

SECTION C: OPERATION

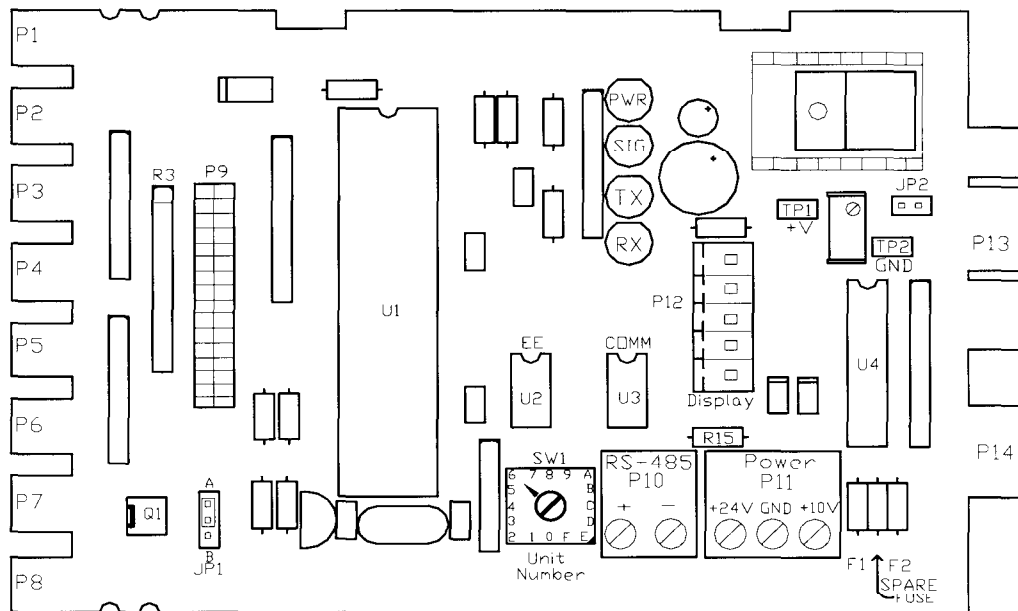


Figure C-1: XE-IO Board

XE-IO BOARD:

GENERAL INFORMATION:

The XE-IO is the key component of the XPRT-Eagle line of controls. It measures the values of inputs such as temperature or pressure, determines what actions should be taken based on the program loaded in the microprocessor (U1) and then provides signals to Altech's relay boards, such as CRX4, to turn on or off the devices wired to the relays.

STATUS LED'S:

PWR (Green):

- Indicates that power is supplied to the inputs P1-P8.
- Normally should be turned on.
- In order for the PWR LED to be on, the microprocessor program in U1 must turn it on.

SIG (Red):

- Provides an indication from the microprocessor to the user.
- Normally should blink on during the power-up mode and then stay off.
- If this LED stays on, the board has a failure of some type.

TX (Green):

- Provides an indication that the microprocessor is transmitting data over the RS-485 local LAN.
- Normally in a system that includes an XE-CM, this LED should periodically flicker on.

RX (Yellow):

- Provides an indication that the RS-485 communication chip (U3) is receiving data over the RS-485 local LAN.
- Normally in a system that includes an XE-CM, this LED should flicker on periodically. If the LED is continuously on or off, a communication fault is indicated.

JUMPERS AND SWITCHES:

Unit Number Switch (SW1):

- Sets the address of the XE-IO on the RS-485 LAN.
- The arrow on the switch points to the address.
- Can be addressed from 0-F which converts to 0-15 (A=10, B=11, C=12, D=13, E=14 and F=15)

JP1 (Lower left corner):

- Selects the power voltage that is supplied to all the universal input connectors P1-P8.
- Position A provides 10 VDC (or higher)
- Position B provides 5.12 VDC

JP2 (Upper right corner):

- Allows 10 VDC power to be fed through connector P13.

CONNECTORS:

P1-P8 Universal Inputs:

- Altech's standard input edge connector.

P9 I/O Expansion Connector (Middle Left):

- Provides an alternate means for connecting inputs in lieu of using edge connectors P1-P8 (See XE-TERM board).
- Allows the connection of specialty expansion boards to XE-IO that can provide additional I/O devices.

P10 Local RS-485 LAN Terminal Block:

- Terminal block can be un-plugged for wiring and servicing.

P11 Power Terminal Block:

- Provides a connection of +24 VDC (minimum) relay power and 10 VDC (minimum) controller and I/O power.
- **Power must be supplied from a Class 2 power supply!**
- If power is supplied through P13, then voltage cannot be measured or power supplied from P11.

P12 Expansion Port:

- Functions to be determined.

P13 Output Relay Edge Connector:

- Altech's standard output relay board connector.
- 10 VDC Power can also be fed through this connector from a combination power supply and relay board such as the XE-PWR3 (See Jumper JP2).

P14 Alternate Power and Local RS-485 Edge Connector:

- Duplicates the connections of P10 and P11.
- Used for supplying power to the XE-IO when installed in the XE-Mother Board card cage.

OTHER SERVICEABLE COMPONENTS :

R3 Pull-up Resistors For Inputs P1-P8:

- Allows removal or change of pull-up resistors when the input transducer requires.
- Pull-up resistors can be individually disconnected from the inputs. Contact Altech for instructions.

F1 24 VDC Supply Fuse, .250 Amp. (PN: 54020)

F2 Spare Fuse, .250 Amp. (PN: 54020)

F3 10 VDC Supply Fuse, .250 Amp. (PN: 54020)

R15 RS-485 Terminating Resistor

- Value: 1 Meg unless network requires a lower value.

U1 Microprocessor: (PN: Varies by controller type)

- Label indicates the firmware type installed.

U2 EE Setpoint Memory: (PN: Varies by controller type)

- Color dots indicate the type of compatible firmware

U3 RS-485 Communication Chip (PN: 45088)

Mating plug for Display Connector P12: PN: 54014

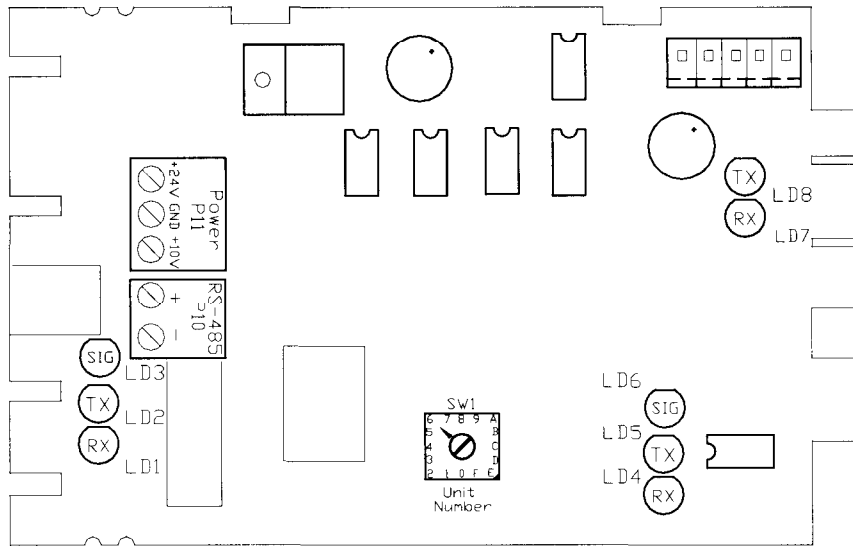


Figure C-2: XE-CM Board

XE-CM BOARD:

GENERAL INFORMATION:

The XE-CM is the Communication Manager for the XPRT Eagle line of controls. It performs the following communication functions:

- Route the communication between the XE-IO boards and the user interface device via either serial, modem or Ethernet connection.
- Route the XE-IO LAN Values between controllers.
- Maintains a real time clock and periodically up-dates the time clock on the XE-IO boards residing on it's RS-485 LAN.
- Monitors for active XE-IO alarm conditions.
- Monitors and alarms communication failures to XE-IO boards.
- Can deliver alarm messages over a WAN via email or via modem.

