S90-010 FSI/APR 2004

File: SERVICE MANUAL - SECTION 90
Replaces: S90-010 FSI/APR 02
Dist. 3, 3a, 3b, 3c

FACTORY SETUP INSTRUCTIONS

FRICK® QUANTUM™ COMPRESSOR CONTROL PANEL

Version 5.0x

Table of Contents

INTRODUCTION

This manual provides information on accessing setup and setpoints that should not be allowed by all users. To prevent unauthorized changes to setup and setpoints, it is important to keep this manual secured from non-privileged users. The ***Factory Setup*** main menu selection has been provided for Factory Representatives and Distributors to set up the customer-specific control features which should not need to be changed by operators. Read the Quantum™ Operation manual (S90-010 O) first and then this manual before entering ***Factory Setup***. To access ***Factory Setup***, switch on (or close) dipswitch #8 on the main board. With this dipswitch in the On position, the ***Main Menu*** screen will change. The ***About*** menu selection is replaced with the ***Factory Setup*** menu selection.

CAUTION **To maintain security, DO NOT DISTRIBUTE THIS MANUAL.**

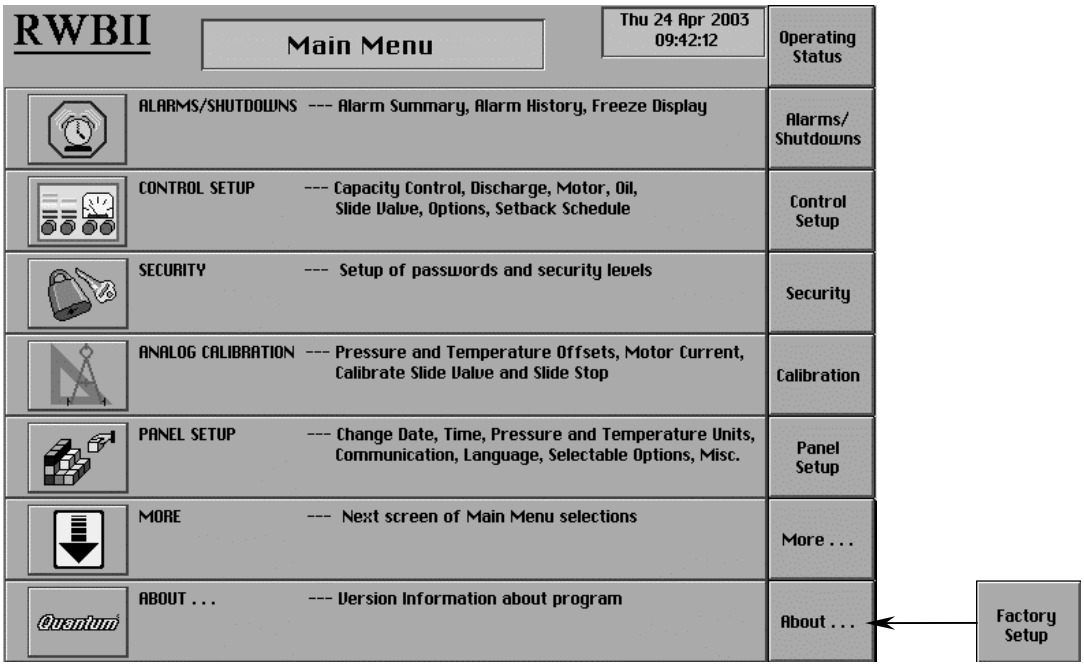
OPERATION
SWITCH FOR FACTORY SETUP

MAIN BOARD DIPSWITCH SETTING

Switch Position	Switch Status	Description of Switch Function
Switch # 1	OFF / Open * On / Closed	Normal Not assigned
Switch # 2	OFF / Open * On / Closed	Normal Operation Clear EEPROM (Required only if configuration data is incorrect and proper operation cannot be obtained.) **CAUTION!!! Will clear all settings.** Power On with switch On/Closed and wait 10 sec. Power Off and set switch Off/Open. Power On for normal operation.
Switch # 3	OFF / Open * On / Closed	Not assigned Not assigned
Switch # 4	OFF / Open * On / Closed	Not assigned Not assigned
Switch # 5	OFF / Open * On / Closed	Not assigned Not assigned
Switch # 6	OFF / Open * On / Closed	Not assigned Not assigned
Switch # 7	OFF / Open * On / Closed	Not assigned Not assigned
Switch # 8	OFF / Open * On / Closed	Not assigned Factory Setup

* = standard setting

MAIN MENU



When in Factory Setup mode (Quantum™ dipswitch position number 8 set to ON), the standard ***Main Menu*** screen will be replaced with the ***Factory Setup*** main menu screen, as shown above.

Note that the only difference between the two screens is the replacement of the **[About…]** key with the **[Factory Setup]** key, as shown. This key has been provided for Factory

Representatives and Distributors to set up the customer-specific control features which should not need to be changed by operators.

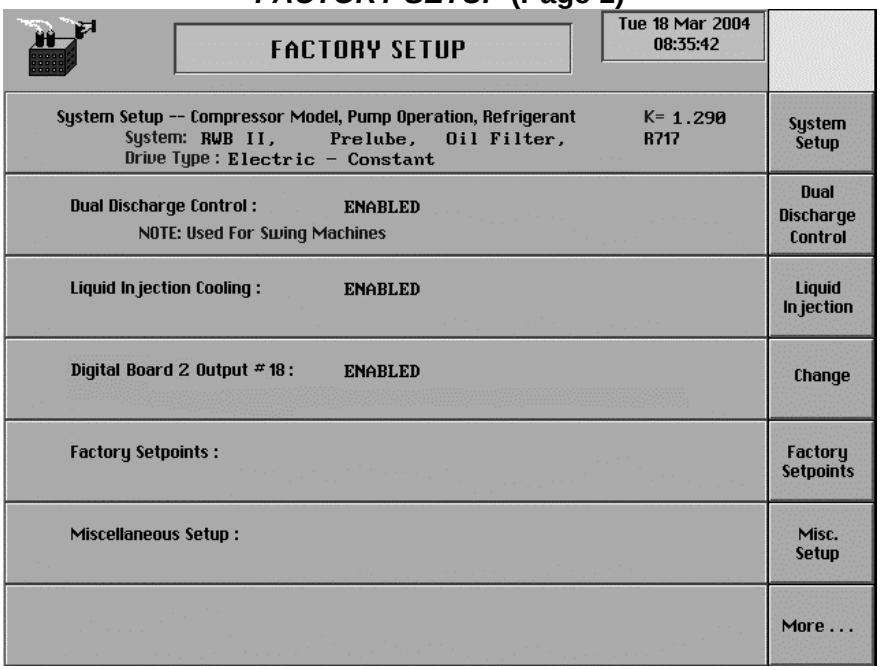
NOTE: It is of the utmost importance to reset dipswitch position number 8 back to the OFF state, whenever all Factory accesses have been completed.

The following warning message is displayed when selecting **[Factory Setup]:**

!!!Warning Entering Factory Setup!!!

You are attempting to modify critical system control settings. Any modifications of these settings may have a significant impact on the operation and performance of the pertinent equipment. By undertaking to modify these settings, you are assuming all responsibility for those actions. At the very minimum, prior to any such action, you should have thoroughly read and understood all manuals and literature accompanying the unit. **IMPROPER CONTROL SETTINGS MAY CREATE AN OPERATING CONDITION WHERE THERE IS THE POTENTIAL OF PROPERTY DAMAGE, PERSONAL INJURY, OR DEATH.**

FACTORY SETUP (Page 1)



This screen shows the Factory Setup selections. The operator will only see the setpoints that are relevant to their plant by enabling or disabling the features that can be selected.

Following are the factory setup selections:

[System Setup] - Compressor Model, Pump Operation, Refrigerant. The selection key shows a screen with the system setup selections. (See Factory Setup ***System Setup*** Screen).

[Dual Discharge Control] - This option should be enabled if the customer uses this compressor as a swing machine that will operate on two different discharge levels. By enabling this option, the ***Discharge Safeties*** screen will show additional setpoints. Both Mode 1 and Mode 2 Discharge Pressure setpoints will be necessary. One of the modes must be activated to select its setpoints as the currently used settings. The selection key toggles between making this control Enabled or Disabled.

[Liquid Injection Cooling] - This option should be enabled if the compressor uses the injection of refrigeration liquid to cool the oil. The selection key toggles between making this control Enabled or Disabled.

[Digital Board 2 Output #18] - This option is intended for the High Stage of a close-coupled, two-stage compressor package without an intercooler. This option energizes the Main Oil Injection solenoid on the High Stage compressor while the booster is running and the High Stage Discharge Temperature rises above a setpoint. The Main Oil Injection Discharge Temperature output is on digital board #2. The selection key toggles between Disabled, Main Oil Injection or User Defined.

[Factory Setpoints] --This key accesses the Factory Setpoints screen. Select **[Change Setpoints]** to change the settings on this screen. The following settings are provided:

- Volume Ratio(VI) Range
  - Low
  - High
  - Deadband
  - Proportional
- Oil Pump
  - Alarm
    - Running
    - Off
    - Delay
  - Shutdown
    - Running
    - Off
    - Delay
- Slide Valve Travel
- Lube Time
- Economizer Override
- Separator Velocity Reference
- Compression Ratio
- Liquid Slugging
  - Alarm
  - Shutdown
- Maximum Discharge Pressure Value
- User Selected Output #18 Control
- Atmospheric Pressure
- Panel Heat Offset
- Sales Order
- Item number

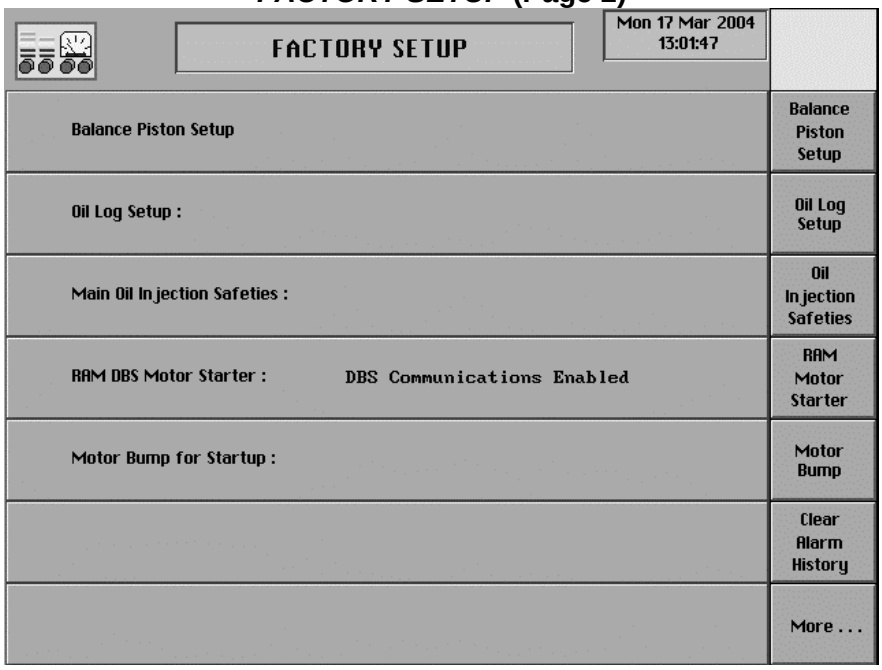
[Misc. Setup] - This key accesses the setup screen to adjust the Superheat parameters, and to enable or disable the Slide Valve Unloader. Select **[Change Setpoints]** to change the settings on this screen. The following settings are provided:

- When starting, a shutdown will occur if Tdsat plus **[Setpoint value]** is greater than the Separator Temperature.
- When running, an alarm will occur if Tdsat plus **[Setpoint value]** is greater than the Discharge Temperature for **[Setpoint Value]**.
- When running, a shutdown will occur if Tdsat plus **[Setpoint value]** is greater than the Discharge Temperature for **[Setpoint Value]**.

