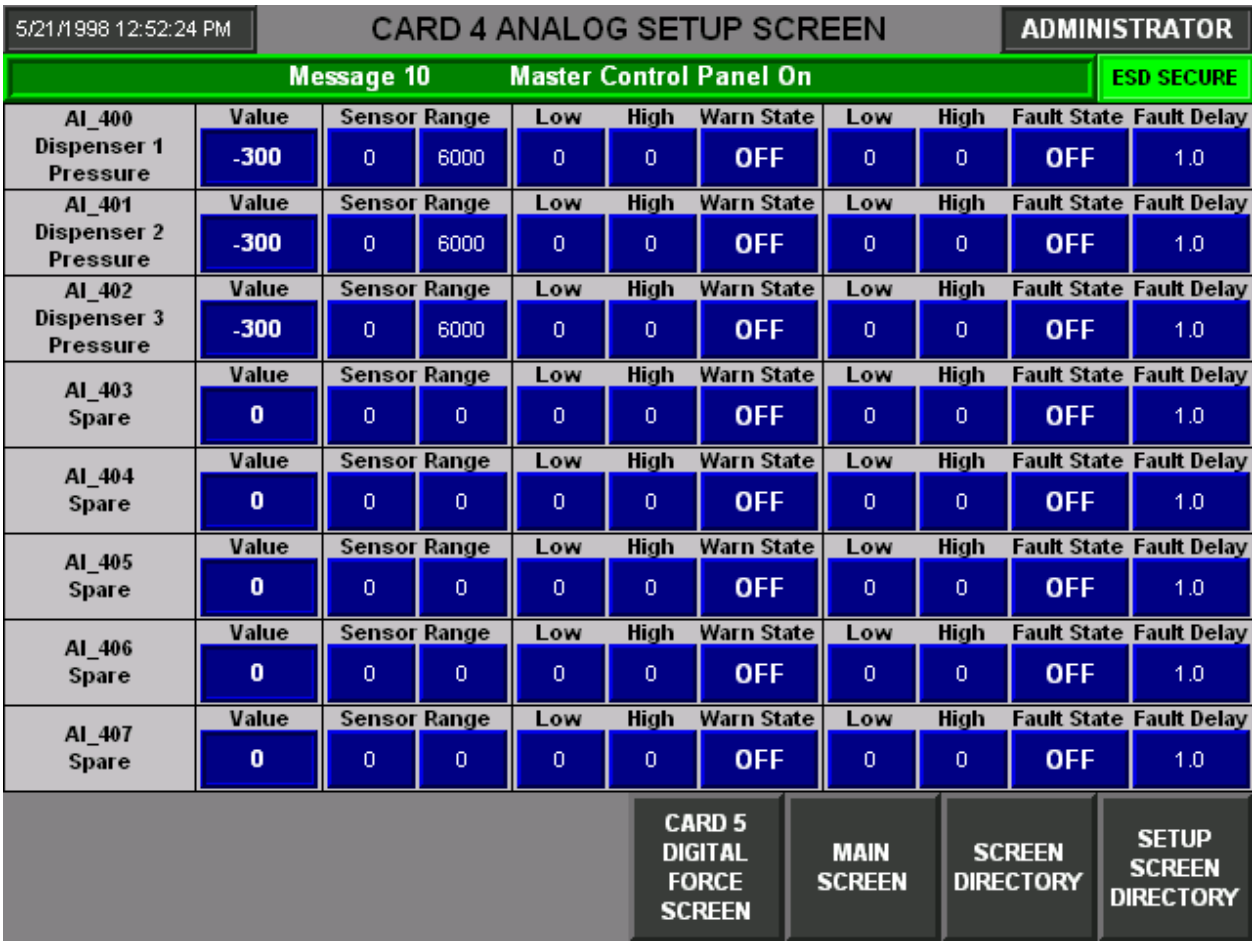
PANELVIEW CONFIG Goto Pushbutton – (not shown on this screen lower left) This pushbutton will exit the compressor application and run the PanelView background software.

MAIN SCREEN Goto Pushbutton – This pushbutton will display the MAIN SCREEN.

SCREEN DIRECTORY Goto Pushbutton – This pushbutton will display the SCREEN DIRECTORY.

9.2 CARD 4 ANALOG SETUP SCREENS

This screen will allow trained personnel the ability to change setup configuration for each analog signal on card 4 analog input modules.



Value – This displays the current value that the analog channel is reading.

Sensor Range – This displays the current value set for the low and high range of the sensor for each channel. It is also a numeric entry, so if the display box is pressed a trained personnel can change the values set for that channel.

Low / High / Warn State – This displays the current value set for the low and high range of the sensor for each warning message. It is also a numeric entry, so if the display box is pressed a trained personnel can change the values set to signal a warning message for each channel. The Warn State can be either OFF or ACTIVE. When the Warn State is OFF no warnings will be displayed regardless of sensor reading. When the Warn State is ACTIVE a warning message will be displayed when the sensor reading falls below or above the set Low or High level.

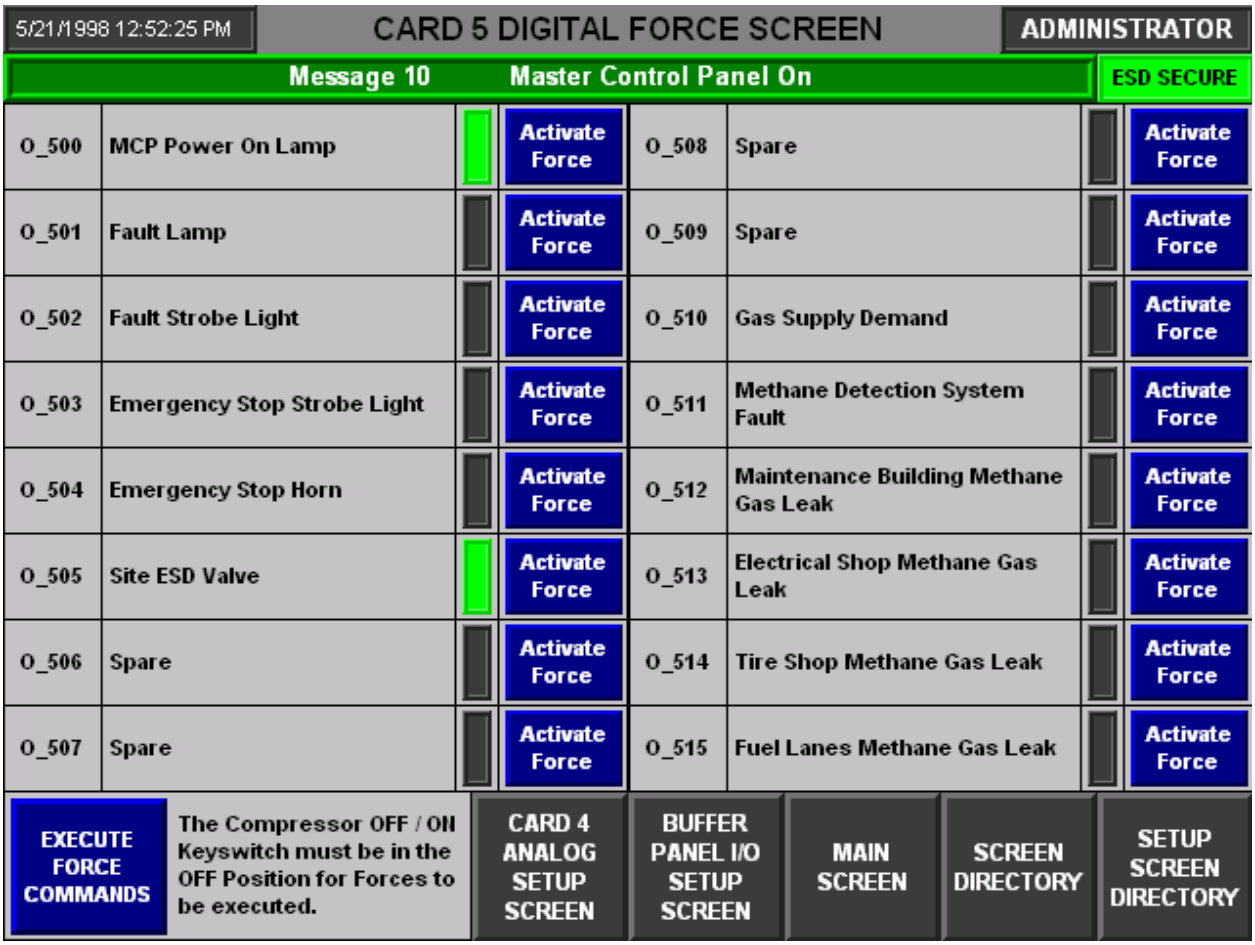
Low / High / Fault State – This displays the current value set for the low and high range of the sensor for each fault message. It is also a numeric entry, so if the display box is pressed a trained personnel can change the values set to signal a fault message for each channel. The Fault State can be either OFF or ACTIVE. When the Fault State is OFF no faults will be displayed regardless of sensor reading. When the