Status LEDs:

TX (Yellow) (Next to Ethernet connector P1):

- Normally On, Blinks Off when the XE-CM is transmitting data on the Ethernet

RX (Yellow)(Next to Ethernet connector P1):

- Normally On, Blinks Off when the XE-CM is receiving data over the Ethernet.

LNK (Yellow) (Next to Ethernet connector P1):

- On indicates that the NX-CM is connected to an active Ethernet port.

LD4 (Yellow) (Next to RS-485 Com IC U3):

- On indicates that the NX-CM is receiving data from a XE-IO board on it's RS-485 LAN..

LD5 (Green) (Next to RS-485 Com IC U3):

- On indicates that the NX-CM is transmitting data onto it's RS485 LAN.

LD6 (Red) (Next to RS-485 Com IC U3):

- On indicates that an alarm condition occurred in the XE-CM.

JUMPERS AND SWITCHES:

Unit Number Switch (SW1):

- Sets the last two digits of the IP address of the XE-CM which is used as an address on the Ethernet LAN. If the base IP address is 10.0.0.30. The actual IP address is "30" plus the switch value. (i.e. SW1=1; IP=10.0.0.31)
- The arrow on the switch points to 0-F which converts to 0-15 (A=10, B=11, C=12, D=13, E=14 and F=15)
- The IP address can be changed but if a separate XE-Router is used to isolate the each sub LAN of XE-CM boards, then the XE-CM can be interchangeable between sites without any addressing other than setting switch SW1.

JP1 (Next to SW1):

- Used for re-programming. Leave pins in the open position.

CONNECTORS:

P1 Ethernet connector:

- RJ45 connector for connection to Ethernet LAN

P2 Alternate Power and Local RS-485 Edge Connector:

- Duplicates the connections of P4 and P7.
- Used for supplying power to the XE-IO when installed in the XE-MB card cage.

P3 TTL Alternate to RS-485 LAN:

P4 Power Terminal Block:

- Provides a connection of the 10 VDC (minimum) controller and I/O power.
- **Power must be supplied from Class 2 power supplies!**
- No connection is required to the +24V terminal.

P5 RS-232 / Modem / Alarm Printer Edge Connector:

- Allows connection of serial RS-232 communication devices such as a PC or modem.
- It also allows connection of a local serial alarm printer.

P6 Local Interface Port:

- Allows connection of a local interface.
- Uses TTL voltages.

P7 Local RS-485 LAN Terminal Block:

- Terminal block can be un-plugged for wiring and servicing.

OTHER SERVICEABLE COMPONENTS :

F1 10 VDC Supply Fuse, .250 Amp.(PN: 54020)

U3 RS-485 Communication Chip (PN: 45088)

U7 RS-232 Communication Chip

IP CONFIGURATION:

Checking the IP Addresses:

- Connect the RS-232 port to a computer running HyperTerminal using the XE Direct Connect cable (PN: 54006)
- Set HyperTerminal for 9600,8,N,1
- Cycle power to the XE-CM board. The screen will display the program revision, board serial number, base IP, IP Mask, Router IP, DNS IP, mail IP: port number and actual IP address (Base plus SW1)

Changing the IP Addresses:

- Connect the RS-232 port to a computer running HyperTerminal using the XE-Direct connect Cable (PN: 54006)
- Set HyperTerminal for 9600,8,N,1
- Remove power to the XE-CM board
- Short the pins of JP1 while applying power.
- HyperTerminal should prompt for entry on a new base IP address.
- Next, it will also prompt for a new IP Mask, Router IP, DNS IP and Mail (SMTP) Server IP address.
- Next it will prompt for an SMTP Port number. This is used for sending alarm emails. It defaults to "25" by pressing "Enter".
- Next it will prompt "Xmodem?" At this prompt, cycle the power to the XE-CM and verify the IP addresses were entered correctly.

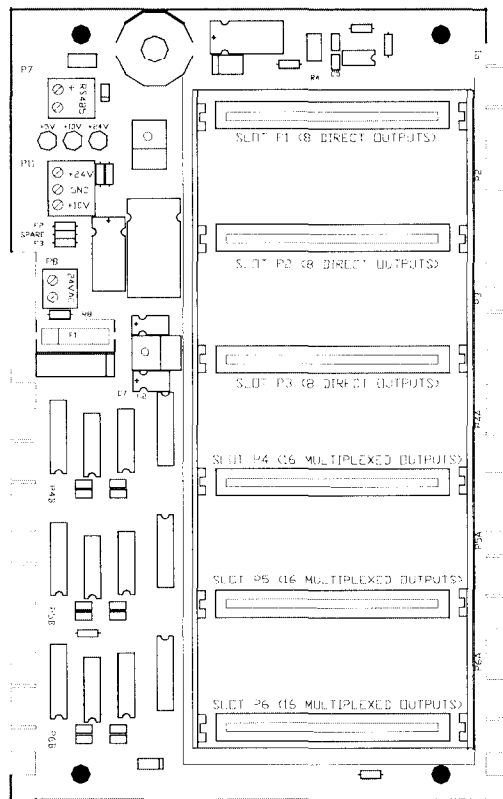


Figure C-3: XE-MB Mother Board

XE-MB MOTHERBOARD:

GENERAL INFORMATION:

The XE-MB is a combination card cage, power supply and output multiplexer for XE-IO and XE-CM boards. It is well suited for the larger applications that require multiple controller boards in one panel such as a Parallel Compressor Rack. It has the following advantages over a network of NX-CM and XE-IO boards mounted flat:

- It reduces the amount of space required in a panel.
- It reduces the amount of hand wiring required to connect power to the boards and to interconnect the RS-485 LAN.
- It does not require power to be removed from the control relays while the controller is removed. This allows the mechanical overrides to be retained while a XE-IO board is removed for service.
- Slots P4, P5 and P6 are able to control 16 output relays rather than the standard 8.

STATUS LED'S:

+24V (Green):

- Indicates that 24 VDC (or higher) relay power is available.

+10V (Green):

- Indicates that 10 VDC (or higher) is available to power the controllers.

+5V (Green):

- Indicates that the 5 VDC power is available to the output multiplexers for card slots P4, P5 and P6.

CARD SLOTS:

Slots P1, P2 & P3:

- These card slots have the XE-IO output drivers directly connected to relay connectors P1, P2 and P3.
- An XE-IO board installed in any of these slots, must be configured for direct control of the outputs.
- A XE-CM can be installed in any of these slots.

Slots P4, P5 & P6:

- These card slots have the XE-IO output drivers tied to relay connectors P4A, P4B, P5A, P5B, P6A & P6B through a multiplexer circuit.
- An XE-IO board installed in any of these slots, must be set for multiplexer control of the outputs.
- A XE-CM can be installed in any of these slots.

