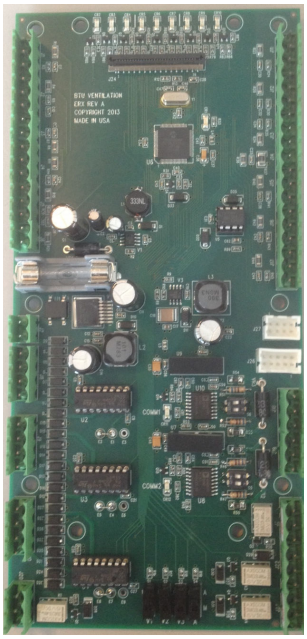
BTU Ventilation

ERX EEV Controller

www.btuvent.com



ERX EEV Control Panel
User's Manual

Manual ERX-EEV 001.1

FORWARD

The new ERX Control Panel from BTU Ventilation is built from the ground up for the 21st century farm manager. Simplicity of operation, combined with sophisticated controls, flexibility allows this card to obtain the most efficiency possible.

STANDARD FEATURES:

- Three Pressure and Three Temperature inputs
- Optional 2x16 local display with backlight
- Optional 5 button keyboard
- Three EEV outputs
- 4 Aux Relay outputs
- 3 Digital Inputs
- 0-20ma Inputs
- 4 Auto, Manual, Off Switches

OPTIONAL FEATURES:

- Full internet web interface for 10 Controllers using one RGX embedded web server.
- RGX provides detailed records for up to 10 ERX panels, using web interface. Direct download into Excel Spreadsheet.
- RGX provides e-mail and text messaging for up to 10 ERX panels.
- Dual Communications ports
- Full internet XT-70 web interface

Analog Inputs:

- Suc A Pressure psi .5-4.5vdc
- Suc B Pressure psi .5-4.5vdc
- Suc C Pressure psi .5-4.5vdc
- Suc A Temp F 2250 ohm
- Suc B Temp F 2250 ohm
- Suc C Temp F 2250 ohm
- ma Input ma 0-20ma
- Temp Spare 1
- Temp Spare 2
- Temp Spare 3

Analog Outputs:

- EEV J8 stepper output
- EEV J9 stepper output
- EEV J10 stepper output

Digital Inputs:

- LLS A proving Dry contact
- LLS B proving Dry contact
- LLS C proving Dry contact

Digital Outputs:

- Relay 1
- Relay 2
- Relay 3
- Relay 4

Electronic Expansion Valve Control:

The ERX card can be used to control up to three stepper control valves. These valves can be used as an expansion valve, pressure regulator or hot gas injection valve. The card is very flexible and uses configuration settings to define the inputs and outputs. The three valves are defined as Valve J8, Valve J9 and Valve J10. Each valve has a suction pressure transducer, temperature sensor and LLS input associated with it. The inputs can be configured in any sequence and can be associated to a group A, group B or group C. The default settings are as follows:

Ch 1 Suction Pressure A
Ch 2 Suction Temperature A
Ch 3 Suction LLS input A
Ch 4 Suction Pressure B
Ch 5 Suction Temperature B
Ch 6 Suction LLS input B
Ch 7 Suction Pressure C
Ch 8 Suction Temperature C
Ch 9 Suction LLS input C
Ch 10 0-20ma analog input
Ch 11 Aux 1 Temperature
Ch 12 Aux 2 Temperature
Ch 13 Aux 3 Temperature

If the suction pressure is the same for all three valves, one pressure transducer could be connected to Ch 1 and assigned as Suction Pressure A. Each valve could then be configured to use Suction Pressure A as its pressure input.

Each of the valves can be assigned different LLS inputs or the same LLS if operating on the same compressor. The LLS input is a closed dry contact that tells the valve to start controlling the superheat.

The start up sequence is as follows:

1. LLS solenoid opens and tells the ERX to start controlling the valve.
2. Controlling valve will open to the initial position.
3. Valve will stay at the initial position until the settling time has expired.
4. Once the settling time expires, the valve will be controlled by the PID loop.
5. If the LLS solenoid goes closed the valve will go fully closed.

Valve sensor failure: If the suction pressure or the suction temperature sensor fails, the associated valve will go to a fail safe position as long as the LLS is open. The fail safe position should be a safe setting that will run at an elevated safe superheat for most all conditions.

The valves have both a physical Auto Manual switch and a virtual Auto Manual switch. The physical switch needs to be set to Auto for the virtual switch to be active. The physical switches are at the bottom of the card, with the up position being Auto. The is also an A (aux) switch for future applications.
If the physical switch is set to manual the valve will go to the programmed manual positionl

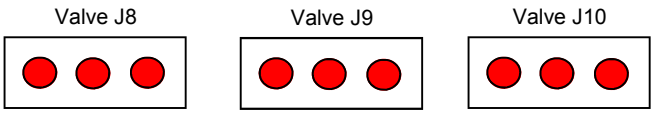
Each of the valves has its own Evap SH SP for control. If not using dynamic superheat control each valve must be set for the desired superheat. When using the dynamic superheat control each valve is designated a compressor number. If the compressor number is the same for all three valves, then each will be updated with the same superheat setpoint value.