The purpose of the Slide Valve Unloader is to separate the Slide Valve from the Slide Stop in the event they get tight against each other.

[More…] - This key accesses additional Factory Setup options.

FACTORY SETUP (Page 2)



This screen shows additional Factory Setup selections. The operator will only see the setpoints that are relevant to their plant by enabling or disabling the features that can be selected.

Following are the additional Factory Setup selections:

[Balance Piston Setup] – This selection shows the ***Balance Piston Setup*** screen.

[Oil Log Setup] – This selection shows the ***Oil Log Setup*** screen.

[Main Oil Injection Safeties] – This selection shows the ***Main Oil Injection Safeties*** screen.

[Motor Bump for Startup] - This selection shows the ***Motor Bump for Startup*** screen.

[RAM DBS Motor Starter] – This option should be enabled if the customer has a RAM DBS. This is a digital bypass solid-state reduced voltage starter that is an internally microprocessor-controlled motor starting device. The operator can select between three options in Factory Setup for the DBS mode. The DBS will accelerate the motor in a smooth, stepless motion, reducing supply voltage dip during motor start and mechanical shock on the compressor.

[DBS Communications Enabled] - When the DBS is in the Enabled mode in Factory Setup, the internal microprocessor of the starter will communicate to the Quantum™. All starter alarms and shutdowns as well as the motor amps will be communicated through the cabling between the DBS starter board and Analog Board 1 in the Quantum™ panel. Motor starter alarms and shutdowns can be cleared at, or remotely through the Quantum™ panel. If a communication error occurs between the DBS starter and the Quantum™ panel when in the Enabled mode, a shutdown will occur due to the loss of motor amp information.

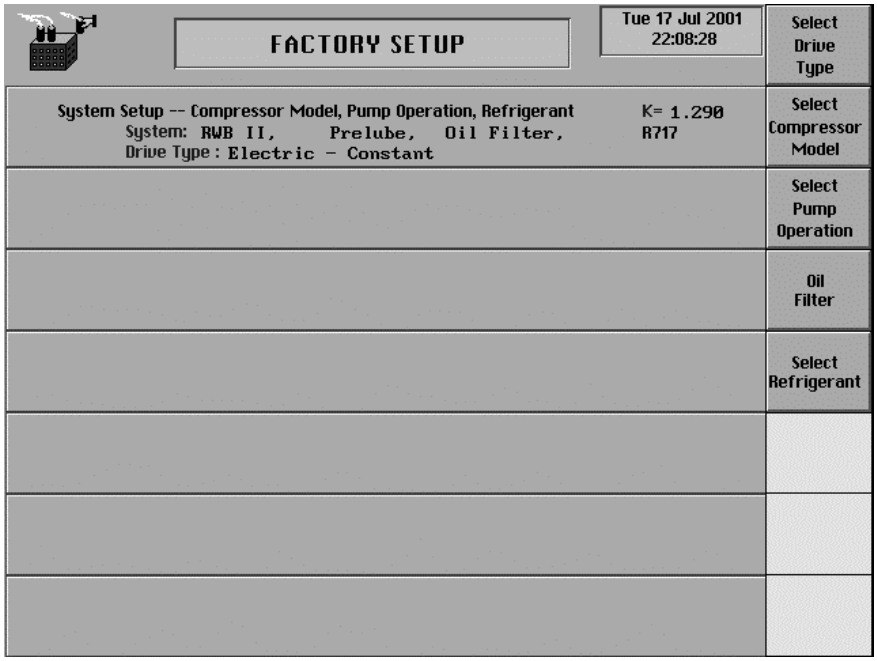
[DBS Communications Enabled Using CT] - When the DBS is in the Enabled 2 mode, all of the information such as alarms and shutdowns are communicated to the Quantum™ panel as in

the Enabled mode, with the exception of the motor amps. The motor amps are received by the Quantum™ from the CT in the starter panel (CT7). The motor setpoints page needs to be setup according to the nameplate data for the motor. When in this mode, if a communications error occurs, an alarm will be sent to the Quantum™ instead of a shutdown because it is still monitoring the motor amps through the CT and not the communications cable.

[DBS Communications Disabled] - If the communications cabling is not in place between the starter and the Quantum™ panel, the starter will need to set to DBS Communications Disabled mode. The starter will still function properly regarding the slow, smooth acceleration upon startup. The CT (CT7) will need to be wired into the Quantum™ per drawing specifications and the nameplate information. The motor setpoints screen will need to also be completed. This is also an option if the communications fail, until a fix is in place.

[Clear Alarm History] – This selection will clear all history of alarms and shutdowns which occur during panel setup and startup of the compressor.

SYSTEM SETUP



This screen is used to define the system configuration. This information is used in the internal control logic. The other factory setup selections are removed and the following selections are provided:

[Select Drive Type] - The other options are removed and the following screen keys are provided:

[Electric Constant]

[Electric - VFD]

[Engine]

[Turbine]

[Select Compressor Model] - The other options that can be selected are removed, and the following screen keys are provided:

[RWF]

[RWB II]

[RXB]

[RXF]

[RDB 4 Step]

[RDB 3 Step]

[GSV II]

[GST]

[GSB]

[Gram Other] - Other Gram compressor manuf.

[SC]

[YLC]

[YORK-S7]

[YORK S5]

[Other Compressor Var. VI]

[Other Compressor Manuf.] – Other compressor manufacturer, i.e. FES, Mycom, Sullair.

The (Other Compressor Var. VI) compressor type has been approved for a variable or stepped Vi machine from a compressor manufacturer other than Frick®. This compressor type has three steps: 2.2, 3.5, and 5.0. The outputs are as follows:

	Vi Inc.	Vi Dec.
Low	0	0
Low > Medium	1	1
High > Medium	0	1
High	1	0

[Select Pump Operation] – The other options that can be selected are removed from the screen and the following screen keys are provided:

[No Pump]

[Demand - Prelube - Cycling]

[Full Time]

[Shaft Driven with Aux.] – Shaft-driven oil pump with an auxiliary to a Prelube pump. Sullair compressors that have Shaft Driven with Aux. require a starting differential pressure of 7 lb. This selection is intended for a Sullair compressor. Also, select **[Other Compressor Manuf.]** for the compressor model during setup.

[Shaft-Driven] – Shaft-driven oil pump without an auxiliary to a Prelube pump. This selection can be used for a Sullair compressor without an auxiliary that does not require a starting differential pressure. Also, select **[Other Compressor Manuf.]** for the compressor model during setup.

A toggle key is provided to select either:

[Dual Pump Enable]

[Dual Pump Disable]

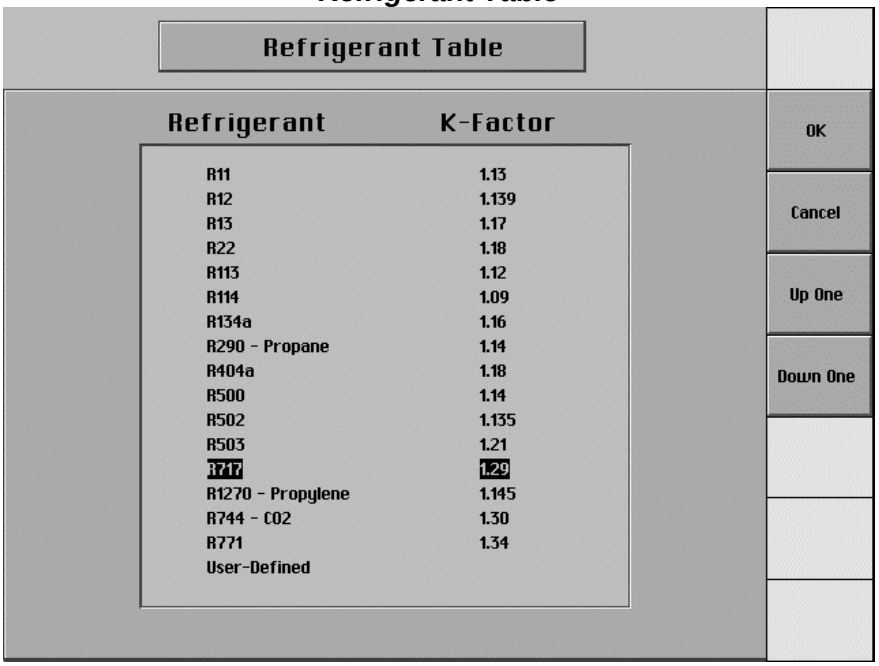
[Oil Filter] - A toggle key is provided to select for an Oil Filter transducer or no transducer:

[Oil Filter]
[No Oil Filter]

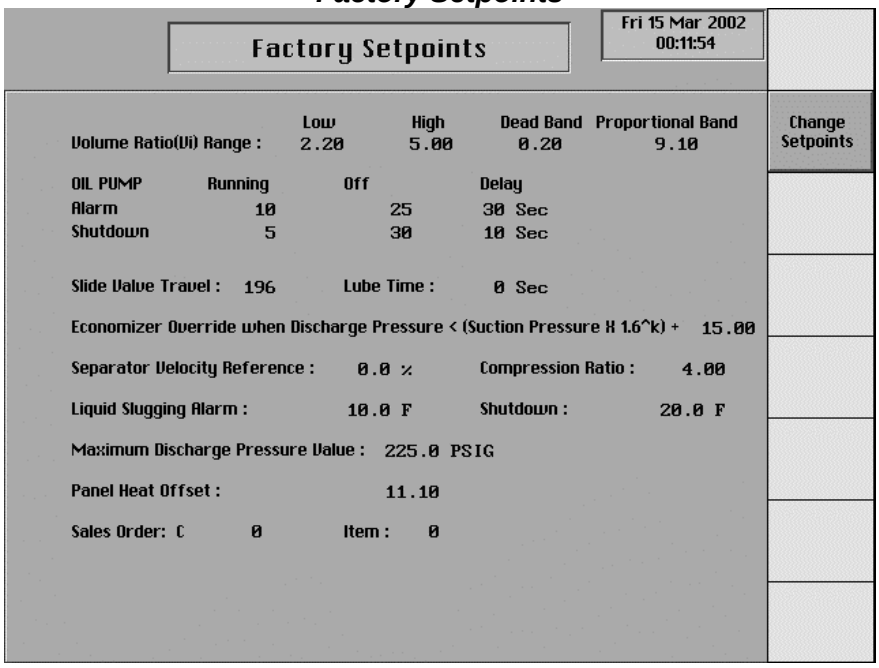
[Select Refrigerant] – See ***Refrigerant Table*** screen.

[Enter K-Factor] – This selection is only available if *User-Defined* is selected as the refrigerant. Select this to change the K-Factor setpoint.

Refrigerant Table



Factory Setpoints



The following factory setpoints are provided on this screen:

Low Volume Ratio (VI) Range – Refer to the *Compressor Volume Ratio and Capacity Information* chart on the following page to find the value for a specific compressor size.

High Volume Ratio (VI) Range – Refer to the *Compressor Volume Ratio and Capacity Information* chart on the following page to find the value for a specific compressor size.

Dead Band Volume Ratio (VI) Range – Refer to the *Compressor Volume Ratio and Capacity Information* chart on the following page to find the value for a specific compressor size.

Proportional Band (VI) Range - Increasing this setpoint will send a longer pulse to unload the Slide Valve when the VI is increasing.

Oil Pump Running Alarm – The differential value between oil and discharge that the pump will alarm at if running. The default value is based upon the type of oil pump selected. Refer to Control Setup – ***Oil Setpoints*** screen of the Operation Manual (S90-010 O) for further information.

Oil Pump Off Alarm – The differential value between oil and discharge that the pump will alarm at if not running. The default value is based upon the type of Oil Pump selected. Refer to Control Setup – ***Oil Setpoints*** screen of the Operation Manual (S90-010 O) for further information.