CONNECTORS:

P1, P2 & P3 Output Relay Edge Connector:

- Altech's standard relay edge connector.
- XE-IO boards must be set for direct control of outputs

P4A, P5A & P6A Output Relay Edge Connector:

- Altech's standard relay edge connector.
- Controlled as Outputs 1-8
- XE-IO boards must be set for multiplex control of outputs

P4B, P5B & P6B Output Relay Edge Connector:

- Altech's standard relay edge connector.
- Controlled as Outputs 9-16
- XE-IO boards must be set for multiplex control of outputs

P7 Local RS-485 LAN Terminal Block:

- Terminal block can be un-plugged for wiring and servicing.
- All the boards in the card slots are tied to this terminal block.

P8 24 VAC Class 2 Power Terminal Block:

- Provides a connection of the 24 VAC Class 2 transformer. (40 VA recommended)

P11 10 VDC and 24 VDC Power Terminal Block:

- Can provide 10 VDC and 24 VDC to other controllers not mounted in the card cage.
- Note: Fuse F2 limits 24 VDC current being supplied to external devices. The 24V LED may still be On even though F2 may be blown.

OTHER SERVICEABLE COMPONENTS :

F1 24 VAC Supply 5X20 mm Fuse, 2 Amp.

F2 24 VDC Supply to P11 Pico Fuse, 2 Amp. (PN: 54019)

F3 10 VDC Supply Pico Fuse, 2 Amp. (PN: 54019)

Spare Pico Fuse, 2 Amp. (PN: 54019)

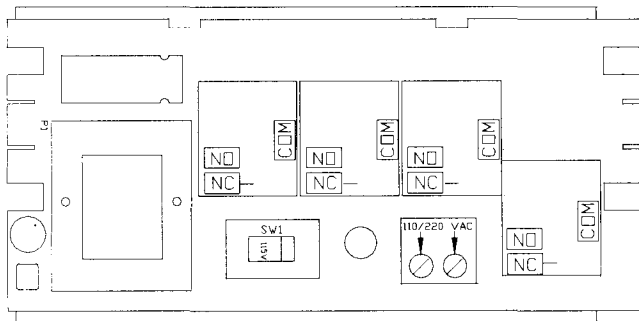


Figure C-4: XE-PWR4 Power / Relay Board

XE-PWR4 POWER/RELAY BOARD:

GENERAL INFORMATION:

The XE-PWR4 board serves both as a power supply and an output relay board for an XE-IO board. It can be powered either by 115 VAC or 230 VAC. The power must match the switch position of SW1.

STATUS LED'S:

+24V (Green):

- Indicates that 24 VDC relay power is available.

Output 1, 2, 3, 4 (Red):

- Indicates that the associated relay is energized.

CONNECTORS:

TB1 Line Voltage Terminal Block:

- The voltage to be applied to terminals 1 and 2 should match the indicated supply voltage on switch SW1.

P1 Relay Output Edge Connector:

- Altech standard eight relay output connector.
- In addition to connecting all eight outputs from an XE-IO board, it also has the ability to supply 10 VDC to an XE-IO board.

P2 Relay Output Edge Connector:

- Altech standard eight relay output connector.
- This connector does not have the ability to supply 10 VDC to an XE-IO board.

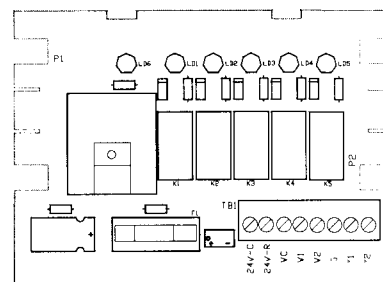


Figure C-5: XE-PLV5 Power / Relay Board

XE-PLV5 POWER/RELAY BOARD:

GENERAL INFORMATION:

The XE-PLV5 board serves both as a power supply and an output relay board for an XE-IO board. It is to be powered by a separate 24 VAC Class 2 supply transformer from the transformer used to by the HVAC unit. It will duplicate the switching action of a low voltage thermostat controlling a roof-top or split HVAC unit with up to two stages of cooling, two stages of heating and a single speed fan.

STATUS LED'S:

LD1 (Yellow):

- Indicates that relay K1 is energized (Fan)
- Equivalent to "Fan On" Thermostat switch position

LD2 (Green):

- Indicates that relay K2 is energized (Cool1)
- This would energize the Fan output if LD1 is Off.

LD3 (Red):

- Indicates that relay K3 is energized (Heat1)

LD4 (Green):

- Indicates that relay K4 is energized (Cool2)
- Note: Cooling stage 2 is can not be energized unless Cool 1 is energized (K2).

LD5 (Red):

- Indicates that relay K5 is energized (Heat2)

LD6 (Green):

- Indicates that 24 VDC relay power is available.

CONNECTORS:

TB1 Terminal Block:

- Terminals are identified the same as a low voltage thermostat. () indicates common wire colors.
 - 24V-C: 24 VAC power
 - 24V-R: 24 VAC power
 - WC: Heating and Cooling Common (Red)
 - W1: Heating, 1st. Stage (White)
 - W2: Heating, 2nd Stage
 - G: Fan (Green)
 - Y1: Cooling, 1st Stage (Yellow)
 - Y2: Cooling, 2nd Stage

P1 Relay Output Edge Connector:

- Altech standard eight relay output connector.
- In addition to connecting all eight outputs from an XE-IO board, it also has the ability to supply 10 VDC to an XE-IO board.

P2 Relay Output Edge Connector:

- Altech standard eight relay output connector.
- This connector does not have the ability to supply 10 VDC to an XE-IO board.

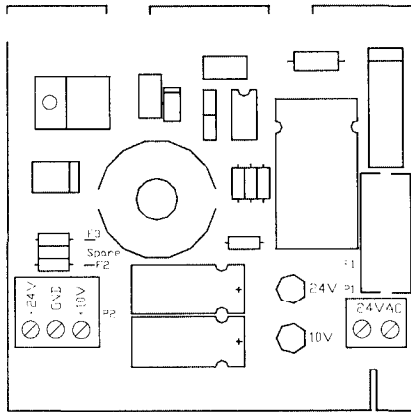


Figure C-6: XE-PLV Power Supply

XE-PLV POWER BOARD:

GENERAL INFORMATION:

The XE-PLV board serves as a power supply board for up to 10 XE-IO and XE-CM boards. It is powered by a 24 VAC, 40 VAC, Class 2 transformer.

STATUS LED'S:

+24V (Green):

- Indicates that 24 VDC relay power is available.

+10V (Green):

- Indicates that 10 VDC controller power is available.

CONNECTORS:

P1 24 VAC Class 2 Power Terminal Block:

- Provides a connection of the 24 VAC Class 2 transformer. (40 VA recommended)

P2 10 VDC and 24 VDC Power Terminal Block:

- Can provide 10 VDC and 24 VDC to other controllers not mounted in the card cage.
- Note: Fuse F2 limits 24 VDC current being supplied to external devices. The 24V LED may still be "On" even though F2 may be blown.

MOUNTING:

- The XE-PLV mounts in a 3.25" wide snap track.
- Many of the XE series of products also mount in 3.25" snap track. This allows the components to be easily combined into integrated assemblies.