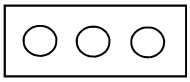
Dynamic Superheat Control: Dynamic superheat control is a method where the associated compres-

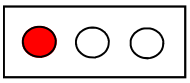
sor communicates with the ERX card and sets the desired evaporator superheat to control the suction superheat at the compressor. Each valve has a parameter for the compressor number. This tells the valve which compressor to listen to. Each valve also has a min and max setting for the allowable superheat setpoint range. The CRX condenser control card evaluates the suction superheat and periodically updates the ERX valve setpoints. The CRX has a safe setting so that if the condenser has been off for a given time, it resets the valve setpoint to a safe value typically 12 degrees.

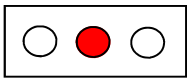
The ERX can be used with a display or without a display. If running without a display the led's on the top of the board can be used to determine the status of each valve.

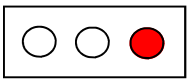
CR2,CR3,CR4 indicate for valve J8
CR5,CR6,CR7 indicate for valve J9
CR8,CR9,CR10 indicate for valve J10

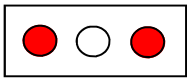


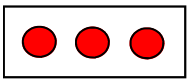

Standby


Refrigeration

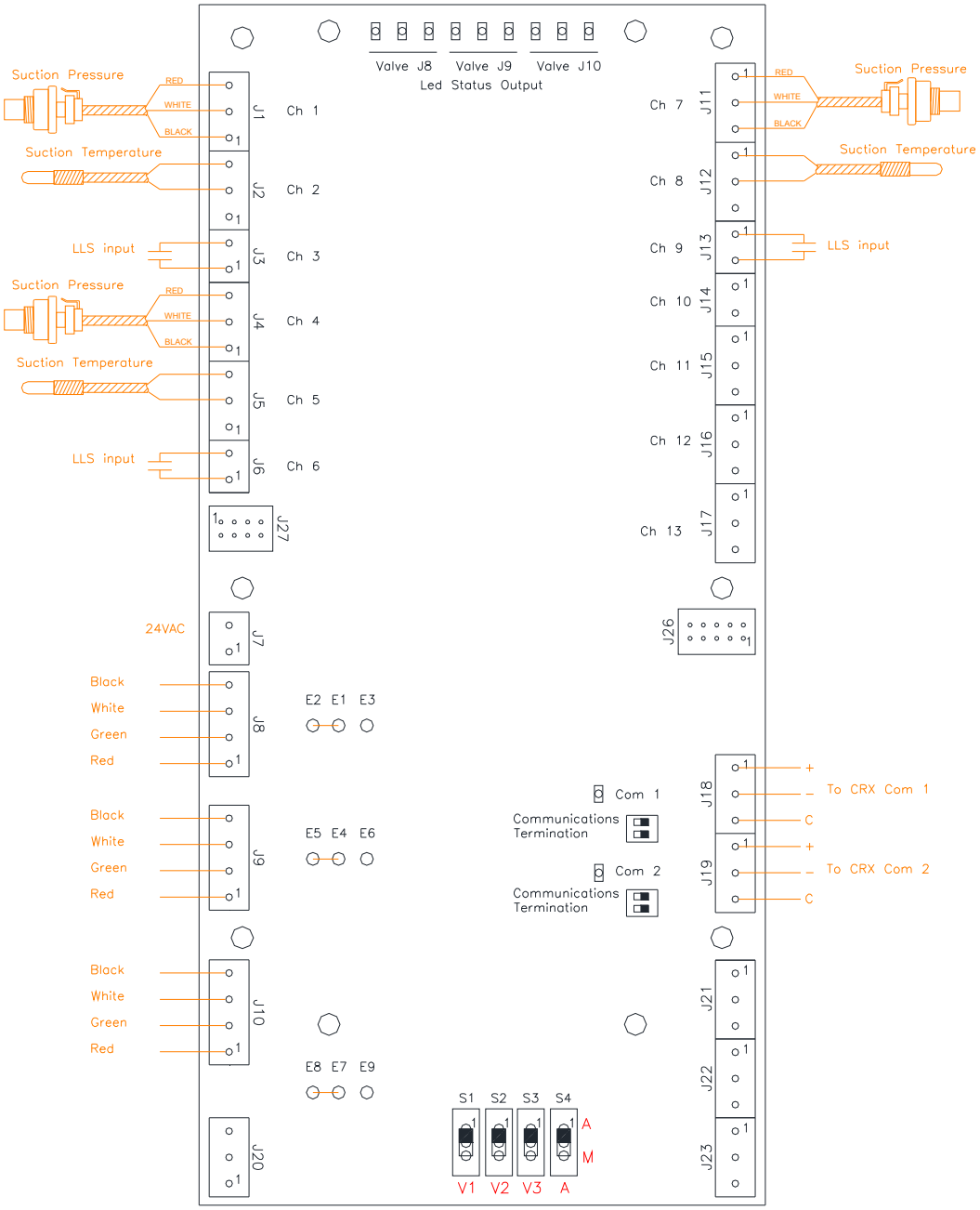

Defrost


Suc Press Sensor Fail


Suc Temperature Sensor Fail

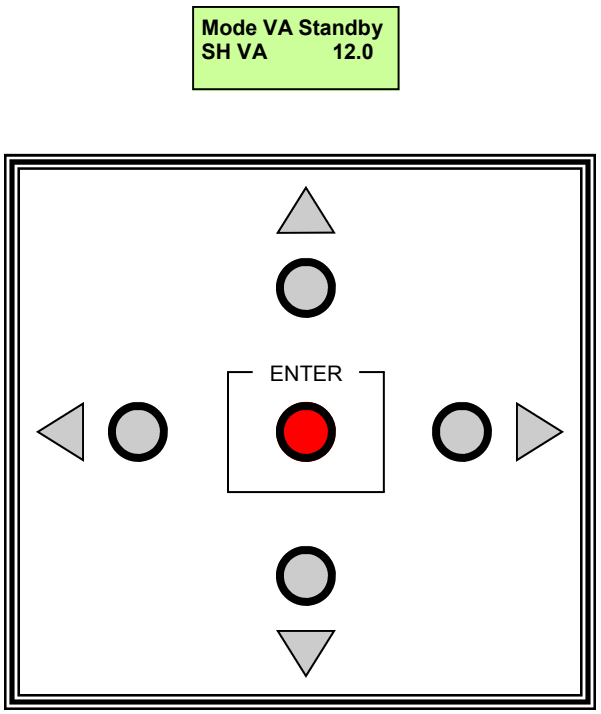

Valve is in Manual

The ERX has two communication ports, com 1 and com 2. Either port can be used for Zbase type communications. The white J26 plug is for com 1. Com 2 is used for card to card communications with the CRX card.



This drawing shows the basic layout of the ERX card. Up to three stepper valves can be controlled using J8, J9 and J10 outputs. The sensors for each of the valves can be doubled up or used in any configuration needed. Each sensor can be assigned to multiple valves so there is no need to have suction pressure and LLS inputs for each valve if on the same circuit.

