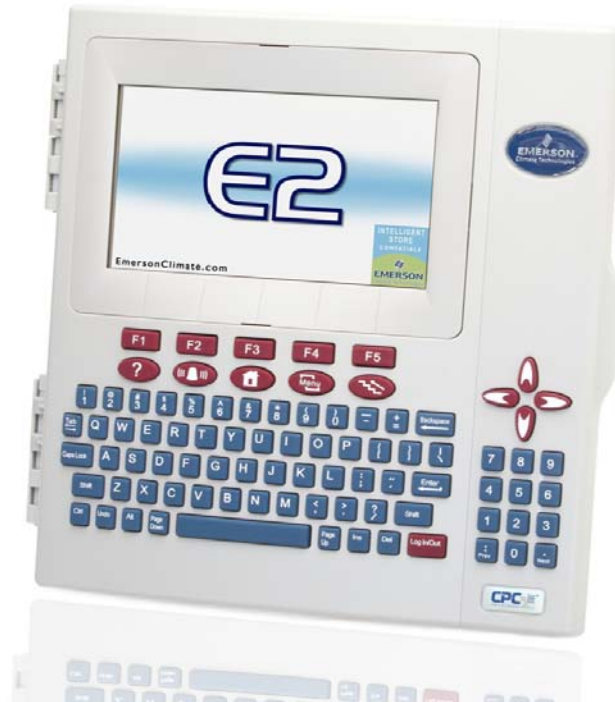




Quick Start Guide for E2 RX Refrigeration, BX HVAC, and CX Convenience Store Controllers



Applicable to E2 firmware versions 4.0 and above



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FCC COMPLIANCE NOTICE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CE COMPLIANCE NOTICE

Class A Product Information for E2 Controllers:

The Retail Solutions Einstein and E2 controllers are Class A products. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. This covers:

- All E2 family product types: RX - Refrigeration Controller (845-xxxx), BX - Building/HVAC Controller (845-xxxx), CX- Convenience Store Controller (845-xxxx), and all version models: (300, 400, 500).

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1 Quick Start

This manual covers what to do when you are programming an E2 for the first time.



The manual includes logging on, specifying information about I/O boards and application types, and other topics related to E2 programming and navigation. For more information, refer to the complete E2 Manual P/N 026-1614.




1.1 Logging On



Figure 1-1 - User Login Dialog Box

When the E2 is powered up for the first time, the first screen displayed after initialization is the User Login screen.

1. Enter "USER" in the Username field.
2. Press .
3. Enter "PASS" in the Password field.
4. Press .

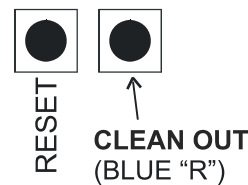
Logging into and out of the E2 controller can be done at any time by pressing the  key on the E2 keypad. If you are currently logged out, pressing  will bring up the User Login dialog box. If you are already logged in, pressing  will immediately log you out and return you to the E2 home screen.

1.2 Cleaning Out the Controller

Cleaning out the E2 controller needs to be done if:

- If you are programming your E2 controller for the first time.
- If all of the settings need to be cleared.
- If the program settings are unknown.

Open the E2 controller panel. There are two buttons located midway down on the main board. These buttons are used to perform various hardware functions. (For more information about E2 hardware, refer to the E2 manual P/N 026-1614.)



• **Reset Button** - The button labeled "RESET" on the main board resets the controller. Pressing and holding this button for one second will cause the E2 to reset and retain all programmed applications, logs, and other data stored in memory.

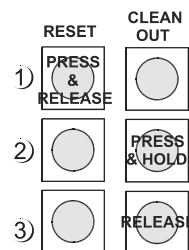
- **Clean Out Button** - The button labeled CLEAN OUT on the controller is used to perform a function called **clean out**. Using this button in conjunction with the Reset Button will cause a clean out, which is a reset that **erases all data from memory**. The E2 will re-boot after a clean out with all programmed applications, logs, and other data erased.

Clean outs are also commonly called Blue "R" resets, named for the key presses required to clean out Retail Solutions' previous generation of controllers, REFLECTS.

Performing a Clean Out



CAUTION: A clean out will erase all programmed parameters from memory. Do not follow these instructions unless you are absolutely sure you wish to remove all applications and logs from memory.



1. Press and RELEASE the Reset Button quickly. The screen will clear.
2. Press and Hold the Clean Out button.
3. When "CLEANOUT" appears in large text across the screen, RELEASE the Clean Out button.

1.3 Setting Number of Network Devices

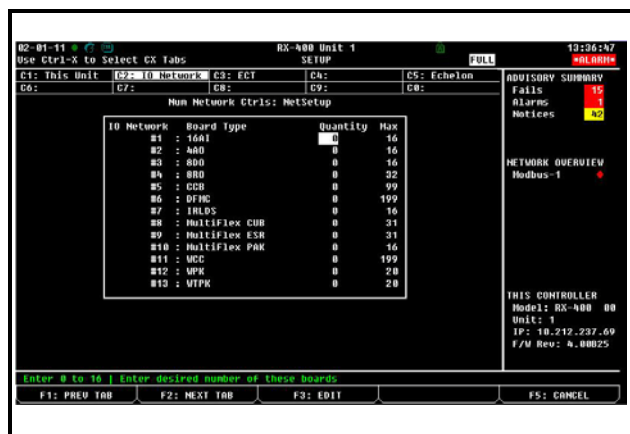


Figure 1-2 - Connected I/O Setup Screen

After logging in for the first time, the Connected I/O screen will ask you to specify how many of each type of device will be connected to the E2 you are currently programming. (Options will vary depending on the type of controller used.)

Unit Number (Echelon Subnet) Each E2 on the Echelon Network must have a different unit number. This can be any number from 1 to 255, but each E2's number must be unique. No two E2s on the network may have the same unit number.

Enter this number in the Unit Number field. It is recommended you number the first E2 "1" and number the other E2s on the network sequentially (2, 3, 4, etc.).

Unit Name Type a name for the E2 in the Unit Name field.

Boards on the I/O Network

16AI Boards Enter the number of 16AIs or MultiFlex I/O boards on this E2's I/O Network. If you have any special MultiFlex or Gateway boards that emulate 16AI, also include their total number of boards in this field.

8RO Boards Enter the number of 8ROs and MultiFlex 168AOs/168s/88AOs relay output boards on this E2's I/O Network.

8DO Boards Enter the number of 8DO digital output boards on this E2's I/O Network.

4AO Boards Enter the number of 4AOs, MultiFlex 168AOs, and MultiFlex 88AO analog output boards on this E2's I/O Network.

IRLDS Controllers Enter the number of IRLDS/

RLDS leak detection units on this E2's I/O Network.

Unit Controllers (Echelon)

Liquid Ctrls (CC100P/CC100LS) Enter the combined number of pulse valve case controllers (CC100Ps) and liquid-side stepper valve case controllers (CC100LSs) in this field.

Suction Controllers (CC100H) Enter the number of suction stepper case controllers (CC100Hs) in this field.

Circuit Suction (CS100) Enter the number of suction lineup circuit controllers (CS100s) in this field.




ESR8 Line Up Boards Enter the number of ESR suction lineup circuit boards (SR100s) in this field.

TD3 Temperature Displays Enter the number of TD3 temperature display units in this field.

EC-2 Case Controllers Enter the number of EC-2 refrigerated case controllers in this field.

Echelon 16AI Enter the number of 16AIe analog input boards in this field.

Echelon 8RO Enter the number of 8ROe analog input boards in this field.

NOTE: At any time, you can access this screen to add or remove boards on this E2 by pressing    .

When finished, press **F5** (NEXT) to move to the next screen.

1.4 Setting Number of Applications

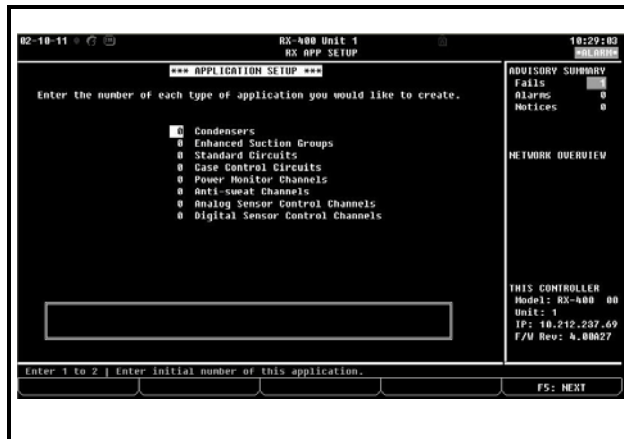


Figure 1-3 - Application Setup (RX version shown)

The Application Setup screen is where you will enter information about the types of devices on the E2's control system. If you know how many applications will be needed, this step will save you time and will keep you from having to create new applications during the setup process. (Options will vary depending on the type of controller used.)



NOTE: You must create at least one application in this screen to continue to the next screen, even if you are only using this E2 to control applications not listed on the screen. If necessary, you can create one application here and delete it later.

When finished, press **F5** (NEXT) to go straight to the Main Status (Home) screen.

2 Screens and Menus

2.1 The Main Status (Home) Screen

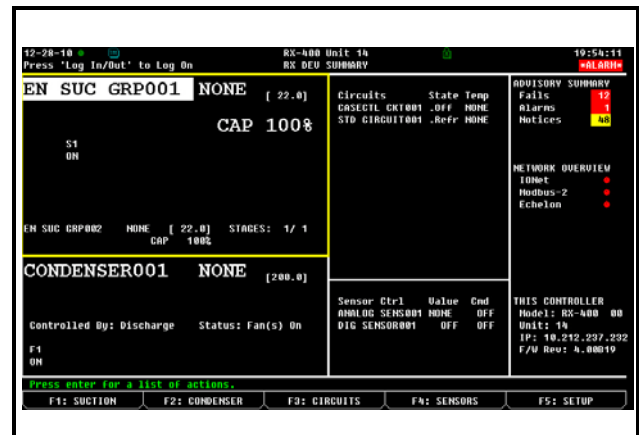


Figure 2-1 - Home Screen (RX version shown)

The Main Status screen is the “home” screen for the E2. When no one is logged in to the controller, this is the screen that will be shown in the display. When a user is logged into the controller, the Home screen is displayed when the user is not performing any actions such as application setup, viewing other status screens, etc.

The Home screen will vary depending on the configuration of the controller. In most cases, the Home screen will show the real-time status of the most fundamental systems being controlled by the E2.

The Home screen is a good place to point out three important common elements of all E2 screens: the screen header, the function key descriptions, and the help line.

Options will vary depending on the type of controller used. For more information on the E2 Home screen including options for both RX and BX versions.

2.1.1 Customizing the Home Screen

The Home screen can be customized to show different information depending on the user's needs. There are eight different screen options available. The **Device Summary** screen is the **Default** screen. See **Section 2.1.1, Customizing the Home Screen** for the steps to customize the Home screen.

2.2 Common Screen Elements

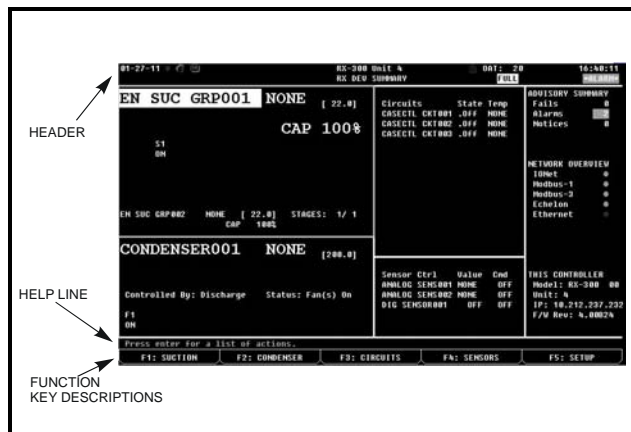


Figure 2-2 - Common Screen Elements (RX version shown)

2.2.1 The Header

The first two lines at the top of the E2 screen are referred to as the **screen header**. This area of the screen contains the time and date, controller name, subnet and node number, and alarm and failure notifications. In addition, it contains highlighted indicators and icons to show when a user is operating in a particular mode, such as full options, edit, macro record, or insert mode.

If the E2's Global Data feature is being used to supply outside air temperature and outside relative humidity values, these values will also be displayed in the header.

2.2.1.1 Header Icons

At the very top of every screen in the E2, there are icons that indicate various stages of activity, number of users logged into the controller, battery alerts, connectivity status, and more.

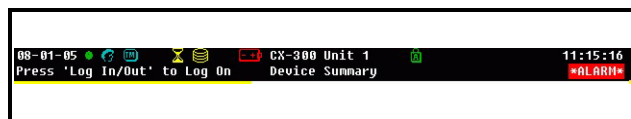


Figure 2-3 - Header Icons

Icon	Description
	Single user is logged in
	Multi-users are logged in
	Terminal mode in use
	E2 is connected to Ethernet

Table 2-1 - Header Icons and Descriptions

Icon	Description
	Wait, or system is busy
	Disk activity, or saving to disk
	Caps lock is ON

Table 2-1 - Header Icons and Descriptions

2.2.2 The Function Keys

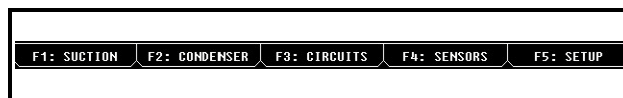


Figure 2-4 - Home Screen Function Keys (RX version shown)

At the very bottom of every screen in the E2, there are five boxes labeled **F1** through **F5**. These boxes are the function key descriptions. The function key descriptions show what each of the five function keys do when pressed. (Options will vary depending on the type of controller being used.)

