Eaton Electric Vehicle Power Charging Station MODBUS Device E2 Setup

P/N 527-0354

This document will guide you through setting up and commissioning the Eaton Electric Vehicle Power Charging Station MODBUS device in the E2 controller.

NOTE 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.

JUtraSite: Revision 5.00 - [Tree Yiew]	8 X
brin tee Log System View Wildow Help	0.2
The large System Here Wrother Here Image: System Here Wrother Here Image: System Here Wrother Here Image: System Here Wrother Here Image: System Here Wrother Here Image: System Here Wrother Here Image: System Here Wrother Image: System Here Wrother Here Image: System Here Wrother Image: System Here Wrothere Here Wrothere Here Wrother Image: System Here Wr	

Figure 1 - Description File Upload



STEP 2: Activate the license of the device

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

96-29-11 🔹 🥝 📟	RX-300 Unit 1 🖄 Add License	14:04:52 *ALARM*
Licensed Features- For controller mod Feature	06/20/2011 - 14:03:48 - Rev: 3. el type: RX-300 Maximum In-Use	01816 License
EUSE Area Controller Log Group Condenser Control Digital Combiner Analog Combiner Heat/Cool Control Time Schedule Holiday Schedule Power Monitoring Analog Sensor Ctr Loop/Sequence Ctr	Activate Feature Enter License key to activate a Feature:	-8655-CE44-0B1E
Digital Sensor Ct(Conversion Cell	128 0	
Pulse Accumulation	16 0	
Digital Import Poi	nt 64 Ø	
Analog Import Poin	t 64 0	
HVAC Simulation	16 0	
Enter desired text		
		F5: CANCEL

Figure 2 - Add License Screen

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

- 1. Press (), 7 (System Configuration), 7 (Network Setup), 2 (Connected I/O Boards & Controllers).
- 2. 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 GD button to save your changes.

STEP 4: Assign the MODBUS Port

- 1. Press (System Configuration), 4 (Remote Communications), 3 (TCP/IP Setup).
- 2. Select the COM port the device is connected to, press F4 (LOOK UP) and select the appropriate MODBUS selection.

09-16-11 🔶 🤭 📖	RX-400 Unit 1	<u>a</u>		9:15:30
Use Ctrl-X to Select CX Tabs	SETUP	FULL		
C1: General C2: Eng Units	C3: Serial	C4: TCP/IP	C5: Pee	r Netwrk
C6: C7: System	C8:	C9:	C0:	
Genera	1 Setup: GENERAL	SERU		
í				
Serial Value				
COM1 Connection: Serial			T	
COM1 Baud : 115.2 Kba	ud			
COM2 Connection: MODBUS-1				
COM2 Baud : 19.2 Kbau	đ			
CUM2 Data Size : 8				
COM2 Parity : None				
COM2 Scopportion: Moder				
COM3 Raud : 9600 baud				
COM3 Modem Port: No Modem				
COM3 Moden Tune: CPC 33.6K	Internal			
CON3 Moden Init: ATERU158=	1S18=48&D2&05\N82	C 98K 98Y 98W 9		
COM3 Fax Init : ATU1E0S0=	1S10=40&D2&05\N02	C 08K 08Y 08W 0		
COM3 DTMF Dur : 199				
COM3 Pause Dur : 2				
COM4 Connection: MODBUS-2				
COM4 Baud : 19.2 Kbau	đ		- 7	
Scroll using Next/Prev keys	Connection Type	For COH1		
F1: PREU TAB F2: NEXT TAB	F3: EDIT	F4: LOOK UP	F5: 0	ANCEL

