# Carel EVD Evolution MODBUS Device E2 Setup for 527-0355

This document will guide you through setting up and commissioning the Carel EVD Evolution MODBUS device in the E2 controller.

Note that Open MODBUS Description files require E2 firmware version 3.01FO1 or higher.

### STEP 1: Upload the description file to the E2 controller.

- 1. From UltraSite, connect to your E2 controller.
- 2. Right-click the E2 icon and select **Description File Upload**.
- 3. Browse to the location of the description file and click **Upload**.
- 4. After uploading, you will need to reboot the E2 controller.



*Figure 1 - Description File Upload* 

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#### STEP 2: Activate the license of the device.

- 5. From the E2 front panel (or via the Terminal Mode), press , **7** (System Configuration), and **9** (Licensing).
- 6. Press **F1** (ADD FEATURE) and enter your license key.

| 5-28-11 🛛 🍞 📟   | RX-300 Unit 1 🖄<br>Add License   | 14:04:52<br>*ALARM* |
|---|--|---------------------|
| Licensed Features- 06/2<br>For controller model ty<br>Feature   | 0/2011 - 14:03:48 - Rev: 3.01<br>pe: RX-300<br>Haximum In-Use  | B16<br>License      |
| EUSE<br>Area Controller<br>Log Group<br>Condenser Control<br>Digital Combiner<br>Analog Combiner<br>Heat/Cool Control<br>Time Schedule<br>Holiday Schedule<br>Power Monitoring<br>Analog Sensor Ctr<br>Loop/Sequence Ctr<br>Digital Sensor Ctr<br>Conversion Cell<br>Pulse Accumulation<br>Digital Import Point<br>Analog Import Point<br>HWAC Simulation | Activate Feature<br>Enter License key to<br>activate a Feature:<br><br>128 0<br>16 0<br>64 0<br>64 0<br>16 0 | -8655-CE44-081E     |
| Enter desired text  |  | F5: CANCEL          |

Figure 2 - Add License Screen

### STEP 3: Once the license is activated, add the device to the E2 controller.

- 7. Press , **7** (System Configuration), **7** (Network Setup), **2** (Connected I/O Boards & Controllers).
- 8. Press **F2** (NEXT TAB) to go to the C4: Third Party tab. You should see the device in the list. Enter the number of devices to add and press the button to save your changes.