Function key usage often varies depending on which screen or field E2 is currently in.

2.2.3 The Help Line

The line directly above the function button menu is called the **help line**. The help line displays information about the currently selected field, such as general descriptions, possible ranges, and other information to help a user maneuver around and/or configure the field.



TIP: To see different messages the help line generates, start from the RX Home screen.

Press **F3** (CIRCUITS). Highlight a circuit

and press **Enter**. Use the arrow buttons to move around the screen and notice how the help line changes as the cursor moves from the setpoint to status sections. When finished, press the key to return to the Home screen.

2.3 Screen Types

2.3.1 The Main Menu

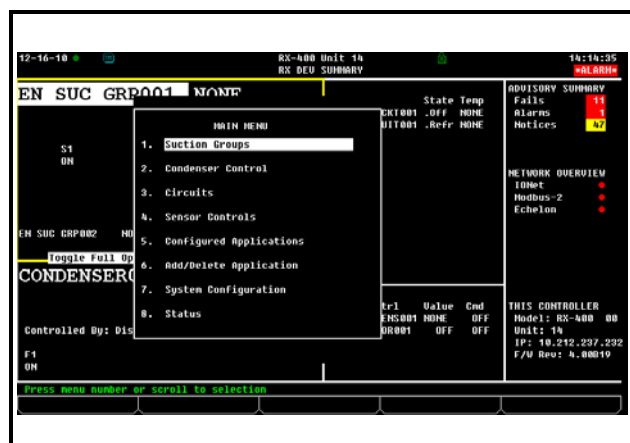



Figure 2-5 - The Main Menu (RX version shown)

The Main Menu is accessed by pressing the  key. This menu gives you direct access to applications such as Suction Groups, Condensers, Circuits, Air Handling Units, Zones, Light Schedules, and Sensor Controls applications, (depending on which controller type you are using) as well as all configured applications in the controller. The Main Menu also allows you to add and delete applications, gives system configuration abilities, and shows status information for inputs and outputs, network, graphs and logs.

2.3.2 Status Screens

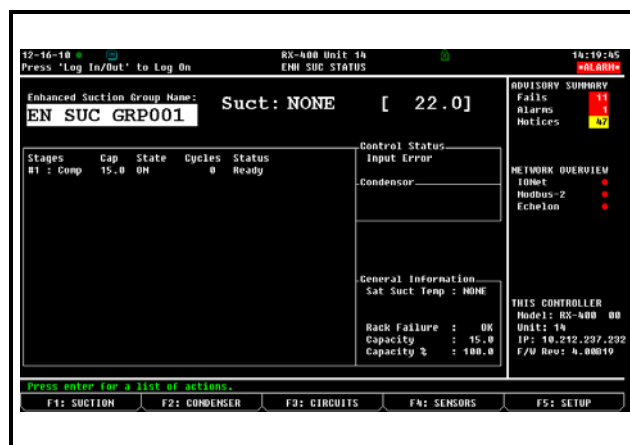


Figure 2-6 - Status Screen (RX version shown)

Status screens are real-time views of application functions. They show the current status of all outputs, the current values of all inputs, and other important data such as control setpoints, run times, and whether or not bypasses or overrides are active.

Each status screen is specially designed to provide a concise at-a-glance view of how one or more systems are functioning.



TIP: To view the Suction Group Status screen in the RX controller, start from the Home screen. Press the function key **F1** (SUC-TION GRP). If more than one Suction Group has been set up, the Suction Group Summary screen opens. Choose which application you wish to view with the cursor and press **Enter**. The current status, runtime, and HP rating for each compressor are displayed in this screen.

To view other application types, use the function keys **F2**, **F3**, and **F4** (see Table 2-2) to see the condenser, circuits, and sensor control status screens.

Key	Function for RX	Function for BX	Function for CX
!	Suction Group	AHU	AHU
@	Condensers	Zones	Lighting
#	Standard and Case Circuits	Lighting	Circuits
\$	Sensor Control and Power Monitoring	Sensors	Sensors
%	Setup	Setup	Setup

Table 2-2 - Status Screen Function Keys

Status screen functions are explained in more detail in the *Operator's Guide to Using the E2* section of the E2 manual, P/N 026-1614. For now, press **Enter** to access another important screen: the Actions menu.

2.3.3 The Actions Menu

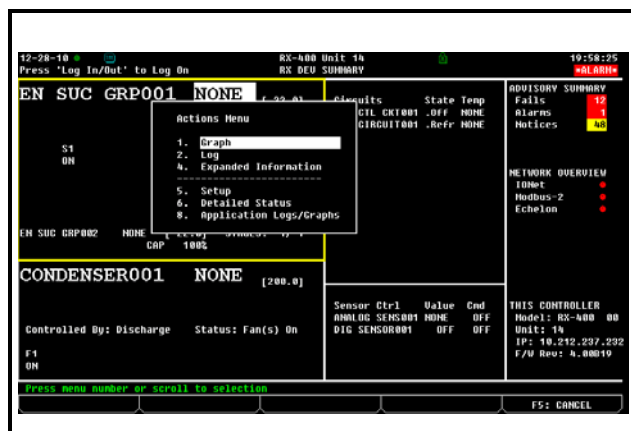



Figure 2-7 - The Actions Menu



The Actions Menu is available from any status screen by pressing Enter , and may be used to do just about any task in the E2 system software. This screen lists a number of options that can be used to affect a selected field, an entire application, or the E2 in general.

Actions Menu Item	Description
Graph	Opens graph view for the selected value.
Log	Opens the Log screen of the selected value.
Override	Opens the Override Update window where the selected input or output can be overridden to a user-defined value or state.
Expanded Information	Displays detailed information about the selected value.
Setup	Opens the setup screen for the selected value.
Detailed Status	Special status screen that shows detailed setpoints and input/output information with complete summary of inputs, outputs.
Manual Defrost	For circuits only. Opens the Circuit Bypass screen to force a manual or emergency defrost, or wash mode.

Table 2-3 - Actions Menu Options and Descriptions

Actions Menu Item	Description
Application Commands	Allows Service Start/End for Irrigation and Pulse Accumulation applications.
Applications Logs/Graphs	Opens various log and graph screens for Anti-sweat and Pulse Accumulation applications. Opens the Circuit Report screen for standard circuits only.

Table 2-3 - Actions Menu Options and Descriptions

One of the more important features of the Actions Menu is the Setup screen  (Setup). The actual setup screen will vary, depending on where the cursor is placed in the Main Status (Home) screen before  is pressed. This is the easiest way to edit an existing application.

For more information on usage of the Setup screen and how to implement its functions, see *Operator's Guide to Using the E2* section of the E2 manual, P/N 026-1614.

2.3.4 The Setup Screens

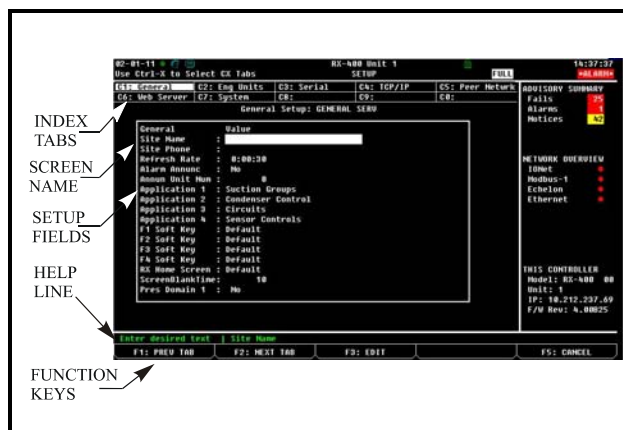


Figure 2-8 - Typical Setup Screen

Setup screens are the interface used to change settings and setpoints, and define inputs and outputs in the E2. **Figure 2-8** shows a typical Setup screen and its primary elements. For more details on Setup screens, see **Section 3.11.2.3, Navigating the Setup Screen**.

2.3.5 System Configuration Menu

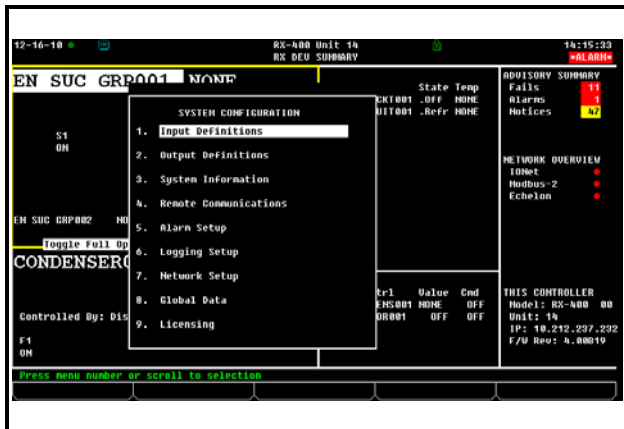


Figure 2-9 - System Configuration Menu

The System Configuration Menu is one of the menus used to set up the E2. Included options are Input/Output Definitions, internal system information, remote communications, global data, alarm, logging, and network setup information.

To open the System Configuration menu:

1. Press **Menu**.
2. Press **& 7** (System Configuration).

The System Configuration menu contains nine menu items:

Menu Option	Description
1 - Input Definitions	View the status of all input boards, as well as set up individual points on the I/O boards.
2 - Output Definitions	View the status of all output boards, as well as set up individual points on the I/O boards.
3 - System Information	Menu that gives access to more E2 setup options and information.
4 - Remote Communications	Gives access to modem information, dial-out setup, and TCP/IP.
5 - Alarm Setup	Set up dial-outs and alarm reporting for the current E2.
6 - Logging Setup	Enter information about Logging Group applications such as the sampling frequency and total number of samples.

Table 2-4 - System Configuration Menu Options

Menu Option	Description
7 - Network Setup	Opens the Network Setup menu, where options to view network status, add or delete boards and controllers, commission devices, set up a router, and make board associations are available.
8 - Global Data	Configure one or more analog or digital sensors to be used as “global” values by all E2s.
9 - Licensing	Opens the Licensing Report page with a list of all licensed features on the current E2, and allows additional features, after a password key has been entered by the user, to be enabled.

Table 2-4 - System Configuration Menu Options

2.3.6 The System Information Menu

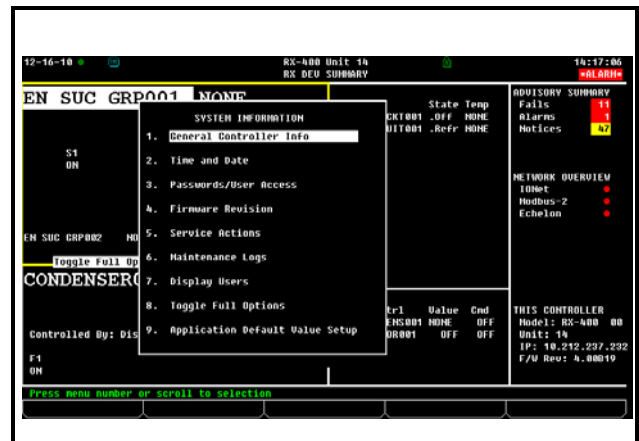


Figure 2-10 - System Information Menu

The System Information Menu is another menu used to set up the E2. The options in this menu allow setting up time and date, passwords, toggle full options, general information about the controller, and system administrator functions.

To open the System Information Menu:

1. Press **Menu**.
2. Press **& 7** (System Configuration).
3. Press **# 3** (System Information).

The System Information menu contains nine items:

Menu Option	Description
1 - General Controller Info	Edit general information about the E2, such as engineering units, and summer/winter change-over specifications.
2 - Time and Date	Change the current date and time, and specify date formats.
3 - Passwords/User Access	Set up usernames and passwords, and define security level requirements.
4 - Firmware Revision	Read-only information screen that contains current system version information
5 - Service Actions	Set up system diagnostics (memory and execution info), and perform advanced functions (system resets and firmware update).
6 - Note Pad	Writable field for technician to make notes about changes made or general information.
7 - Display Users	Enter information about Logging Group applications such as the sampling frequency and total number of samples.
8 - Toggle Full Options	When set to on, FULL will appear at the top right of the screen and gives user full access to options and applications.
9 - Application Default Value Setup	Choose the default values most appropriate to the refrigeration control components in the system.

