# E2 Enhanced CCB Case Control Support and **RMCC** Retrofitting

**Technical Bulletin** 

#### **Overview**

To support E2E retrofitting of supermarkets with existing REFLECS controllers using CCB case controllers, the Retail Solutions E2E RX-300 and RX-400 refrigeration controllers now support communication with CCBs. The CCBs were previously sold and used with Retail Solutions' 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).



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#### 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*). 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.



#### **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 7 2 to access the General Controller Info screen.
- 3. Press + 3 (or F2 two times) to access the C3: Serial tab (Figure 2).

| 12-03-15 🌢 🌈 📖<br>Use Ctrl-X to Select CX Tabs   | RX-4   | 00 Unit 2<br>SETUP                     | NAMES FULL                 | 15:31:35<br>*ALARM*   |  |  |  |
|--|--|--|----------------------------|---|--|--|--|
| C1: General C2: Eng Units   C6: Web Server C7: System   General General   Serial Value   COH1 Connection : Serial   COH1 Baud : 115.2  | C3: Serial<br>C8: BACnet<br>L Setup: GENERAL<br>(baud                      | C4: TCP/IP<br>C9:<br>SERU              | C5: Peer Netwr<br>C0: MORE | ADUISORY SUMMARY<br>Fails 7<br>Alarms 2<br>Notices 31       |  |  |  |
| C0H2 Connection     19-2 K       C0H2 Baud     19-2 K       C0H3 Connection     19-2 K       C0H3 Baud     115.2 I       C0H3 Moden Port     N Mode       C0H3 Moden Type     CPC 33       C0H3 Moden Init     A Toto IC       C0H3 Pause Dur     1       C0H3 Pause Dur     1 | Chaud<br>en<br>6K Internal<br>68 IS10=408D28Q5'<br>50=IS10=408D28Q5'<br>80 | NØ%C ØRK ØRY ØRWØ<br>NØ%C ØRK ØRY ØRWØ |                            | IONet-1 ©<br>MODBUS-1 ©<br>Echelon ©                        |  |  |  |
| COM6 Connection : Not Us   | 20   |  |                            | E2 Unit02<br>Rev 4.07F01<br>IP 10.212.237.145<br>English-US |  |  |  |
| Scroll using Next/Prev keys  <br>F1: PREV TAB F2: NEXT   | TAB F3   | For COM2                               | F4: LOOK UP                | F5: CANCEL  |  |  |  |
| 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 T 2 (Connected I/O Boards and Controllers). The I/O Network screen will open (Figure 3).
- 2. CCB will be listed as a device type in the *IO 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*).



| 11-17-10 🔶 🔟  |  | RX-400 Unit<br>Network Summ   | 14<br>ary                                     | <u>ه</u>  | 19:33:41<br><mark>*Alarm*</mark>   |
|---|--|---|---|---|--|
| Name  | Туре   | Network Address   | Rev   | Status  | ADVISORY SUMMARY<br>Fails 6  |
| E2 Unit14<br>CASE DISP_001<br>16AI_001<br>CL RSC_001<br>E2 Unit01 | RX490-Refrig<br>TD3-Case Display<br>16AI<br>CtrlLink RSC<br>RX400-Refrig | Ethernet: 14<br>000350330800: 2<br>IONEt: 1<br>HODBUS-2: 1<br>Ethernet: 1 | 4.00816<br>0.00<br>0.00<br>4.13803<br>3.00817 | This Controller<br>Online<br>Online<br>Online<br>Online | HIATMS 21<br>Notices 21<br>NETWORK OVERVIEW<br>IONet 6<br>Modbus-2 6<br>Echelon 6        |
|   |  |   |   |   | THIS CONTROLLER<br>Model: RX-400 00<br>Unit: 14<br>IP: 10.212.237.23<br>F/W Rev: 4.00B16 |
|   | F2: STATUS   | F3: NET STA   | TUS 🗼   |   |  |
|   | Figure   | 4 - E2E Netwo   | ork Su  | mmary Scree   | n  |