Fault State is ACTIVE a fault message will be displayed when the sensor reading falls below or above the set Low or High level.

Fault Delay – This displays the current time value set before a fault message is displayed. This delay allows trained personnel the ability to refine the machine operation for each site. Sites may see fluctuations in pressures and setting this fault delay to a longer delay may allow the machine to operate without nucicense faults that could shut down the machine and require a manual reset of the machine.

9.3 CARD 5 DIGITAL FORCE SCREEN

This screen will allow trained personnel the ability to force any of the digital outputs to a high state when the OFF / ON Keyswitch is in the OFF position.

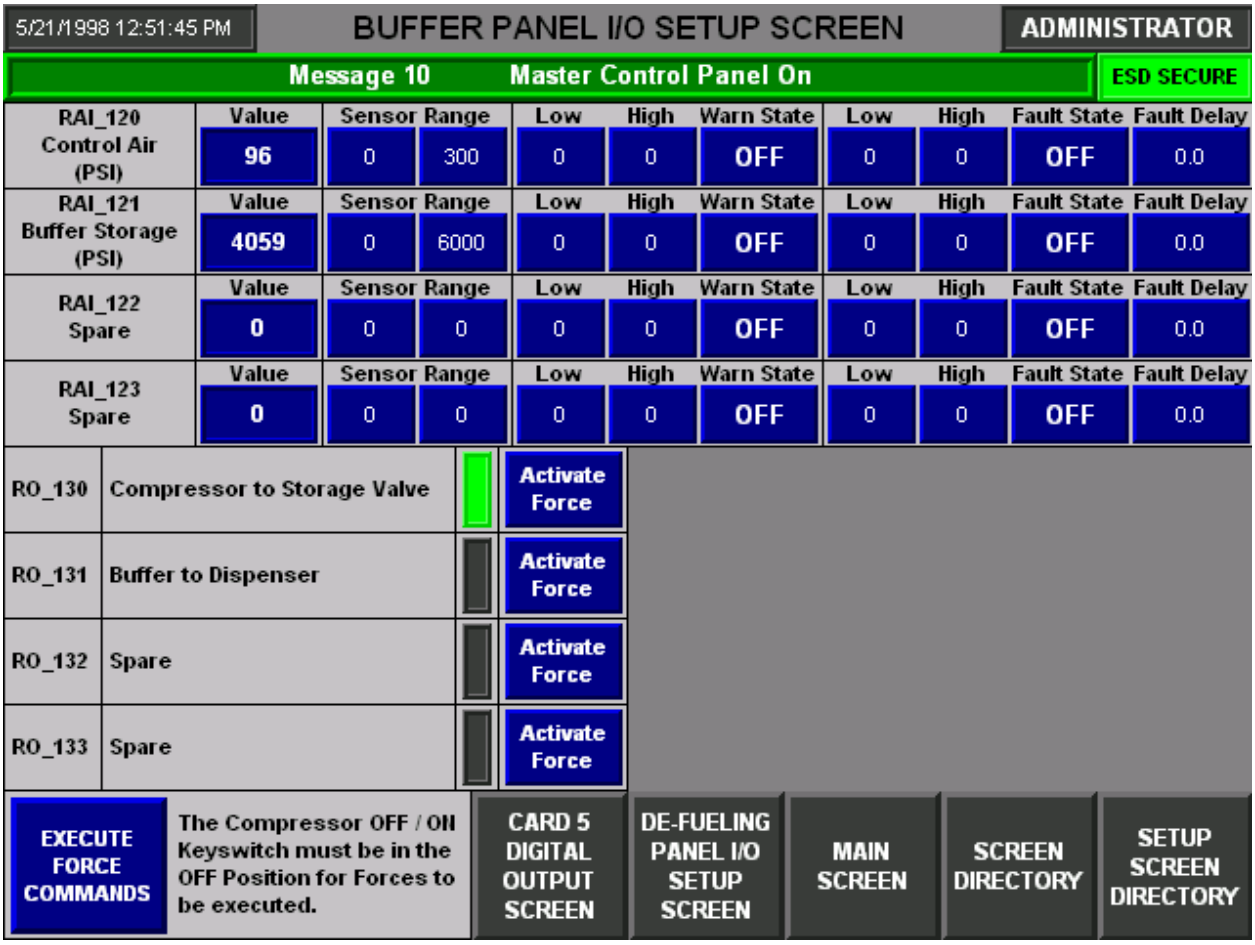


Activate Force – This toggled touch pushbutton next to each output will designate which outputs have been selected to be forced on. Note: Once the user changes to another screen all selected activated forces will be set back to an unselected state.

EXECUTE FORCE COMMANDS (lower left now displays "EXECUTE FORCE COMMANDS") – This momentary touch pushbutton when pressed will force the selected active forced outputs high. These outputs will only be held high while the user is holding the EXECUTE FORCE COMMANDS touch pushbutton.