Oil Pump Delay Alarm – The delay for the Oil Pump alarm. This value is based upon the type of Oil Pump selected. Refer to Control Setup – ***Oil Setpoints*** screen of the Operation Manual (S90-010 O) for further information.

Oil Pump Running Shutdown – The differential value between oil and discharge that the pump will shutdown at if running. The default value is based upon the type of Oil Pump selected. Refer to Control Setup – ***Oil Setpoints*** screen of the Operation Manual (S90-010 O) for further information.

Oil Pump Off Shutdown – The differential value between oil and discharge that the pump will shutdown at if not running. The default value is based upon the type of oil pump selected. Refer to Control Setup – ***Oil Setpoints*** screen of the Operation Manual (S90-010 O) for further information.

Oil Pump Delay Shutdown – The delay for the oil pump shutdown. This value is based upon the type of Oil Pump selected. Refer to Control Setup – ***Oil Setpoints*** screen of the Operation Manual (S90-010 O) for further information.

Slide Valve Travel – The correct slide valve travel is determined by the last numbers of the Compressor Serial Number. The serial number must be checked to ensure that the correct value is used. Refer to the *Compressor Volume Ratio and Capacity Information* chart on the following page to find the value for a specific compressor size.

> **NOTE:** Failure to set this Slide Valve Travel Setpoint correctly may result in over compression, under compression, excessive noise, excessive vibration, high motor amp draw, high discharge temperatures, and the inability to calibrate the slide valve and slide stop properly.

Lube Time - The period of time in which the oil/lube pump will run if the compressor start is initiated prior to the compressor start/run output being energized.

Economizer Override When Discharge Pressure < (Suction Pressure x 1.6^k) + 15.00 - Setpoint that will de-energize/close the solenoid valve between the economizer and the compressor to prevent back-flow from the compressor to the economizer when running at low differential between suction and discharge pressure. A solenoid can be used on machines operating at low differentials instead of a check valve to avoid back-flow while the compressor is running based on the formula above.

Separator Velocity Reference and Compression Ratio – If a value other than zero is entered for the separator velocity reference setpoint, then the *Stop Load – Separator Velocity* or *Force Unload – Separator Velocity* safety conditions are checked. Settings for these setpoints are provided from the factory and are specific to the separator and compressor package. The separator velocity default setting is 0.0% and the compression ratio default setting is 4.00. When a compressor is operating out of it's design conditions (either high Suction Pressure or low Discharge Pressure), oil can be carried over to the coalescing end of the separator as the compressor is loaded. These setpoints are used to calculate the maximum Slide Valve position allowed for the given conditions to prevent oil carry-over.

Liquid Slug Alarm - This alarm is triggered off of a sudden decrease in Discharge Temperature that is greater than the Liquid Slug Alarm setpoint for a 5 second period. That is, if the Discharge Temperature is 130 degrees F, and the Liquid Slug Alarm setpoint is 10 degrees F, then a sudden drop in Discharge Temperature from 130 to 120 degrees F within a five second period will generate an alarm condition.

Liquid Slug Shutdown - This shutdown is triggered off of a sudden decrease in Discharge Temperature that is greater than the Liquid Slug Shutdown setpoint for a 5 second period. That is, if the Discharge Temperature is 130 degrees F, and the Liquid Slug Shutdown setpoint is 20 degrees F, then a sudden drop in Discharge Temperature from 130 to 110 degrees F within a five second period will generate a shutdown condition.

Maximum Discharge Pressure Value – This setpoint will be used as the maximum Discharge Pressure shutdown setting that is allowed on the ***Discharge Safeties*** screen. Any higher Discharge Pressure reading is beyond the safe operation of the compressor. This setpoint is also used as the default value of the High Discharge Pressure Shutdown setpoint.

Panel Heat Offset - The setpoint that will give the operator a true internal panel ambient and not the surface temperature of the processor.

Internal Panel Temperature - The Frick® controller has the built-in capability to directly read the temperature present on the Quantum™ board. This temperature can be viewed from the ***Operating Status - 2*** screen. This temperature may be shown as either Fahrenheit or Celsius, based upon the Temperature Units that have been selected in Panel Setup (the initial default setting is Celsius).

The purpose of this temperature readout is to monitor the internal panel temperature present at the Quantum™. Environmental conditions, such as the control panel being mounted outside in the heat of the desert in direct sunlight or in a hot engine room, or to the opposite extreme of being located outside in an arctic environment. Since electronic components can be damaged through extremes in temperature, it is highly recommended that this temperature never read below the range of 55° F (12.5° C), or above 140° F (60.2° C).

If the temperature were to read below 55° F (12.5° C), this would be a good indication that an internal panel heater should be installed. If one is already installed, verify that it is working properly. If it is working properly, a higher wattage unit may be needed. If it is not working, then it must be replaced.

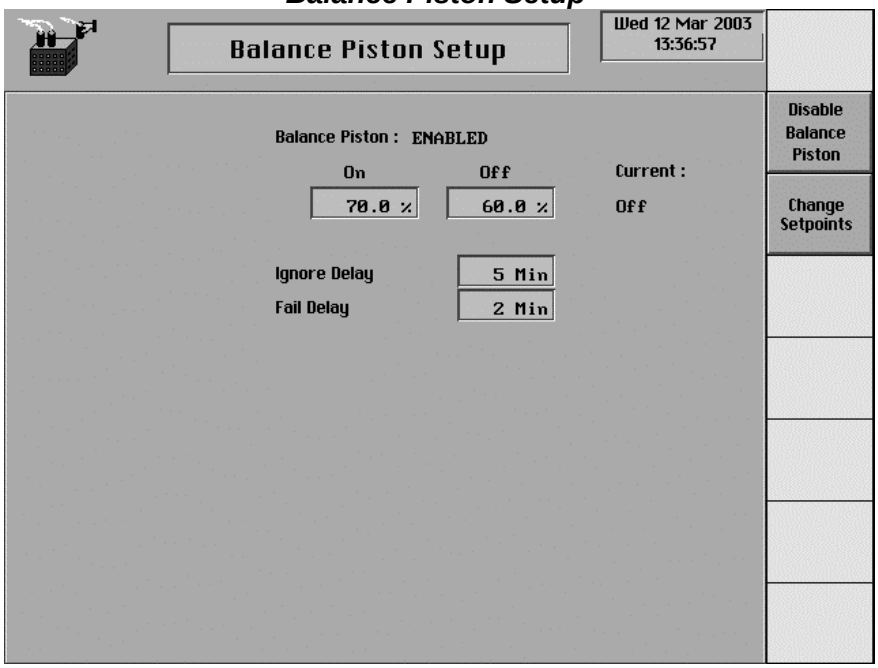
If the temperature were to read above 140° F (60.2° C), then a cooling fan option should be installed. This fan will cause the internal temperature to drop by between 10 and 15 degrees F. If a fan is already installed, verify that it is functioning properly, and replace as needed.

> **NOTE:** This Internal Panel Temperature reading must first be calibrated to ensure an accurate readout.

Sales Order - The Sales Order number should be entered here. The Sales Order number is useful for obtaining contract information and will be shown on the ***About*** screen.

Item Number - The Item Number of the Sales Order should be entered here. The Item Number along with the Sales Order number is more useful for obtaining contract information and will be shown on the ***About*** screen.

Balance Piston Setup



The ***Balance Piston Setup*** screen is provided for compressor models that require Balance Piston control. Whether or not this feature has been enabled is shown, along with the current status of the Balance Piston output. The Balance Piston regulator should be adjusted so that the Balance Piston pressure reads 50 lb. less than the Discharge Pressure.

Three conditions will cause a *Balance Piston Failure Shutdown*:

1. If the difference between Discharge Pressure and Suction Pressure is less than 60 lb. and the Balance Piston output module (digital output module 12) is de-energized, then the Balance Piston pressure must be 1.1 times Suction Pressure, plus or minus 15 lb.

2. If the difference between Discharge Pressure and Suction Pressure is greater than or equal to 60 lb. and the Balance Piston output module (digital output module 12) is de-energized, then the Balance Piston pressure must be 50 lb. below Discharge Pressure, plus or minus -15 lb.

3. If the Balance Piston output module (digital output module 12) is energized, then Balance Piston pressure must be within 20 lb. of Oil Pressure.

A toggle key is provided that changes between the following selections:

[Enable Balance Piston] - This key is provided if the control is disabled.

[Disable Balance Piston] - This key is provided if the control is enabled.

This screen has the following setpoints:

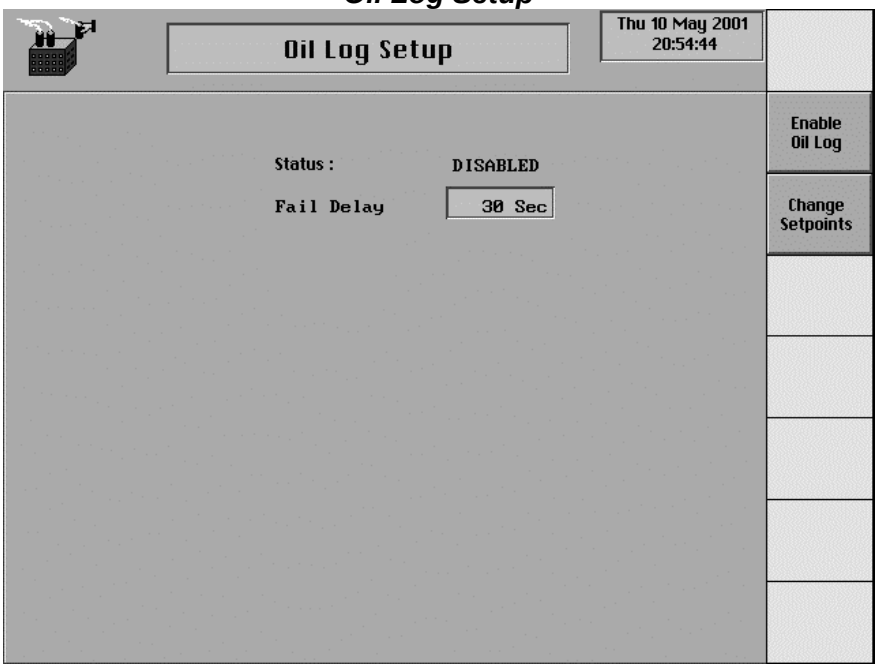
On - When the Slide Valve is at or above this position, the Balance Piston output module (digital output module 12) is energized allowing the oil flow to bypass the Balance Piston regulator. The default Slide Valve position is 70%.

Off - When the Slide Valve is at or below this position, the Balance Piston output module (digital output module 12) is de-energized allowing regulated oil flow to the Balance Piston. The default Slide Valve position is 60%.

Ignore Delay --After the compressor is started, this is the time in minutes that must elapse before the Balance Piston conditions that will cause a *Balance Piston Failure Shutdown* are checked.

Fail Delay - When a Balance Piston failure condition occurs, this is the time in minutes that the condition must persist before triggering a Balance Piston Failure Shutdown.

Oil Log Setup



This screen has been provided for compressor packages that have a vertical oil separator. During compressor starting, if necessary, the Oil Pump will run to unload the Slide Valve below the *Highest Slide Valve Position to allow starting the compressor* setpoint (Reference the ***Slide Valve Setpoints*** screen). If the Slide Valve doesn't unload, the Oil Pump remains running, which can cause oil-logging in the discharge line. The oil will continue to back up into the package, causing the compressor to seize when it is started. *Oil logging* refers to the amount of time allowed to run the Oil Pump before a shutdown is issued. This screen shows whether this feature has been enabled.