ERX Optional Display & Keyboard

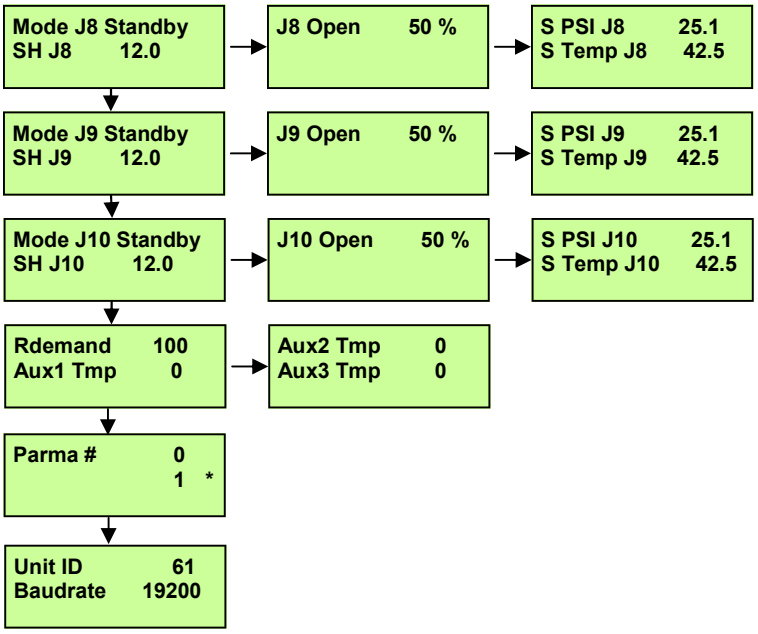


Use up and down arrows to navigate thru the main menu. The left and right keys are used to access additional parameters associated with the main menu.

Programmable parameters are followed with an *. On any of these parameters pressing the ENTER key will activate a cursor indicating program mode. Press the up and down arrows to change the parameter. Use the left and right keys to move the cursor on multiple program screens.

Press the ENTER button when done to save and escape from the program mode.

Display Sequence



Display Windows

Mode J8 Standby SH J8 12.0	Shows the operating mode of valve J8. The bottom line is the super heat for valve J8.
J8 Open 50%	Valve J8 operating percentage (0-100)
S PSI J8 25.1 S Temp J8 42.5	Suction pressure valve J8 psi. The bottom line is the suction temperature for valve J8.
Mode J9 Standby SH J9 12.0	Shows the operating mode of valve J9. The bottom line is the super heat for valve J9.
J9 Open 50%	Valve J9 operating percentage (0-100)
S PSI J9 25.1 S Temp J9 42.5	Suction pressure valve J9 psi. The bottom line is the suction temperature for valve J9.
Mode J10 Standby SH J10 12.0	Shows the operating mode of valve J10. The bottom line is the super heat for valve J10.
J10 Open 50%	Valve J10 operating percentage (0-100)
S PSI J10 25.1 S Temp J10 42.5	Suction pressure valve J10 psi. The bottom line is the suction temperature for valve J10.
Rdemand 100 Aux 1 Tmp	Rdemand is only used if running one of the valves as a pressure regulator. This would be the refrigeration demand. The bottom line is the Aux 1 temperature.
Aux 2 Tmp Aux 3 Tmp	Aux 2 and Aux 3 reads temperature in degrees F if used.