Table 2-5 - System Information Menu Options

3 Setup

3.1 Set Up Time/Date

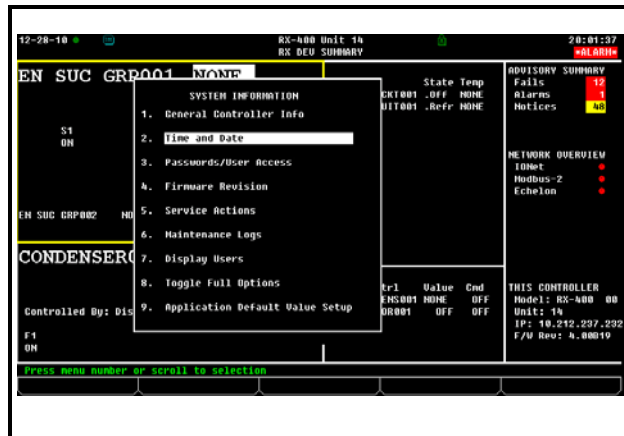


Figure 3-1 - System Information Menu

The Time/Date Setup screen is where users may change the time, date, date format, Daylight Savings Dates, and special time synchronization features.

To get to the Time/Date Setup screen from the Main Menu:

1. Select **&7** (System Configuration).
2. Select **#3** (System Information).
3. Select **@2** (Time/Date).

The Time/Date Setup screen (*Figure 3-2*) is where all time and date changes occur.

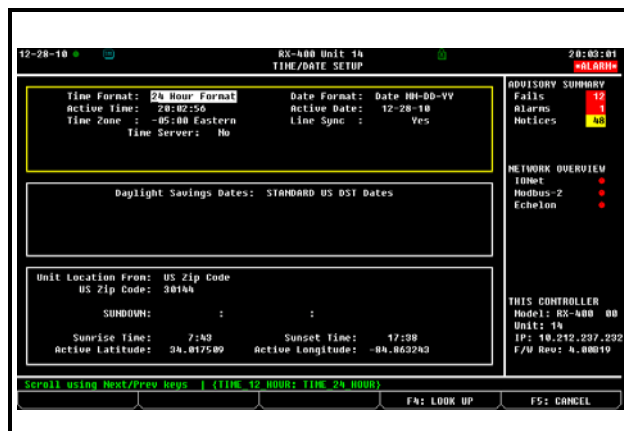


Figure 3-2 - Time/Date Setup Screen (User-Defined Shown)

3.1.1 Setting the Time and Date

The Time Format field affects how times are displayed and entered throughout the controller. When 24 Hour Format is selected in this field, the hours are displayed and entered as a number from 0 to 23. When 12 Hour Format is selected, the hours are displayed and entered as a number from 1 to 12; an A or a P at the end of the time signifies whether the time is A.M. or P.M.

Table 3-1 shows some times as how they would appear in both formats.

Time	12 Hour Format	24 Hour Format
7:15 a.m.	7:15:00A	7:15:00
12:00 noon	12:00:00P	12:00:00
11:59 p.m.	11:59:00P	23:59:00
12:00 midnight	12:00:00A	0:00:00

Table 3-1 - Time Formats (12 and 24 hour)

To select a time format, select either 12 or 24 hour using the **F4** (LOOK UP) tab.

Active Date

The Active Date shows the current Julian date in the format that was chosen in the Date Format field. For security reasons, the Active Date cannot be set to a date earlier in time than the current date without assistance from Retail Solutions Technical Service (1-800-829-2724).

Active Time

The Active Time is the current time in the controller's internal clock. This time may be changed by entering the new time in the **Active Time** field.

When a new time is entered in the **Active Time** field, it is sent across the network and changed on all device clocks so that all devices can remain synchronized.

Time Zone

Time zone is where the time zone of the E2 is entered. Each time zone is represented by a time zone offset that corresponds to the amount each time zone must add or subtract from Greenwich Mean Time (GMT) to get the correct local time. Choose the time zone by using the **F4** (LOOK UP) tab.

Time Server

Set this field to Yes or No depending on whether you would like to use SNTP (simple network time protocol) for synchronizing the E2 clock.

SNTP ensures accurate synchronization to the millisecond of computer clock times. If the E2 time is off by 5 seconds or greater, the SNTP will update the E2 time if enabled. When the E2 time is updated, an entry in Service

Log is added.

If this field is set to No, the E2 clock will have to be set manually. If this field is set to Yes, SNTP support is used. Two SNTP servers are supported: Primary Time Server, and an optional Secondary Time Server.

Primary Time Server

The E2 will call up this primary server first to synchronize the E2 time. If the primary server fails to respond, the secondary server is used.

Enter the IP address or name of the first server the E2 should use to set the time (up to 40 characters).

Secondary Time Server

The E2 will use this secondary server if no response is received from the primary server, or if the primary server is invalid.

If desired, enter the IP address or name of the second server the E2 should use to set the time (up to 40 characters).

Date Format

Dates may be presented and entered in either of two ways: month-day-year format, and day-month-year format. Choose the most appropriate date format by using the **F4** (LOOK UP) tab.

Daylight Savings Dates

The Daylight Savings Dates type determines how the E2 will make date adjustments for daylight savings time. Use the **F4** (LOOK UP) tab to cycle through the options in each of the fields. There are four options:

- **STANDARD US DLT DATES** - the E2 will use the standard United States' method of determining Daylight savings time dates. The Daylight savings time will start on the Sunday of the second week of March every year, and will end on the Sunday of the first week of November (Note: these are the dates recently enacted by the U.S. Congress, which went into effect in 2007).
- **USER DEFINED DLT DATES** - when this option is chosen, the user can specify start and end times for daylight savings, including month, week, and day settings.
- **EUROPEAN UNION DLT DATES** - the European Union Daylight rules are the same as the Standard US DLT Dates, with the exception that one hour must be added to the time at 1:00AM (GMT), during the last Sunday in March.
- **DLT Not Used** - the E2 does not make any adjustments to Active Time for Daylight Savings Time.

Daylight Savings Time uses GMT

This setting is only visible when **Daylight Savings Dates** is set to **User Defined DLT Dates**. If set to **Yes**, **Daylight Savings Time uses GMT** calculates the time to change from GMT and the current time zone setting. For example, if the start time is at 1:00 AM, and the time zone is +200 GMT, the time change will occur at 3:00 AM local time. Defaults to **No**.

Unit Location From

Sunrise and sunset times are calculated based on either zip code or latitude/longitude. If **US Zip Code** is chosen in the **Unit Location From** field, enter the zip code in which the controller is located. If outside the United States, choose **Lat/Long** and enter the latitude and longitude values in which the controller is located. Once a value has been chosen, the controller is able to calculate the sunrise and sunset times. The Sunset output will turn ON at sunset, and OFF at sunrise and can be connected to a lighting circuit.

Sundown

Sundown is an output that calculates when the sun sets based on latitude and longitude, and is ON when the sun sets. The user will select the Board/Controller, Point/Application, and Input values from the **F4** (LOOK UP) menu for each field. (When a Lighting Schedule is configured to use Sundown information, the Lighting Schedule application automatically connects to the Sundown output.)

3.2 Set Up Modem

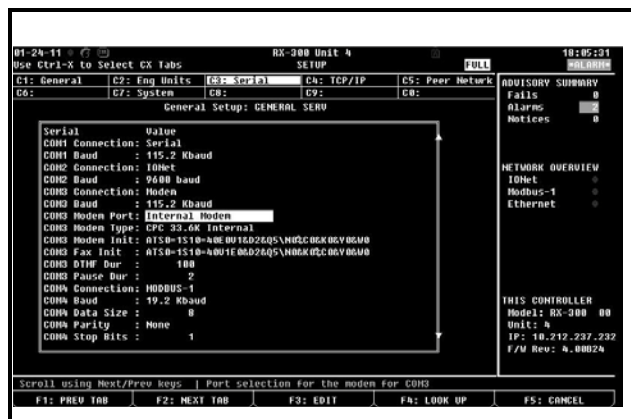


Figure 3-3 - Modem Select Screen

From the Main Menu:

1. Press **&7** (System Configuration).
2. Press **S4** (Remote Communications).

3. Press **1** (Modem Setup) to advance to the General Services screen.

You can choose between an internal modem (one that is mounted directly on to the E2 circuit board (via the PC-104 slot in previous generation E2 circuit boards) or an external modem. If you have a modem, navigate to the **COM3 Modem Port** field and select **Internal Modem**. Press **F4** (LOOK UP) for the Option List Selection screen.

3.3 Set Up TCP/IP

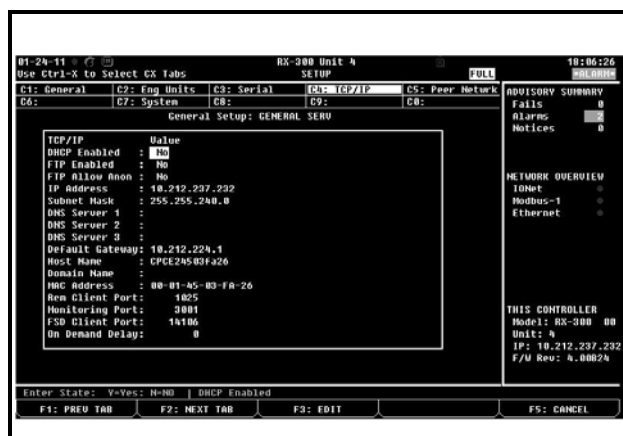


Figure 3-4 - TCP/IP Addressing

The TCP/IP screen is where you enter the information necessary to allow Ethernet connection to this controller. If this site uses Ethernet box-to-box, you will need to enter a TCP/IP address and a group name to allow all E2s on site to communicate as a group. See the **E2 Ethernet Peer Communications** section of the E2 manual, P/N 026-1614.

From the Main Menu:

1. Press **&7** (System Configuration).
2. Press **S4** (Remote Communications).
3. Press **#3** (TCP/IP Setup) to advance to the TCP/IP Setup screen.

E2 units may be configured to communicate across an Ethernet computer network using TCP/IP protocol. To enable Ethernet communication, you will need to enter IP address information for the E2 in the Serial IP screen.

IP Address The IP Address field sets the network address for this E2. Other network devices (such as PCs running UltraSite) will communicate with this E2 by sending information to this specified address. Contact your network administrator to determine

what IP address to enter.

The IP Address always consists of four numbers from zero to 255, each of which is separated by a period. Enter the address in this format.

Subnet Mask Contact your network administrator to get the correct subnet mask value, and enter it in this field.

The default value, “255.255.255.0”, is the subnet mask commonly used for small networks.

Primary DNS Contact your network administrator to see if a Primary DNS value is required for this E2. If so, enter the Primary DNS address supplied by your administrator in this field. If not, leave this field set to “0.0.0.0”.

Secondary DNS Contact your network administrator to see if a Secondary DNS value is required for this E2. If so, enter the Secondary DNS address supplied by your administrator in this field. If not, leave this field set to “0.0.0.0”.

Primary Gateway Contact your network administrator to see if a Primary Gateway value is required for this E2. If so, enter the Primary Gateway address supplied by your administrator in this field. If not, leave this field set to “0.0.0.0”.

Secondary Gateway Contact your network administrator to see if a Secondary Gateway value is required for this E2. If so, enter the Secondary Gateway address supplied by your administrator in this field. If not, leave this field set to “0.0.0.0”.

DHCP Enabled Dynamic Host Communication Protocol (DHCP) is a protocol that assigns a dynamic IP address to devices on a network. With dynamic addressing, a device could have a different IP address every time it connects to the network. When set to **Yes**, DHCP Enabled keeps track of IP addresses and enables a new IP device to be added to a network without having to manually assign it a unique IP address. DHCP supports a mix of static and dynamic IP addresses.

3.4 Set Up Network Baud Rates



NOTE: *If a baud rate is changed in this screen, the controller must be rebooted (turned OFF then ON again) to make the baud rate change occur.*

3.4.1 COM1 Serial (RS232) Baud Rate

To access COM1 Serial (RS232) and I/O Network baud rates:

1. Press to open the Main Menu.
2. Press (System Configuration).
3. Press (System Information).
4. Press (General Controller Info) and navigate to the **COM1** Baud rate field.

The **COM1 Baud** rate field determines the speed of communications between the E2 and an RS232 device (such as a satellite link or PC).

The baud rate selected in this field should correspond with the baud rate for the RS232 device. For example, if connecting a PC to this port, the PC’s COM port should be set up to communicate at the same rate as what is set in this field.

There are multiple options to choose from. Select one of the options below using (LOOK UP) depending on the type of connection.

- **1200 Baud** (devices that operate at 1200)
- **2400 Baud** (devices that operate at 2400)
- **4800 Baud** (devices that operate at 4800)
- **9600 Baud** (recommended for satellite)
- **19.2 Kbaud** (recommended for modem)
- **38.4 Kbaud** (recommended for modem)
- **57.6 Kbaud** (recommended for modem)
- **115.2 Kbaud** (recommended for direct connect)

3.5 Set Up User Access

Access the User Access Setup screen from the System Information menu:

1. Press **Menu** to open the Main Menu.
2. Press **8** & **7** (System Configuration).
3. Press **3** (System Information).