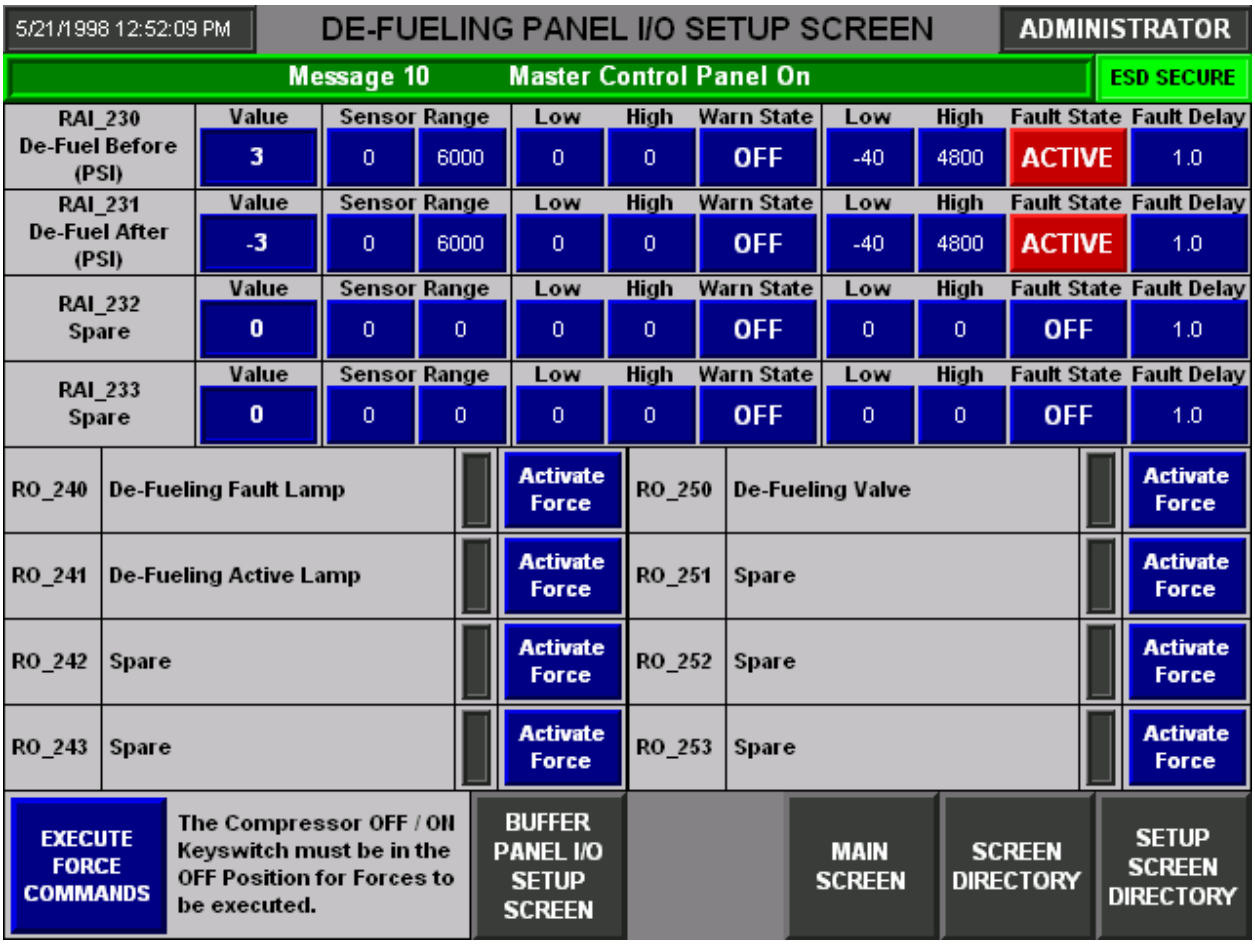
9.4 BUFFER PANEL I/O SETUP SCREEN

This screen will allow trained personnel the ability to analog sensor scaling, warning levels, fault levels, and fault delay values for analog inputs. Digital outputs can be forced from this screen by highlighting the "Activate Force" touch button to the right of each output description and pressing and holding the "EXECUTE FORCE COMMANDS" touch button.



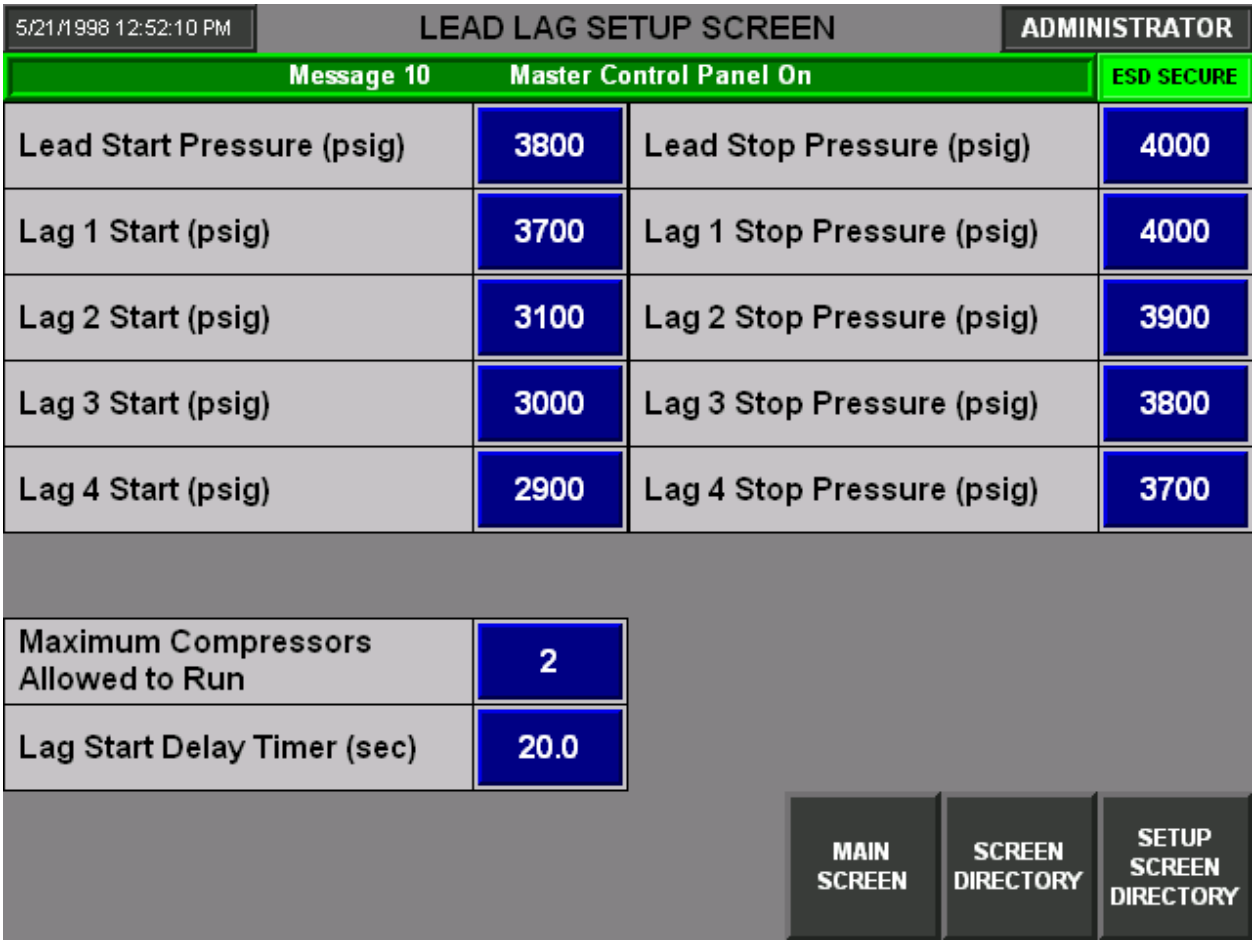
9.5 DE-FUELING PANEL I/O SETUP SCREEN

This screen will allow trained personnel the ability to analog sensor scaling, warning levels, fault levels, and fault delay values for analog inputs. Digital outputs can be forced from this screen by highlighting the "Activate Force" touch button to the right of each output description and pressing and holding the "EXECUTE FORCE COMMANDS" touch button.