### STEP 4: Assign a MODBUS port.

9. Press , **7** (System Configuration), **4** (Remote Communications), **3** (TCIP/IP Setup).

10. Select the COM port the device is connected to, press **F4** (LOOK UP), and select the appropriate MODBUS selection.

| : C7: System C8: C9: C0:<br>General Setup: GENERAL SERV<br>Serial Value<br>C0H1 Connection: Serial<br>C0H1 Baud : 115.2 Kbaud<br>C0H2 Connection: MOBUS-1<br>C0H2 Baud : 19.2 Kbaud<br>C0H2 Parity : None<br>C0H2 Parity : None<br>C0H2 Parity : None<br>C0H2 Stap Bits : 1<br>C0H3 Connection: Moden<br>C0H3 Baud : 9600 baud<br>C0H3 Hoden Port: No Moden<br>C0H3 Hoden Port: No Moden<br>C0H3 Hoden Pype: CPC 33.6K Internal |  |
|---|--|
| General Setup: GENERAL SERU      Serial   Value     COH1 Connection:   Serial     COH1 Baud   : 115.2 Kbaud     COH2 Connection:   MOBBUS-1     COM2 Baud   : 19.2 Kbaud     COH2 Data Size :   8     COM2 Parity :   None     COM3 Connection:   MOden     COM3 Baud   : 9600 baud     COM3 Hoden Port:   No Moden     COM3 Hoden Type:   CPC 33.6K Internal   |  |
| Serial Value   COH1 Connection: Serial   COH1 Baud : 115.2 Kbaud   COH2 Connection: MOBBUS-1   COM2 Baud : 19.2 Kbaud   COH2 Data Size : 8   COM2 Parity : None   COM2 Connection: Moden   COM3 Baud : 9600 baud   COM3 Hoden Port: No Moden   COM3 Hoden Type: CPC 33.6K Internal  |  |
| COH1 Connection:   Serial     COH1 Baud   : 115.2 Kbaud     COH2 Connection:   MOBBUS-1     COH2 Baud   : 19.2 Kbaud     COH2 Data Size :   8     COH2 Parity :   None     COM2 Connection:   Moden     COM3 Baud   : 9600 baud     COM3 Hoden Port:   No Moden     COM3 Hoden Type:   CPC 33.6K Internal   |  |
| COH1 Baud   : 115.2 Kbaud     COH2 Connection: MODBUS-1     COM2 Baud   : 19.2 Kbaud     COH2 Data Size   : 8     COM2 Parity   : None     COM2 Connection:   Moden     COM3 Connection:   Moden     COM3 Baud   : 9600 baud     COM3 Hoden Port:   No Moden     COM3 Hoden Type:   CPC 33.6K Internal  |  |
| COM2 Connection: MODBUS-1<br>COM2 Baud : 19.2 Kbaud<br>COM2 Data Size : 8<br>COM2 Parity : None<br>COM2 Stop Bits : 1<br>COM3 Connection: Moden<br>COM3 Baud : 9600 baud<br>COM3 Hoden Port: No Hoden<br>COM3 Hoden Type: CPC 33.6K Internal  |  |
| COM2 Baud   : 19.2 Kbaud     COM2 Data Size :   8     COM2 Parity :   None     COM2 Stop Bits :   1     COM3 Connection:   Moden     COM3 Baud   : 9600 baud     COM3 Hoden Port:   No Moden     COM3 Hoden Type:   CPC 33.6K Internal  |  |
| COM2 Data Size :   8     COM2 Parity :   None     COM2 Stop Bits :   1     COM3 Connection: Moden   600     COM3 Baud :   9600 baud     COM3 Hoden Port: No Moden   6001     COM3 Hoden Type:   CPC 33.6K Internal  |  |
| COM2 Parity : None<br>COM2 Stop Bits : 1<br>COM3 Connection: Moden<br>COM3 Baud : 9600 baud<br>COM3 Moden Port: No Moden<br>COM3 Moden Type: CPC 33.6K Internal   |  |
| COM2 Stop Bits : 1<br>COM3 Connection: Moden<br>COM3 Baud : 9600 baud<br>COM3 Moden Port: No Moden<br>COM3 Moden Type: CPC 33.6K Internal   |  |
| COM3 Connection: Moden<br>COM3 Baud : 9600 baud<br>COM3 Moden Port: No Moden<br>COM3 Moden Type: CPC 33.6K Internal   |  |
| CON3 Baud : 9600 baud<br>CON3 Hoden Port: No Moden<br>CON3 Hoden Type: CPC 33.6K Internal   |  |
| COM3 Moden Port: No Modem<br>COM3 Moden Type: CPC 33.6K Internal  |  |
| COM3 Moden Type: CPC 33.6K Internal   |  |
|   |  |
| CON3 Moden Init: ATE0V1S0=1S10=40&D2&Q5\N0%C0&K0&Y0&W0  |  |
| COM3 Fax Init : ATV1E0S0=1S10=40&D2&Q5\N0%C0&K0&Y0&W0   |  |
| COM3 DTNF Dur : 100   |  |
| COM3 Pause Dur : 2  |  |
| COM4 Connection: MODBUS-2   |  |
| COM4 Baud : 19.2 Kbaud  |  |

Figure 3 - COM Port Selection



Figure 4 - MODBUS Selection

11. Set up the baud rate for the chosen port. Press **F4** to look up the appropriate speed.



Figure 5 - Baud Rate Selection

### STEP 5: Set up the baud rate on the Carel EVD Evolution device.

- 12. The baud rate can be configured using the User Interface (<u>a separate device and is</u> <u>required for this device to communicate with the E2</u>) for Carel EVD Evolution. Refer to <u>Modifying the Manufacturer Parameters</u> section for password and instructions on configuring the baud rate and network address using the User Interface device.
  - The *Configuration* tab allows you to change the network address of the device to match the E2 network address setting.
  - The *Advanced > Network Settings* tab allows you to change the baud rate to match the E2 baud rate setting.

