

# E2 Enhanced CCB Case Control Support and RMCC Retrofitting

## Overview

To support E2E retrofitting of supermarkets with existing REFLECS controllers using CCB case controllers, the Copeland E2E RX-300 and RX-400 refrigeration controllers now support communication with CCBs. The CCBs were previously sold and used with the RMCC refrigeration controller, and were discontinued in 1998 when the Einstein family of refrigeration and building controllers were released (along with the replacement case controller, the CC-100/CS-100 case controllers).

CCB support requires an E2E RX-300 or RX-400 with software version 4.01 or higher. The RX-100 does not support CCB, nor do any of the BX building controller or CX convenience store controller models.

## STEP 1: Preparing for Retrofit

When replacing a REFLECS unit with an E2E, there are several major differences that must be taken into account.

1. All REFLECS units are powered by 110/220VAC line voltage. E2E controllers are powered by 24VAC non center-tapped transformers. Refer to the E2E User's Manual (*P/N 026-1614 Rev 5 or later*) for more information on powering the E2E controller.
2. REFLECS units use an RS485 (COM B) network to connect to a 485 Alarm Panel. E2E does not support the 485 Alarm Panel.
3. REFLECS units use an RS232 (COM C) host network to connect all units to a modem for alarm dial-out. E2Es may use either Echelon or Ethernet for box-to-box communication. The existing host network wiring may not be used for E2E box-to-box communication - you will either have to rewire using approved Echelon network wire, or wire CAT 5 cable to an approved network router or switch. Refer to the E2E User's Guide for more information on box-to-box wiring.
4. COM A and COM D networks (the RS485 I/O networks) use the same wire and polarity for both the REFLECS and E2E controllers. No rewiring of the I/O network will be necessary; just unplug the COM A and/or COM D connectors, and plug them into the I/O port(s) on the E2E PIB (see [Transferring the COM A and COM D Networks](#) below).

## STEP 2: Transferring the COM A and COM D Networks

The COM A and COM D I/O networks on the RMCC are where connections to all I/O devices, such as 16AIs, 8ROs, and CCBs, are made. The two networks are interchangeable, each one capable of connecting up to 31 devices. In a typical CCB configuration, the most common means of wiring was to connect all CCB devices in a single daisy-chain to one network port, with all other I/O devices kept separate on the other network port.

The E2E's standard I/O port (COM2, located on the E2E Power Interface Board, or PIB) also has two connectors ([Figure 1 - COM2 Port Location, E2E \(Right Side Interior\)](#)). Unplug the connectors from the COM A and COM D plugs, and plug them into the COM2 plugs on the E2E.

## STEP 3: E2E Termination Jumper Settings

The network termination jumpers, directly above the two COM2 plugs on the PIB, will need to be set to the same positions as the COM A and COM D termination jumpers on the RMCC. The rules for termination on E2E I/O networks are the same as the rules for RMCC I/O networks. Set the three jumpers to the middle **I/O** (terminated) position if the port is at the end of a network segment or the hub of a star configuration, and down **NO** (unterminated) if the port is in the middle of a segment.

There is one set of RS485 jumpers for each RS485 port (COM2A-2B; COM6; and COM4A-B). Jumpers J8-J10 are located directly above the COM2A connector port, and jumpers J11-J13 are located directly above the COM2B port. The RS485 termination jumpers (J8-J22) are used to terminate the devices at the beginning and end of an RS485 Network. If the E2 is the beginning of all RS485 I/O or MODBUS Networks, all three of these jumpers should be set to the up position. For MODBUS, the jumpers should all be in the top-most position (**MOD**). For I/O Net, the jumpers should be in the middle position (**I/O**). For no termination, set the jumpers to the down position (**NO**).

Refer to the E2E User's Manual (*P/N 026-1614 Rev 5 or later*) for expanded communication setup information.