A toggle key is provided that changes between the following selections:

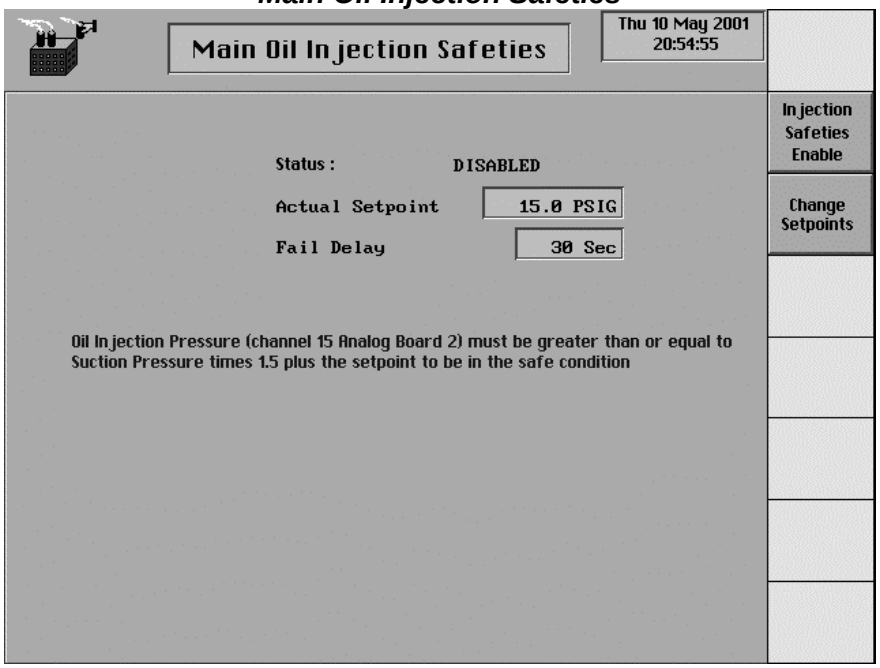
[Enable Oil Log] - This key is provided if the control is disabled.

[**Disable Oil Log]** - This key is provided if the control is enabled.

This screen has the following setpoints:

Fail Delay - This is the maximum time in seconds (between 0 to 60 sec.) that the Oil Pumps are allowed to be turned on during starting. If the Compressor has not started and the Oil Pump has already run for this amount time, an *Oil Log Shutdown* occurs.

Main Oil Injection Safeties



This feature, when activated, protects against pressure drop across the expansion and solenoid valves. It has an adjustable value where Oil Pressure must be >([1.5 x Suction Pressure] + Adjustable Setpoint) or a shutdown will occur. It is used on vertical separator packages with a solenoid valve on the manifold Oil Injection line.

A toggle key is provided that changes between the following selections:

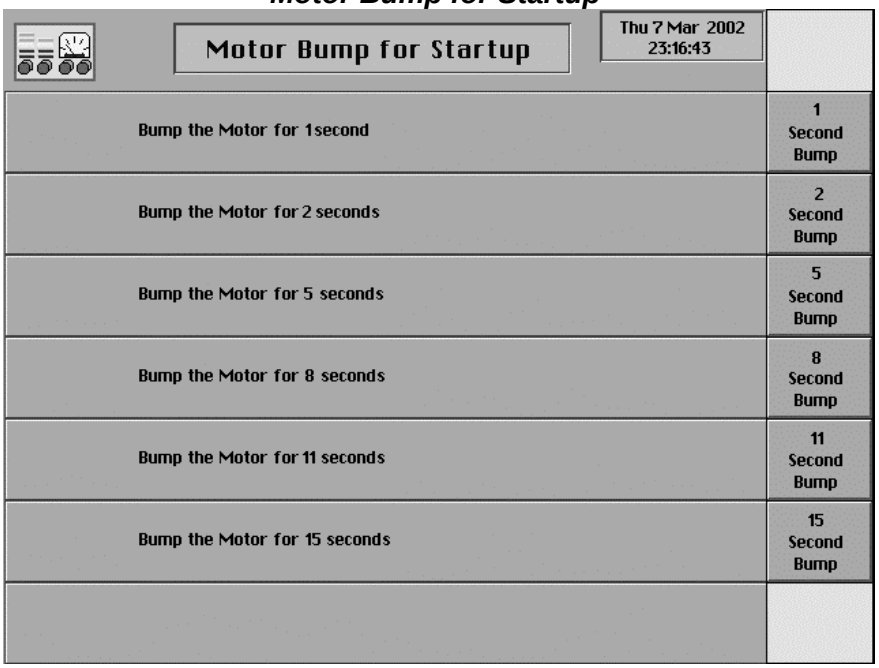
[Injection Safeties Enable] - This key is provided if the control is disabled.

[Injection Safeties Disable] - This key is provided if the control is enabled.

This screen has the following setpoints:

Fail Delay - The time that must elapse before initiating a Main Oil Injection shutdown.

Motor Bump for Startup



This screen allows the service technician to rotate the motor momentarily to check for proper rotation. This is to allow the start up technician to prove proper starter transition as well as motor rotation. When one of the bump keys at the right side of the screen is selected, a message will appear asking if the compressor is uncoupled. If the compressor is not uncoupled, press the **[Cancel]** key. Once the compressor has been uncoupled, answer with the **[OK]** key.

The following selections are available on this screen which will energize the starter output for the specified time once you have responded with the **[OK]** key:

[1 Second Bump]

[2 Second Bump]

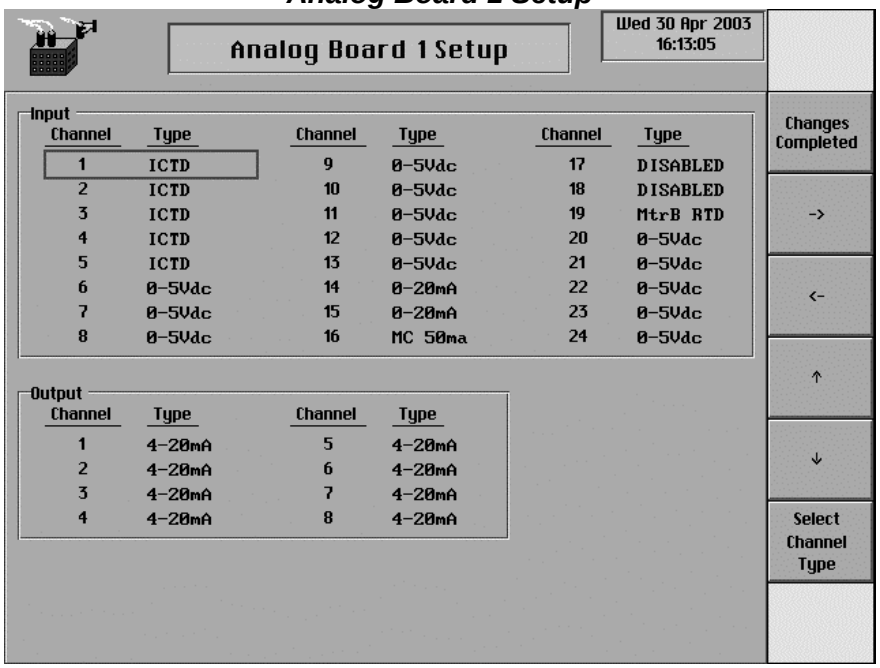
[5 Second Bump]

[8 Second Bump]

[11 Second Bump]

[15 Second Bump]

Analog Board 1 Setup



This screen allows the service technician to set each of the input channels to a specific type of transducer device. Channels 1 through 16 correspond to the following list:

Ch. 1 - Suction Temperature

Ch. 2 - Discharge Temperature

Ch. 3 - Oil Temperature

Ch. 4 - Separator Temperature

Ch. 5 - Leaving Process Temperature

Ch. 6 - Oil Pressure

Ch. 7 - Filter Pressure

Ch. 8 - Discharge Pressure

Ch. 9 - Suction Pressure

Ch. 10 - Balance Piston

Ch. 11 - System Discharge

Ch. 12 - Remote Control Setpoint

Ch. 13 - Remote 4-20 mA Slide Valve Position

Ch. 14 - Slide Valve

Ch. 15 - Slide Stop

Ch. 16 - Motor Amps

Channels 17 through 24 are devoted to PhD (vibration analysis), and correspond to the following list:

Ch. 17 (PhD 1) - Compressor Vibration (Suction)

Ch. 18 (PhD 2) - Compressor Vibration (Discharge)

Ch. 19 (PhD 3) - Compressor Motor Vibration or Bearing Temp. RTD (Shaft Side)

Ch. 20 (PhD 4) - Compressor Motor Vibration or Bearing Temp. RTD (Opposite Shaft)

Ch. 21 (PhD Ch. 5) - Motor RTD - Stator # 1

Ch. 22 (PhD Ch. 6) - Motor RTD - Stator # 2

Ch. 23 (PhD Ch. 7) - Motor RTD - Stator # 3

Ch. 24 PhD Ch. 8) - Future

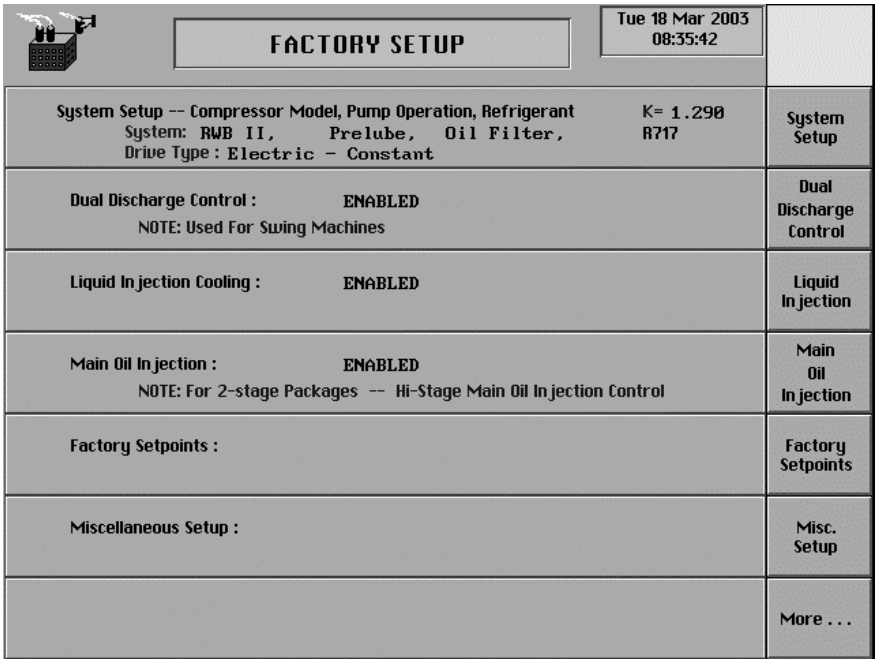
To change the type of device that is shown, press the **[Change Settings]** key. This will cause a box to be placed around the Channel 1 selection. A new series of keys will be shown at the right side of the screen. Using the arrow keys, locate the box over the channel that you wish to change, then press the [**Select Channel Type]** key. Pressing the key repeatedly will cycle through all of the available device types. Stop at the device type that you wish to use, then either use the arrow keys to select another channel, or select the **[Changes Completed]** key, if you are finished making changes.