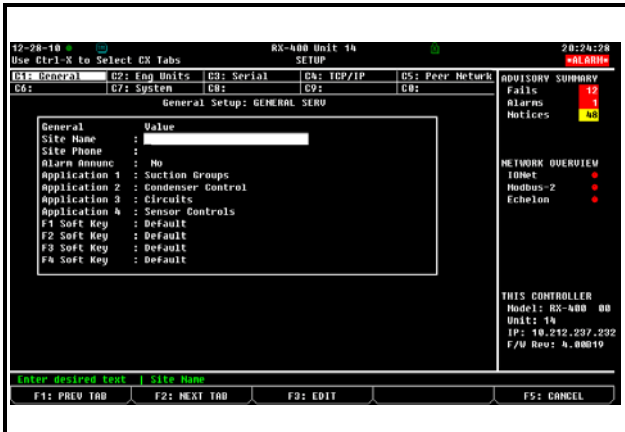


Figure 3-5 - COM1 Baud Rate Setup (Serial RS232)

3.4.2 I/O Network Baud Rate

The I/O Network baud rate is the rate at which the E2 will communicate with input and output boards on the RS485 I/O Network, and is located directly below the **RS232 Baud** rate field.

Press **F4** to select the baud rate. The appropriate baud rate is **9600 baud**.

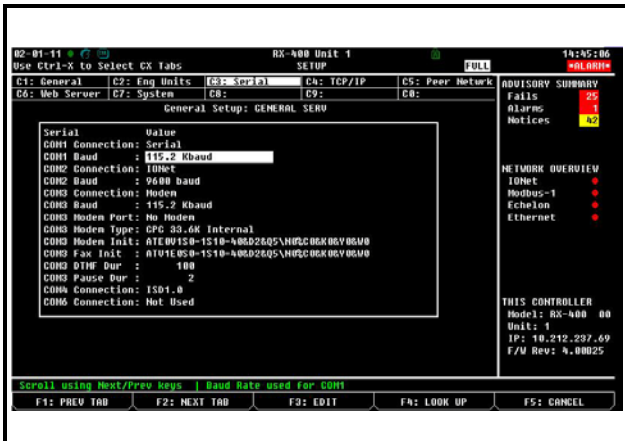


Figure 3-6 - I/O Network Baud Rate Setup

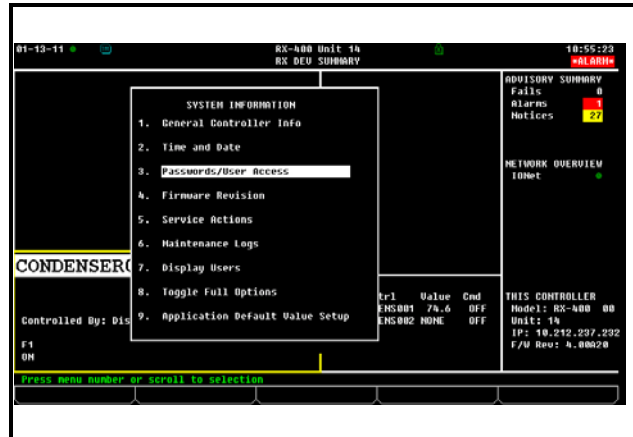


Figure 3-7 - System Information Menu

In the User Access Setup screen, you may add user names and passwords to the controller with varying levels of security, and customize user access for each security level.

To access this menu, choose option **3** (Passwords/ User Access) from the System Information Menu.

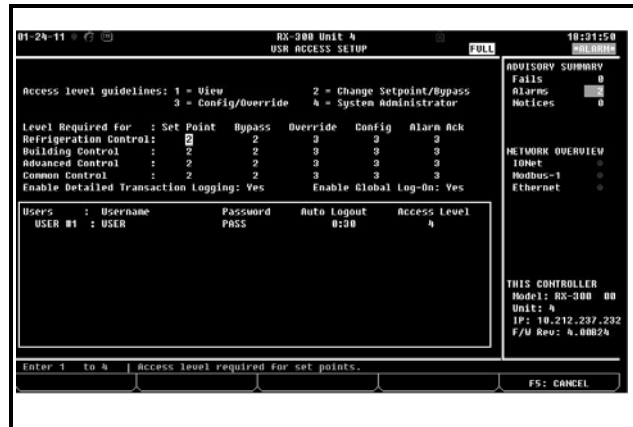


Figure 3-8 - User Access Setup Screen

An E2 may be programmed with up to 25 different users. A user basically consists of a username, a password, and an access level. Whenever a username and password are entered during login, the E2 searches the user records

for the username and password. If found, the E2 will log the user in at the access level chosen for the user in the user records.

The access level determines how many of the E2's features the user may use. The E2 uses four access levels, one being the lowest, and four being the highest. **Table 3-2** gives a description of each level and the capabilities they have access to.

Level 1	Read-only access. Users may generally only view status screens, setpoints, and some system settings.
Level 2	Setpoint and bypass access. Users may perform all the tasks a level 1 user may, plus they may change control setpoints and bypass some devices.
Level 3	Configuration and override access. Users may perform all the tasks a level 2 user may, plus they may override system settings, create new cells, and program new applications.
Level 4	System Administrator access. All E2 functions are accessible by a level 4 user.

Table 3-2 - User Access Levels

3.5.1 Changing Required User Access Levels

The **Level Required For** table in this screen is used to customize what access level is required to perform certain actions within the E2 unit. There are four rows in this table, each of which corresponds to a different type of E2 function or application.

- **Refrigeration Control** - This category includes changes or actions involving refrigeration applications specific to RX controllers (Suction Groups, Condensers, Circuits, CC-100s, etc.).
- **Building Control** - This category includes changes or actions involving building control applications specific to BX controllers (AHUs, Zones, Lighting Control, Time Schedule, Demand Control, etc.).
- **Common Control** - This category includes control applications common to both RX and BX controllers (Sensor Control, Time Schedules, Conversion Cells, Analog or Digital Combiners, Global Data, etc.).
- **Advanced Control** - This category includes applications common to both boxes that are only used by advanced users, such as Loop/Sequence Controllers, Refrigeration or HVAC Simulations, etc.

Each row has five columns, each of which corresponds to a different category of user actions.

- **Setpoint** - This includes all actions that change application setpoints. Also, **clearing** one or more alarms out of the Alarm Advisory Log is considered a “setpoint” action (refer to the *Operator's Guide to Using the E2* section of the E2 manual (P/N 026-1614) for the definition of “clearing alarms”).
- **Bypass** - This includes all actions that bypass a device to a certain state, such as initiating a manual defrost, or configuring an application input designated as a “bypass.” Also, **resetting** one or more alarms in the Alarm Advisory Log is considered a “bypass” operation (refer to the *Operator's Guide to Using the E2* section of the E2 manual (P/N 026-1614) for the definition of “resetting alarms”).
- **Override** - This includes any user-ordered override of a setpoint, input, or output.
- **Config** - This includes all actions that change an application setting. This includes configuring inputs and outputs.
- **Alarm Ack** - This includes **acknowledging** one or more alarms in the Alarm Log. If this field is set to 1, alarms can be acknowledged on the Alarm Advisory Log without a user logging into the controller first. If set to 2, 3, or 4, login is required before a user can acknowledge alarms. The default is set to 3 (controller login required for acknowledging alarms). Refer to the *Operator's Guide to Using the E2* section of the E2 manual (P/N 026-1614) for the definition of “acknowledging alarms.”

For each row and column of the Level Required For table, enter the desired minimum priority level that will be required for users to perform actions on each type of application. E2 will check this table when a user attempts an action to verify the user has the appropriate access level to make the change. If the user's access level is equal to or above the priority setting in the table, access will be allowed. If not, access will be denied.

3.5.2 Creating a New User Account

After entering the User Access Setup screen by pressing **# 3** **Passwords/User Access** from the System Information menu:

1. Move the cursor so that it is somewhere in the **Users** box at the bottom of the screen.
2. Press **F1** (ADD USER) to put a blank record at the bottom of the list.

- Type in the user name (**Username**), and then move to the next field (**Password**) by pressing the right arrow button.
- Type in a password for the next user, then press the right arrow button to advance to the next field.
- The Auto Logout feature determines the maximum time user may be inactive before being logged out. Enter the amount of time for the user and press the right arrow button.
- Enter the appropriate access level for the user. See *Table 3-2*.
- Press **BACK**.

3.5.3 Deleting a User

To delete a user from the system:

- Move the cursor so that it is highlighting the record to delete in the **Users** box at the bottom of the screen, and press **F2** (DELETE USER).
- A question box will appear to double check the deletion of the current record. Press **Y** if you are sure about the deletion.

3.6 Set Up I/O Network

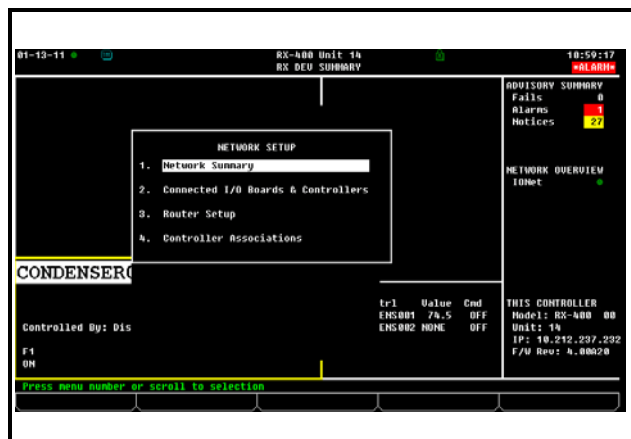


Figure 3-9 - Network Setup Menu

To start the setup on the I/O Network, access the Network Setup menu:

- Press **Menu** to open the Main Menu.
- Press **& 7** (System Configuration).
- Press **& 7** (Network Setup).

The Network Setup menu displays four options:

- Network Summary

- Connected I/O Boards & Controllers
- Router Setup
- Controller Associations

For the total (E2) devices online or offline, status, setup screens, changing board or controller names, configuring and commissioning devices, deleting a device, and viewing detailed status screens of controllers, select **Network Summary**.

For the number of I/O Network devices (16AIs, 8ROs, etc.) associated with each controller online and offline, select **Connected I/O Boards & Controllers**.

To set up a router, select **Router Setup**. For more information on routers and repeaters, refer to the *Router and Repeater Installation Guide (P/N 026-1605)*.

For CC-100 circuit associations, select **Controller Associations**.

3.6.1 Specify Number of Boards

Specify the number of boards from the Connected I/O screen:

- Press **Menu** to open the Main Menu.
- Press **& 7** (System Configuration).
- Press **& 7** (Network Setup)
- Press **@ 2** (Connected I/O Boards & Controllers)

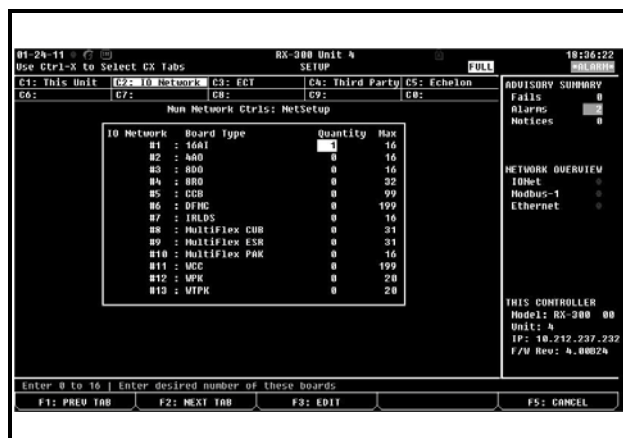


Figure 3-10 - Connected I/O Screen (RX version)

Boards on the I/O Network

16AI Boards Enter the number of 16AI analog input boards on this E2's I/O Network.

8RO Boards Enter the number of 8RO relay output boards on this E2's I/O Network.

8DO Boards Enter the number of 8DO digital out-

put boards on this E2's I/O Network.

4AO Boards Enter the number of 4AO analog output boards on this E2's I/O Network.

IRLDS Controllers Enter the number of leak detector units on this E2's I/O Network.

(Options will vary depending on the type of controller used.)

3.6.2 Checking Online Status

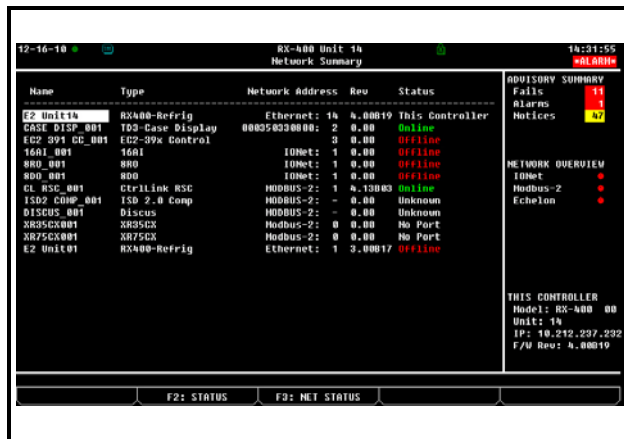


Figure 3-11 - Network Summary Screen

You can check all boards that are on either the Echelon Network (E2 controllers) or the I/O Network from the Network Status screen (See **Figure 3-11**). The Network Summary screen displays information such as the Subnet and Node addresses for each board, and the status of Echelon and I/O boards.

To get to the Network Summary Screen:

1. Press **Menu** to open the Main Menu.
2. Press **&7** (System Configuration).
3. Press **&7** (Network Setup).
4. Press **1** (Network Summary).

From the Network Summary screen you can see the total (E2) devices online or offline, status, setup screens, change board or controller names, configure and commission devices, delete a device, and view detailed status screens of controllers.

After determining if a board is offline, turn to **Appendix A: Troubleshooting**.