OTHER SERVICEABLE COMPONENTS :

F1: 24 VAC Supply 5X20 mm Fuse, 2 Amp.

F2: 24 VDC Supply to P11 Pico Fuse, 2 Amp (PN: 54019)

F3: 10 VDC Supply Pico Fuse, 2 Amp. (PN: 54019)

Spare Pico Fuse: 2 Amp. (PN: 54019)

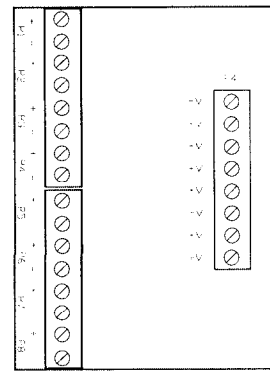


Figure C-7: XE-TERM Terminal Interface

XE-TERM BOARD:

GENERAL INFORMATION:

The XE-TERM board provides a means of terminating sensors using screw terminals in addition to the standard edge connectors P1-P8 on the XE-IO board. All the connections that occur on the eight input terminals P1-P8 are available on the XE-TERM board.

The XE-TERM plugs onto the XE-IO board using the three plastic standoffs as guides. It can be installed and removed without removing power to the XE-IO board.

Note: Use of the XE-TERM board does not prevent the use of the edge connectors on the XE-IO board. They can be used in conjunction with each other.

Terminals:

P1-P8 +:

- Provides a connection of the eight analog inputs. They are connected to +5.12 VDC via R3 on the XE-IO board.

P1-P8 -:

- All are connected to the ground side of the +5.12 VDC power.

+V:

- All are connected to the positive voltage. It can be either +10 VDC (typ.) or 5.12 VDC based on the position of jumper JP1 on the XE-IO board.

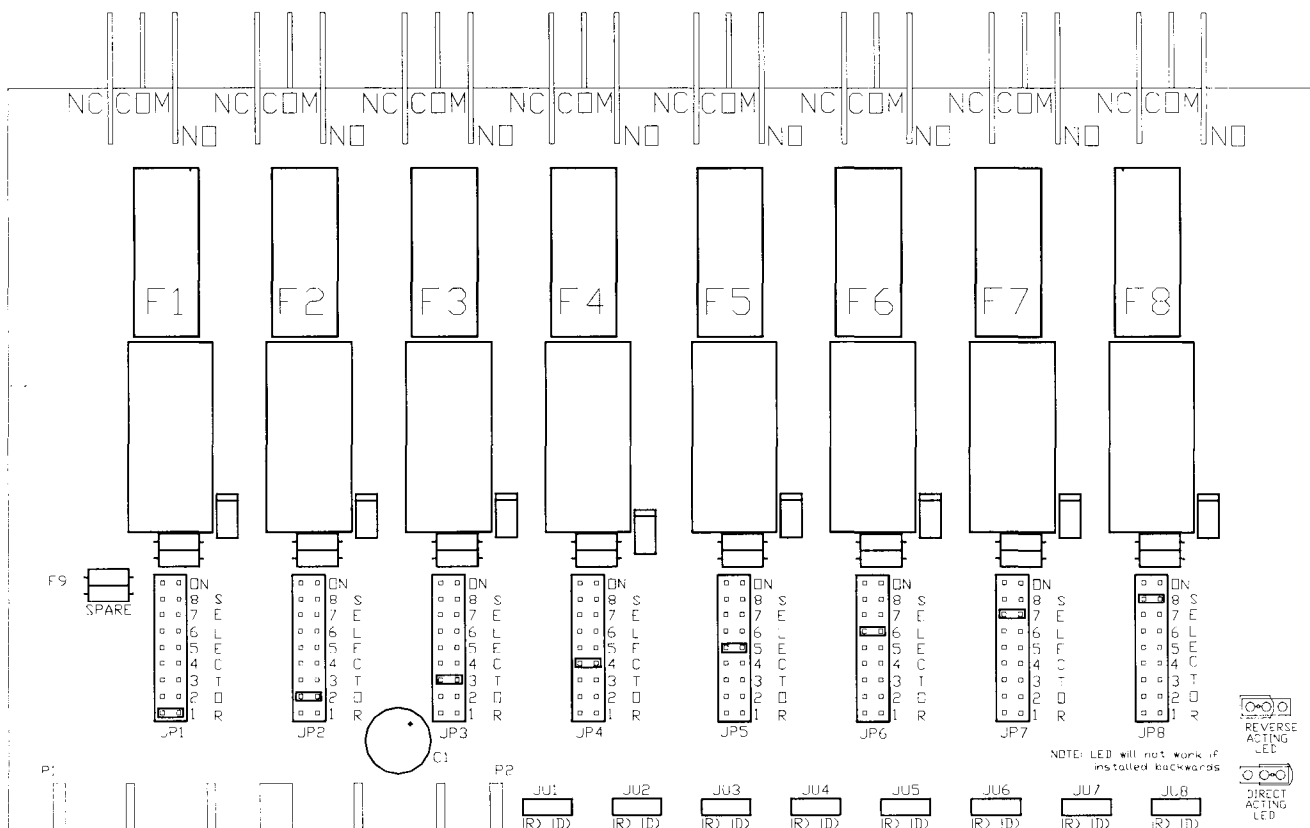


Figure C-8: CRX-8J Relay Board

CRX4J / CRX8J RELAY BOARD

GENERAL INFORMATION:

The CRX4J and CRX8J relay boards provide four (CRX4J) or eight (CRX8J) addressable relays that can be set to operate off of any of the eight relay drive channels from the XE controller.

CONFIGURATION:

JP1-JP8 (JP1-JP4 for CRX4J)

- The position of a shunt on these 9 X 2 jumper pins configures the associated relay with one of eight relay output channels available from the XE-IO board or XE-MB.
- The standard position for the shunts is shown in Figure C-8. In this case, each relay is associated with the output channel. However, if the need arose, it is possible to have multiple relays assigned to a single output channel.
- If it is desired not to assign a relay or to prevent it from being energized, place the configuring shunt on only one pin.
- If it is desired to force the output on all the time, then put the shunt across the pins identified as "ON" to override the relay into the energized state.

JU1-JU8 (JU1-JU4 for CRX4J)

- LED's installed in these lead sockets indicate the status of the device being controlled by the relays.
- The LED's are inserted into two of the three lead sockets of JU1-JU8. If it is inserted in the left two sockets, then the LED will be "ON" when the relay is de-energized (Reverse Acting or "RA"). If the LED is installed in the right two sockets, then the LED will be "ON" when the relay is energized (Direct Acting or "DA")
- Note proper way to install the LED shown in the drawing in the lower right corner of the board. If the LED is installed backwards, it will not operate.
- It is recommended that needle pliers be used to install and remove the LED's from their sockets.
- The CRX4J and CRX8J come standard with red color LED's. Alternate color LED's are available (green and yellow) when it is desired to help identify the controlled device by color.

FUSES:

F1-F8:

- 5X20 mm Fuse, 1 Amp. @ 250 VAC
- Fuse protects each relay from excessive current

F9:

- Pico Fuse; .250 Amp (PN: 54020)
- Restricts the amount of 24 VDC drive current that can be fed to the relays.