ENHANCED ANALOG BOARD
SOFTWARE CONFIGURATION SETUP

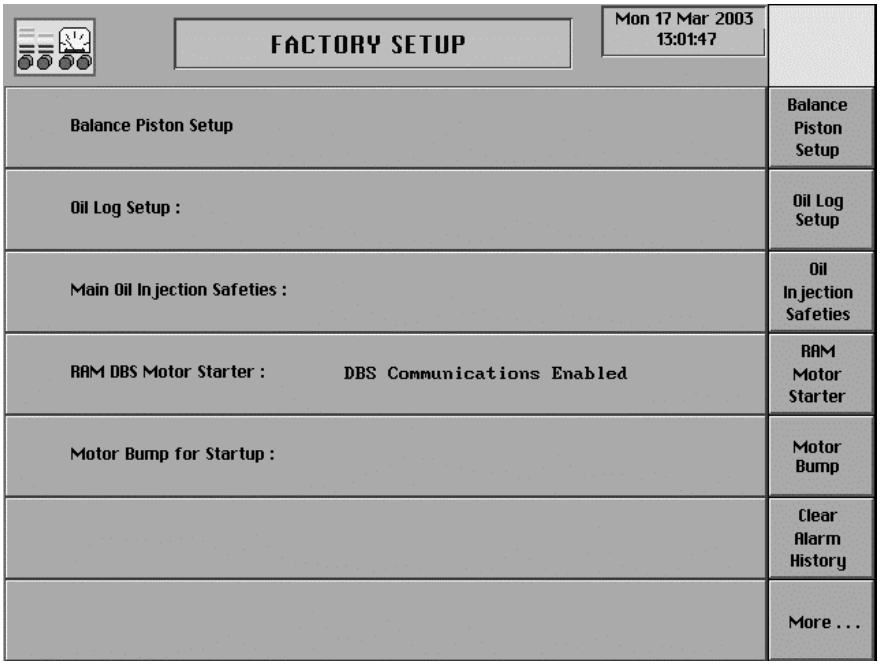
To ensure the proper operation of all Enhanced Analog Boards that are installed in the Quantum™ controller, they must be properly setup through software configuration as to channel operation. It is no longer necessary to modify physical jumpers to perform channel setup, it is all done now through display screens and software. The initial setup is performed at the factory. However, in the event that a board is replaced, or an input device has been changed to a different type (such as a 0-20 mA device is replaced with a 0-5 v device) the procedure is presented here for the maintenance personnel to configure the new board or reconfigure the original board.

To perform the configuration setup, it is necessary to access the ***Factory Setup*** screen. When the following screen is shown, press the **[More…]** key at the bottom of the screen.

FACTORY SETUP

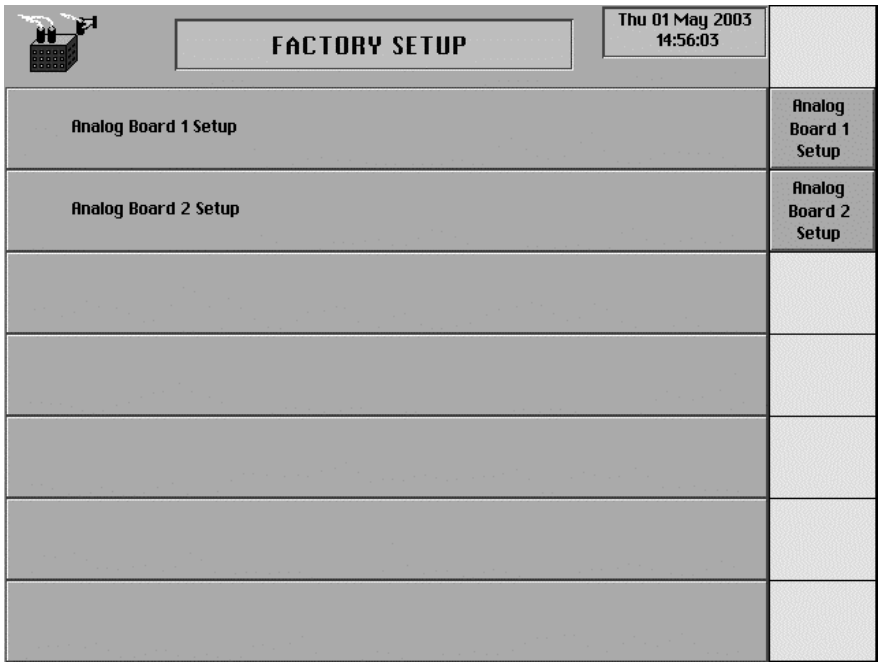


FACTORY SETUP



The screen that appears above will be shown. Press the **[More…]** key to call up the next screen.

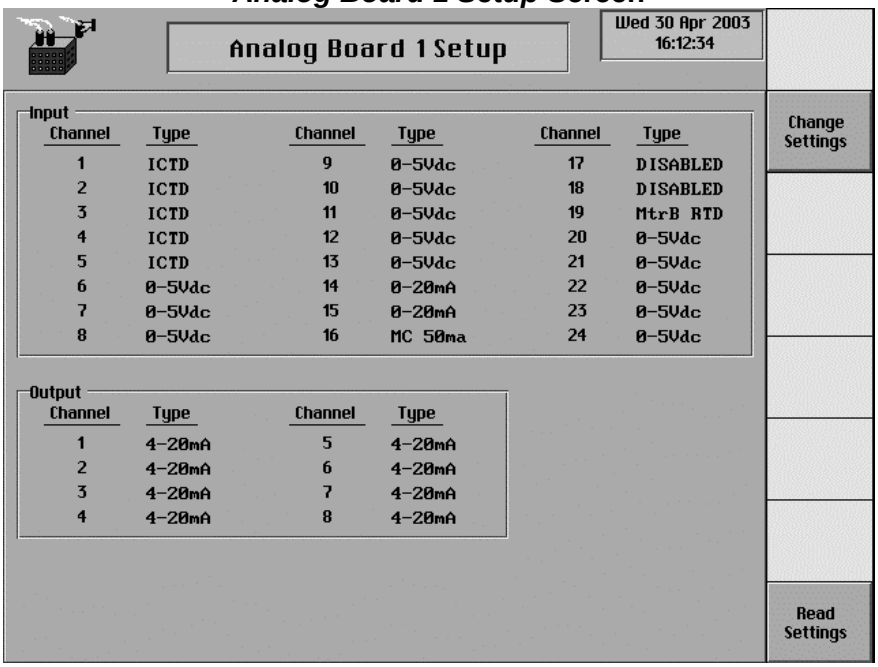
FACTORY SETUP



The screen shown above will appear, if the Quantum™ control system has one Analog board installed. There will be only one key shown at the right side of the screen also.

If there are two Analog boards, then there will be a second key for Analog Board 2 Setup, as shown below. Press the key for the board you would like to configure.

Analog Board 1 Setup Screen



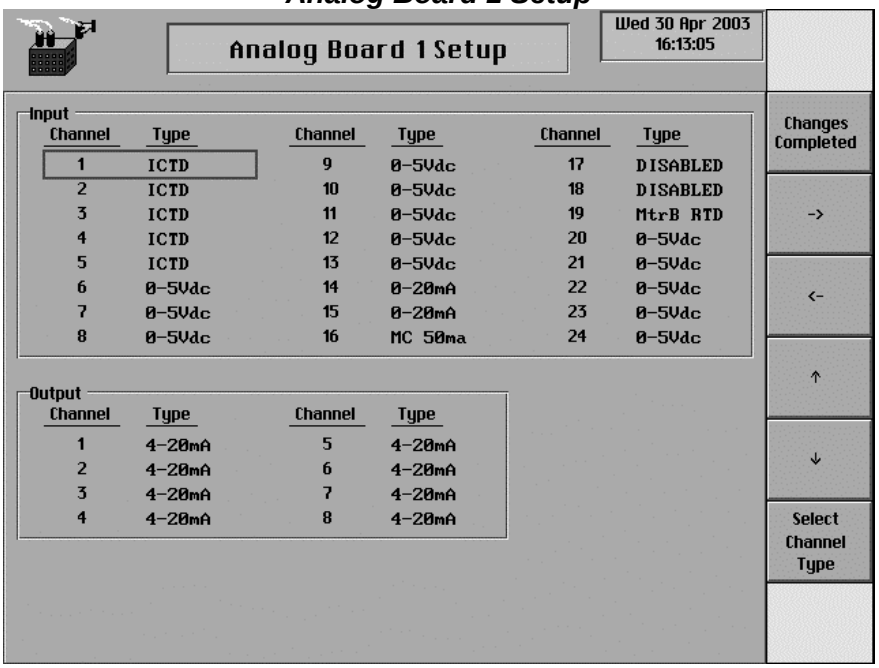
This is the screen for ***Analog Board 1 Setup***. Notice that at the top of this screen, there are 24 Input channels and types shown. Near the bottom of the screen, there are 8 Output channels and types. Each of the Input channels will need to be configured for the type of device that is connected to it (output channels cannot be changed).

The following keys appear on this screen:

[Change Settings] - Pressing this key will allow the user to customize the settings of each I/O channel. Upon power up of the processor, the new board will communicate its channel configuration to the processor. Since this may differ from the configuration for this application, it is important to confirm/change these settings at the board setup screen in factory setup.

[Read Settings] - This key is also beneficial in resolving communications issues with the board. If a communications failure occurs, and the Quantum™ is not able to receive the individual channel assignments, then each I/O channel will display the words *Read Err.* By pressing this key, the Quantum™ will request the channel assignments to be reloaded and the screen to be updated.

Analog Board 1 Setup



This screen allows the user to configure many of the analog input channels to match the type of device that is connected to it. Refer to the Analog Board Input Configuration Table (refer to S90-010 M, Maintenance Manual) for the types of allowable devices.

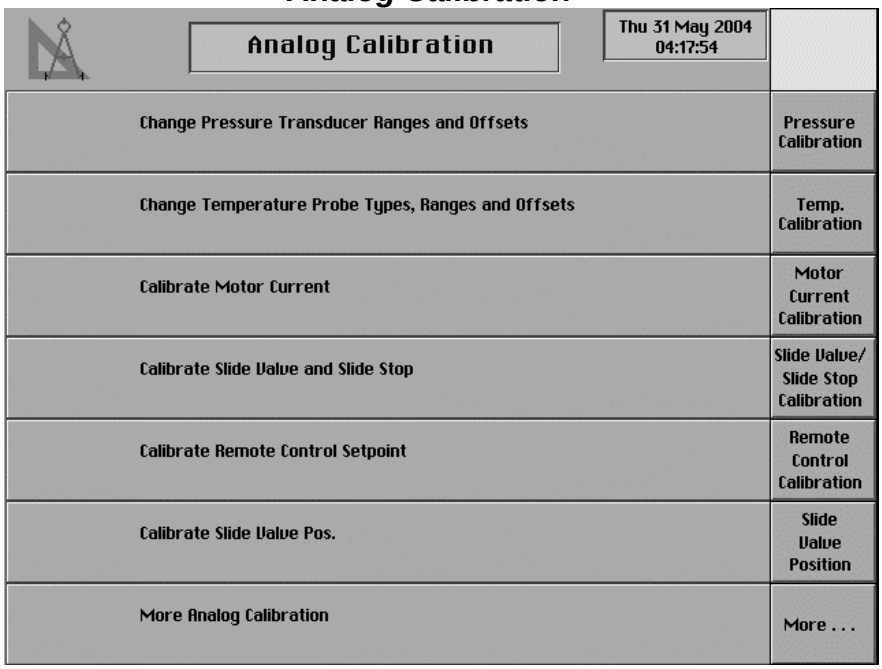
The following keys have been provided:

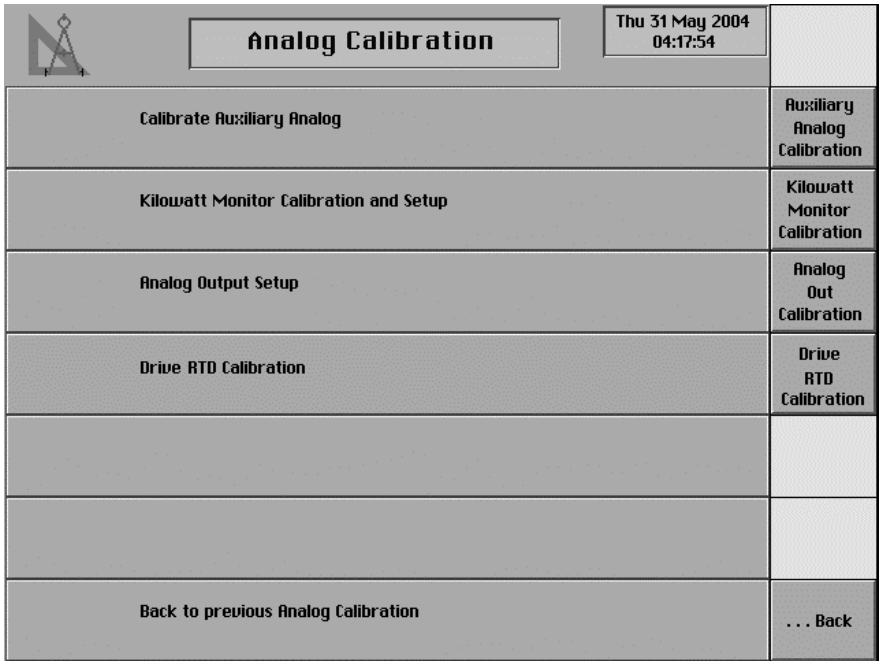
[Changes Completed] - Press this key after all changes have been made to this screen. The changes will be saved.