Modes

Param # 321
8.0 *

(Programmable Parameter)
Parameter Number. The number is associated with a given parameter and the value is displayed below it. Use the left and right arrows to view the different parameters and the up and down arrow to view a different display. Press the SELECT button to program the parameter shown. Use the up and down arrows to change the value. Press the ENTER button to Save.

Unit # 1
Baudrate 19200

Unit # is the panel number when used in a network with multiple panels. Each panel must have a unique number. The Baudrate is set for both communication ports.

VALVE J8 MODES OF OPERATION

00	STANDBY
01	REFRIG
02	DEFROST
03	
04	SUC PRESS SENSOR FAIL
05	SUC TEMP SENSOR FAIL
06	
07	MANUAL

If a valve loses either a pressure or a temperature sensor, it will go to a failsafe mode. In a failsafe mode, the valve will go to a conservative opening position and stay there.

VALVE J9 MODES OF OPERATION

00	STANDBY
01	REFRIG
02	DEFROST
03	
04	SUC PRESS SENSOR FAIL
05	SUC TEMP SENSOR FAIL
06	
07	MANUAL

VALVE J10 MODES OF OPERATION

00	STANDBY
01	REFRIG
02	DEFROST
03	
04	SUC PRESS SENSOR FAIL
05	SUC TEMP SENSOR FAIL
06	
07	MANUAL

Analog Inputs

TABLE 1

0: N/U
1: Suc A Press 0-100 psi
2: Suc A Press 0-500 psi
3: Suc B Press 0-100 psi
4: Suc B Press 0-500 psi
5: Suc C Press 0-100 psi
6: Suc C Press 0-500 psi
7: Suc A Temperature
8: Suc B Temperature
9: Suc C Temperature
10: LLS A Input
11: LLS B Input
12: LLS C Input
13: Rdemand 0-20ma
14: Rdemand 4-20ma
15: Aux 1 Temperature
16: Aux 2 Temperature
17: Aux 3 Temperature

J8 Valve Press Sensor Config

TABLE 2

0: N/U
1: Suction A
2: Suction B
3: Suction C

J8 Valve Temp Sensor Config

TABLE 3

0: N/U
1: Suction A
2: Suction B
3: Suction C

J8 LLS Input Config

TABLE 4

0: N/U
1: Suction A
2: Suction B
3: Suction C

J9 Valve Press Sensor Config

TABLE 5

0: N/U
1: Suction A
2: Suction B
3: Suction C

J9 Valve Temp Sensor Config

TABLE 6

0: N/U
1: Suction A
2: Suction B
3: Suction C

J9 LLS Input Config

TABLE 7

0: N/U
1: Suction A
2: Suction B
3: Suction C

J10 Valve Press Sensor Config

TABLE 8

0: N/U
1: Suction A
2: Suction B
3: Suction C

J10 Valve Temp Sensor Config

TABLE 9

0: N/U
1: Suction A
2: Suction B
3: Suction C

J10 LLS Input Config

TABLE 10

0: N/U
1: Suction A
2: Suction B
3: Suction C

Outputs

TABLE 11

0: N/U
1: ON
2: Alarm

Auto Off Manual Sw

TABLE 12

0: OFF
1: MAN
2: AUTO

Parameter Explanation

0: Unit ID The Unit ID has a range of 0 to 99. The ID number designates each of the card for communication purposes. When used with the CRX, the unit ID should be 61, 62, 63, 64 for each of the cards. The first number is considered a network number and the second number the unit number. The unit number should always start with 1.

1: Baud Rate This is the baud rate for both com 1 and com 2 ports. Set to 1 for 9600 and 0 for 19.2 kb. The default setting is 0.

2: Filter This is a digital filter for all the analog inputs. It can be set from 1 to 10. One would be the least filtering and ten would be the max filtering. A typical setting would be 2.

3: Proportion gain Valve J8 This value controls the Proportional response for valve J8. The proportional gain is based off of change. In this case it would be change between the Superheat SP and the actual evaporator suction superheat. Raising the value of P results in a greater reaction to changes. A typical setting would be 20 to 50.

4: Integral gain Valve J8 This value controls the Integral response for valve J8. The integral gain is what will cause the output to change when the superheat is not changing and is steady state. Increasing this value too much will cause the system to become unstable. A typical value would be 5.

5: Derivative gain Valve J8 This value controls the Derivative response for valve J8. The derivative is constantly analyzing the rate of change of the error, makes a prediction about what the future error will be and makes adjustment to the output in an attempt to reduce the rate of change in the error. For most cases the derivative is disabled by setting it to zero.