### E2 PIB COM PORT ASSOCIATIONS

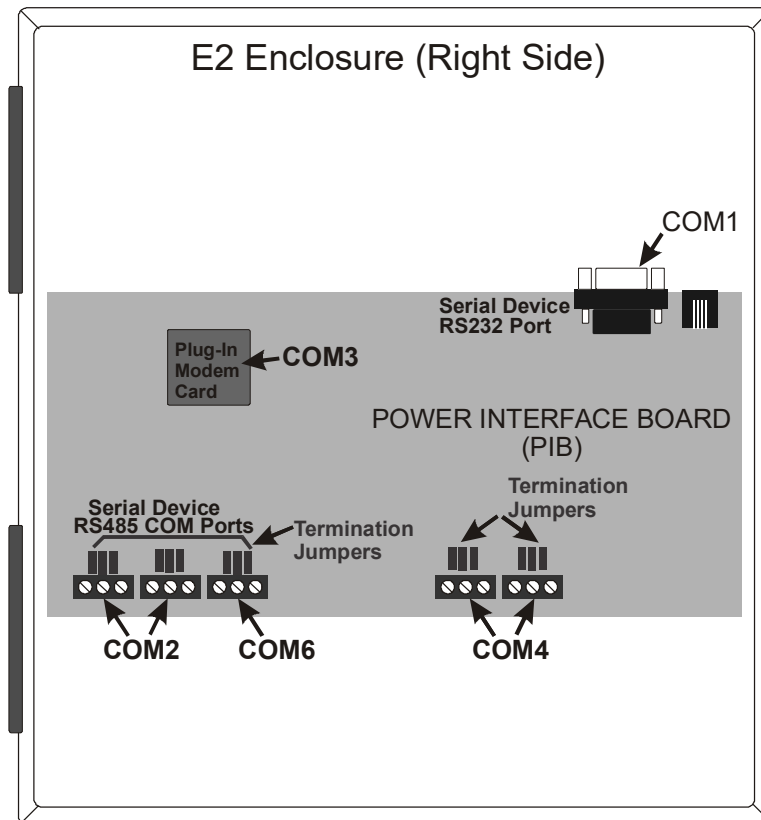









Figure 1 - COM2 Port Location, E2E (Right Side Interior)

## STEP 4: E2E Baud Rate Settings

The CCB communicates at a fixed 19200 baud. Because the COM A and COM D networks of an RMCC must communicate at the same baud rate, all I/O boards connected to the RMCC were also set to communicate at 19200 baud. Because the default E2E baud rate for I/O networks is 9600 baud, you will need to change the COM2 baud rate setting. This must be done in the C3: Serial tab of the E2E's General Controller Info screens.

1. Log into the E2 with Level 4 password access.
2. Press     to access the **General Controller Info** screen.
3. Press  +  (or  two times) to access the **C3: Serial** tab (*Figure 2 - E2E Serial Configuration Screen - Baud Rate*).

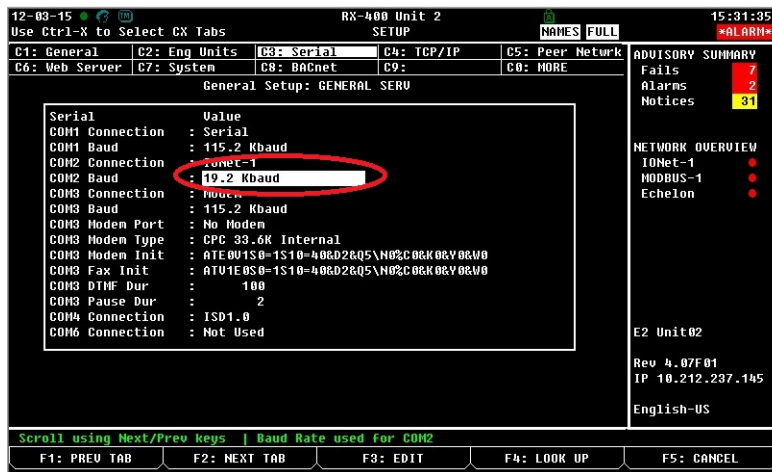


Figure 2 - E2E Serial Configuration Screen - Baud Rate

You will need to set two parameters in the **C3: Serial** tab.

1. In the **COM2 Connection** field, if the value displayed is something other than **IO Net**, set this parameter to **IO Net**.
2. In the **COM2 Baud** field, set the value to **19.2 Kbaud**.

## STEP 5: Adding CCBs

1. Press (Connected I/O Boards and Controllers). The I/O Network screen will open ([Figure 3 - E2E Connected I/O Screen](#)).
2. CCB will be listed as a device type in the *I/O Network* tab at the top of the screen. In the **CCB** field, enter the total number of CCBs that will be connected to this E2E.