3.7 Set Up Echelon Network

3.7.1 Specifying Number of Devices

To specify the number of devices on the Echelon Network, navigate to the Connected I/O screen:

1. Press **Menu** to open the Main Menu.
2. Press **&7** (System Configuration).
3. Press **&7** (Network Setup).
4. Press **@2** (Connected I/O Boards & Controllers).

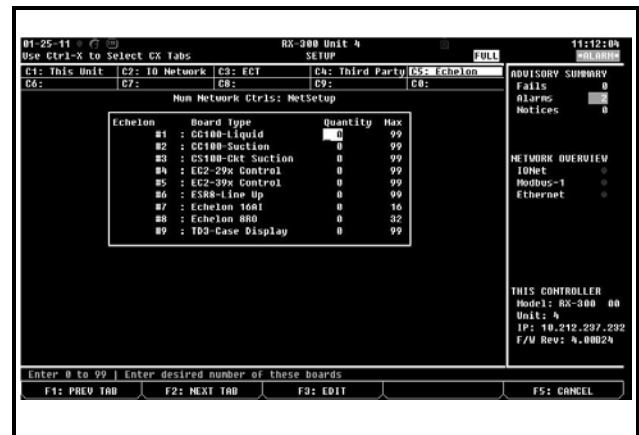


Figure 3-12 - Connected I/O Screen (RX version shown)

After logging in for the first time, the Connected I/O screen will ask you to specify how many of each type of device will be connected to the E2 you are currently programming. (Options will vary depending on the type of controller used.)

Unit Number (Echelon Subnet) Each E2 on the Echelon Network must have a different unit number. This can be any number from 1 to 255, but each E2's number must be unique. No two E2s on the network may have the same unit number.

Enter this number in the Unit Number field. It is recommended you number the first E2 "1" and number the other E2s on the network sequentially (2, 3, 4, etc.).

Unit Name Type a name for the E2 in the Unit Name field.

Unit Controllers (Echelon)

Liquid CtrlIs (CC100P/CC100LS) Enter the combined number of pulse valve case controllers

(CC100Ps) and liquid-side stepper valve case controllers (CC100LSs) in this field.

Suction Controllers (CC100H) Enter the number of suction stepper case controllers (CC100Hs) in this field.

Circuit Suction (CS100) Enter the number of suction lineup circuit controllers (CS100s) in this field.

ESR8 Line Up Boards Enter the number of ESR suction lineup circuit boards (SR100s) in this field.

TD3 Temperature Displays Enter the number of TD3 temperature display units in this field.

EC2- 29x Case Controllers Enter the number of EC2-29x refrigerated case controllers in this field.

EC2-39x Case Controllers Enter the number of EC2-39x refrigerated case controllers in this field.





Echelon 16AI Enter the number of 16AIe analog input boards in this field.

Echelon 8RO Enter the number of 8ROe analog input boards in this field.

3.7.2 Commissioning a Device

Once all records have been created and defined for all devices on the Echelon Network, they must be “commissioned.” Commissioning is necessary for the E2 to identify and establish communications with all devices on the network.

To start commissioning, open the Network Summary screen:

1. Press  to open the Main Menu.
2. Press  (System Configuration).
3. Press  (Network Setup).
4. Press  (Network Summary).

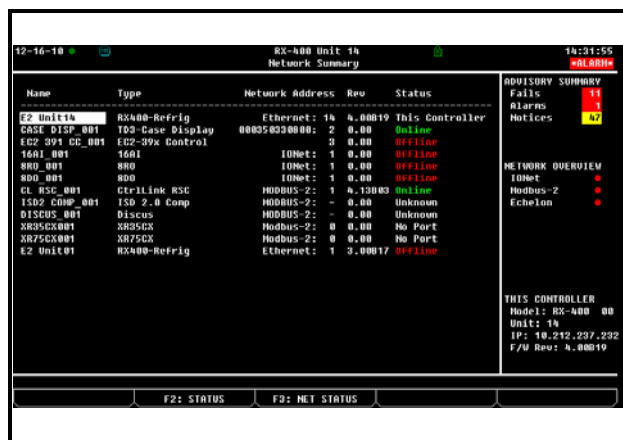


Figure 3-13 - Network Summary Screen



NOTE: A device may only be commissioned if it is properly connected on the network and powered up.

How Echelon Commissioning Works

Each device that is capable of communicating on a Echelon Network has a unique 12-digit “Neuron ID” code number that is hard-coded in a chip on the board. In order for the E2 to begin communications with a unit controller or another E2, it must know the device’s ID number.

When a device is commissioned, its 12-digit code is either entered by hand into the E2 (via the front panel keyboard) or sent across the network to the E2 using the device’s service button. Once the E2 knows the device’s 12-digit ID, it establishes communication and gives the device its user-defined subnet and node address. From that point on, the E2 uses only the subnet and node address to communicate with the device.

As mentioned above, there are two ways in which a device may be commissioned. No one way is better than the other in terms of effectiveness, but one of the methods may be less difficult than the other depending on the type of installation.

MODBUS Commissioning

If commissioning a MODBUS device and multiple MODBUS ports are available, you will be prompted to select the appropriate network during the commissioning process.

3.7.2.1 The Service Button Method

To commission a device using the service button, you must first set up the E2 to receive a service button signal, and then press the service button on the device. When the signal is received by the E2, the device will be commissioned.

To set up the E2 to receive a service button signal, move the cursor to the Controller Name field of the record you wish to set up, and press **F4** (SET ADDRESS).

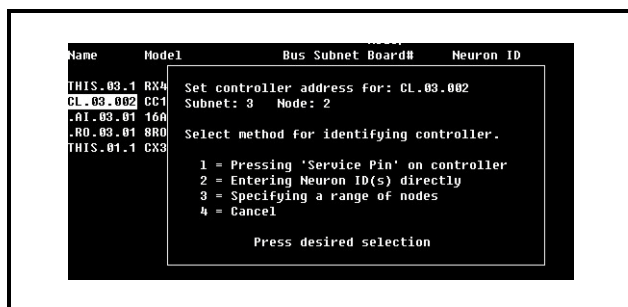


Figure 3-14 - Commissioning Menu

A menu will appear on the screen, giving you the option of either pressing the service button, entering the Neuron ID by hand, or canceling and returning to the main screen. Press **1** to select the service button option.



Figure 3-15 - Service Button Screen

The E2 will prompt you to enter a wait time in the Wait Time field. The Wait Time is the amount of time the E2 will try to detect a service button press before declaring the attempt unsuccessful and returning to the main screen. To commission the device, the Neuron ID must be sent during the Wait Time duration.

After you enter a wait time in hours:minutes:seconds format and press **Enter**, the Wait Time duration begins. All that is left to do is to press the service button on the device to be commissioned.



CAUTION: When the E2's Wait Time duration begins, the E2 will accept the first Neuron ID code it receives. Be sure that no other service buttons on any devices on the network are being pressed during the Wait Time. Since the service button on the CC-100 is its Hand-held Terminal jack, be sure that no one has a Hand-held Terminal plugged into a CC-100 other than the one being commissioned.

The location of the service button and the method of pressing it depends on the device or controller being commissioned.

The CC-100's Service Button

Since the CC-100 is meant to remain in an enclosure, the CC100's Hand-Held Terminal jack has been configured to act as the service button. Plugging a Hand-Held Terminal into the jack simulates a service button press.

The Hand-Held Terminal Jack is on the left side of the case controller next to the power cable harness connection. To send the Neuron ID, plug a Hand-Held Terminal into the jack and hold it in for five seconds.

The TD3's Service Button

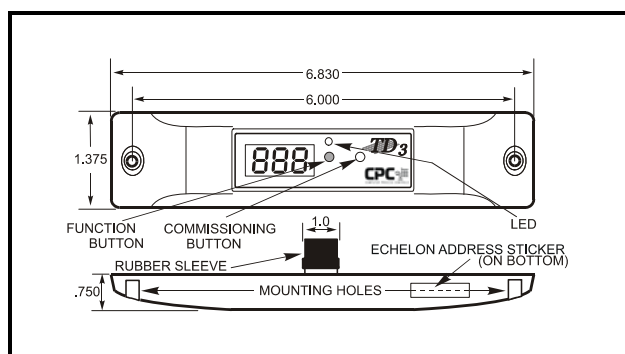


Figure 3-16 - TD3 Service Button Location

The service button on the TD3 is located on the front panel (Figure 3-16). Of the two buttons on the face, the commissioning button is the one on the right. To send the Neuron ID, press and hold this button down for five seconds.

The ESR8's Service Button

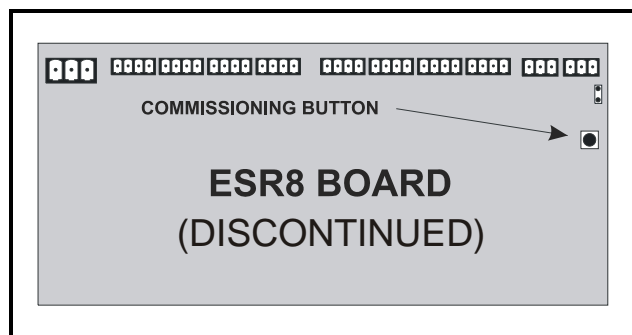


Figure 3-17 - ESR8 Service Button Location

The service button on the ESR8 is located on the right hand side of the board directly below the termination jumper (*Figure 3-17*). To send the Neuron ID, press and hold this button down for five seconds.

Commissioning the EC-2

The EC-2 can be commissioned by pressing the UP ARROW key on the EC-2 front panel and holding it for five seconds.

3.7.2.2 The Manual ID Entry Method

The Manual ID Entry Method involves entering each device's twelve-digit ID number by hand. When entered, the E2 searches the network and tries to match the ID number to the device. When the E2 finds this device, the commissioning process is completed.

The easiest way to set up a multiple-node store using the Manual ID Entry Method is to arrange all network devices into a list that shows each device's name, subnet and node address, controller type, and corresponding Neuron ID number. Once this list is complete, each device may be commissioned one at a time from the E2 front panel.

To make a list of network devices, follow the steps below:

1. For each record set up in the Controller Network Configuration/Status Screen, write down the contents of each device's Controller Name, Model, Subnet, and Node fields on a sheet of paper. If desired, you may also include the model or serial numbers of the units that will be controlled, as well as a physical location.
2. When step 1 is complete, go to where each device on the list is installed and locate each device's Neuron ID sticker. Every Echelon-compatible device available from Retail Solutions has a sticker on its enclosure that shows the unit's Neuron ID number. Each sticker also has a perforated tag at the bottom that may be removed and

affixed to your form. Tear this tag off and stick it in the Neuron ID blank on the sheet of paper. If the perforated tag has already been removed, write the ID number in the blank.

When all Neuron ID numbers have been collected, return to the E2 and enter the Neuron ID numbers for each device. To commission a device, move the cursor to the device to be commissioned and press **F4** (Set Address).

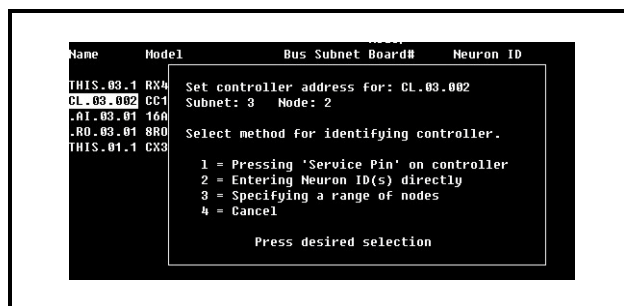


Figure 3-18 - Commissioning Menu

A menu will appear on the screen, giving you the option of either pressing the service button, entering the Neuron ID by hand, or cancelling and returning to the main screen. Press **@ 2** to select the manual entry option and bring up the dialog box shown in *Figure 3-19*.

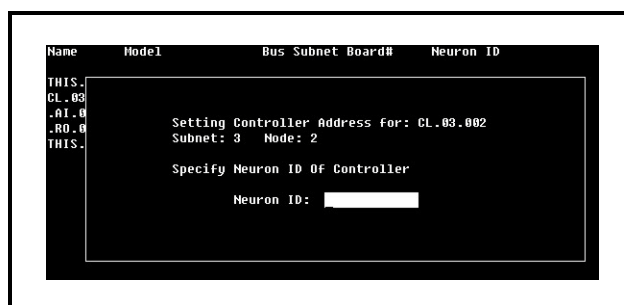


Figure 3-19 - Setting Controller Address - Neuron ID

Enter the device's Neuron ID as it appears on the form you created, and press **Enter**. The E2 will then look for the controller with the Neuron ID you entered. If it is found, the E2 commissions the device, and you may move on to commissioning the next device.

If E2 does not find it, the display will read "ERROR - Controller with specified Neuron ID did not respond." This could be caused by an improperly entered number, or it could be caused by a problem with the device's network connections or power connections.

When all devices are commissioned, keep the form with the Neuron ID stickers in an easily accessible place so that it may be referred to if necessary for board removals, replacements, or troubleshooting.

3.8 License Management

Some applications in the E2 are only available when activated with a license key that is obtained through Retail Solutions. Licensing allows the user to activate certain features in the E2.