Spare:

- Pico Fuse; .250 Amp (PN: 54020)
- Not connected to any circuitry.
- Can be used to replace F9

RELAY STATUS LEDS:

- Red LEDs (Bag of 25 pieces) (PN: 50016)
- Green LEDs (Bag of 25 pieces) (PN: 50017)
- Yellow LEDs (Bag of 25 pieces) (PN: 50018)

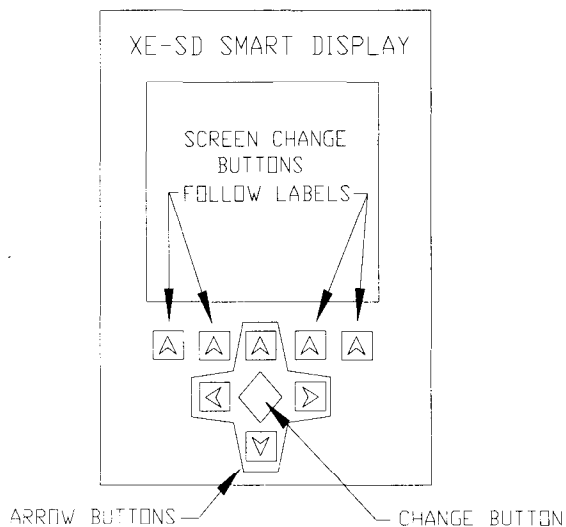


Figure C-9: XE-SD SMART DISPLAY

GENERAL INFORMATION:

The XE-SD Smart Display provides a stand-alone interface to the XE product line. For each Smart Board controller, it provides the following interfaces:

- A status summary
- Ability to view and change primary setpoints
- Ability to view and clear alarms
- Ability to view sensor history logs.

There are nine buttons that are divided into three groups.

- Screen Change Buttons.
- Arrow Buttons
- Change Button

The operation of each group is based on the page that is being displayed at the moment. In general, the Screen Change Buttons help navigate between pages, whereas the Arrow Buttons are used to navigate within the page when the display is not in scroll mode. The Change Button is used only when starting the process of making a setting change.

STARTUP MODE:

The XE-SD Smart Display automatically checks the controllers on restoration of power. First it verifies the communication to the XE-CM (Communication Manager). It then checks all the controllers with id's up to the Max Controller Number setting stored in the XE-CM. During that process it will send single line messages to the display indicating where it is in the startup process. If a new type controller is detected, the Smart Display will perform a setpoint read for that controller. Any controller not online when the Smart Display is powered up, will not be included in the scroll of Home pages.

Note: Every night at 12:40 AM, the Smart Display will read all the setpoints for all controllers in order to pick up any changes that might have been made via EagleTool.

SCAN MODE:

After the power-up routine, the XE-SD Smart Display automatically presents the Home Page for each of the controllers connected to the XE-CM. Every 15 seconds, the Home Page for the next controller in numeric order is displayed. The display defaults to this mode if the display is stopped on a page and a key is not pressed for 10 minutes.

Button Operation:

Button #1 "STOP SCAN": Stop Scan on current Home Page

Button #2: No function

Button #3: No function

Button #4 "ADMIN": Go to Administration Page

Arrow Buttons: No function

Change Button: No function

Defrost Cntl	TD8 Home
Alarm	Cntl: 2
Start-on Time #2	Imp Stat
SA01: Multideck Dairy	33.7F
SA02: Multideck Meat	26.6F
SA03: Smoked Meat	35.0F
SA04: High Back Prod	43.7F
SA05: Produce Cooler	44.1F
SA06: Meat Cooler	38.5F
SA07: Dairy Cooler	53.6F
SA08: Deli Cooler	35.7F

Figure C-10: HOME PAGE (Scan Stopped)

Each type of Smart Board controllers (XE-IO) has it's unique Home page. The picture above Each is arranged in a grid pattern that presents the important values and setpoints for that type controller. Every 15 seconds, the Home Page for the next controller in numeric order is displayed. Since each controller has a unique Home page, scroll to the right using the Right arrow button to find all the setpoints that can be changed for that type of controller. In column 2, line 2 of each controller's Home Page shows if there are any active alarms on that controller. To get the details, go to the Alarm Page. See the controller application pages for description what is displayed and what can be changed on each controller's home page.

Button Operation:

Button #1 "START SCAN": Resumes Scan Mode

Button #2 "GOTO ALARM": Change to Alarm Page

Button #3 "NEXT CNTL": Change to next controller

Button #4 "PREV CNTL": Change to previous controller

UP/DN Arrow Buttons: Moves the triangle cursor up and down

LEFT/RIGHT Arrow Buttons: Changes the displayed column

Change Button: Will allow changing a value of the value to the right of the triangle cursor.

XE-TD8 Home Page: The following can be viewed:

- Defrost Status (changeable)
- Number of Defrosts Per Day (changeable)
- First Defrost Time (changeable)
- Defrost Failsafe and Drain Times (changeable)
- Termination and Temperature Control (changeable)

XE-MCC Home Page: The following can be viewed:

- Manifold Pressure and Compressor Status
- Cut-In and Cut-out Settings (changeable)
- Suction and High Head Limits (changeable)

XE-CDF Home Page: The following can be viewed:

- Condensing Pressure and Fan Status
- Cut-In and Cut-out Settings (changeable)
- Split settings (changeable)

XE-HVAC Home Page: The following can be viewed:

- Zone Temperatures
- Zone Heating and Cooling Setpoints (changeable)
- Time of Day Schedule Settings (changeable)

ADMINISTRATION PAGE

The Administration Page allows the CM's time and date to be changed. The CM maintains the time and date that is periodically broadcast to the XE-IO boards.

Button Operation:

Button #1 "START SCAN": Resumes Scan Mode

Button #2 "SCAN CNTLS": Reloads the controller info

Button #3 "INC CNTRST": Increases display contrast

Button #4 "DEC CNTRST": Decreases display contrast

UP/DN Arrow Buttons: Moves the triangle cursor up and down

LEFT/RIGHT Arrow Buttons: No function

Change Button: Will allow changing a value of the value to the right of the triangle cursor.

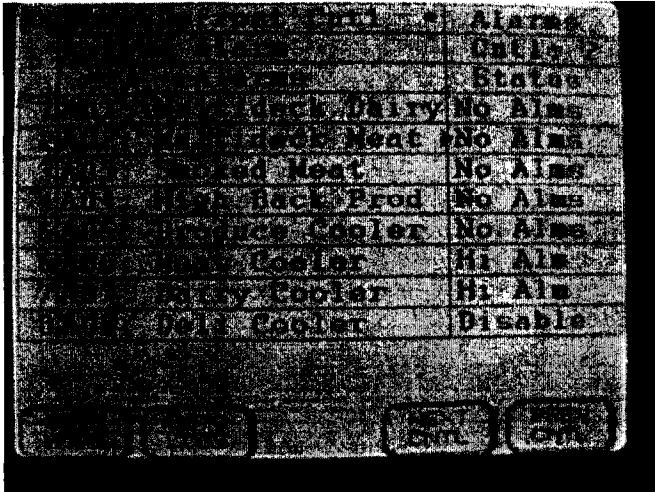


Figure C-11: Alarm Page

The Alarm Page presents the status of the 8 alarms in each XE-IO controller. The column to the right (not shown) also displays the current value of the sensor for each alarm.