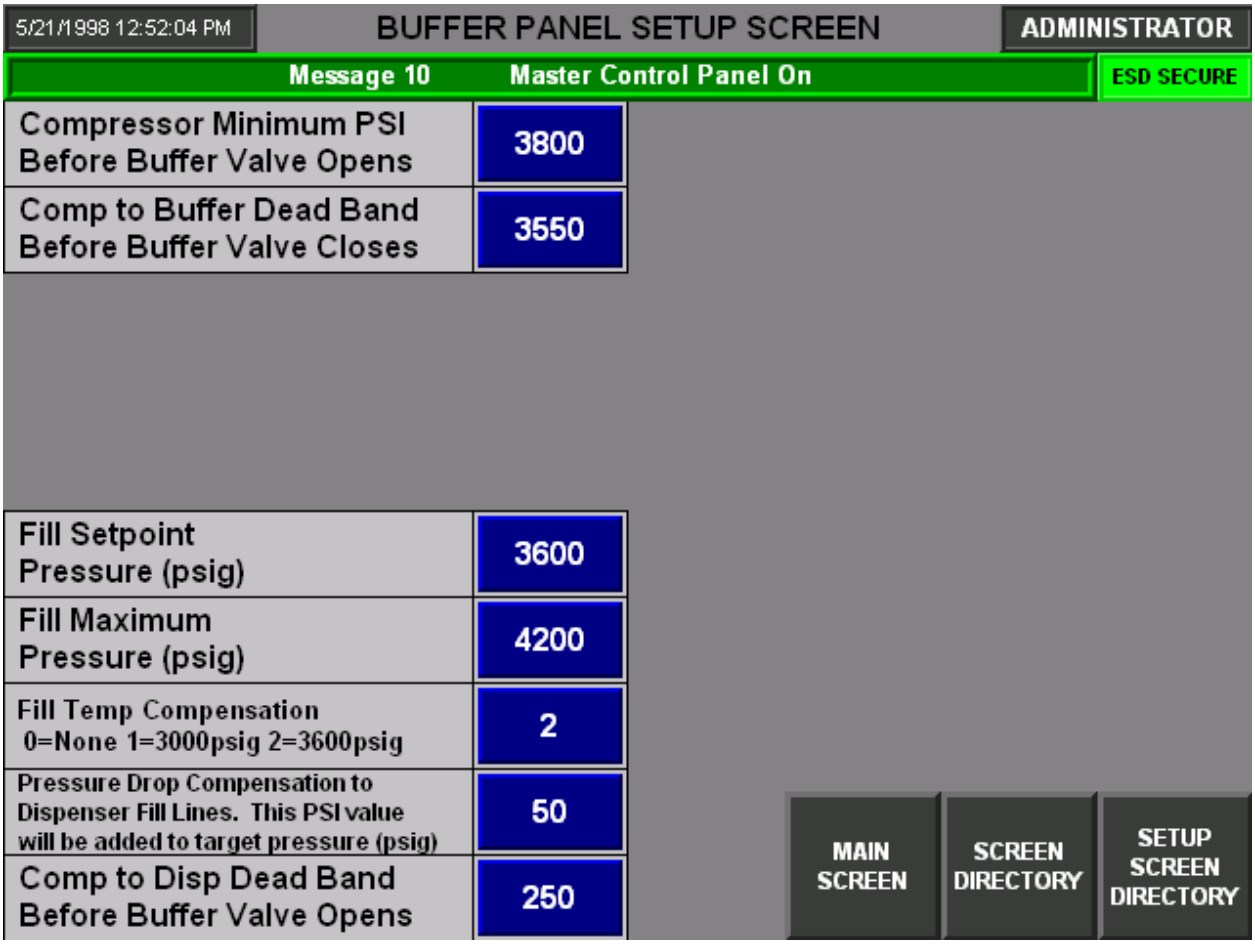
9.6 LEAD LAG SETUP SCREEN

This screen will allow trained personnel the ability to set operation of the compressor lead lag start pressures. It will also allow the maximum number of compressors to be set and the time delay between compressors starting.



9.7 BUFFER PANEL SETUP SCREEN

This screen will allow trained personnel the ability to set operation of the Buffer Panel valves to direct gas to storage and from storage to the dispensers.



Compressor Minimum PSI Before Buffer Valve Opens – This setting will verify the pressure in the header tubing and all pressures in the sequence panels are at this value before allowing gas to flow to storage.

Comp to Buffer Dead Band Before Buffer Valve Closes – This setting will allow the buffer valve to close if any pressure value in the sequence panel drops below this value.

Fill Setpoint Pressure – This setting is the target vehicle fill pressure.

Fill Maximum Pressure – This setting is the maximum vehicle fill pressure allowed regardless of temperature compensation.

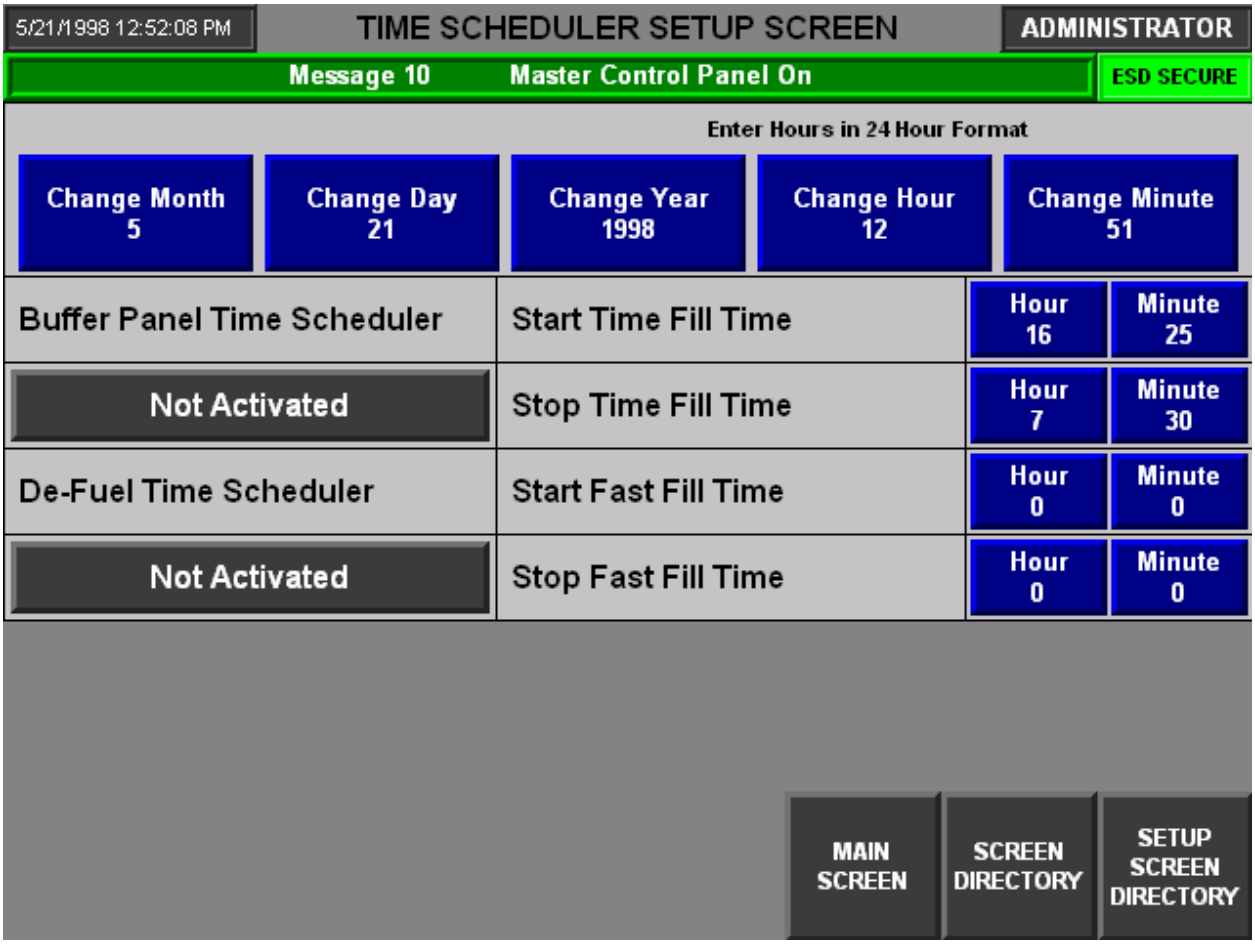
Fill Temp Compensation – This value 0, 1, or 2 will set either no temperature compensation or temperature compensation for 3000 or 3600psi vehicle fills.

Pressure Drop Compensation – The value entered will make sure the hose pressure at the dispenser is satisfied to the temperature compensated fill pressure plus this value before gas is routed to storage.