To obtain a license for a feature, go to the TCP/IP setup screen and obtain your E2 controller's MAC Address. Press **Alt** + T, or from the Main Menu:

1. Press **&7** (System Configuration).
2. Press **\$4** (Remote Communications).
3. Press **#3** (TCP/IP Setup) to open the TCP/IP Setup screen and locate your E2's MAC address (circled in *Figure 3-20*):

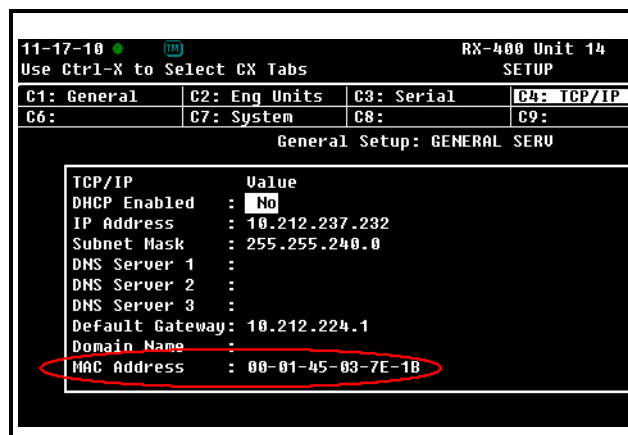


Figure 3-20 - TCP/IP Screen - Locating the Mac Address

4. Call Retail Solutions Customer Service at 770-425-2724 and have your MAC Address ready in order to obtain your unique license key.

Once you have received your unique license key from Customer Service, you can now activate the licensed feature(s) from the License Report screen. The License Report screen displays that E2 controller's unit type and firmware version, the list of all licensed features on that E2, the current number and maximum number of each of those applications allowed, and which additional features, (that require a license key), have been enabled.

From the Main Menu:

1. Press **&7** (System Configuration).
2. Press **9** (Licensing).
3. Press **F1** (Add Feature).

Enter your license key to activate the desired feature:

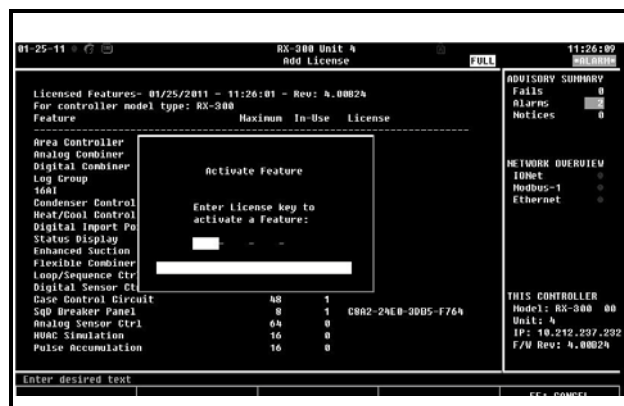


Figure 3-21 - Enter Your Unique License Key

4. Reboot the controller and open the License Report screen again to see the license key appear next to the activated feature (*Figure 3-22*):

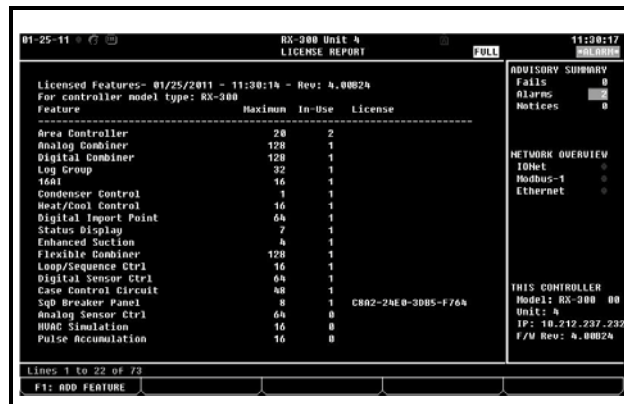


Figure 3-22 - License Report Screen

3.8.1 Web Services

Web Services is a licensed feature that allows the user, once the required license has been obtained and entered, to view and adjust certain parameters in the E2 controller through a Web page. The E2 Web Services feature enables the user to:

- View site-specific information such site name, site phone, local date and time.
- View the current version of the E2. This includes the type of unit (e.g., RX-400) and the version of the firmware.
- View global data values such as outside air temperature and humidity.
- View a list of other networked area controllers at the site, including version and controller type information.
- Connect to the selected E2 for remote configuration

changes.

- Access Terminal Mode.
- View Alarms.

To access Web Services:

Open a browser window and enter the IP Address of your E2 controller:



Figure 3-23 - E2 Web Services Page

3.9 Set Up Alarming

To set up alarms, open the Alarm Setup menu:

1. Press **Menu** to open the Main Menu.
2. Press **8 & 7** (System Configuration).
3. Press **5** (Alarm Setup).

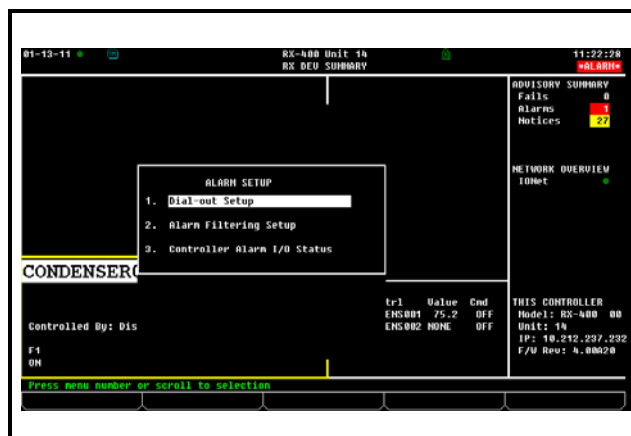


Figure 3-24 - Alarm Setup Menu

3.9.1 Specifying Alarm Reporting Types

Apart from storing alarms it generates in its own Alarm Advisory Log, E2 can also report alarms it generates or receives in order to notify personnel. E2 can report alarms in several different ways.

3.9.1.1 The Display Line

Alarms that occur within an E2 (or which are received by an Alarm Annunciator from another E2) may be reported to the header display at the top of the screen. When an alarm is reported to the display, the word “*ALARM*” flashes underneath the time at the top of the screen, allowing site managers or supervisors to see that one or more alarms are active for the E2.

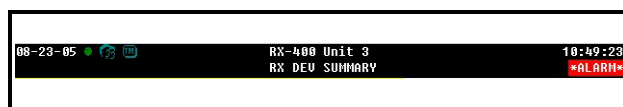


Figure 3-25 - Display Line

3.9.1.2 The Alarm Output

Each E2 has a single digital output that reacts to alarm reports. An alarm can be reported to this output, in which case the output turns ON and remains on until the alarm condition has returned to normal.

3.9.1.3 Dial-Out

Alarms may be sent to remote alarm receivers via the modem defined for the controller. Possible dial-out devices include a PC running UltraSite, a printer, a fax machine, and a digital pager. Dial-out sites are configured in Section 3.9.3.

3.9.1.4 The Echelon Network (The Alarm Annunciator)

If multiple E2s exist on a network, you may choose to send alarms from all E2s across the Echelon Network so that they may be picked up by the Alarm Annunciator.

The Alarm Annunciator is the primary alarm reporting device in a multiple-device E2 Network. The Alarm Annunciator gathers all alarms posted by all devices on the Echelon Network, records them in its own advisory log, and applies its own set of alarm filters to determine if the alarms should be dialed out, reported to its display, or sent to its Advisory Output.

There are several benefits to having an Alarm Annunciator:

- An Alarm Annunciator makes it possible to handle all alarm dial-outs for all controllers with a single modem or network card.

- Users can view alarm notifications and alarm logs for all controllers from the Alarm Annunciator.
- Only the Alarm Annunciator needs to be programmed with alarm filter settings for dial-out, output, and display. All other controllers may be programmed to simply send all alarms to the Alarm Master via the LonWorks Network.

3.9.2 Setting up an E2 to be an Alarm Annunciator

Any E2 on the network that has a modem or Ethernet connection can be set up as an alarm annunciator, but only one alarm annunciator per network is allowed. To set up from the Main Menu:

1. Press **&7** (System Configuration).
2. Press **#3** (System Information).
3. Press **!1** (General Controller Info).
4. Set **Alarm Annunc** field to **Yes**.



NOTE: When the E2 is set up as an Alarm Annunciator, the Home screen becomes the Alarm Log.

If the target E2 is configured as the Annunciator, the **AnnuncIsHomesCrn** property becomes available in General Services to select if the Annunciator log is to be the Home screen. The property will default to **Yes**. If the property is set to **No**, the Home screen will be either the default Home screen or the user-selected Home screen.

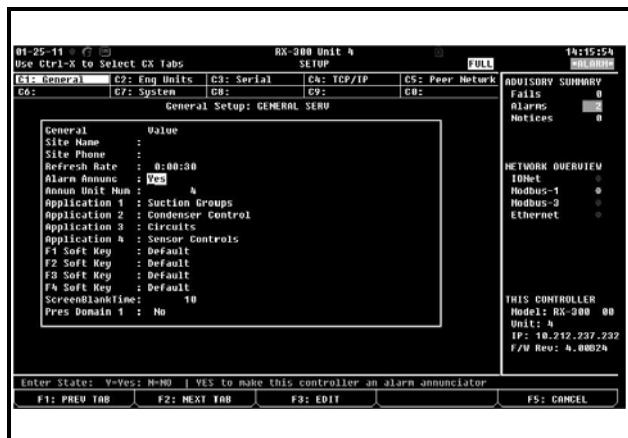


Figure 3-26 - Alarm Annunciator

3.9.3 Alarm Dial-Out

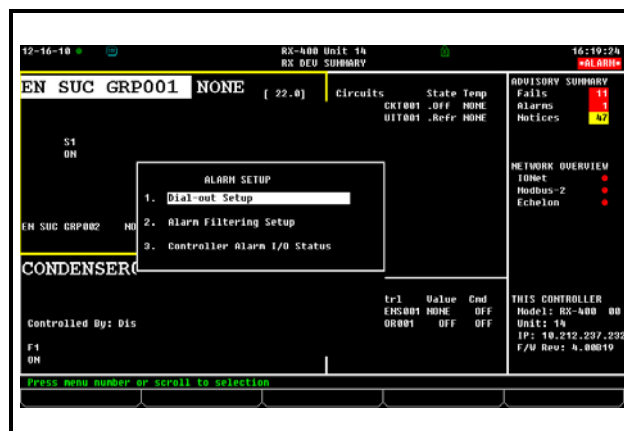


Figure 3-27 - Alarm Setup Menu

One of the E2's most important alarm reporting features is its ability to dial-out to remote sites whenever a serious alarm condition occurs. Each E2 is capable of dialing out to up to three sites. The E2 may dial out to a computer, a fax machine, a digital pager, or a printer. To set up from the Main Menu:

Dial-out devices are set up in the Dial-out Setup screen. To reach this screen:

1. Press **Menu** (Main Menu).
2. Press **&7** (System Configuration).
3. Press **%5** (Alarm Setup).
4. Press **!1** (Dial-out Setup).

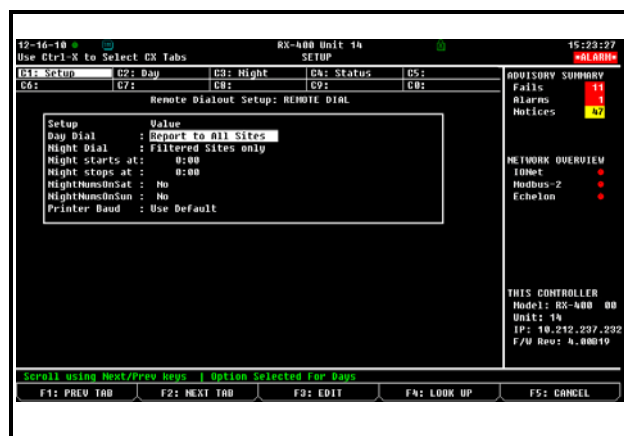


Figure 3-28 - Remote Dialout Setup Screen

This screen and the other screens that follow it are used to set up dial-out sites for both daytime and nighttime operation, including specifying phone numbers and IP

addresses. Use the **F1** and **F2** keys to cycle through the Setup screens.

3.9.4 Introduction: Alarm Reporting

In general, a controller reports alarms to any or all of four different sources:

1. The E2 Display Header

Alarms that occur within a E2 may be reported to the header display at the top of the screen. When an alarm is reported to the display, the word “*ALARM*” flashes underneath the time at the top of the screen, as shown in the example below:

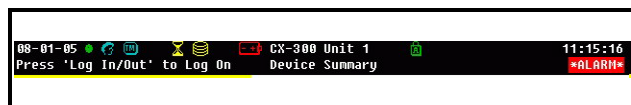


Figure 3-29 - E2 RX Display Header

2. The Advisory Output

Each E2 has a single digital output that reacts to alarm reports. When an alarm is reported to this output, the output turns ON and remains on until the alarm condition has returned to normal.

3. Dial-Out

Alarms may be sent to remote alarm receivers via the modem defined for the controller. Possible dial-out devices include a PC running UltraSite, a printer, a fax machine, and a digital pager.

4. The LonWorks Network (The Alarm Annunciator)

If multiple E2s exist on a network, you may choose to send alarms across the LonWorks Network so that they may be picked up by the Alarm Annunciator.