Button Operation:

Screen Change Button #1: Go to Home Page

Screen Change Button #2: Go to Log Page

Screen Change Button #3: Changes to Control with next ID #

Screen Change Button #4: Changes to Control with previous ID #

UP/DN Arrow Buttons: Moves the triangle cursor up and down

LEFT/RIGHT Arrow Buttons: Changes the displayed column

Change Button: Will allow resetting an active alarm if the alarm is configured for "Manual Reset".

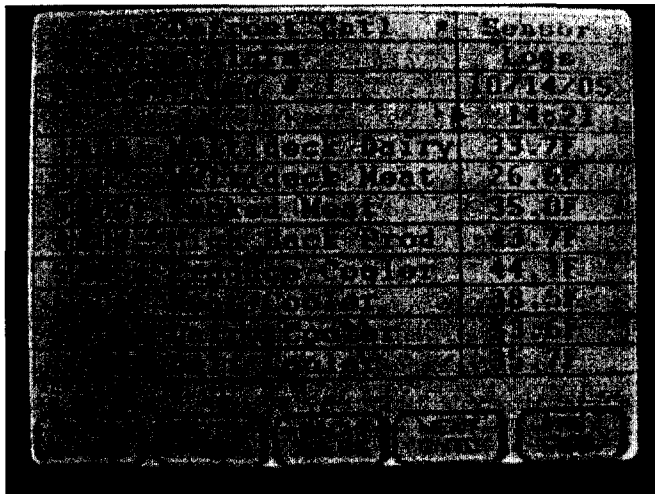


Figure C-12: Log Page

The Log Page provides access to the current value plus stored logs in each XE-IO controller. There are a total of 1000 entries for each logged sensor. The logs are returned in groups of 5. When the Smart Display needs to go get the next group of 5, the value will go blank while it retrieves the values from the controller.

Button Operation:

Screen Change Button #1: Go to Alarm Page

Screen Change Button #2: Go to Home Page

Screen Change Button #3: Changes to Control with next ID #

Screen Change Button #4: Changes to Control with previous ID #

UP/DN Arrow Buttons: Jumps back / forward 20 logs at a time

RIGHT/LEFT Arrow Buttons: Shows the previous/next set of logs

Change Button: No function.

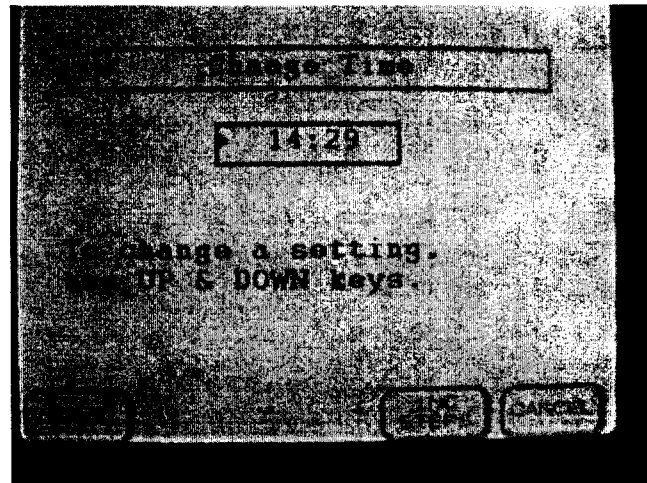


Figure C-13: Change Box

A setpoint can be changed via the UP and DOWN buttons. If the button is held down, it will increment or decrement about 1 per second. To increase the rate of change with each button press, press the "INC STEPS" button. The INC STEPS button label will change to DEC STEPS. Press the DEC STEPS button when it is desired to decrease rate of change. When the SAVE button is pressed, the Smart Display will write the change to the controller and then turn around and read the value again. This provides confirmation that the change was made.

Button Operation:

Screen Change Button #1: Save the change to the controller

Screen Change Button #2: No function

Screen Change Button #3: Increase / decrease change step size

Screen Change Button #4: Cancel change.

UP/DN Arrow Buttons: Increase / decrease value in step sizes

LEFT/RIGHT Arrow Buttons: No function

Change Button: No function.

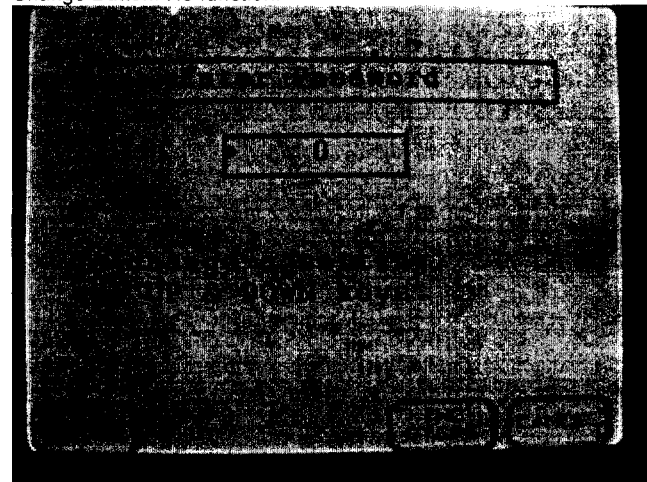


Figure C-14: Password Page

When a change is requested, if the current password does not match the controller's password, then the Smart Display will ask for a password. The password is a number that is entered in the same manner as other changes are made. Each controller (including the CM) can have their own password. Resuming the Scan Mode clears the password.

Button Operation:

Screen Change Button #1: Save the change to the controller

Screen Change Button #2: No function

Screen Change Button #3: Increase / decrease change step size

Screen Change Button #4: Cancel change.

UP/DN Arrow Buttons: Increase / decrease value in step sizes

LEFT/RIGHT Arrow Buttons: No function

Change Button: No function.

EAGLETOOL OPERATION:

EagleTool is a Windows based software program used to view the status and to make changes to values in the XPRT Eagle controllers. When the program is launched, it brings up the "List of Sites" Screen (See Figure C-16). Values displayed from the EagleTool database reflect the last data received from that controller. To get current values, communication must be established with the controller by going "On-Line" by selecting the green button in the upper left corner of the EagleTool display (See Figure C-15). One can also go "On-Line" with a site by selecting the site name in the "List of Sites" Screen.

- EagleTool has some conventions that are used to help a user navigate and use EagleTool:
- Text that is blue in color indicates a link that can be selected with a left button click of the mouse.
 - Changes to Setpoints and Configuration values can not be made unless the controller is "On-Line".
 - Text that has a background color that is light blue can be changed by a left button click of the mouse. Then make entries in the Change Box.
 - If the Change Box indicates that a drop-down menu is available by showing an arrow to the right of the value, then only values from the drop-down menu can be selected.
 - Changes made through the Change Box are stored in the computer and displayed with a light blue text color until they are sent to the controller using the "Down-Load" button. The "Down-Load" button is the gray button located in the upper right corner of the EagleTool display and has the image of the Space Shuttle (See Fig C-15).



Figure C-15: EagleTool Buttons

- **Far Left Button:** Brings up the "Controllers" page (See Figure C-17).
- **Second Button from Left (Green):** "Go On-Line". It will attempt to start communications with the site.
- **Third Button from Left (Red):** "Go Off-Line" It will start the process of stopping communication with the site.
- **Far Right Button (Shuttle):** Sends changes to current controller.