#### **Modifying the Manufacturer Parameters**

The Manufacturer level is used to configure all the driver parameters, service parameters, and the parameters relating to managing alarms, probes, and valve configuration.

#### After fitting the display on top of the expansion valve:

To modify a manufacturer parameter using the User Interface device:

- 1. Press the **Esc** key several times to enter the standard display.
- 2. Press the **Prg** key to show the PASSWORD request screen.

3. Press the **Enter** key and enter the password for the Manufacturer level: **66**, starting with the right-most digit and pressing **Enter** after each digit.



Figure 6 - Enter Manufacturer Level Password

4. If the password entered is correct, the list of parameter categories is displayed (*Figure 7*):





- 5. Press the UP or DOWN key to select and press Enter to access the first parameter.
- 6. Press the **UP** or **DOWN** key to select the parameter to be set and press **Enter** to go to the parameter value.
- 7. Press the **UP** or **DOWN** key to change the parameter value.
- 8. Press Enter to save the new value.
- 9. Repeat Steps 6, 7, and 8 to modify the other parameters.
- 10. Press **Esc** to exit the screen.

- 11. Go to the list of parameter categories (*Figure 7*).
- 12. Select **Configuration** and press **Enter** to access the first parameter, **Network** address (*Figure 8*).



Figure 8 - Configuration > Network Address

13. Press **Enter** to move to the parameter value.

14. Press the **UP** or **DOWN** key to configure the value (*Figure 9*).



Figure 9 - Network Address Value

15. Press **Enter** to confirm and save the new value (*Figure 10*).



Figure 10 - Confirming the New Parameter Value

16. Press the **UP** or **DOWN** key to access the refrigerant parameter.



Figure 11 - Refrigerant Parameter

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#### STEP 6: After configuring the baud rate, the device must be commissioned.

- 13. Press 📀 , **7** (System Configuration), **7** (Network Setup), **1** (Network Summary).
- 14. Highlight the device and press **F4** (COMMISSION). Select the MODBUS port that you will be assigning the device and then select the MODBUS device address.

| 16-20-11 🔹 🕜 🌘               |                             | RX-300 Unit 1<br>Network Sunnary                            | ۵           |                        | 14:23:42                             |
|------------------------------|-----------------------------|---|-------------|------------------------|--------------------------------------|
| Name<br>E2 Unit01<br>EUSE001 | Type<br>RX300-Refri<br>EUSE | Notwork Add<br>Select Network<br>1. MODBUS-1<br>2. MODBUS-2 | 1<br>1<br>1 | Rev<br>3.01816<br>9.00 | Status<br>This Controller<br>Offline |
| Press nenu nur               | ber or scroll t             | o selection   |             |                        | F5: CANCEL                           |