6: Update time Valve J8 This value controls the response for valve J8. The update time is in tenths of a second and will determine how often the PID loop math is calculated and a correction made.

7: Scale J8 This is an engineering unit and should not be changed in the field. It is used to scale the correction from the pid loop.

8: Proportion gain Valve J9 This value controls the Proportional response for valve J9. The proportional gain is based off of change. In this case it would be change between the Superheat SP and the actual evaporator suction superheat. Raising the value of P results in a greater reaction to discharge pressure changes. A typical setting would be 5-20.

9: Integral gain Valve J9 This value controls the Integral response for valve J9. The integral gain is what will cause the output to change when the superheat is not changing and is steady state. Increasing this value too much will cause the system to become unstable. A typical value would be 5.

10: Derivative gain Valve J9 This value controls the Derivative response for valve J9. The derivative is constantly analyzing the rate of change of the error, makes a predication about what the future error will be and makes adjustment to the output in an attempt to reduce the rate of change in the error. For most cases the derivative is disabled by setting it to zero.

11: Update time Valve J9 This value controls the response for valve J9. The update time is in tenths of a second and will determine how often the PID loop math is calculated and a correction

made.

12: Scale J9 This is an engineering unit and should not be changed in the field. It is used to scale the correction from the pid loop.

13: Proportion gain Valve J10 This value controls the Proportional response for valve J10. The proportional gain is based off of change. In this case it would be change between the Superheat SP and the actual evaporator suction superheat. Raising the value of P results in a greater reaction to discharge pressure changes. A typical setting would be 5-20.

14: Integral gain Valve J10 This value controls the Integral response for valve J10. The integral gain is what will cause the output to change when the superheat is not changing and is steady state. Increasing this value too much will cause the system to become unstable. A typical value would be 5.

15: Derivative gain Valve J10 This value controls the Derivative response for valve J10. The derivative is constantly analyzing the rate of change of the error, makes a predication about what the future error will be and makes adjustment to the output in an attempt to reduce the rate of change in the error. For most cases the derivative is disabled by setting it to zero.

16: Update time Valve J10 This value controls the response for valve J10. The update time is in tenths of a second and will determine how often the PID loop math is calculated and a correction made.

17: Scale J10 This is an engineering unit and should not be changed in the field. It is used to scale the correction from the pid loop.

18: Display Config To use the ERX with no display, set this parameter to 0. For use with a display set to 1.

19: Remote Control Switch If set to 1, resets the card.

20: Gas Type This parameter is used to set the type of gas being used in the system. This is used to calculate the superheats and alarms.

0: R22
1: R407A
2: R507
3: R134a
4: R407F
5: R404a
6: R407c

21: Valve J8 PID Mode This parameter allow the valve to be changed from Auto to Manual.

0: Auto
1: Manual

22: Valve J9 PID Mode This parameter allow the valve to be changed from Auto to Manual.

0: Auto

1: Manual

23: Valve J10 PID Mode This parameter allow the valve to be changed from Auto to Manual.

0: Auto
1: Manual

24: - 31: Spare

32: Evap Superheat SP J8 This is the valve J8 superheat setpoint. The PID will adjust the EEV J8 to try and maintain the Evap superheat setpoint.

33: Evap Superheat SP J9 This is the valve J9 superheat setpoint. The PID will adjust the EEV J9 to try and maintain the Evap superheat setpoint.

34: Evap Superheat SP J10 This is the valve J10 superheat setpoint. The PID will adjust the EEV J10 to try and maintain the Evap superheat setpoint.

35: Fail Safe Valve J8 If valve J8 goes into an alarm situation the valve will go to this manual position. The setting is in percent.

36: Fail Safe Valve J9 If valve J9 goes into an alarm situation the valve will go to this manual position. The setting is in percent.

37: Fail Safe Valve J10 If valve J10 goes into an alarm situation the valve will go to this manual position. The setting is in percent.

38: Valve J8 Settling Time The setting time is in seconds. The valve will remain in the Initial Position for this amount of time. Once the time is up, the valve will go to the normal PID operation.

39: Valve J9 Settling Time The setting time is in seconds. The valve will remain in the Initial Position for this amount of time. Once the time is up, the valve will go to the normal PID operation.

40: Valve J10 Settling Time The setting time is in seconds. The valve will remain in the Initial Position for this amount of time. Once the time is up, the valve will go to the normal PID operation.

41: Initial Position Valve J8 When the LLS initially opens, the associated valve will go to this position for the settling time. This value should be large enough to allow the suction pressure to raise and the compressor to start and continue to run. A typical setting would be 20 to 30 percent. If this percentage is too high, it may cause the superheat to drop.

42: Initial Position Valve J9 When the LLS initially opens, the associated valve will go to this position for the settling time. This value should be large enough to allow the suction pressure to raise and the compressor to start and continue to run. A typical setting would be 20 to 30 percent. If this percentage is too high, it may cause the superheat to drop.