Name	Address	City/State	
abc	Street Address	City State	Configure
Altech Facility	4910 Wright Road, Suite 120	Stafford Texas	
Demo			Configure
Direct Connect Test			Configure
Modem Test			Configure
Test 2			Configure
Test Site			Configure
Test21			Configure
Test CM			Configure
XE-ASC Test			Configure
XE CDF Test			Configure
ASC			Configure

Figure C-16: List of Sites Screen

- EagleTool is required to configure the XPRT Eagle controllers. When the program is started, the program defaults to the "List of Sites" screen. It lists, in alphabetical order, all the sites currently stored in the database. The following can be accessed:
- **Site Name:** Opens that site's Controllers Page (See Fig. C-17) either in the "On-Line" mode where communication is established with the site or "Off-Line" where only the stored database values are displayed.
 - **Configure:** Opens site's configuration (See Figure C-21).
 - **Create Site:** Starts the Site Creation Wizard.

Unit	Type	Demo Controller	Last Updated	Comm.
1	XE-CM	Communication Mgr	175d 23h 55m 32s	
1.1	XE-MCC	Multiple Control Unit	257d 19h 52m 41s	
1.2	XE-TOR	Temp/Discharge Unit	257d 19h 52m 39s	
1.3	XE-HVAC	HVAC Control Unit	257d 19h 52m 44s	

Controllers - Offline

Offline

Menu

- List of Sites
- Controllers
- Sensor Logs

Figure C-17: Controllers Screen

- This screen provides a listing of all controllers (Including XE-CM's) for the site. The table has the following columns:
- **Unit:** The controller addresses in numeric order. The addresses consist of the CM# and the XE-IO address.
 - **Type:** Controller type
 - **Name:** Controller name. If the name appears in the color red and has an "*" at the end of it, then the controller either has an active high or low alarm or there an active override. The "Detailed Status Screen" provides more information.
 - **Last Updated:** Time since EagleTool last communicated with the controller. When in the "On-Line" mode, EagleTool will constantly try to communicate with the controllers in sequence and the time shown should periodically reduced.
 - **Comm:** If a controller fails numerous attempts to communicate, then "Fail" will appear here and EagleTool will stop trying to communicate with that controller. To clear the failure and have EagleTool retry to communicate, take the site "Off-Line" and then retry to go "On-Line".

- The Menu on the left has the following selections:
- **List of Sites:** Returns to List of Sites screen.
 - **Controllers:** This screen (No change).
 - **Sensor Logs:** Selects the Sensor Log Screen

In addition, the status page for each of the controllers can be accessed by clicking on the controller's name. The controller status screens are shown in the Application Section F. Note: Clicking on the name of a XE-CM will bring up the CM Summary Screen (See Figure C-18). It is a summary for the status of all controllers connected to that XE-CM's RS-485 network.

Model Type: XE-CM	Revision: 30
Serial Number: 956	Number of Resets: 53
Time (Hr:Min): 09:12	Time of Last Reset (Hr:Min): 15:05
Date (MM/DD/YY): 12/14/2007	Date of Last Reset (MM/DD/YY): 11/12/2007
Suc. Press -23F (PSI): 20.5	>12
Suc. Press -20F (PSI): 51.7	3--
In-4s A1: Temp Ice Cream: -3.9 Ref	None: 4.0 Sat
In-6s A2: Temp Walk-In FF: -7.9 Ref	None: 4.0 Sat
None: 4.0 Sat	None: 4.0 Sat
None: 4.0 Sat	None: 4.0 Sat
In-1s A3: Temp Dairy Cases: 34.9 Ref	In-6s A7: Temp Meal Prep: 44.7 Sat
In-2s A4: Temp Dairy Cooler: 33.0 Sat	None: 4.0 Sat
In-3s A5: Temp Produce Ch: 40.8 Def	None: 4.0 Sat
In-4s A6: Temp Meal Cooler: 38.8 Ref	None: 4.0 Sat
In-1s A8: Temp Fresh Meat: 30.0 Ref	In-6s Spare: 33.2 Sat
In-2s A9: Temp Smoked Meat: 33.5 Sat	In-7s Spare: 33.2 Sat
In-3s A10: Temp Prod Case: 44.6 Sat	None: 4.0 Sat
In-5s Spare: 33.2 Sat	None: 4.0 Sat
Discharge Pressure (PSI): 208.1	Outside Air Temp (F): 64.5
Drop Leg Temperature (F): 84.4	
Cond Fan Ctrl: >12-	
Zone 1 South (F): 72.9	Zone 2 Dry North (F): 71.6
Zone 1 RH (%): 85	Zone 3 RH (%): 48
Zone 2 Dry South (F): 71.8	Zone 4 Frozen Food (F): 73.6
Zone 2 RH (%): 40	Zone 4 RH (%): 39
HVAC Units	
In-1s Zone 1 South Cool: 1	None
In-3s Zone 2 Dry South A1 Off	None
In-5s Zone 3 Dry North Heat: 1	None
In-7s Zone 4 Frozen Food A1 Off	None

Figure C-18: CM Summary Screen

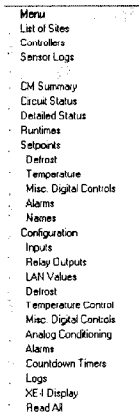


Figure C-19: XE-TD8 Menu

The XE-TD8's Menu is shown in Figure C-19. It represents a typical menu for any of the XE-IO controllers. The selections indented under the "Setpoints" will vary from controller to controller but represent links to setpoint screens. The indented selections under the "Configuration" heading link to the Configuration screens for that model of XE-IO controller.

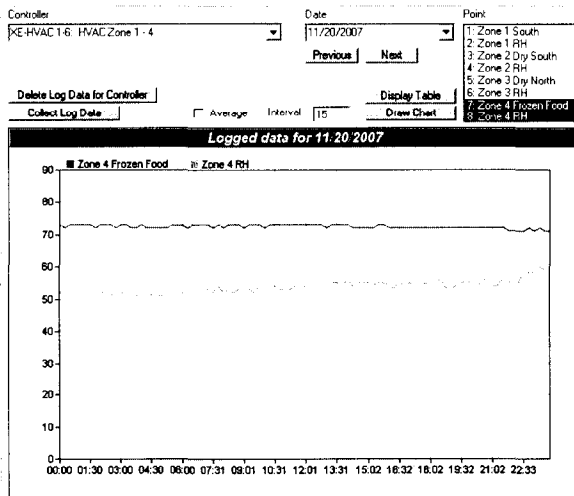


Figure C-20: Sensor Logs

If the "Sensor Logs" menu item is selected from the Controllers Screen (or EagleTool can retrieve and display the log in either a Table or Chart (Graph) format organized in a daily basis. Once the data is retrieved from the controller, it is stored in the EagleTool database. This screen has the following operator selections:

- **Controller:** Selects the XE-IO controller
- **Date:** Dates that have stored data.
- **Previous Button:** Selects the previous day's data
- **Next Button:** Selects the next day's data.
- **Points:** Allows selection of one or more values to be displayed. Hold down the "Ctrl" button while left clicking the point to select multiple points.
- **Display Table Button:** Displays data in a numeric table.
- **Display Chart:** Displays sensor data in a graph format.
- **Delete Log Data for Controller Button:** This button will clear the sensor logs for this controller. This operation is normally done only if the sensor log configuration for the controller has been changed.
- **Collect Log Data Button:** Collects the stored log data from the selected controller. Note: Controller must be "On-Line" for the logs to be collected.
- **Average / Interval:** The displayed data will be averaged for the interval indicated. Note: For proper display, the interval time must be larger than the individual log interval for the raw sensor data retrieved from the controller.