The CCBs you added should immediately come online, provided the CCBs and their network are functioning properly and the CCBs are numbered in sequence starting with board #1 and continuing in order to the last device on the network. To verify the Online/Offline status of the CCBs, press the back button from the *I/O Network* screen, and then select **2 - Network Summary**. The **Status** column on this screen will show whether the CCBs you added are Online or Offline ([Figure 4 - E2E Network Summary Screen](#)).

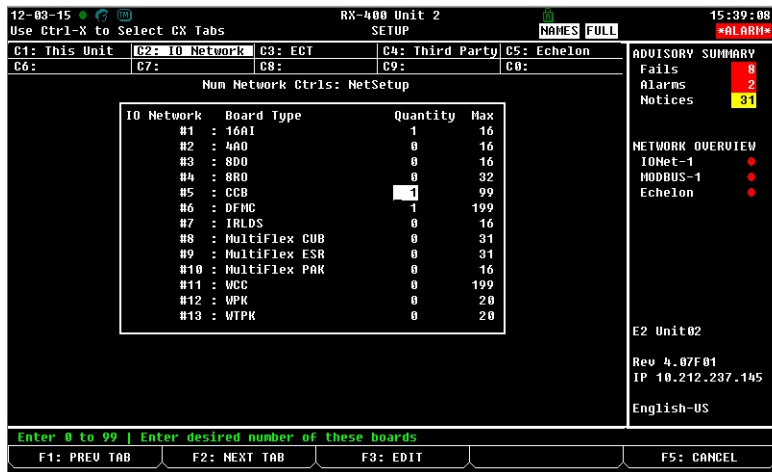


Figure 3 - E2E Connected I/O Screen

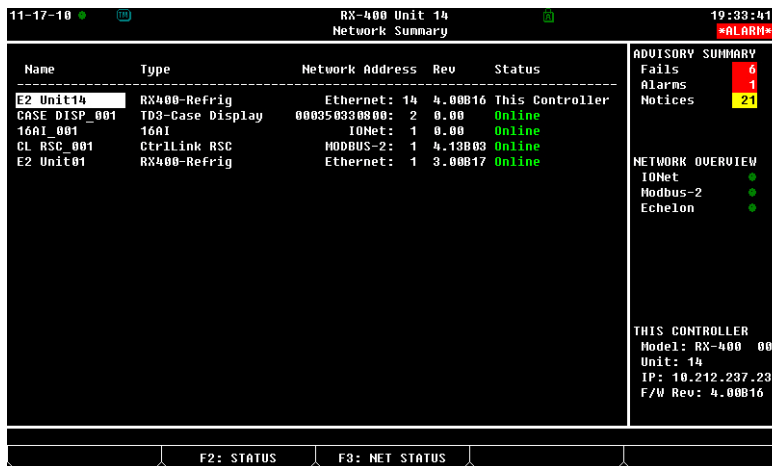


Figure 4 - E2E Network Summary Screen

## STEP 6: Associating CCBs

The process for associating CCBs with Case Control Circuits is the same process used to associate other case controllers, such as the CC-100. In [Figure 5 - Controller Associations](#), CCBs may be associated in the **Case Control Associations** screen (Menu 7 7 4 1). In [Figure 6 - CC Circuit Associations](#), for each case controller shown on the left, you can pick the circuit to associate it with on the right. Note that in this example, the case controllers shown on the left are a variety of CC-100, XR, XM, and CCB controllers.

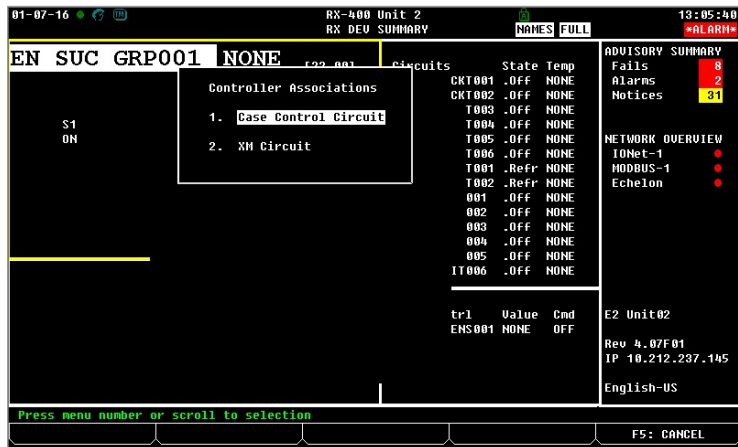


Figure 5 - Controller Associations



Figure 6 - CC Circuit Associations

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