Comp to Disp Dead Band Before Buffer Valve Opens – The dead band value will make sure the pressure drops this psi lower than the temperature compensated vehicle fill pressure before opening the valve from storage to the dispensers.

9.8 TIME SCHEDULAR SETUP SCREEN

This screen will allow trained personnel the ability to set operation of the compressor for scheduling Buffer and De-Fueling allowed run times. This could be set to only allow operation during a certain time of day or ensure that the compressor does not run for reasons like hours of operation or during peak energy cost duration. The time and date are also configurable on this screen.



Time and Date Entry – Selection of each segment will allow the user the ability to set the time and date. The time must be entered in 24 hour format.

Buffer Panel Time Scheduler – This pushbutton is a toggle between Active and Not Active for the Buffer Panel time scheduler.

Start Buffer Panel Time – This time (Entered in 24 hour format) will be the allowed start time for the Buffer Panel.

Stop Buffer Panel Time – This time (Entered in 24 hour format) will be the allowed stop time for the Buffer Panel.

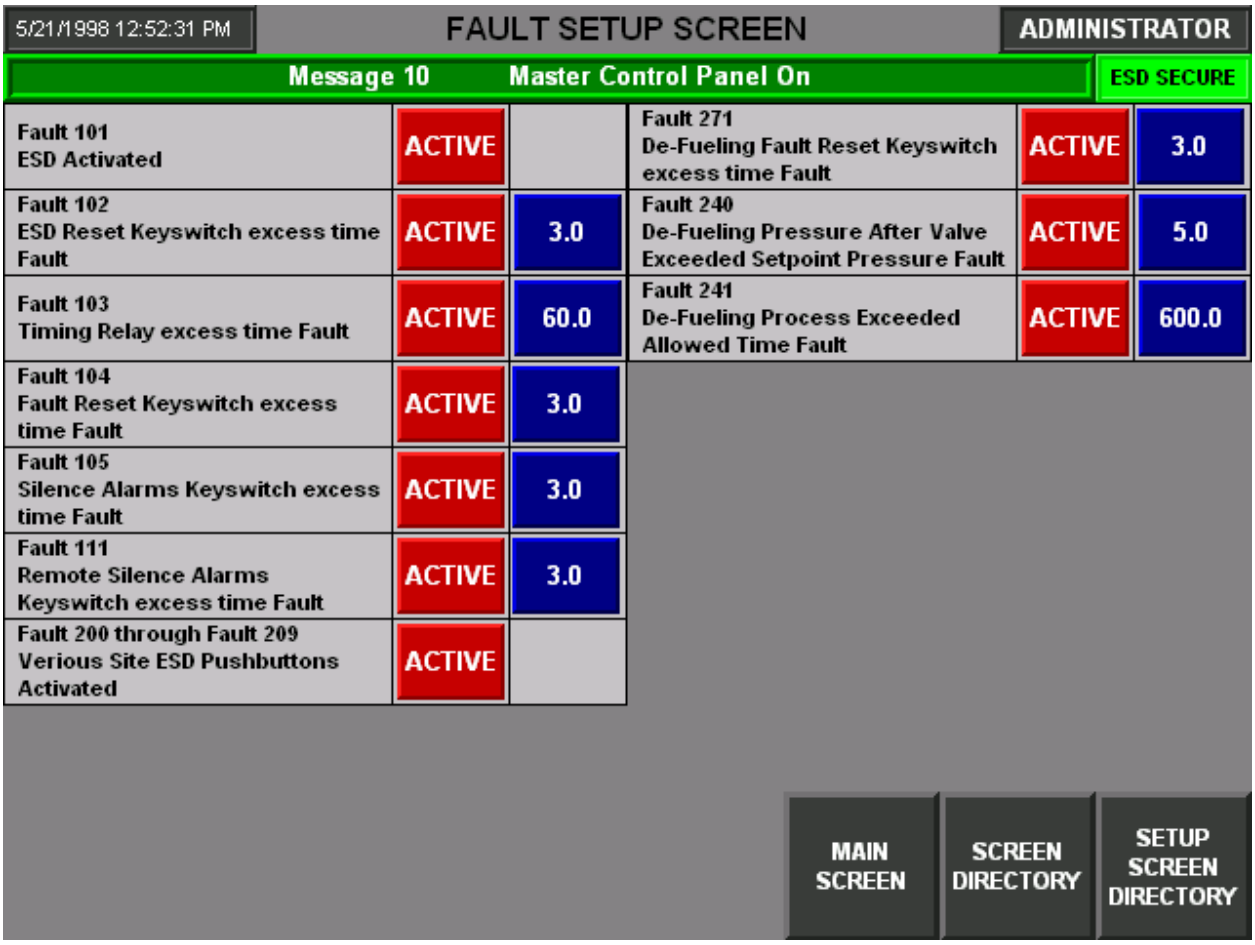
De-Fuel Time Scheduler – This pushbutton is a toggle between Active and Not Active for the De-Fueling Panel time scheduler.

Start De-Fueling Panel Time – This time (Entered in 24 hour format) will be the allowed start time for the De-Fueling Panel.

Stop De-Fueling Panel Time – This time (Entered in 24 hour format) will be the allowed stop time for the De-Fueling Panel.

9.9 FAULT SETUP SCREEN

This screen will allow trained personnel the ability to activate individual faults and set delay timers for faults that may require settling times.



10. TROUBLESHOOTING

During the CNG operations, the control system will prompt the user with status of the machine through messages and faults.

Blue Messages – Text will prompt the operator step by step to set the machine to run in automatic mode.

Green Messages – Text will display status of the machine while it is running in automatic mode.

Orange Messages – are not used.

Yellow Messages – Text will display warning conditions of the machine, but do not affect operation of the machine. When a warning message is present no other status messages will be displayed.

Red Messages – Text will display faults and record the cause for the machine to stop in the Alarm History Screen. If a fault is active the fault condition must be verified with an on unit gauge or separate test device prior to carrying out any mechanical repairs. This is to insure that the fault indicated is due to the mechanical equipment not the monitoring system. All faults must be reset on the MAIN SCREEN or by using the RESET KEYSWITCH.

The following list shows all of the messages and faults that may be displayed:

Message Number	Message Header Text	Message Description Text	Input/Device Numbers
Message 1	ESD Cicuit needs to be Reset	Please reset the ESD Circuit by rotating the ESD Reset keyswitch. On initial power up the Timing Relay will Reset the ESD Circuit after 60 Seconds.	407KS, Input I_101
Message 2			
Message 3			
Message 4	MCP Keyswitch Off	Please turn the MCP OFF / ON Keyswitch to the ON Position.	Input I_100
Message 5			
Message 6			
Message 7			
Message 8			
Message 9			
Message 10	Master Control Panel On	The site is under Master Control	
Message 11			
Message 12			
Message 13			
Message 14			
Message 15			
Message 16			
Message 17			
Message 18			
Message 19			
Message 20			

Message 21			
Message 22			
Message 23			
Message 24			
Message 25			
Message 26			
Message 27			
Message 28			
Message 29			
Message 30			
Message 31			
Message 32			
Message 33			
Message 34			
Message 35			
Message 36			
Message 37			
Message 38			
Message 39			
Message 40			
Message 41			
Message 42			
Message 43			
Message 44			
Message 45			
Message 46			
Message 47			
Message 48			
Message 49			
Message 50	Dispenser 1 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input AI_400
Message 51	Dispenser 1 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input AI_400
Message 52	Dispenser 2 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input AI_401
Message 53	Dispenser 2 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input AI_401
Message 54	Dispenser 3 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input AI_402
Message 55	Dispenser 3 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input AI_402
Message 56	AI_403 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input AI_403
Message 57	AI_403 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input AI_403
Message 58	AI_404 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input AI_404
Message 59	AI_404 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input AI_404
Message 60	AI_405 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input AI_405