Refer to **Section 3.9.2** for information on how an Alarm Annunciator works.

3.10 Set Up Global Data

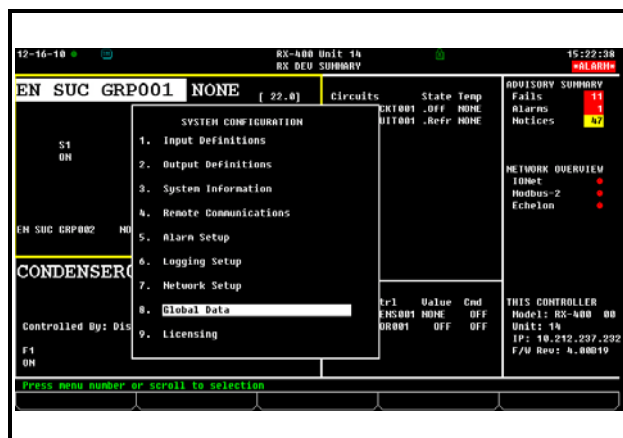


Figure 3-30 - System Configuration Menu

In a network with multiple E2s, it is often the case that certain sensors or transducer values will need to be used by all E2s. A good example of this is outside air temperature. There is no real need for every E2 to have its own outside air temperature sensor, and therefore it would be beneficial if a single sensor could be used by all E2s on the network.

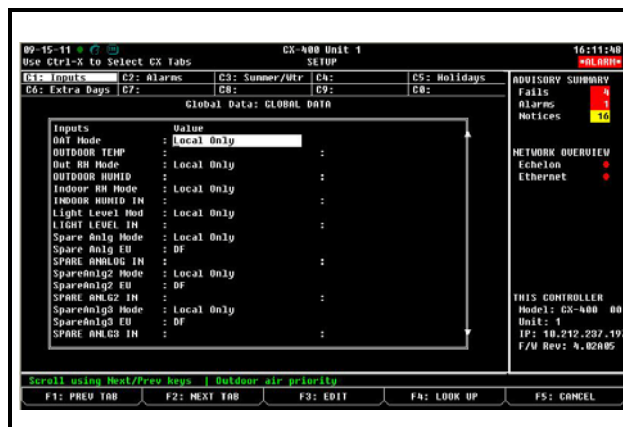


Figure 3-31 - Global Data Setup Screen

Navigate to the Global Data screen from the Main Menu:

1. Press **&7** (System Configuration)
2. Press ***8** (Global Data) to open the Global Data Status screen.
3. Press **F5** (Setup) to open the Global Data Setup screen.

The Global Data feature is an enhanced method of effectively distributing commonly used input values between multiple E2s. Sensors such as outdoor temperature and outdoor humidity are set up on an E2 as Global Data inputs. This E2 then becomes the “provider” of the

global sensor values to all other Global Data applications on the E2.

As a result, a single sensor can be used by any application in any E2 on the network.

Unless you program it otherwise, the E2 always assumes you will be using Global Data in all your applications. When you create new applications in the E2, it will always automatically connect the appropriate application inputs (except for the spares) to their corresponding Global Data outputs.

3.10.1 Priority Settings

When selecting the priority for a global sensor input, there are four settings to choose from.

Primary Primary inputs are the highest priority inputs. If a sensor is set up with a primary priority, it is recognized by all Global Data applications on the network as the highest priority. The primary provider sends this input value to the other Global Data applications in the other E2s, and each E2 immediately sends that value to all of its own applications that use the Global Data input.

Only one input of each type may be designated as a primary on the E2 Network. In other words, if one E2 is acting as the primary provider of the global Outdoor Air Temp, no other E2 on the network may have a global Outdoor Air Temp sensor with a “primary” priority.

If using this priority setting, you must enter board and point settings.

Secondary Sensors that are set up with secondary priorities are backup sensors that will be used by all Global Data applications if the primary sensor fails.

If a global input is set up on an E2 with a secondary priority, the E2 will not send its value to the other Global Data applications as long as it is receiving a primary value of that type from another E2 on the network. If a secondary provider does not receive a primary value update at least once every five minutes, the secondary provider will assume the primary sensor has failed, and it will send the secondary value to all other Global Data applications on the network. These applications will then use the secondary value in place of the failed primary value.

Secondary providers will continue to send the input value until the primary provider again sends a valid update to the other Global Data applications. The secondary provider would then stop sending the secondary value, and all Global Data applications would use the primary value.

If using this priority setting, you must enter board and

point settings.

Example: Out of three E2s, an outside air temperature sensor on E2 A's I/O Network is set up as the primary provider of the global Outside Air Temp input. A similar sensor is set up on E2 C with a secondary priority (see **Figure 3-32**).

As long as E2 A is capable of broadcasting a valid temperature value, all three E2s would use E2 A's Outside Air Temperature value in their own Global Data applications.

However, if E2 A loses contact with the sensor, E2 A no longer has a valid temperature value to send to the other Global Data applications. After five minutes of no updates from E2 A, E2 C will consider the primary Outside Air Temp source to have failed, and it will begin sending the value of the secondary sensor to the Global Data applications of the other two E2s. All E2s would then use this secondary value as Outside Air Temperature.

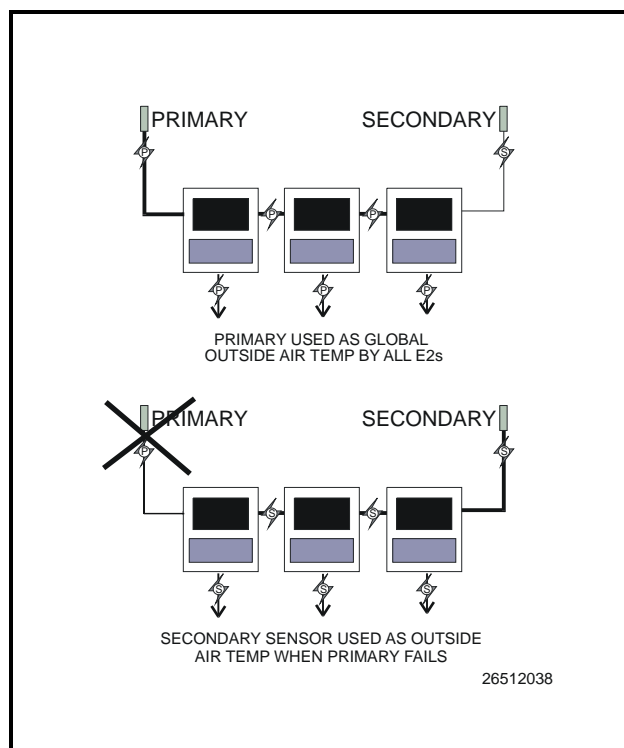


Figure 3-32 - Global Data Priority Example

Just as there may be only one primary provider for each input type, there may be only one secondary for each input type. It is recommended that secondaries be set up on different E2s than primaries; this way, if a single controller fails or loses communication with the other E2s, there will still be a usable input source for the other E2s.

User This setting means the E2's global data will read (or be a "User" of) all values coming from the network. This setting is for E2s that are not connected to the sensor itself, but read the data that comes from it.

If the application in this E2 will be using primary or secondary inputs from other E2s, then set the priority to "USER."

Local Only This setting specifies that the input to the global data is read and sent only to within the E2 you are programming. Also, this means that this E2 will not read any Primary or Secondary providers from the network.

If using this priority setting, you must enter board and point settings.

Example: Setting Up an Outdoor Temperature Sensor

1. Press **8** (Global Data) and the Status screen opens.
2. Move the cursor to the Outdoor Air Temperature (OAT) Mode, and then choose the priority by scrolling with the **Next** and **Prev** keys.
3. Press the down arrow button once to the Board and Point section and enter the board and point locations for the sensor.
4. Press **BACK** to return to the Main Status (Home) screen.

The Outdoor Air Temperature sensor is now set up as a global device in the E2. Other global inputs can be set up using the same method as above.

E2 is now ready to be programmed with applications.

3.11 Set Up Applications

From the Main Status (Home) screen, place the cursor on the application you wish to view and press **F5** (SETUP). You can also press **Enter** and select **5** (Setup) from the Actions Menu to open the Setup screen for your selected application.

3.11.1 Add/Delete an Application

Add an Application:

1. Press the **Menu** key to open the Main Menu screen.
2. Select **6** (Add/Delete Application) to open the Add/Delete Application menu.
3. Select **1** to add an application.
4. Choose an application by pressing **F4** (LOOK UP) to open the Option List Selection menu, and choose the application you wish to add.
5. Press **Enter** to place the application in the **Type** field.
6. Select the number of applications you wish to add in the **How many?** field.
7. Press **Enter** to add.
8. You are then asked if you would like to edit the application now. Press **Y** (Yes) or **N** (No).

Delete an Application:

1. Press the **Menu** key to open the Main Menu screen.
2. Select **6** (Add/Delete Application) to open the Add/Delete Application menu.
3. Select **2** (Delete Application).
4. Press **Enter** to delete the application if not displayed by default.
5. If not displayed by default, choose the application you wish to delete by selecting **F4** (LOOK UP). The Option List Selection menu opens. Choose the application you wish to delete from this list.
6. Press **Enter** and the application appears in the **Type** field.
7. Press **Enter** to delete the application.
8. A dialog box opens asking if you are sure you want to delete the application you have selected. Press **Y** (Yes) or **N** (No).

3.11.2 Using and Configuring a Setup Screen

The Setup screen is application-specific depending on where you place the cursor on the Home screen.

Press **Enter** to open the Actions Menu and select **5** (Setup), or press **F5** (SETUP) on the Home screen.

The Setup screen for your selected application will open.

3.11.2.1 The Edit Menu

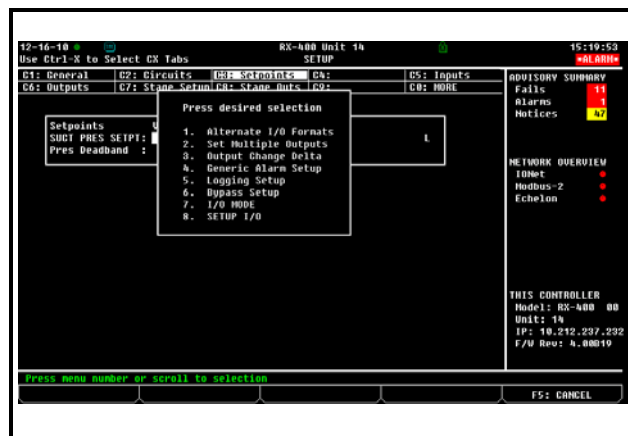


Figure 3-33 - Edit Menu

The Edit menu becomes available when you are on a Setup screen and can be opened by pressing **F3** (EDIT). Depending on which Setup option (index tabs) is highlighted, the Edit menu allows you to change field formatting using these options:

- Alternate I/O Formats - setting up pointers can change a field to expect a **Board:Point, Fixed Value**, or **Area Ctrl:Application:Property**.
- Set Multiple Outputs - allows you to connect an output pointer to multiple input pointers.
- Output Change Delta - the +/- change that must occur at the output before the new value is used.
- Generic Alarm Setup - enables the user to custom-assign alarming parameters in the controller.
- Logging Setup - enables the user to turn logging on for a particular parameter. Note that if “L” appears next to the parameter, default logging has already been enabled for the Logging Group Cell.
- Bypass Setup - Opens screen for bypass input types, which are “Momentary” or “Level” triggered and remain active for a “Bypass Duration”. For example, Time Schedules have two such inputs.
- I/O Mode - toggles between displaying board

names and board numbers.

- Setup I/O - allows user to enter an input or output point setup screen.

3.11.2.2 Entering Setpoints

An application setpoint is a user-defined control parameter stored inside the controller. Setpoints can be programmed from any application setup screen.

To enter setpoints from a Setup screen:

1. Press **F5** (SETUP) from the desired application’s Status screen. (If starting from the Home screen, move the cursor to the desired application’s value and press **Enter** to open the Actions Menu. Choose **Setup**. This will take you to the Setup screen.)
2. Once inside the application’s Setup screen, look for the **Setpoints** option in the index tabs along the top of the screen.
3. Use **F2** (NEXT TAB) to tab over and the Setpoints box of your application will open.