Figure C-21: Site Configuration

The Site Configuration Screen is accessed by clicking on the "Configure" message associated with each site on the List of Sites Screen. It contains information describing the site as well as parameters for communicating with a site.

Site Configuration Data:

- **Site Name:** Enter name (up to 40 characters). Note that the order the sites are presented in the List of Sites screen by alphabetical order.
- **Address / City / Zip:** For informational purposes only.
- **Phone / Manager:** For informational purposes only.
- **Connection Type:** Select one of the connection types:
 - **Direct Serial:** Connect to one of the PC's serial ports.
 - **Dial Up:** Connection via a telephone modem
 - **Direct Network:** Connect via Ethernet with each XE-CM addressed directly.
 - **Router Network:** Connect via Ethernet with a router using port redirection. Typically used when only one IP address is available.
 - **Serial IP Converter:** Not currently supported.
- **Connection Number:** Enter phone number if Dial Up is selected or the "Base IP Address" if either Direct Network or Router Network is selected. See XE-CM Configuration.
- **Serial Port Number:** If Direct Serial or Dial Up is selected, then the Com Port must be selected. Note: Only Com 1 through Com 4 is permitted. If the Com Port assigned by the computer is higher than 4, then the computer's Com Port for the modem or serial port must be reconfigured.
- **Serial Port Settings:** This should be set for "9600" unless bypassing the XE-CM and serially communicating directly with XE-IO boards. In that case, set the speed to "19200".
- **Modem Initialization String:** Recommend entering: ATH
- **Auto Connect Delay:** This is the time in hours in which EagleTool will automatically download the logs from the site. Setting the value to "0" disables the auto collection. The Background Version of EagleTool must also be running for the logs to be collected.
- **Next Collection TimeDate:** : The time for the next log collection (This value plus the Auto Connect Delay.).
- **Create Site Button:** Select once the values have been entered and the program will launch a Wizard to help in creating the new site.
- **Cancel Button:** Aborts the Create Site process.
- **Re-Scan Site Button:** Allows controllers to be added or removed from a site.
- **Up-Date Database Button:** Clears some database errors that might cause data display issues. Can be run at anytime without loss of data.

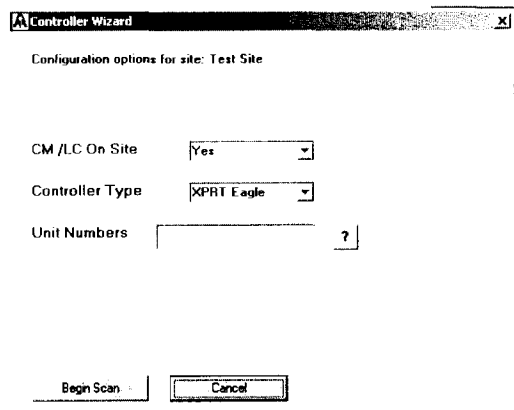


Figure C-22: Site Creation Wizard

If "Create Site" is selected from the List of Sites Screen, then EagleTool will start the Site Creation Wizard. The wizard starts by bringing up the Site Configuration Screen (Figure D-17). When completed with the entries on that page, select "Next" then the Wizard will bring up Figure C-18 and try to establish a connection to the site.

This screen starts the process for scanning a site for controllers. The scanning process determines which types of controllers are on a site and creates database entries to allow the proper display of the controller's status and settings.

- **CM / LC On Site:** Enter "Yes" if connecting via a XE-CM. Enter "No" if connecting directly to the XE-IO controllers. The LC refers to XPRT legacy controller (XPRT1, XPRT4 & XPRT5) interface.
- **Controller Type:** Select "XPRT Eagle" only if communicating with a site with XPRT legacy controllers.
- **Unit Numbers:** Normally selects the XE-CM address to be scanned. If directly communicating with XE-IO boards or with XPRT legacy controllers, then select their address.
- **Begin Scan Button:** Starts the site scan. Note: This button will be "grayed-out" until the communication link is established.
- **Cancel:** Stops the Site Scan.

While scanning, the screen will be similar to the Listing of Sites screen. When it is finished it will ask if you want to accept the scan results. If all the controllers are in the list, left-click the "Yes" button and then it will ask if you are ready to build the site. Left click "Continue". This will make the entries in the database for all the controllers detected. When it completes making the database entries, it will ask if you want to "Read Controllers" or "Continue". As a general rule, you left click "Read Controllers". This operation takes roughly 5 minutes per controller but only needs to be done once. It reads the settings stored in the controllers and stores it in the database. Usually it best to wait until the site is read before viewing or making changes to controller setpoints. However, if in a hurry, the complete read can be skipped and one can go directly to the EagleTool screen directly. EagleTool will attempt to read the data required to display the data correctly. All controllers have a "Read All" menu selection. This selection forces EagleTool to read all the data for that controller.

XPRT Eagle New Site Setup Guide:

1. Determine what controllers will be needed and generate a Points List for each controller (See Figure E-11). Note the desired detail number for each input and indicate if the desired output is to be controlled from a NO or NC contact.
2. Wire the sensors to the XE-IO boards per the Points List.
3. Wire the XE-CM to the XE-IO controllers into the desired RS-485 communication sub-network. See instructions on Page E-3.
4. Route power to the controllers as shown on Page E-1.
5. Set the Rotary Switch on each XE controller board to the designated address. Normally start at 1 and increment up. Each XE controller on the network must have a different address.
6. Set the Rotary Switch on the XE-CM to the desired sub-network address. Normally starting at 1. Note: The XE-CM's address can be the same as one of the XE controllers on it's sub-network. Address Example: 1-1, 1-2
7. Connect the XE-CM to a PC running EagleTool either by:
 - Serial connection using the Direct Connect cable (PN: 54006) to edge connector P5 on the XE-CM. Note: The edge connections are on the bottom of the board.
 - Serial connection using the Modern Connect cable (PN: 54008) to edge connector P5 on the XE-CM. Note: The connections are on the bottom of the board.
 - Ethernet connection from a PC to the XE-CM.
8. Start EagleTool
9. Select "Create Site" from the menu and follow the Site Creation Wizard (See Figure C-22) and let it guide the Site Creation through the scanning and reading process.
10. For each XE-IO controller, select in order the following menu items and set the values as required. For a cleaner Detailed Status Display set the Status Display values.
 - Names
 - Relay Outputs
 - Inputs
 - LAN Values
 - Analog Conditioning
 - Misc. Digital Control Configuration
 - Application Functions Configuration
 - Misc. Digital Control Setpoints
 - Application Functions Setpoints
11. Connect up the relay outputs and analog outputs.
12. Exercise each of the output relays to verify it operates as expected.
13. Start testing operation by overriding Input and LAN values and seeing if the application functions control the Outputs as expected.
14. Disable all overrides of the inputs, LAN values and outputs and allow the controllers to operate in automatic mode.
15. Set the values in the auxiliary functions as required:
 - XE-CM Time and Date
 - Alarm Configuration and Setpoints
 - Log Configuration
 - Runtimes
 - XE-CM Alarm Configuration and Destinations