Message 61	AI_405 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input AI_405
Message 62	AI_406 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input AI_406
Message 63	AI_406 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input AI_406
Message 64	AI_407 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input AI_407
Message 65	AI_407 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input AI_407
Message 66			
Message 67			
Message 68			
Message 69			
Message 70	Buffer Control Air Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input RAI_120
Message 71	Buffer Control Air Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input RAI_120
Message 72	Buffer Storage Pressure Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input RAI_121
Message 73	Buffer Storage Pressure Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input RAI_121
Message 74	RAI_122 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input RAI_122
Message 75	RAI_122 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input RAI_122
Message 76	RAI_123 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input RAI_123
Message 77	RAI_123 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input RAI_123
Message 78			
Message 79			
Message 80			
Message 81			
Message 82			
Message 83			
Message 84			
Message 85			
Message 86			
Message 87			
Message 88			
Message 89			
Message 90	Methane Detection System Fault	The Methane Detection System has faulted. Evaluate the control panel for issues	Input I_311
Message 91	Maintenance Building Methane Gas Leak	There is a presents of methane detected in the Maintenance Building. Please clear the area and evaluate the cause for the high methane level.	Input I_312
Message 92	Electrical Shop Methane Gas Leak	There is a presents of methane detected in the Electrical Shop. Please clear the area and evaluate the cause for the high methane level.	Input I_313
Message 93	Tire Shop Methane Gas Leak	There is a presents of methane detected in the Tire Shop. Please clear the area and evaluate the cause for the high methane level.	Input I_314

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Message 94	Fueling Lanes Methane Gas Leak	There is a presents of methane detected in the Fueling Lanes area. Please clear the area and evaluate the cause for the high methane level.	Input I_315
Message 95			
Message 96	Air Dryer Failure to Switch Alarm	The Air Dryer is in an alarm condition. Check the Air Dryer controller for and problems. If no alarm is present at the dryer verify wiring for a short circuit.	Input I_212
Message 97	Air Dryer Moisture Alarm	The Air Dryer is in a high moisture alarm condition. Check the Air Dryer controller for display information. If no alarm is present at the dryer verify wiring for a short circuit.	Input I_213
Message 98	Dryer Alarm	The Dryer is in an alarm condition. Check the Dryer controller for display information. If no alarm is present at the dryer verify wiring for a short circuit.	Input I_214
Message 99	Dryer Moisture Alarm	The Dryer is in a high moisture alarm condition. Check the Dryer controller for display information. A regeneration may be required. If no alarm is present at the dryer verify wiring for a short circuit.	Input I_215
Fault 100			
Fault 101	ESD is Active	The ESD Circuit is no longer secure. This is most likely caused by a ESD Pushbutton, gas detector, vibration switch, or some break in the ESD Loop wiring or a faulty ESD relay. Reset ESD Keyswitch.	Input I_101, 407CR, 416CR, 417CR, 418CR
Fault 102	ESD Reset Keyswitch excess time Fault	The ESD Reset Keyswitch has been held longer than the allowed time. If not caused by operator verify keyswitch operation and wiring.	Input I_102
Fault 103	Timing Relay excess time Fault	This fault occurs when the timing relay delay on time is greater than programmed maximum delay time. Verify that the Timing Relay is set and working properly.	Input I_103, 219TR
Fault 104	Fault Reset Keyswitch excess time Fault	The Fault Reset Keyswitch has been held longer than the allowed time. If not caused by operator verify keyswitch operation and wiring.	Input I_104
Fault 105	Silence Alarms Keyswitch excess time Fault	The Silence Alarms Keyswitch has been held longer than the allowed time. If not caused by operator verify keyswitch operation and wiring.	Input I_105
Fault 106			
Fault 107			
Fault 108			
Fault 109			
Fault 110			
Fault 111	Remote Silence Alarms Keyswitch excess time Fault	The Remote Silence Alarms Keyswitch has been held longer than the allowed time. If not caused by operator verify keyswitch operation and wiring.	Input I_111
Fault 112			
Fault 113			
Fault 114			
Fault 115			
Fault 116	Dispenser 1 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input AI_400
Fault 117	Dispenser 1 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input AI_400

Fault 118	Dispenser 1 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input AI_400
Fault 119	Dispenser 1 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input AI_400
Fault 120	Dispenser 2 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input AI_401
Fault 121	Dispenser 2 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input AI_401
Fault 122	Dispenser 2 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input AI_401
Fault 123	Dispenser 2 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input AI_401
Fault 124	Dispenser 3 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input AI_402
Fault 125	Dispenser 3 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input AI_402
Fault 126	Dispenser 3 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input AI_402
Fault 127	Dispenser 3 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input AI_402
Fault 128	AI_403 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input AI_403
Fault 129	AI_403 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input AI_403
Fault 130	AI_403 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input AI_403
Fault 131	AI_403 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input AI_403
Fault 132	AI_404 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input AI_404
Fault 133	AI_404 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input AI_404
Fault 134	AI_404 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input AI_404

Fault 135	AI_404 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input AI_404
Fault 136	AI_405 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input AI_405
Fault 137	AI_405 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input AI_405
Fault 138	AI_405 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input AI_405
Fault 139	AI_405 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input AI_405
Fault 140	AI_406 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input AI_406
Fault 141	AI_406 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input AI_406
Fault 142	AI_406 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input AI_406
Fault 143	AI_406 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input AI_406
Fault 144	AI_407 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input AI_407
Fault 145	AI_407 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input AI_407
Fault 146	AI_407 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input AI_407
Fault 147	AI_407 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input AI_407
Fault 148			
Fault 149			
Fault 150			
Fault 151			
Fault 152			
Fault 153			
Fault 154			
Fault 155			
Fault 156			
Fault 157			
Fault 158			

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Fault 159			
Fault 160			
Fault 161			
Fault 162			
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Fault 166			
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Fault 191			
Fault 192			
Fault 193			
Fault 194			
Fault 195			
Fault 196			
Fault 197			
Fault 198			
Fault 199			

Fault 200	MCP ESD Pushbuttion is Active	The MCP ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_107
Fault 201	Guard Shack ESD Pushbuttion is Active	The Guard Shack ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_110
Fault 202	Compressor 1 ESD Pushbuttion is Active	The Compressor 1 ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_107
Fault 203	Compressor 2 ESD Pushbuttion is Active	The Compressor 2 ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_107
Fault 204	Compressor 3 ESD Pushbuttion is Active	The Compressor 3 ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_107
Fault 205	Compressor 4 ESD Pushbuttion is Active	The Compressor 4 ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_107
Fault 206	Compressor 5 ESD Pushbuttion is Active	The Compressor 5 ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_107
Fault 207	Buffer Panel ESD Pushbuttion is Active	The Buffer Panel ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input RI_110
Fault 208	De-Fueling Panel ESD Pushbuttion is Active	The De-Fueling Panel ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input RI_210
Fault 209	Dryer ESD Pushbuttion is Active	The Dryer ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_300
Fault 210	GDP ESD 5 Pushbuttion is Active	The GDP ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_301
Fault 211	RAP ESD 5 Pushbuttion is Active	The RAP ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_302
Fault 212	Dispenser 3 ESD 6 Pushbuttion is Active	The Dispenser 3 ESD Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_303
Fault 213	Fuel Island ESD 1 Pushbuttion is Active	The Fuel Island ESD 1 Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_304
Fault 214	Fuel Island ESD 2 Pushbuttion is Active	The Fuel Island ESD 2 Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_305
Fault 215	Fuel Island ESD 3 Pushbuttion is Active	The Fuel Island ESD 3 Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_306