Arrow Keys - By using the left, right, up and down arrow keys, the highlighting rectangle can be maneuvered around the screen, to highlight the channel that you wish to modify. **NOTE:** Although the rectangle can physically be located over the Output channel positions, they cannot be modified.

[Select Channel Type] - Once you have selected the channel that needs changed, press this key to toggle through the possible selections.

Analog Calibration





The following analog calibration selections can possibly appear, depending on the setup selections:

Change Pressure Transducer Ranges and Offsets

Change Temperature Probe Types, Ranges and Offsets

Calibrate Motor Current

Calibrate Slide Valve and Slide Stop

Calibrate Remote Control Setpoint

Calibrate Slide Valve Position

Calibrate Auxiliary Analog Inputs

Kilowatt Monitor Calibration and Setup

Calibrate Analog Outputs

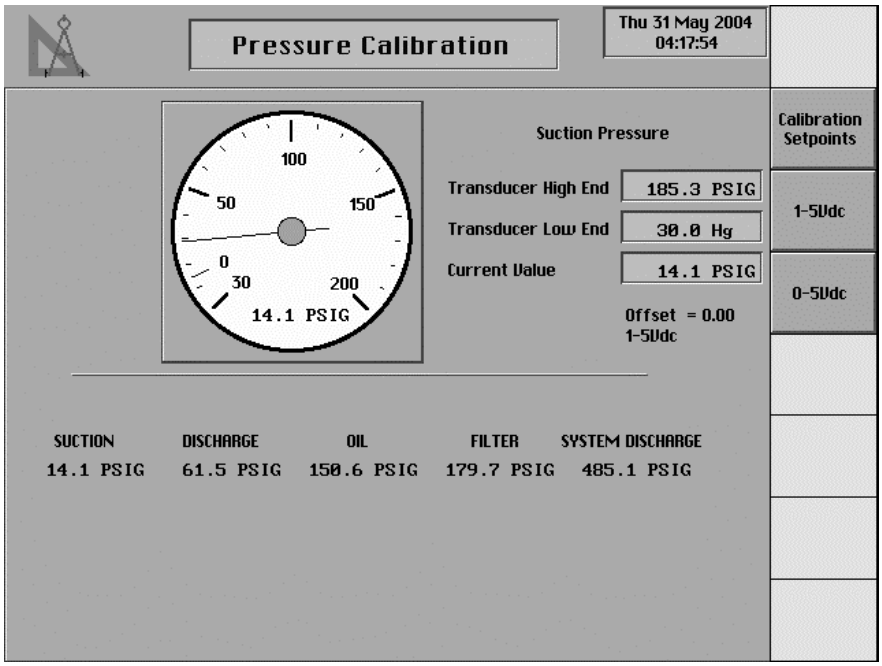
Calibrate RTD Drive

When in Factory Setup, the settings for the *High End* and the *Low End* of the calibration devices are permitted to be changed from the calibration screens.

For the Auxiliary Analog channels, you may wish to select the type of device, such as pressure, temperature, or other. You can also name the safety when dipswitch position #8 is on.

To properly enter an offset, the range setpoints should be entered and accepted by pressing the **[OK]** key prior to selecting the **[Change Setpoints]** key again to enter the offset.

Pressure Calibration



This screen shows a picture of a pressure gauge. Below the gauge, the current pressure readings are shown for:

- Suction
- Discharge
- Oil
- Filter (If it has an oil filter transducer, see Factory Setup)
- System Discharge (Required for Condenser Control)
- Balance Piston (If applicable, see Factory Setup)

The following keys are only available when in Factory Setup. These can be changed accordingly for the connected sensor:

[1-5 Vdc] – This selection will set up the channel to handle a 4-20 mA signal.

[0-5 Vdc] – This selection will set up the channel for a 0-5V signal.

The Setting for the *Transducer High End*, *Transducer Low End*, and the *Current Value* are blank until a pressure for calibration is selected from the screen keys. A screen key exists for each of the displayed pressure readings. When a pressure calibration is selected the Identification of the pressure transducer and its settings are shown. It is at this time that the current reading and the calibration offset and channel setup are shown.

The following special settings are only available when in Factory Setup and can be changed after selecting **[Calibration Setpoints]**:

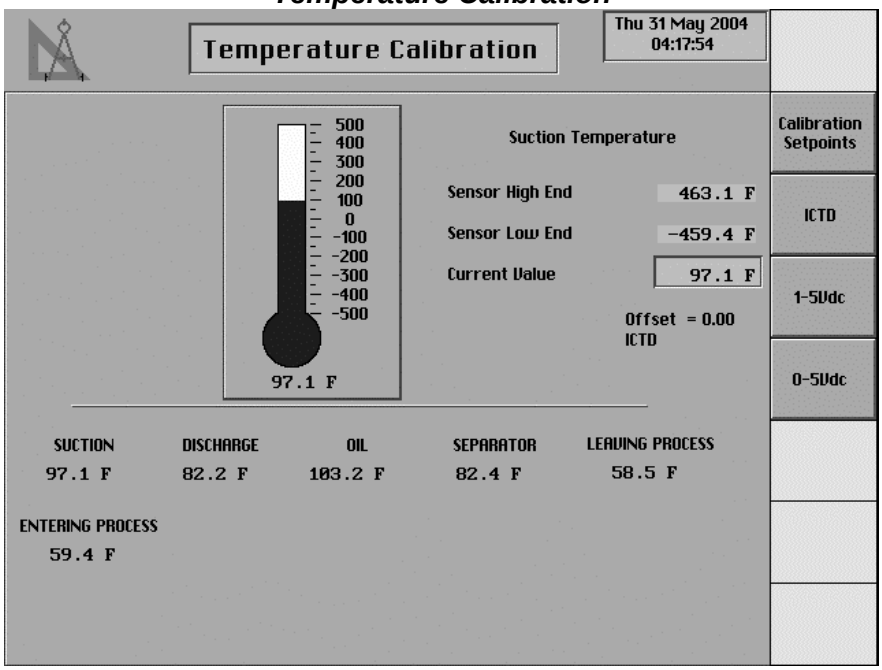
- **Transducer High End** - Although a value is shown here, it cannot be changed (it is preset with a factory default value).

- **Transducer Low End** - Although a value is shown here, it cannot be changed (it is preset with a factory default value).

To properly enter an offset, the range setpoints should be entered and accepted by pressing the **[OK]** key prior to selecting the **[Change Setpoints]** key again to enter the offset. The maximum offset for pressure is 10% of the range.

Note: The measurement range of transducers is usually given in PSIA. If another pressure unit has been selected in Panel Setup, the operator can temporarily change the Panel Setup to use PSIA pressure units. Then enter the PSIA ranges for all the transducers and finish by returning the pressure units in Panel Setup to the prior selection.

Temperature Calibration



This screen shows a thermometer and the current temperature readings for:

- Suction
- Discharge
- Oil
- Separator
- Leaving Process (If Process Temperature Capacity entered and accepted by pressing the **[OK]** key prior to Control was enabled)
- Entering Process (If applicable, see Panel Setup)

The following keys are only available when in Factory Setup. These can be changed accordingly for the connected sensor:

[ICTD] – This selection will show the data as though the measurement device is an ICTD (A High and Low End will be preset and unable to be modified).

[1-5 Vdc] – This selection will set up the channel to handle a 4-20 mA signal.

[0-5 Vdc] – This selection will set up the channel for a 0-5V signal.

The Setting for the *Sensor High End*, *Sensor Low End*, and the *Current Value* is blank until a temperature for calibration is selected from the screen keys. A screen key exists for each of the displayed temperature readings. When a temperature calibration is selected, the identification of the temperature measurement sensor and its settings are shown. At this time, the actual reading and the calibration offset and channel setup are shown.

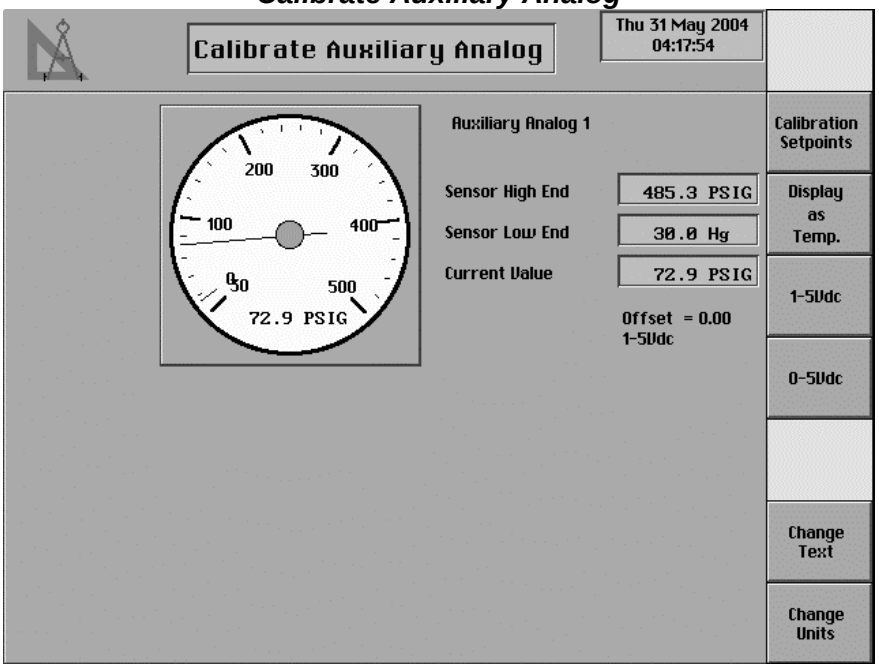
The following special settings are only available when in Factory Setup and can be changed after selecting **[Calibration Setpoints]**:

Sensor High End - Although a value is shown here, it cannot be changed (it is preset with a factory default value).

Sensor Low End - Although a value is shown here, it cannot be changed (it is preset with a factory default value).

The maximum offset for temperature is 15% of its range.

Calibrate Auxiliary Analog



If Auxiliary Analog Inputs was enabled in Panel Setup, this calibration screen is shown. These inputs are only available if Analog Board 2 has been installed. The Auxiliary Analog inputs correspond to the following physical channels on the board:

Aux. Analog 1 - Channel 5

Aux. Analog 2 - Channel 6

Aux. Analog 3 - Channel 7

Aux. Analog 4 - Channel 8

Aux. Analog 5 - Channel 9

Aux. Analog 6 - Channel 10

Aux. Analog 7 - Channel 11

Aux. Analog 8 - Channel 12

Aux. Analog 9 - Channel 13

Aux. Analog 10 - Channel 14

The following keys are only available when in Factory Setup. A toggle key is provided for each of the auxiliary analog that changes between the following selections:

[Display as Temp.] – The auxiliary analog is to be used for temperature monitoring.

[Display as Pressure] – The auxiliary analog is to be used for pressure monitoring.

[Display as Other] – The auxiliary analog is to be used for other types of monitoring.

The following special selections are only available when in Factory Setup. These can be changed accordingly for the connected sensor:

[1-5 Vdc] – This selection will set up the channel to handle a 4-20 mA signal.