43: Initial Position Valve J10 When the LLS initially opens, the associated valve will go to this posi-

tion for the settling time. This value should be large enough to allow the suction pressure to raise and the compressor to start and continue to run. A typical setting would be 20 to 30 percent. If this percentage is too high, it may cause the superheat to drop.

44: Manual Output Valve J8 When the operation of the PID is set to Man, the valve will go to this position and stay until switched to Auto.

45: Manual Output Valve J9 When the operation of the PID is set to Man, the valve will go to this position and stay until switched to Auto.

46: Manual Output Valve J10 When the operation of the PID is set to Man, the valve will go to this position and stay until switched to Auto.

47: Spare

48: Valve J8 Compressor Number This parameter designates which compressor to received data from for the dynamic superheat adjustments.

49: Valve J9 Compressor Number This parameter designates which compressor to received data from for the dynamic superheat adjustments.

50: Valve J10 Compressor Number This parameter designates which compressor to received data from for the dynamic superheat adjustments.

51: Valve J8 Min SH SP This is the minimum superheat setpoint that this valve can dynamically be set for.

52: Valve J9 Min SH SP This is the minimum superheat setpoint that this valve can dynamically be set for.

53: Valve J10 Min SH SP This is the minimum superheat setpoint that this valve can dynamically be set for.

54: Valve J8 Max SH SP This is the maximum superheat setpoint that this valve can dynamically be set for.

55: Valve J9 Max SH SP This is the maximum superheat setpoint that this valve can dynamically be set for.

56: Valve J10 Max SH SP This is the maximum superheat setpoint that this valve can dynamically be set for.

57 - 62: Spare

63: Alarm Reset Timer This timer is in seconds and goes from 0 to 250. If set to zero the functionality is disabled. If a sensor fail is detected and alarms, the alarm reset timer will try to reset the alarm if the sensors correct the issue.

64: Valve J8 Pressure Sensor Fail Timer This timer is in seconds and goes from 0 to 250. If set to zero, the functionality is disabled. If the pressure sensor is out of limits for the set time, the valve will go into an alarm status.

65: Valve J8 Temperature Sensor Fail Timer This timer is in seconds and goes from 0 to 250. If set to zero the functionality is disabled. If the temperature sensor is out of limits for the set time, the valve will go into an alarm status.

66 - 70: Spare

71: Valve J9 Pressure Sensor Fail Timer This timer is in seconds and goes from 0 to 250. If set to zero the functionality is disabled. If the pressure sensor is out of limits for the set time, the valve will go into an alarm status.

72: Valve J9 Temperature Sensor Fail Timer This timer is in seconds and goes from 0 to 250. If set to zero the functionality is disabled. If the temperature sensor is out of limits for the set time, the valve will go into an alarm status.

73 - 77: Spare

78: Valve J10 Pressure Sensor Fail Timer This timer is in seconds and goes from 0 to 250. If set to zero the functionality is disabled. If the pressure sensor is out of limits for the set time, the valve will go into an alarm status.

79: Valve J10 Temperature Sensor Fail Timer This timer is in seconds and goes from 0 to 250. If set to zero the functionality is disabled. If the temperature sensor is out of limits for the set time, the valve will go into an alarm status.

80 - 84: Spare

91: J10 Val Max This parameter is only used for evaporator hot gas injection. The J10 valve must be designated as a hot gas valve. This will limit the max opening of the valve based on the system. A typical setting would be 30%.

92: J10 HGV ST Hot Gas Valve Start %. This is the CRX Rdemand starting position. This is used to stage the compressors.

93: J10 HGV ED Hot Gas Valve End %. This is the CRX Rdemand ending position. This is used to stage the compressors.

300 - 328: Spare

400: Valve J8 Steps This value depends on the type of valve it is. Most valves are 1596 steps but could be as large as 6000 steps. This value tells the system where the 100% point is.

401: Valve J9 Steps This value depends on the type of valve it is. Most valves are 1596 steps but could be as large as 6000 steps. This value tells the system where the 100% point is.

402: Valve J10 Steps This value depends on the type of valve it is. Most valves are 1596 steps but could be as large as 6000 steps. This value tells the system where the 100% point is.

403 - 412: Spare

500: Relay 1 (J20) Output Config This output can be configured for a number of different type outputs. See table 5.

501: Relay 1 (J20) Output AOM Allows the output to be configured as OFF (0), MANUAL (1) and AUTO (2).

502: Relay 2 (J21) Output Config This output can be configured for a number of different type outputs. See table 5.

503: Relay 2 (J21) Output AOM Allows the output to be configured as OFF (0), MANUAL (1) and AUTO (2).

504: Relay 3 (J22) Output Config This output can be configured for a number of different type outputs. See table 5.

505: Relay 3 (J22) Output AOM Allows the output to be configured as OFF (0), MANUAL (1) and AUTO (2).

506: Relay 4 (J23) Output Config This output can be configured for a number of different type outputs. See table 5.

507: Relay 4 (J23) Output AOM Allows the output to be configured as OFF (0), MANUAL (1) and AUTO (2).