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Fault 216	Fuel Island ESD 4 Pushbuttion is Active	The Fuel Island ESD 4 Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_307
Fault 217	Building Wall Mandoor ESD Pushbuttion is Active	The Building Wall Mandoor ESD 4 Pushbutton has been pressed and will need to be pulled back to a non active state. Then turn the ESD Reset Keyswitch to secure the ESD circuit.	Input I_307
Fault 218			
Fault 219			
Fault 220			
Fault 221			
Fault 222			
Fault 223			
Fault 224			
Message 225	ESD Cicuit needs to be Reset	Please reset the ESD Circuit by rotating the ESD Reset keyswitch. On initial power up the Timing Relay will Reset the ESD Circuit after 60 Seconds.	407KS, Input I_101
Message 226	De-Fueling Panel Keyswitch is OFF	Please turn the De-Fueling Panel Keyswitch to the On Position.	Input I_211
Message 227			
Message 228			
Message 229			
Message 230	The De-Fueling Panel is in process of Venting Gas	Adjust needle valve to limit flow to an acceptable vent level.	
Message 231			
Message 232			
Message 233			
Message 234			
Message 235			
Message 236			
Message 237			
Message 238			
Message 239			
Message 240			
Message 241			
Message 242			
Message 243			
Message 244			
Message 245			
Message 246			

Message 247			
Message 248			
Message 249			
Message 250	De-Fueling Pressure Before Valve Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input RAI_230
Message 251	De-Fueling Pressure Before Valve Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input RAI_230
Message 252	De-Fueling Pressure After Valve Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input RAI_231
Message 253	De-Fueling Pressure After Valve Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input RAI_231
Message 254	RAI_232 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input RAI_232
Message 255	RAI_232 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input RAI_232
Message 256	RAI_233 Analog Signal Low Warning	The Analog Signal is below the warning setpoint limit.	Input RAI_233
Message 257	RAI_233 Analog Signal High Warning	The Analog Signal is above the warning setpoint limit.	Input RAI_233
Message 258			
Message 259			
Message 260			
Message 261			
Message 262			
Message 263			
Message 264			
Message 265			
Message 266			
Message 267			
Message 268			
Message 269			
Fault 270			
Fault 271	De-Fueling Panel Fault Reset Keyswitch excess time Fault	The De-Fueling Fault Reset Keyswitch has been held longer than the allowed time. If not caused by operator verify keyswitch operation and wiring.	Input RI_211
Fault 272			
Fault 273			
Fault 274			
Fault 275			
Fault 276			
Fault 277			

Fault 278	De-Fueling Pressure Before Valve Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input RAI_230
Fault 279	De-Fueling Pressure Before Valve Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input RAI_230
Fault 280	De-Fueling Pressure Before Valve Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input RAI_230
Fault 281	De-Fueling Pressure Before Valve Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input RAI_230
Fault 282	De-Fueling Pressure After Valve Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input RAI_231
Fault 283	De-Fueling Pressure After Valve Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input RAI_231
Fault 284	De-Fueling Pressure After Valve Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input RAI_231
Fault 285	De-Fueling Pressure After Valve Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input RAI_231
Fault 286	RAI_232 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input RAI_232
Fault 287	RAI_232 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input RAI_232
Fault 288	RAI_232 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input RAI_232
Fault 289	RAI_232 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input RAI_232
Fault 290	RAI_233 Analog Signal Broken Wire	The analog signal is reading a value simlar to a broken wire or disconnected sensor. Verify sensor connection, loose terminal connection points, or a damaged wire.	Input RAI_233
Fault 291	RAI_233 Analog Signal Short Circuit	The analog signal is reading a value simlar to a short circuit. Verify sensor operation and sensor wiring.	Input RAI_233
Fault 292	RAI_233 Analog Signal Low Fault	The analog signal is lower than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a low signal.	Input RAI_233
Fault 293	RAI_233 Analog Signal High Fault	The analog signal is higher than the fault setpoint limit. Check analog sensor value and verfity correct sensor operation and wiring. If sensor operation is correct then evaluate the cause of a high signal.	Input RAI_233
Fault 294			
Fault 295			
Fault 296			
Fault 297			

Fault 298			
Fault 299			
Fault 300			
Fault 301			
Fault 302			
Fault 303			
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Fault 308			
Fault 309			
Fault 310	De-Fueling Pressure after valve exceeded allowed pressure	The pressure downstream of the De-Fueling valve is higher than allowed. Reduce the needle valve flow setting, Reset the De-Fueling Station using the Fault Reset keyswitch and resume De-Fueling process by pressing Start De-Fueling pushbutton.	
Fault 311	De-Fueling Process exceeded allowable time	Needle valve flow setting may need to increased or process may need to be repeated if tank being de-fueled is large. Reset the De-Fueling Station using the Fault Reset keyswitch and resume De-Fueling process by pressing Start De-Fueling pushbutton.	
Fault 312			
Fault 313			
Fault 314			
Fault 315			
Fault 316			
Fault 317			
Fault 318			
Fault 319			
Fault 320			

11. SETPOINT TABLE

The following table contains all the setpoints for the selectable values of the compressor. The Value (Factory Set) column contains the values as the machine was tested and shipped to the site. Value (Site 1-3) columns contain space for manual entry to log any changes that occur during or after installation and are the customer's responsibility to maintain record of.

CARD 4 ANALOG SETUP SCREEN					
Description	Units	Value (Factory Set)	Value (Site 1)	Value (Site 2)	Value (Site 3)
AI_400 Sensor Range Low	psig	0			
AI_400 Sensor Range High	psig	6000			
AI_400 Warning Level Low	psig	0			
AI_400 Warning Level High	psig	0			
AI_400 Warn State	toggle	OFF			
AI_400 Fault Level Low	psig	0			
AI_400 Fault Level High	psig	0			
AI_400 Fault State	toggle	OFF			
AI_400 Fault Delay	sec	1			
AI_401 Sensor Range Low	psig	0			
AI_401 Sensor Range High	psig	6000			
AI_401 Warning Level Low	psig	0			
AI_401 Warning Level High	psig	0			
AI_401 Warn State	toggle	OFF			
AI_401 Fault Level Low	psig	0			
AI_401 Fault Level High	psig	0			
AI_401 Fault State	toggle	OFF			
AI_401 Fault Delay	sec	1			
AI_402 Sensor Range Low	psig	0			
AI_402 Sensor Range High	psig	6000			
AI_402 Warning Level Low	psig	0			
AI_402 Warning Level High	psig	0			
AI_402 Warn State	toggle	OFF			
AI_402 Fault Level Low	psig	0			
AI_402 Fault Level High	psig	0			
AI_402 Fault State	toggle	OFF			
AI_402 Fault Delay	sec	1			
AI_403 Sensor Range Low	psig	0			
AI_403 Sensor Range High	psig	0			
AI_403 Warning Level Low	psig	0			
AI_403 Warning Level High	psig	0			
AI_403 Warn State	toggle	OFF			
AI_403 Fault Level Low	psig	0			
AI_403 Fault Level High	psig	0			
AI_403 Fault State	toggle	OFF			
AI_403 Fault Delay	sec	1			
AI_404 Sensor Range Low	psig	0			
AI_404 Sensor Range High	psig	0			

AI_404 Warning Level Low	psig	0			
AI_404 Warning Level High	psig	0			
AI_404 Warn State	toggle	OFF			
AI_404 Fault Level Low	psig	0			
AI_404 Fault Level High	psig	0			
AI_404 Fault State	toggle	OFF			
AI_404 Fault Delay	sec	1			
AI_405 Sensor Range Low	psig	0			
AI_405 Sensor Range High	psig	0			
AI_405 Warning Level Low	psig	0			
AI_405 Warning Level High	psig	0			
AI_405 Warn State	toggle	OFF			
AI_405 Fault Level Low	psig	0			
AI_405 Fault Level High	psig	0			
AI_405 Fault State	toggle	OFF			
AI_405 Fault Delay	sec	1			
AI_406 Sensor Range Low	psig	0			
AI_406 Sensor Range High	psig	0			
AI_406 Warning Level Low	psig	0			
AI_406 Warning Level High	psig	0			
AI_406 Warn State	toggle	OFF			
AI_406 Fault Level Low	psig	0			
AI_406 Fault Level High	psig	0			
AI_406 Fault State	toggle	OFF			
AI_406 Fault Delay	sec	1			
AI_407 Sensor Range Low	psig	0			
AI_407 Sensor Range High	psig	0			
AI_407 Warning Level Low	psig	0			
AI_407 Warning Level High	psig	0			
AI_407 Warn State	toggle	OFF			
AI_407 Fault Level Low	psig	0			
AI_407 Fault Level High	psig	0			
AI_407 Fault State	toggle	OFF			
AI_407 Fault Delay	sec	1			