[0-5 Vdc] – This selection will set up the channel for a 0-5V signal.

[Change Text] – Pressing this key displays the *Alpha Select* screen for changing the name of the auxiliary so it can be better identified. A maximum of 20 characters can be entered.

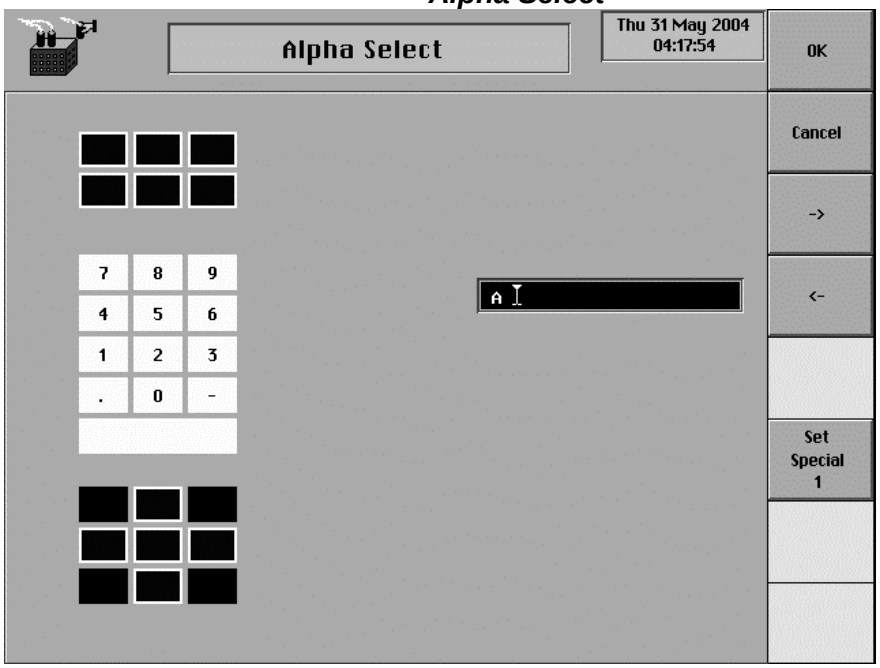
[Change Units] - Pressing this key displays the *Alpha Select* screen for changing the unit of the auxiliary so it can be better identified. A maximum of 4 characters should be entered. **NOTE:** The units can only be changed when the device is set to *Display as Other*. If it is set to either Pressure or Temperature, the device will show the units as setup in Panel Setup.

The Settings for the *High End*, *Low End*, and the *Current Value* are blank until an auxiliary is selected for calibration. A screen key exists for each of the auxiliaries. When an auxiliary is selected, the sensor or transducer is shown along with the identification of the auxiliary and its settings. At this time, the current reading and the calibration offset and channel setup are shown.

The following special settings are only available when in Factory Setup and can be changed after selecting **[Calibration Setpoints]**:

- **Transducer High End or Sensor High End** - Set this value to the high-end range of the installed transducer. For example, if the transducer has a range of 0 - 200 PSIG, then the high-end value would be 200. This value normally only needs to be verified/changed when replacing a transducer.
- **Transducer Low End or Sensor Low End** - Set this value to the low-end range of the installed transducer. For example, if the transducer has a range of 0 - 200 PSIG, then the low-end value would be 0. This value normally only needs to be verified/changed when replacing a transducer.

Alpha Select



This screen is used for changing alphanumeric text. A toggle key is provided that displays different sets of alphanumeric text that correspond to the keys on the panel keypad. Pressing a key that is graphically displayed on the screen will enter the alphanumeric shown on the graphical key. The existing **[Delete]** key on the panel keypad is always available when changing text.

A toggle key is provided that changes between the following sets of alphanumeric text selections:

[Character Set 1] – This selection displays the letters of the alphabet in upper case.

[Character Set 2] – This selection displays the letters of the alphabet in lower case.

[Special Character] – This selection displays a set of special characters

[Keypad] – This selection displays a numeric keypad.

This screen is only available when in Factory Setup. The maximum length for a text name is 20 characters and for a unit name is 4 characters. The following selections access this screen:

- Control Setup – Options Setup – ***Auxiliary Setup*** Screen

  [Change Auxiliary 1 Text]

  [Change Auxiliary 2 Text]

- Control Setup – ***Auxiliary 3-8 Setup*** Screen

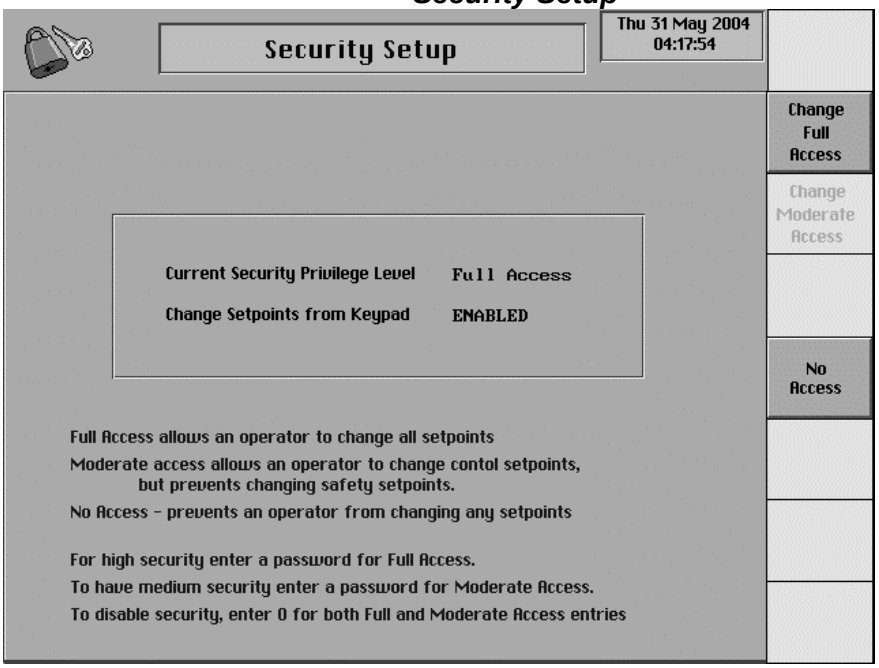
  [Change Text]

- Analog Calibration – Calibrate Auxiliary Analog

  [Change Text]

  [Change Units]

Security Setup



Security can be set up to allow different operators different access rights to setpoints. If access is presently denied when an operator selects to **[Change Setpoints]**, then a message box will appear prompting the operator to enter a password. If an operator has not changed any setpoint within the last 15 minutes, the access level will change to no access.

Three levels of access rights to changing setpoints are provided:

1. Full access – allows an operator to change all setpoints.
2. Moderate access – allows an operator to change setpoints, but prevents changing safety setpoints.
3. No access – prevents an operator from changing any setpoint.

To have full access requiring a password, enter a password other than zero (0) for the full-access entry. To have moderate access, enter a different password for the moderate access entry than the full-access entry. If an operator does not know an entered password, then they are prevented from changing any setpoints. To disable security, enter zero (0) for both full- and moderate-access entries. Disabling security allows any operator to change all setpoints without entering a password.

The following information about the current access is shown:

Current Security Privilege Level:

1. No Access
2. Moderate Access
3. Full Access

Change Setpoints from Keypad:

1. Enabled
2. Disabled

If a password exists, then selecting a screen key will cause a password entry box to appear. To change a password, the operator must enter their password and accept it **[OK]**, which will cause another password entry box to appear. It prompts the operator to reenter the password to verify it. Properly reentering the password will cause a message box to appear that say “Pass Number Changed”. Improperly reentering the password will cause a message box to appear that says “Bad Verify Pass Number Not Changed”.

The following screen keys are used to set up security:

[Change Full Access] – Select this key to change the full-access password. The operator can also enter the current password to acquire full-access privilege without changing the password.

[Change Moderate Access] – Select this key to change the moderate-access password. The operator can also enter the current password to acquire moderate-access privilege without changing the password.

[No Access] – Select this key to change the current-access privilege to no access. This cancels security access to the system. A password must be reentered to gain security access after pressing this key.

LOST PASSWORD

If security was set up and the password is forgotten or unknown, a secret password has been provided for full access privilege. The password can be entered when an operator selects **[Change Setpoints]** on a setpoint entry screen or when **[Change Full Access]** is selected on the “Security Setup” screen. The password is dependent on the panel date. January 2 is equivalent to the number 102, while October 11 is equivalent to the number 1011. The Frick® number is equivalent to entering Frick® on a telephone, which is the number 37425. The number of the date is added to the Frick® number to get the secret password number. For example if the date is April 1 then:

Pass Number is **37826** (401 + 37425)

Compressor Volume Ratio and Capacity Information

		Standard Slide Valve		Low Vi Slide Valve			
Package Model	Bare Model Serial Number	Min. Vi	Max. Vi	Min. Vi	Max. Vi	Slide valve travel	Theoretical minimum capacity
RXB/RXF 12, 15, 19	All	2.2, 3.5, 5.0		N/A	N/A	190°	25%
RXB/RXF 24,30, 39, 50	All	2.2, 3.5, 5.0		N/A	N/A	190°	25%
RXF 58, 68, 85, 101	All	2.2, 3.5, 5.0		N/A	N/A	190°	21%
RWB-II 60	All	2.2	5.0	N/A	N/A	195.6°	12%
RWB-II 38, 76	All	2.2	5.0	N/A	N/A	195.6°	12%
RWB-II 100	All	2.2	5.0	1.7	3.0	195.6°	12%
RWB-II 134	All	2.2	5.0	1.7	3.0	195.6°	12%
RWB-II 177	All	2.2	5.0	1.7	3.0	195.6°	12%
RWB-II 222	All	2.2	5.0	1.7	3.0	195.6°	12%
RWB-II 270	All	2.2	5.0	1.7	3.0	158.6°	23%
RWB-II 316	All	2.2	5.0	1.7	3.0	195.6°	12%
RWB-II 399	All	2.2	5.0	1.7	3.0	195.6°	12%
YS Chiller S7	All	N/A	N/A	1.7	2.5	194.1°	8%
RWB-II 480	All	2.2	4.2	1.7	3.0	165.5°	23%
RWB-II 496	0153L / 0011SBS and lower	2.2	5.0	1.7	3.0	185.6°	18%
RWB-II 496	0154L / 0012SBS and higher	2.2	5.0	1.7	3.0	213.9°	12%
RWB-II 676	0222K / 0025SBL and lower	2.2	5.0	1.7	3.0	185.6°	18%
RWB-II 676	0223K / 0026SBL and higher	2.2	5.0	1.7	3.0	213.9°	12%
RWB-II 856	0109XL / 0052SBXL and lower	2.2	5.0	1.7	3.0	146.5°	30%
RWB-II 856	0110XL / 0053SBXL and higher	2.2	5.0	1.7	3.0	184.6°	18%
RWB-II 1080	All	2.4	4.5	1.7	2.6	141.5°	26%
RWF 100	All	2.2	5.0	1.7	3.0	195.6°	12%
RWF 134	All	2.2	5.0	1.7	3.0	195.6°	12%
RWF 177	All	2.2	5.0	1.7	3.0	195.6°	12%
RWF 222	All	2.2	5.0	1.7	3.0	195.6°	12%
RWF 270	All	2.2	5.0	1.7	3.0	195.6°	12%
RWF 316	All	2.2	5.0	1.7	3.0	195.6°	12%
RWF 399	All	2.2	5.0	1.7	3.0	195.6°	12%
RWF 480	All	2.2	5.0	1.7	3.0	213.9°	12%

MAINTENANCE

QUANTUM™ PROGRAM UPGRADE

Upgrading An Existing Program

(Requires Frick® Flash Card P/N 649A0884Gxx)

- Ensure that all customer setpoint values have been written down as a safety precaution.
- Turn Quantum™ power OFF.
- Open Quantum™ control panel door.
- Locate Flash Card Socket. Refer to Pictorial drawing for location (refer to Maintenance Manual S90-010 M).
- Install the Flash Card into the flash socket. The card is keyed such that it can only be installed one way.
- Turn Quantum™ power ON.
- Once the Quantum™ controller has fully booted, the *Quantum™ Installer* screen will appear. There are 6 options on this screen:

  1. Update Program
  2. Update Text Files
  3. Save Setpoints
  4. Restore Setpoints
  5. Full System Install
  6. Finished

- Press the numeral **[1]** on the keypad. This will cause the program that is loaded on the Flash Card to download into the Quantum™. This will overwrite the previous program that the Quantum™ had (it does not overwrite the original setpoints that the customer would have been using.)
- After pressing **[1]**, you will see a bar appear that will display the % of progress of the download.
- Once the download has completed, the menu will reappear.
- Press numeral **[2]** on the keypad. This will cause any new text that is necessary for the new program upgrade to download. This does not overwrite any setpoints, or the alarm history.
- After pressing **[2]**, you will once again see a bar appear that will display the % of progress of the download.
- Once the download has completed, the menu will reappear.
- At the menu screen, press the numeral **[6]** to finish. The screen will then display information about powering down and removing the Flash Card. At this point, follow the directions, shut down the Quantum™ power, and remove the Flash Card.
- Power the Quantum™ ON. Once the Quantum™ has fully booted, the upgrade is complete.
- Upon removal of the Flash Card, return it to its protective case.