#### **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*, CCBs may be associated in the *Case Control Associations* screen ( ). In *Figure 6*, 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.

| 91 07 | -16 🔹 🦪  |            |   | RX-400<br>RX DEV                            | Unit 2<br>SUMMARY |  | ia<br>Nami   | S FULL   |   | 13:05:4<br>*ALARM    |
|-------|----------|------------|---|---|-------------------|--|--|--|---|----------------------|
| EN    | SUC      | GRP00      | DI NONE<br>Controller A<br>1. Case Con<br>2. XH Circu | r99 nn)<br>ssociations<br>trol Circui<br>it | Circu:            | its<br>CKT001<br>CKT002<br>T003<br>T005<br>T005<br>T005<br>T005<br>T005<br>001<br>002<br>003<br>004<br>005<br>IT006<br>tr1<br>ENS001 | State<br>.Off<br>.Off<br>.Off<br>.Off<br>.Off<br>.Refr<br>.Off<br>.Off<br>.Off<br>.Off<br>.Off<br>.Off<br>.Off | Temp<br>None<br>None<br>None<br>None<br>None<br>None<br>None<br>None | ADUISORY<br>Fails<br>Alarms<br>Notices<br>NETWORK 0<br>IOMET-1<br>HODBUS-1<br>Echelon<br>E2 Unit02<br>Rev 4.077<br>P 10.212 | 81<br>91<br>237, 145 |
| Pres  | s nenu n | umber or s | croll to selecti                                      | on  |                   |  |  |  | English-U   | S                    |

| 01-07-16 🔺 🌈 💷             |              | RX-400<br>Case Ct | Unit 2<br>RL ASSOC | NAMES FULL | 13:06:48<br>*ALARM* |
|----------------------------|--------------|-------------------|--------------------|------------|---------------------|
| CC/CS100                   | <> CaseCt    | trl Circuit       | Association        |            | ADVISORY SUMMARY    |
| Application                | Bus          | Node              | Case Ctrl Circuit  |            | Alarms 2            |
| CC LIQUID 801              | LONWorks     | 2                 |                    |            | NOTICES 31          |
| CS SUCTION_001             | LONWorks     | 4                 |                    |            |                     |
| CC SUCTION 001             | LONWorks     | 3                 |                    |            | NETWORK OVERVIEW    |
| CCB_001                    | IONet        | 1                 |                    |            | IONet-1 🔶           |
| XM679K_13001               | MODBUS       | 1                 |                    |            | HODBUS-1 🔶          |
| XR35CX001                  | MODBUS       | 1                 | CASECTL CKT003     |            | Echelon 🔶           |
| XR35CX002                  | MODBUS       | 2                 |                    |            |                     |
| XR75CX001                  | MODBUS       | 1                 |                    |            |                     |
| XM678D001                  | MODBUS       | 1                 | CASECTL CKT003     |            |                     |
| XM678D_25001               | MODBUS       | 1                 | CASECTL CKT001     |            |                     |
| XM679K_34001               | MODBUS       | 1                 |                    |            |                     |
|                            |              |                   |                    |            |                     |
|                            |              |                   |                    |            |                     |
|                            |              |                   |                    |            | E2 Unit02           |
|                            |              |                   |                    |            | Rei 4 07F01         |
|                            |              |                   |                    |            | IP 10.212.237.145   |
|                            |              |                   |                    |            | English-US          |
| Scroll applications with N | EXT/PREV key | js or use L       | DOK-UP to select   |            |                     |
| F1: SETUP APP   F2:        | SETUP CKT    | Ţ                 | F4:                | LOOK UP    | F5: CANCEL          |
|                            | <i>c</i> :   |                   | <i>c</i> : ::      | . ,.       |                     |
|                            | Figure       | 26 - CC           | CIFCUIT ASSO       | ciations   |                     |

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