508 - 515: Spare

600: J8 Valve Suction Pressure Config J8 is the first valve output. This configuration will determine which suction pressure transducer will be used for calculations for this valve. There are three possibilities, Suction A pressure, Suction B pressure or Suction C pressure. The actual location of the Suction Pressure transducers is set up under the channel configuration parameters. More than one valve can be controlled off of the same Suction Pressure Transducer.

601: J8 Valve Suction Pressure Off-Man-Auto Sw This parameter is used to set the suction pressure for the J8 valve to Off, Manual or Auto. The normal setting would be 2 or Auto. If set to 2 the suction pressure is read from the selected suction transducer. If set to 1 or Manual, the suction pressure is determined by the manual setting. When set to 0 or Off the suction pressure would be 0.

602: J8 Valve Suction Pressure Manual Setting This parameter is used to set the desired pressure when the suction pressure is set to manual. This value needs to be equal to the A to D count.

603: J8 Valve Suction Temperature Config J8 is the first valve output. This configuration will determine which suction temperature probe will be used for calculations for this valve. There are three possibili-

ties, Suction A temperature, Suction B temperature or Suction C temperature. The actual location of the Suction temperature probe is set up under the channel configuration parameters. More than one valve could be controlled off of the same temperature probe. This is not recommended, but could be used in the event of a loss of a sensor to get the system back running.

604: J8 Valve Suction Temperature Off-Man-Auto Sw This parameter is used to set the suction temperature for the J8 valve to Off, Manual or Auto. The normal setting would be 2 or Auto. If set to 2 the suction temperature is read from the selected suction temperature probe. If set to 1 or Manual, the suction temperature is determined by the manual setting. If set to 0 the suction temperature would be out of range.

605: J8 Valve Suction Temperature Manual Setting This parameter is used to set the desired temperature when the suction temperature is set to manual. This value needs to be equal to the A to D count.

606: J8 Valve Liquid Line Config J8 is the first valve output. This configuration will determine which LLS input will be used to start the J8 valve control. There are three possibilities, LLS A, LLS B or LLS C. The actual location of the LLS input is set up under the channel configuration parameters. More than one valve could use the same LLS to start operation.

607: J8 Valve Liquid Line Off-Man-Auto Sw This parameter is used to set the LLS for the J8 valve to Off, Manual or Auto. The normal setting would be 2 or Auto. If set to 2 the LLS is read from the selected LLS input. If set to 1 or Manual, the LLS input would be ON. A setting of 0 will turn the input off.

608: J9 Valve Suction Pressure Config J9 is the second valve output. This configuration will determine which suction pressure transducer will be used for calculations for this valve. There are three possibilities, Suction A pressure, Suction B pressure or Suction C pressure. The actual location of the Suction Pressure transducers is set up under the channel configuration parameters. More than one valve can be controlled off of the same Suction Pressure Transducer.

609: J9 Valve Suction Pressure Off-Man-Auto Sw This parameter is used to set the suction pressure for the J9 valve to Off, Manual or Auto. The normal setting would be 2 or Auto. If set to 2 the suction pressure is read from the selected suction transducer. If set to 1 or Manual, the suction pressure is determined by the manual setting. When set to 0 or Off the suction pressure would be 0.

610: J9 Valve Suction Pressure Manual Setting This parameter is used to set the desired pressure when the suction pressure is set to manual. This value needs to be equal to the A to D count.

611: J9 Valve Suction Temperature Config J9 is the second valve output. This configuration will determine which suction temperature probe will be used for calculations for this valve. There are three possibilities, Suction A temperature, Suction B temperature or Suction C temperature. The actual location of the Suction temperature probe is set up under the channel configuration parameters. More than one valve could be controlled off of the same temperature probe. This is not recommended, but could be used in the event of a loss of a sensor to get the system back running.

612: J9 Valve Suction Temperature Off-Man-Auto Sw This parameter is used to set the suction temperature for the J9 valve to Off, Manual or Auto. The normal setting would be 2 or Auto. If set to 2 the suction temperature is read from the selected suction temperature probe. If set to 1 or Manual, the suction temperature is determined by the manual setting. If set to 0 the suction temperature would be out of range.

613: J9 Valve Suction Temperature Manual Setting This parameter is used to set the de-

sired temperature when the suction temperature is set to manual. This value needs to be equal to the A to D count.

614: J9 Valve Liquid Line Config J9 is the second valve output. This configuration will determine which LLS input will be used to start the J9 valve control. There are three possibilities, LLS A, LLS B or LLS C. The actual location of the LLS input is set up under the channel configuration parameters. More than one valve could use the same LLS to start operation.

615: J9 Valve Liquid Line Off-Man-Auto Sw This parameter is used to set the LLS for the J9 valve to Off, Manual or Auto. The normal setting would be 2 or Auto. If set to 2 the LLS is read from the selected LLS input. If set to 1 or Manual, the LLS input would be ON. A setting of 0 will turn the input off.