BUFFER PANEL I/O SETUP SCREEN					
Description	Units	Value (Factory Set)	Value (Site 1)	Value (Site 2)	Value (Site 3)
RAI_120 Sensor Range Low	psig	0			
RAI_120 Sensor Range High	psig	300			
RAI_120 Warning Level Low	psig	0			
RAI_120 Warning Level High	psig	0			
RAI_120 Warn State	toggle	OFF			
RAI_120 Fault Level Low	psig	50			
RAI_120 Fault Level High	psig	125			
RAI_120 Fault State	toggle	ACTIVE			
RAI_120 Fault Delay	sec	1			
RAI_121 Sensor Range Low	psig	0			

RAI_121 Sensor Range High	psig	6000			
RAI_121 Warning Level Low	psig	0			
RAI_121 Warning Level High	psig	0			
RAI_121 Warn State	toggle	OFF			
RAI_121 Fault Level Low	psig	-40			
RAI_121 Fault Level High	psig	4800			
RAI_121 Fault State	toggle	ACTIVE			
RAI_121 Fault Delay	sec	1			
RAI_122 Sensor Range Low	psig	0			
RAI_122 Sensor Range High	psig	0			
RAI_122 Warning Level Low	psig	0			
RAI_122 Warning Level High	psig	0			
RAI_122 Warn State	toggle	OFF			
RAI_122 Fault Level Low	psig	0			
RAI_122 Fault Level High	psig	0			
RAI_122 Fault State	toggle	OFF			
RAI_122 Fault Delay	sec	1			
RAI_123 Sensor Range Low	psig	0			
RAI_123 Sensor Range High	psig	0			
RAI_123 Warning Level Low	psig	0			
RAI_123 Warning Level High	psig	0			
RAI_123 Warn State	toggle	OFF			
RAI_123 Fault Level Low	psig	0			
RAI_123 Fault Level High	psig	0			
RAI_123 Fault State	toggle	OFF			
RAI_123 Fault Delay	sec	1			

DE-FUELING PANEL I/O SETUP SCREEN					
Description	Units	Value (Factory Set)	Value (Site 1)	Value (Site 2)	Value (Site 3)
RAI_230 Sensor Range Low	psig	0			
RAI_230 Sensor Range High	psig	6000			
RAI_230 Warning Level Low	psig	0			
RAI_230 Warning Level High	psig	0			
RAI_230 Warn State	toggle	OFF			
RAI_230 Fault Level Low	psig	-40			
RAI_230 Fault Level High	psig	4800			
RAI_230 Fault State	toggle	ACTIVE			
RAI_230 Fault Delay	sec	1			
RAI_231 Sensor Range Low	psig	0			
RAI_231 Sensor Range High	psig	6000			
RAI_231 Warning Level Low	psig	0			
RAI_231 Warning Level High	psig	0			
RAI_231 Warn State	toggle	OFF			
RAI_231 Fault Level Low	psig	-40			
RAI_231 Fault Level High	psig	4800			
RAI_231 Fault State	toggle	ACTIVE			
RAI_231 Fault Delay	sec	1			

RAI_232 Sensor Range Low	psig	0			
RAI_232 Sensor Range High	psig	0			
RAI_232 Warning Level Low	psig	0			
RAI_232 Warning Level High	psig	0			
RAI_232 Warn State	toggle	OFF			
RAI_232 Fault Level Low	psig	0			
RAI_232 Fault Level High	psig	0			
RAI_232 Fault State	toggle	OFF			
RAI_232 Fault Delay	sec	1			
RAI_233 Sensor Range Low	psig	0			
RAI_233 Sensor Range High	psig	0			
RAI_233 Warning Level Low	psig	0			
RAI_233 Warning Level High	psig	0			
RAI_233 Warn State	toggle	OFF			
RAI_233 Fault Level Low	psig	0			
RAI_233 Fault Level High	psig	0			
RAI_233 Fault State	toggle	OFF			
RAI_233 Fault Delay	sec	1			

LEAD LAG SETUP SCREEN					
Description	Units	Value (Factory Set)	Value (Site 1)	Value (Site 2)	Value (Site 3)
Lead Start Pressure	psig	3800			
Lag 1 Start Pressure	psig	3700			
Lag 2 Start Pressure	psig	3100			
Lag 3 Start Pressure	psig	3000			
Lag 4 Start Pressure	psig	2900			
Lead Stop Pressure	psig	4000			
Lag 1 Stop Pressure	psig	4000			
Lag 2 Stop Pressure	psig	3900			
Lag 3 Stop Pressure	psig	3800			
Lag 4 Stop Pressure	psig	3700			
Maximum Compressor Allowed to Run	Integer	2			
Lag Start Delay Timer	sec	20			

BUFFER PANEL SETUP SCREEN					
Description	Units	Value (Factory Set)	Value (Site 1)	Value (Site 2)	Value (Site 3)
Comp Min PSI Before Buffer Valve Opens	psig	3800			
Comp to Buff Dead Band Before Buffer	psig	3550			
Fill Setpoint Pressure	psig	3600			
Fill Maximum Pressure	psig	4200			
Fill Temp Compensation	Integer	2			
Pressure Drop Compensation	psig	50			
Comp to Disp Dead Band Before Buffer	psig	250			

CompactLogix Controller

TIME SCHEDULER PARAMETERS					
Description	Units	Value (Factory Set)	Value (Site 1)	Value (Site 2)	Value (Site 3)
Buffer Panel Time Scheduler	toggle	Not Activated			
Start Buffer Panel Time	Hour/Min	N/A			
Stop Buffer Panel Time	Hour/Min	N/A			
De-Fuel Time Scheduler	toggle	Not Activated			
Start De-Fueling Panel Time	Hour/Min	N/A			
Stop De-Fueling Panel Time	Hour/Min	N/A			

FAULT SETUP SCREEN					
Description	Units	Value (Factory Set)	Value (Site 1)	Value (Site 2)	Value (Site 3)
Fault 101 OFF/ACTIVE	toggle	ACTIVE			
Fault 102 OFF/ACTIVE	toggle	ACTIVE			
Fault 102 Time Delay	sec	3			
Fault 103 OFF/ACTIVE	toggle	ACTIVE			
Fault 103 Time Delay	sec	60			
Fault 104 OFF/ACTIVE	toggle	ACTIVE			
Fault 104 Time Delay	sec	3			
Fault 105 OFF/ACTIVE	toggle	ACTIVE			
Fault 105 Time Delay	sec	3			
Fault 111 OFF/ACTIVE	toggle	ACTIVE			
Fault 111 Time Delay	sec	3			
Fault 200-209 OFF/ACTIVE	toggle	ACTIVE			
Fault 271 OFF/ACTIVE	toggle	ACTIVE			
Fault 271 Time Delay	sec	3			
Fault 240 OFF/ACTIVE	toggle	ACTIVE			
Fault 240 Time Delay	sec	5			
Fault 241 OFF/ACTIVE	toggle	ACTIVE			
Fault 241 Time Delay	sec	600			