Loading A Program To A New Board (Or A Board That Has A Corrupted Program)

(Requires Frick® Flash Card P/N 649A0884Gxx)

- Turn Quantum™ power OFF.
- Open Quantum™ control panel door.
- Locate Flash Card Socket. Refer to Pictorial drawing for location (refer to Maintenance Manual S90-010 M).
- Install the Flash Card into the flash socket. The card is keyed such that it can only be installed one way.
- Turn Quantum™ power ON.
- Once the Quantum™ controller has fully booted, the *Quantum™ Installer* screen will appear. There are 6 options on this screen:

  1. Update Program
  2. Update Text Files
  3. Save Setpoints
  4. Restore Setpoints
  5. Full System Install
  6. Finished

- Press the numeral **[5]** on the keypad. This will cause the program that is loaded on the Flash Card to download into the Quantum™. This will overwrite any previous program that the Quantum™ had and the original setpoints that the customer would have been using, plus any custom text labeling that may have been done. The alarms and history (if any) will also be cleared out.
- After pressing **[5]**, you will see a bar appear that will display the % of progress of the download, as well as the names of the files as they are loaded.
- Once the download has completed, the menu will reappear.
- At the menu screen, press the numeral **[6]** to finish. The screen will then display information about powering down and removing the Flash Card. At this point, follow the directions, shut down the Quantum™ power, and remove the Flash Card.
- Upon removal of the Flash Card, return it to its protective case.
- Power the Quantum™ ON. Once the Quantum™ has fully booted, the download is complete.

You will at this point need to modify any setpoints to ensure optimum operation of the unit.

Saving Setpoints With The Flash Card

(Requires Frick® Flash Card P/N 649A0887Gxx)

- Ensure that all customer setpoint values have been written down as a safety precaution.
- Turn Quantum™ power OFF.
- Open Quantum™ control panel door.
- Locate Flash Card Socket. Refer to Pictorial drawing for location (refer to Maintenance Manual S-90-010 M).
- Install the Setpoint Flash Card into the flash socket. The card is keyed such that it can only be installed one way.
- Turn Quantum™ power ON.
- Once the Quantum™ controller has fully booted, the *Quantum™ Maintenance Program* screen will appear. There are 3 options on this screen:
  1. Save Compressor Setup
  2. Restore Compressor Setup
  3. Finished
- Press the numeral **[1]** on the keypad. The menu will be replaced with the following dialog box:

  "Enter the Unit Number to be saved
  Press ENTER when finished
  Press DELETE to clear"

  There is also a box below this dialog that will contain a 0 (zero).
- Using the keypad, enter the number that is equivalent to the Panel ID for this controller (this ID number can be found on the ***Panel Setup*** screen). Up to 99 different compressor settings can be saved to one Flash Card. For example, If you have 12 different Quantum™ compressor packages at an installation, you can take the same Flash Card around to each, and save the specific setpoints for that compressor, as each should have a different ID number.
- After entering the ID number for the compressor that you are saving, press **[ENTER]**. A dialog box will appear asking to verify the ID number (as a precaution). Press the pound key **[#]** if the ID number is correct.
- A new dialog box will appear with the wording *Saving Unit x Configuration Data* ("x" will be replaced by the ID number you had entered). When the setpoints have been successfully saved, the main menu will again appear.
- Press the numeral **[3]** (Finished) on the keypad to finish and exit. A message dialog box will appear, giving instructions about powering down and removing the Flash Card. At this point, follow the directions, shut down the Quantum™ power, and remove the Flash Card.
- Your setpoints have been saved, and will remain intact on the Flash Card until such time as YOU decide to overwrite them (by repeating this procedure).
- Upon removal of the Flash Card, return it to its protective case.

Restoring Previously Saved Setpoints With the Flash Card

(Requires Frick® Flash Card P/N 649A0887Gxx)

- Turn Quantum™ power OFF.
- Open Quantum™ control panel door.
- Locate Flash Card Socket. Refer to Pictorial drawing for location (refer to Maintenance Manual S-90-010 M).
- Install the Setpoint Flash Card into the flash socket. The card is keyed such that it can only be installed one way.
- Turn Quantum™ power ON.
- Once the Quantum™ controller has fully booted, the *Quantum™ Maintenance Program* screen will appear. There are 3 options on this screen:
  1. Save Compressor Setup
  2. Restore Compressor Setup
  3. Finished
- Press the numeral **[2]** on the keypad. The menu will be replaced with the following dialog box:

  "Enter the Unit Number to be restored
  Press ENTER when finished
  Press DELETE to clear
  Press F1 for available units"

  There is also a box below this dialog that will contain a 0 (zero).
- If you had previously saved multiple compressor settings to the Flash Card, you may look at the list of saved ID numbers by pressing the **[F1]** function key on the keypad.
- After entering the ID number for the compressor that you are restoring, press **[ENTER]**. A dialog box will appear asking to verify the ID number (as a precaution). Press the pound key **[#]** if the ID number is correct.
- A new dialog box will appear with the wording *Restoring Unit x Configuration Data* ("x" will be replaced by the ID number you had entered). When the setpoints have been successfully restored, the main menu will again appear.
- Your setpoints have been restored.
- Press the numeral **[3]** (Finished) on the keypad to finish and exit. A message dialog box will appear, giving instructions about powering down and removing the Flash Card. At this point, follow the directions, shut down the Quantum™ power, and remove the Flash Card.

  Upon removal of the Flash Card, return it to its protective case.

Upgrading the Enhanced Analog Board Program

Upgrade Procedure

If at any time, the Enhanced analog board should require a program upgrade as recommended by Frick®, use the following procedure:

NOTE: Requires Frick® Flash Card P/N 649A0884Gxx (Quantum™ program card).

- Turn Quantum™ power OFF.
- Open Quantum™ control panel door.
- Locate Flash Card Socket on the Quantum™.
- Install the Program Flash Card (649A0884Gxx) into the flash socket. The card is keyed such that it can only be installed one way.
- Turn Quantum power ON.
- Once the Quantum controller has fully booted, the Quantum Installer screen will appear. There are 7 options on this screen:
    1. Update Program
    2. Update Text Files
    3. Save Setpoints
    4. Restore Setpoints
    5. Full System Install
    6. Update Analog Board
    7. Finished
- Press **[6]** on the keypad and the following command will appear:

Enter the analog board's id value
Press ENTER when finished
Press DELETE to clear

- There will also be a box below this message containing a *0*.
- Determine the ID number for the analog board being updated and enter the value on this page. The ID number will either be a 1 or 2.
- After entering the id number for the analog board, press **[ENTER]**. Another message will appear asking for verification of the ID number. Press the pound key **[#]** if the ID number is correct.
- If the analog board can be upgraded the following message will appear:

Current Analog Board Version = 2.06
New Version = 2.08
Press # to continue – any other key to exit

- If the Current Analog Board Version is equal to or greater than the New Version, there is no need to upgrade the analog board. If the Current Analog Board Version is less than the New Version, press the pound key **[#]** to continue with the upgrade.
- If you are having trouble getting the program to download, refer to the end of this section entitled *Download Troubleshooting*.
- While the analog board is being programmed, a status bar will show the progress of the upload. The upload should take between 2 and 3 minutes. If this process is successful, the message *Successfully Uploaded* will be shown at the completion of the upload. If the upload is not successful, an *Error in Upload* message will be displayed.
- After the upload is complete, the Quantum™ Installer menu will reappear.
- At the menu screen, press **[7]** to finish. The screen will then display information about powering down and removing the flash card. At this point, follow the directions, shut down the Quantum power, and remove the flash card.
- Power the Quantum™ ON and go to the ***About*** screen to verify that the Quantum™ is communicating to the analog board and that its version has changed to the new program version.

Download Troubleshooting

If the analog board cannot be upgraded either of the following messages will appear:

Current Analog Board Version = 2.03
Analog Board must be at least Version 2.04 to update
Press any key to exit

- If the current analog board version is less than 2.04, the analog board program cannot be upgraded from the Quantum™ Install flash card.

Analog Board #1 is not replying
Remove flash card and boot into new Quantum program.
Then try to install analog board software again.
Press any key to exit

In this case, the install program is unable to communicate to the analog board and cannot upload the new version. This may simply be due to a compatibility problem between the current Quantum™ program version and the new analog board version. Follow the steps below to fix this situation.

- Return to the Quantum™ Install menu and upgrade the Quantum™ program version.
- Power down the Quantum™ panel.
- Remove the flash card.
- Power up the Quantum™ panel so that it boots into the new Quantum™ program.
- After the panel has booted to the Operating Status screen, Power down the Quantum™ panel again.
- Re-install the flash card in the flash socket.
- Repeat the steps above to install the new analog board software.
- If the error above appears again, verify that the analog board's ID number is correct, the communications cable running to the board is intact, the board is powered on and the Quantum™ program can communicate to the board.

MAIN QUANTUM™ BOARD REPLACEMENT

Replacing the main board involves inserting a pre-programmed Flash Card on the main board. It is suggested that the operator first record all control setpoints prior to board replacement. Make sure that the operator can access Factory Setup to restore all compressor specific settings. Reference the *LOADING A PROGRAM TO A NEW BOARD* instructions.

The procedure to replace the main board is outlined below:

1. Shut off control power.
2. Remove the old board from the machine and the new board from its packing and place both on an anti-static surface.
3. Then install the modified replacement board in the panel.
4. Ensure that all jumpers (links) on the new I/O portion of the board match the placement of the jumpers (links) of the original board. The I/O board for the Quantum™ 3 is the larger board, for the Quantum™ 4. It is the smaller board.
5. Follow the instructions in the *LOADING A PROGRAM FROM FLASH CARD* section.

ANALOG OR DIGITAL BOARD REPLACEMENT

The Procedure to replace an analog or digital board is outlined below:

1. Shut off control power.
2. Remove the old board from the machine and the new board from its packing and place both on an anti-static surface.
3. Remove any required chip(s), for analog outputs only (there are on chips on the Enhanced analog board), from the defective board and install them in the replacement board.
4. Check that all jumpers, dipswitches, and components are set up on the new board the same as they were on the old board.

Then install the modified replacement board in the panel.

INDEX

P

R

S

T

U

V

W

YORK Refrigeration Systems
100 CV Avenue, P.O. Box 997 Waynesboro, Pennsylvania USA 17268-0997
Phone: 717-762-2121 • Fax: 717-762-8624 • www.frickcold.com