Figure 12 - Network Summary Screen

| 06-20-11 🔹 | ; 📼 RX-300 Unit 1 🖄<br>Network Sunmary |                     | 14:24:12<br>=ALARH |  |
|------------|--|---------------------|--------------------|--|
| Nane       | Tupo                                   | Notwork Addroce Pou | statue             |  |
| E2 Unit01  | MODBUS-1 Devices                       |                     | ntroller           |  |
| EVSE001    | 1. EUSE001                             | EUSE                |                    |  |
|            | 2. (Unused)                            |                     |                    |  |
|            | 3. (Unused)                            |                     |                    |  |
|            | 4. (Unused)                            |                     |                    |  |
|            | 5. (Unused)                            |                     |                    |  |
|            | 6. (Unused)                            |                     |                    |  |
|            | 7. (Unused)                            |                     |                    |  |
|            | 8. (Unused)                            |                     |                    |  |
|            | 9. (Unused)                            |                     |                    |  |
|            | 10. (Unused)                           |                     |                    |  |
|            | 11. (Unused)                           |                     |                    |  |
|            | 12. (Unused)                           |                     |                    |  |
|            | 13. (Unused)                           |                     |                    |  |
|            | 14. (Unused)                           |                     |                    |  |
|            | 15. (Unused)                           |                     |                    |  |
|            | 16. (Unused)                           |                     |                    |  |
|            | 17. (Unused)                           |                     | _                  |  |
|            | 18. (Unused)                           |                     |                    |  |
|            |  |                     |                    |  |
|            |  |                     |                    |  |
| Press nenu | number or scroll to                    | selection           |                    |  |
|            |  |                     | F5: CANCEL         |  |

Figure 13 - MODBUS Port Assignment

## Carel EVD Evolution MODBUS Device E2 Setup for 527-0355

| 86-28-11 🔍 🥳  |                | RX-300 Unit 1 🛛 🕥<br>Network Sunnary | 14:24:52<br>-ALARH= |
|---------------|----------------|--------------------------------------|---------------------|
| Nane          | Tuno           | EVSE001<br>Notwork Address Dou       | C+ ++++             |
| E2 Unit01     |                |                                      | ntroller            |
| EUSE001       |                |                                      |                     |
|               |                |                                      |                     |
|               | Setting F      | Physical Address for: EVSE001        |                     |
|               | Specify (      | Physical Address OF Controller       |                     |
|               |                | Address: 1                           |                     |
|               |                |                                      |                     |
|               |                |                                      |                     |
|               |                |                                      |                     |
|               |                |                                      |                     |
|               |                |                                      |                     |
| Enter value a | and Press ENTE | R to Set Address                     | F5: CANCEL          |

Figure 14 - Device Physical Address Setting

# STEP 7: After assigning the MODBUS address of the device and verifying that the connections are wired properly, the device should go online.

• Make sure the polarity is reversed on the E2.



Figure 15 - Wiring Diagram

| Controller Name                |       |                                |       |
|--------------------------------|-------|--------------------------------|-------|
| Carel EV0001                   |       |                                |       |
|                                |       |                                |       |
| INDIVIDUAL TEMPERATURES        |       | UNIT INFORMATION               |       |
| S1 Probe                       | -33.0 | Unit of Measure                | 2     |
| S2 Probe                       | -86.3 | DI1 Status                     | OFF   |
| S3 Probe                       | -33.0 | DI2 Status                     | OFF   |
| S4 Probe                       | -86.3 | Probe S1 Alarm                 | ON    |
|                                |       | Probe S2 Alarm                 | ON    |
| Superheat A                    | 601.7 | Probe S3 Alarm                 | ON    |
| Superheat B                    | 601.7 | Probe S4 Alarm                 | ON    |
| _VALVE A                       |       | VALVE B                        |       |
| Regulation Backup (Supervisor) | OFF   | Regulation Backup (Supervisor) | OFF   |
| Control Setpoint A             | 0     | Control Setpoint B             | 0     |
| Valve Opening A                | 5     | Valve Opening B                | 8     |
| Suction Temp A                 | -86.3 | Suction Temp B                 | -86.3 |
| Current Unit Cooling Capacity  | 0     | Current Unit Cooling Capacity  | 0     |
| Evaporator Temperature A       | -688  | Evaporator Temperature B       | -688  |
| Evaporator Pressure A          | -33.0 | Evaporator Temperature B       | -33.0 |
|                                |       |                                |       |

Figure 16 - E2 Carel Status Screen

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