616: J10 Valve Suction Pressure Config J10 is the third valve output. This configuration will determine which suction pressure transducer will be used for calculations for this valve. There are three possibilities, Suction A pressure, Suction B pressure or Suction C pressure. The actual location of the Suction Pressure transducers is set up under the channel configuration parameters. More than one valve can be controlled off of the same Suction Pressure Transducer.

617: J10 Valve Suction Pressure Off-Man-Auto Sw This parameter is used to set the suction pressure for the J10 valve to Off, Manual or Auto. The normal setting would be 2 or Auto. If set to 2 the suction pressure is read from the selected suction transducer. If set to 1 or Manual, the suction pressure is determined by the manual setting. When set to 0 or Off the suction pressure would be 0.

618: J10 Valve Suction Pressure Manual Setting This parameter is used to set the desired pressure when the suction pressure is set to manual. This value needs to be equal to the A to D count.

619: J10 Valve Suction Temperature Config J10 is the third valve output. This configuration will determine which suction temperature probe will be used for calculations for this valve. There are three possibilities, Suction A temperature, Suction B temperature or Suction C temperature. The actual location of the Suction temperature probe is set up under the channel configuration parameters. More than one valve could be controlled off of the same temperature probe. This is not recommended, but could be used in the event of a loss of a sensor to get the system back running.

620: J10 Valve Suction Temperature Off-Man-Auto Sw This parameter is used to set the suction temperature for the J10 valve to Off, Manual or Auto. The normal setting would be 2 or Auto. If set to 2 the suction temperature is read from the selected suction temperature probe. If set to 1 or Manual, the suction temperature is determined by the manual setting. If set to 0 the suction temperature would be out of range.

621: J10 Valve Suction Temperature Manual Setting This parameter is used to set the desired temperature when the suction temperature is set to manual. This value needs to be equal to the A to D count.

622: J10 Valve Liquid Line Config J10 is the third valve output. This configuration will determine which LLS input will be used to start the J10 valve control. There are three possibilities, LLS A, LLS B or LLS C. The actual location of the LLS input is set up under the channel configuration parameters. More than one valve could use the same LLS to start operation.

623: J10 Valve Liquid Line Off-Man-Auto Sw This parameter is used to set the LLS for the J10 valve to Off, Manual or Auto. The normal setting would be 2 or Auto. If set to 2 the LLS is read from the selected LLS input. If set to 1 or Manual, the LLS input would be ON. A setting of 0 will turn the input off.

624: Chan 1 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 1. The default setting is 1 or suction A pressure (0-100 psi). This channel can only be used for a pressure sensor.

625: Chan 1 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

626: Chan 1 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

627: Chan 2 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 2. The default setting is 7 or suction A temperature. This channel can only be used for temperature or dry contact inputs.

628: Chan 2 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

629: Chan 2 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

630: Chan 3 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 3. The default setting is 10 or LLS A input. This channel can only be used for temperature or dry contact inputs.

631: Chan 3 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

632: Chan 3 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

633: Chan 4 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 4. The default setting is 3 or suction B pressure (0-100 psi). This channel can only be used for a pressure sensor.

634: Chan 4 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

635: Chan 4 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

636: Chan 5 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 5. The default setting is 8 or suction B temperature. This channel can only be used for temperature or dry contact inputs.

637: Chan 5 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

638: Chan 5 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

639: Chan 6 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 6. The default setting is 11 or LLS B input. This channel can only be used for temperature or dry contact inputs.

640: Chan 6 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

641: Chan 6 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

642: Chan 7 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 7. The default setting is 5 or suction C pressure (0-100 psi). This channel can only be used for a pressure sensor.

643: Chan 7 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

644: Chan 7 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

645: Chan 8 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 8. The default setting is 9 or suction C temperature. This channel can only be used for temperature or dry contact inputs.

646: Chan 8 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

647: Chan 8 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

648: Chan 9 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 9. The default setting is 12 or LLS C input. This channel can only be used for temperature or dry contact inputs.

649: Chan 9 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

650: Chan 9 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

651: Chan 10 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 10. The default setting is 13 or Rdemand 0-20ma. This channel can only be used for a ma signal or dry contact input.

652: Chan 10 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

653: Chan 10 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

654: Chan 11 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 11.

The default setting is 15 or Aux 1 temperature input. This channel can only be used for temperature or dry contact inputs.

655: Chan 11 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

656: Chan 11 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

657: Chan 12 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 12. The default setting is 16 or Aux 2 temperature input. This channel can only be used for temperature or dry contact inputs.

658: Chan 12 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

659: Chan 12 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.

660: Chan 13 Config Use Table 1 (Analog Inputs) to select the desired type of sensor for Chan 13. The default setting is 17 or Aux 3 temperature input. This channel can only be used for temperature or dry contact inputs.

661: Chan 13 Off-Man-Auto Sw This is a virtual switch. 0 = OFF, 1 = MAN and 2 = AUTO. OFF the input will always be off. Man the input will always be on. Auto the input will operate normal.

662: Chan 13 Manual Count When the AOM switch is in manual a count of 0-4095 can be entered as an input signal.