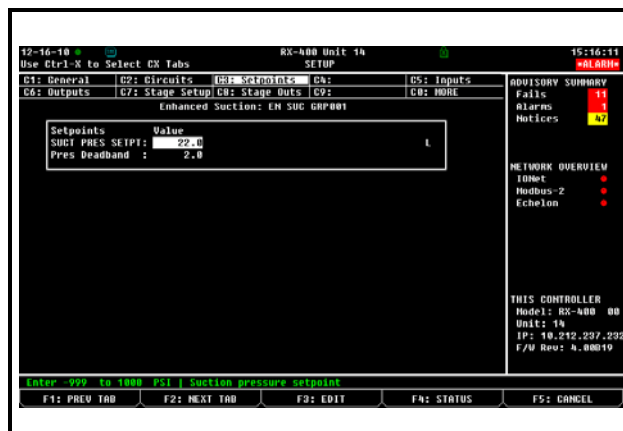


Figure 3-34 - Setpoints Box

3.11.2.3 Navigating the Setup Screen

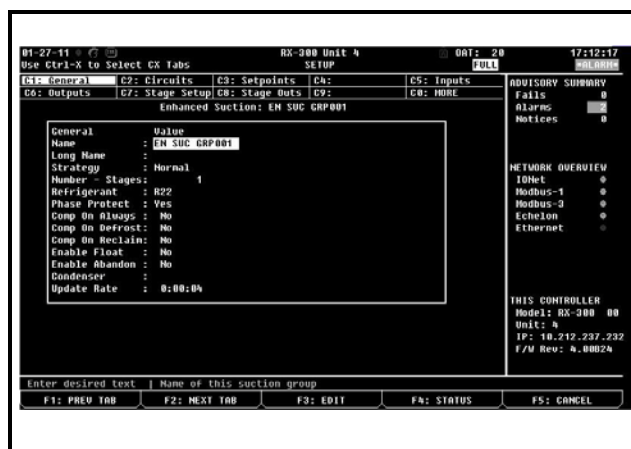


Figure 3-35 - Typical Setup Screen (RX version shown)

The Setup utility is the interface used to change settings and setpoints, and define inputs and outputs in the E2. *Figure 2-8* and *Figure 3-35* show a typical Setup screen and its primary elements.

Index Tabs

The ten boxes at the top of the screen labeled **C1** through **C0** are known as the **index tabs**. These tabs provide a short index of the screens that are used to set up the current application. The numbers **C1** through **C0** represent the screen numbers (**C1** being screen 1, **C2** being screen 2, and so on).

Each of the Setup screens that you may access will have a name beside its number. But as in *Figure 2-8* and *Figure 3-35* for example, you will notice some tabs have names, while others are blank.

As you move through these screens within the Setup Editor, the highlight will move to different tabs to indicate which screen is being displayed.

- Pressing **F1** (PREV TAB) will back-up the order of the screens.
- Pressing **HOME** (HOME) at any point will take you to the Main Status (Home) screen.



TIP: To see each screen in a typical setup for the E2 RX controller, start from the Main Status (Home) screen.

1. Position the cursor somewhere inside the Suction Groups section and press **Enter** and **5** (Setup), or just **F5** (SETUP) from the Home screen. The General Setup screen will be displayed.
2. Press **F2** (NEXT TAB) to move the cursor to Setpoints. The Setpoints Setup screen is displayed.
3. Press **F2** again and the Inputs Setup screen comes up.
4. Press **F2** a few more times to see the rest of the Setup menu screens. When the **C0** tab (MORE) is highlighted, there may be more than one extra Setup screen. Press **Ctrl** + **0** (zero) to see a list of all Setup screens for that application.
5. Keep pressing **F2** while taking note of the extra screens until **C1** is highlighted once more.

These screens (**C1** through **C0**) contain all of the set up information that is associated with the selected suction group.

Blank tabs are inaccessible. There are several reasons why a tab may be inaccessible (i.e., without a name next to the number):

- The tab (and the corresponding screen) is unused and reserved for later revisions.
- The screen may only be accessed when running in Full Options mode.
- The screen may require one or more fields to be set to certain values before the screen may be accessed. For example, a screen containing nothing but compressor proof input definitions might be hidden if there is a field on another screen that tells the system there are no proof checking devices on the group's compressors. To access this screen, you would have to set this field to "YES".

The screen you are currently in is always highlighted in the screen's index tab. For example, in *Figure 2-8* and *Figure 3-35*, because Screen 1 is displayed, tab **C1** is highlighted.

The Help Line

The line near the bottom of the screen above the function key menu is the **help line**. The help line this time provides a short description of the selected field, along with important information such as minimum and maximum value ranges, and setup instructions.

The Function Keys For Setup

The five boxes at the very bottom of the screen show the function of keys **F1** through **F5**. Most of these keys retain the same function no matter which field, screen, or application is selected in a Setup screen. **Table 3-3** shows what each key is used for.

Key	Function	Description
!	PREV TAB	Moves backward one screen
@	NEXT TAB	Moves forward one screen
#	EDIT	Opens the Edit Menu box
\$	STATUS, OVERRIDE, or LOOKUP	Opens the Detailed Status screen, Opens the Override Update screen, or Look Up Tables
%	CANCEL	Cancels the operation

Table 3-3 - Function Keys for Setup Screens

After all of the functions of E2 are set up, the next step is to set the System Configuration, which is basically how the system is used.

3.11.3 Using the Help Key to Get Property Help

Property Help gives an explanation of the parameter, input, or output the user has selected.

Pressing the **?** key while the cursor is pointing to a parameter, input, or output opens the Property Help window. The Property Help window displays documentation specific to the parameter, input, or output the cursor is currently pointing to.



Appendix A: Troubleshooting

The chart below describes symptoms and solutions if troubleshooting the system or equipment is needed. For further information, contact Retail Solutions Service at 1-800-829-2724.

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
I/O Network Problems	I/O board not getting power.	Check I/O board power--is the green STATUS light on? If not, check power wiring connections, and use a multimeter to verify the board is getting 24VAC. Reset power to board.
	I/O board not communicating or won't come online.	Check I/O network connections: 1. Check wire polarity (positive to positive/negative to negative) 2. Check for broken or loose wires.
	Dip switches are set incorrectly.	Check I/O board network dip switches. Verify network ID number is not a duplicate and that baud rate switches are set to 9600. (If switches are wrong, make changes and then reset the controller.)
	Terminating resistance jumpers are set incorrectly.	Check for proper setting of terminating resistance jumpers. Network segment should be terminated on the two endpoints of the daisy chain and unterminated everywhere else.
	Boards are not powered.	Check Network/Power voltages.
Echelon Network Problems	Faulty wiring.	Check connections. Are wires broken or loose? Check network polarity (positive to positive/negative to negative). Check for wire damage.
	Termination jumpers are set incorrectly.	Check for proper setting of terminating resistance jumpers. Network segment should be terminated on the two endpoints of the daisy chain and unterminated everywhere else.
	Subnet (unit #) is set incorrectly.	Each controller must have its own subnet address.



SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Compressor will not Operate	Compressor is not programmed properly.	Verify that E2 was programmed for correct number of compressor stages. Highlight the General tab (C1) in the Suction Group Setup screen. Is the correct number of stages in the “Number of Stages” field?
	Compressor types are set up incorrectly.	Make sure that compressor stages were properly set up as VS (variable speed), C (compressor), or U (unloader).
	Compressor programmed with incorrect rating.	Verify that compressors were assigned the proper rating (HP/AMP, or BTU).
	Pressure setpoints are set up incorrectly.	Set proper pressure setpoints. If you are controlling the rack using suction pressure, enter the pressure setpoint in the SUC PRES SETPT field. If you are controlling by temperature, enter the temperature setpoint in the CTRL TEMP SETPT field. Note: Pressure setpoints are located under the Setpoints tab (C2) in the Suction Group Setup screen.
	Board and point addresses are incorrect.	Set proper board and point settings for input, output, and compressor outputs. Board and point settings are located under the Inputs tab (C4), Outputs tab (C5), and Comp Outs tab (C7) in the Suction Group Setup screen.

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Compressor will not Operate (Cont.)	8RO fail-safes are not wired correctly.	Verify fail-safe wiring on 8RO board for N.O./N.C. positions. One wire of the two-wire connection should always be connected to the middle terminal. The second wire must be either connected to the N.C. terminal (if you want the relay to be closed (ON) during power failure) or the N.O. terminal (if you want the relay to be open (OFF) during power failure.)
	Compressor in override.	Highlight compressor stage and cancel the override by pressing Enter to open the Actions Menu. Select 3 for Override options, or go to the Override/Bypass Log to view and cancel overrides: 1. From the Main Menu, press 8 to open the Status menu. 2. From the Status menu, press 4 for the Graphs/Logs menu. 3. Press 3 for the Override/Bypass Log. (This screen gives you quick access to all overrides/bypasses in the system)
	Rack is in Phase Fail.	Verify correct phase and verify correct input for phase loss. If you specified that phase protection would be used on this rack, the Phase Loss input is displayed. The Phase Loss input is automatically configured to use E2's Global Data phase loss protection source. If you wish to define a different source, re-define this input definition. To point this input to a board and point address: press F3 (EDIT) and then 1 to change the definition format.
	Oil sensors are set up but are not in use.	Remove oil sensors from individual compressors. 1. Highlight the Comp Setup tab (C6) in the Suction Group Setup screen. 2. Use the arrow keys to select the OIL SENSOR field. 3. Choose "None" from the LOOK UP menu.

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Problems with Condenser	Condenser will not operate.	Verify that E2 is programmed with proper number of fans. 1. Highlight the General tab (C1) in the Condenser Setup screen. 2. Is the correct number of fans in the Number of Fans field?
	Incorrect board and point settings.	Confirm proper board and point settings: Go to the Inputs tab (C3) in the Condenser Setup screen to check PRES CRTL IN and DISCH TRIP IN.
	Fail-Safe wiring on 8RO is incorrect.	Verify proper fail-safe switch positions on the 8RO board. The fail-safe dip switches are labeled S2 on the 8RO and S3 on the 8ROe and 8IO. Set the rocker UP (ON) to close the relay and turn the output ON during network failure. Set the switch DOWN (OFF) to open the relay and turn the output OFF during network failure.
	Condenser will not split.	Enable the condenser to split. Go to the General tab (C1) in the Condensers Setup screen and set the Split Enable field to Yes .
	Unsplit setpoint is set too low.	Unsplit setpoint value is compared with discharge pressure value instead of temperature. Enter the value in terms of discharge pressure. Go to the Setpoints tab (C2) in the Condensers Setup screen and check that the UNSPLIT STPT field value has been entered as a pressure value.
	Half of the fans are not running.	Check the split fan relay output: 1. Go to the Other Outs tab (C7) in the Condensers Setup screen and check that SPLIT FAN has a board and point assignment. 2. Verify Split is enabled: Go to General tab (C1) in the Condensers Setup screen and set the Split Enable field to Yes . 3. Verify output is ON.
Problems with Cases	Case will not go into hot gas or cool gas defrost.	Check Group LLSV in Suction Group setup: 1. Go to the Outputs tab (C5) on the Suction Groups Setup screen and check GROUP LLSV. 2. Verify that the case(s) is assigned to the correct group.
	Case will not terminate out of defrost mode.	1. Verify the termination type (Term Type) in the Defrost tab (C4) in the Standard Circuits Setup screen. 2. Check the defrost termination input location on circuit input. 3. Go to the Inputs tab (C6) and check DEFROST AV TERM.

SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Problems with Global Actions	Information cannot be read from another E2 controller.	Verify that the controller with the sensor is set up as the Primary and the controller receiving the information is set up as the User (both controllers default as local).
Problems with Temp Sensor or Pressure Transducer Displaying Proper Value	16AI input dip switches are set improperly.	The 16 dip switches on the 16AI board correspond to each of the inputs: Dip Switches Up = Temperature Sensor Dip Switches Down = Pressure Transducer
	Incorrect board and point address.	Set proper board and point settings for both input and output: Go to the Inputs tab in the application's Setup screen and check Board and Point.
	Incorrect sensor type.	<p>1. Verify that the sensor type in E2 is the same as the sensor installed. (For example, "5V-200PSI" is a 5-volt powered 200PSI pressure transducer, and "Temperature" is the standard Retail Solutions temperature sensor.</p> <p>NOTE: The previous Eclipse and Standard sensors are now 5V and 12V respectively.</p> <p>2. From the Main Menu, select System Configuration (7) and Input Definitions (1).</p> <p>3. Highlight the desired input and press F1 (SETUP) to check Sensor Type.</p>
No Heat or Air Will Come On	Incorrect board and points assignment.	Make sure that your board and points are assigned to the correct compressors and heat stages
	Check the Heat and Cool OAT lockout temps.	From the Home screen, press F1 (AHU), F5 (SETUP). Move cursor to C5 (HT/CL Setup) to check the Lockout temperatures.
Dehumidification Problems	Number of stages are not set up or set up incorrectly.	From the Home screen, press F1 (AHU), F5 (SETUP). Move cursor to C9 (Dehum) to check Dehum Stages.
	Dehumidifier source not set up.	From the same screen, verify what the sensor source is.
	Temperature setting for DEHUM OCC or DEHUM UOC is set too high.	From the same screen, check the minimum temperature setting.



SYMPTOM	POSSIBLE PROBLEM	SOLUTION
Lighting Control Problems	Lights will not come on.	Make sure you have a Time Schedule set up. A Time Schedule is not Lighting Control. You can use the same Time Schedule for several Lighting Controls. Set up the Time Schedule first and then assign it to a Lighting Control.
		Set up a Time Schedule and got to Lighting Control. Choose the desired application and press F5 (SETUP). Move the cursor to C7 (Inputs) and highlight the Board field. Press F4 (LOOK UP), choose the input device and press Enter . Highlight the Point field and press F4 (LOOK UP). Select the type of schedule and press Enter .
		Make sure Lighting Control output is assigned.
Lights Will Not Come On With The Photocell	Photocell is not recognized by controller.	Make sure the photocell is configured as an analog input.
		Verify that the type of light sensor is correct.
		If using a light level sensor from another E2 controller, set it up on the controller it is associated with in the Global Data section.

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