Figure 3 - COM Port Setup

C1: General C2: Eng Units C3: Serial C4: TCP/IP C5: Peer Ne C6: C7: System C8: C9: C0: Serial Option List Selection C0: C0: C0H1 Connectio Option List Select: Description Select: C0H2 Data Size Not Used 0 0	09-16-11 🔹 📖		RX-400 Unit 1 OPTION LOOKUP	à	13:24:53
Serial Option List Selection COH1 Connectio Option List Selection COH2 Connectio Select: COM2 Baud Description COM2 Data Size Not Used	C1: General C6:	2: Eng Units 7: System	C3: Serial C8:	C4: TCP/IP C9:	C5: Peer Netwrk C0:
COM2 For BitsIONet13COM3 Stop BitsISD1.016COM3 BaudLennox19COM3 Hoden PorMODBUS-122COM3 Hoden TypMODBUS-223COM3 Fax InitCHTL33COM4 BaudCOM4 BaudCOM4 Parity	Serial COM1 Connect COM2 Connect COM2 Connect COM2 Baud COM2 Data Si COM2 Parity COM2 Stop Bi COM3 Connect COM3 Baud COM3 Modem T COM3 Modem T COM3 Modem T COM3 Modem T COM3 Fax Ini COM4 Connect COM4 Baud COM4 Data Si COM4 Parity	io Opti io Descripti ze Not Used ts IONet io Lennox or MODBUS-1 yp MODBUS-2 ni MODBUS-3 t CHTL io ze	ion List Selectio Select: ion	on Select 13 16 19 22 23 24 33	
Use Up-Down Arrow keys or Function keys to select entry. Press BACK.	Use Up-Down Arro	w keys or funct	ion keys to sele	ect entry. Pres	SS BACK.

Figure 4 - Option List Selection Screen - Connection

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

09-16-11 🔹 🍘 💷		RX-400 Unit 1 OPTION LOOKUP	6 FULL	9:16:57 *ALARM*
C1: General C2 C6: C7	: Eng Units : System	C3: Serial C8:	C4: TCP/IP C9:	C5: Peer Netwrk C0:
Serial COM1 Connectio COM1 Baud COM2 Connectio COM2 Baud COM2 Data Size COM2 Parity COM2 Stop Bits COM3 Connectio COM3 Hoden Por COM3 Hoden Typ COM3 Hoden Typ COM3 Hoden Typ COM3 Fax Init COM3 Fax Init COM3 Fax Init COM3 Fax Init COM3 Pause Dur COM4 Connectio COM4 Baud	Opt Descript 4800 bau 9600 bau 19.2 Kba 38.4 Kba	ion List Selectio Select: ion d d ud ud	on Select 2 3 4	
F1: SELECT	Keys or Funct	F3: BEGINNING	F4: END	F5: CANCEL

Figure 5 - Option List Selection Screen - Baud Rate

4. The baud rate also needs to be configured using dip switches on the EVSE device. The baud rate must match the E2 baud rate setting. The diagram below provides the dip switch setting for the baud rates.



Figure 6- Dip Switch Setting

STEP 5: Commission the device onto the E2

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

06-20-11 🗕 🥱 😬		RX-300 Unit 1 Network Summary	â		14:23:42
Nane	Туре	Notwork Add	ess	Rev	Status
E2 Unit01 EVSE001	RX300-Refri EVSE	Select Network 1. <u>MODBUS-1</u> 2. MODBUS-2	1	3.01B16 0.00	This Controller Offline
			J		
Press menu numb	er or scroll to	selection			
		L L			F5: CANCEL

Figure 7 - Network Summary Screen

06-20-11 🔶	(? III) M	RX-300 Unit 1 🖄 Network Summary	14:24:12 <mark>*ALARM*</mark>
Name	Тиро	Notwork Addrorg Pou	Statue
E2 Unit01	MODBUS-1 Devices		ntroller
EUSE001	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)		.
	to: (olluseu)		
L L			
Press menu	number or scroll to s	selection	
			F5: CANCEL

Figure 8 - MODBUS Port Assignment

96-29-11 🗕 🤗 🖮		RX-300 Unit 1 💿 Network Summary	14:24:52 *ALARM*
Name	Tupo	EUSE001 Notwork Addroce Dow Sta	tue
E2 Unit01 EVSE001			ntroller
	Setting	Physical Address for: EVSE001	
	Specify	Physical Address Of Controller	
		Address: 1	
Enter value and	Press ENT	ER to Set Address	
			F5: CANCEL

Figure 9 - Device Physical Address Setting

STEP 6: After assigning the MODBUS address of the device and verifying that the connections are wired properly, the device should go online

- 1. The device has a four-terminal Phoenix connector. Wire Data Line A on terminal 1, Data Line B on terminal 2, and the shield wire on terminal 3/Common.
- 2. There should be no termination on terminal 4.



Figure 10 - Four-Terminal Phoenix Connector



Figure 11 - RS-485 COM6 Connector on the E2 PIB (E2 Version 4.01 shown)



Figure 12 - Wiring Diagram

3. Once the device is online, it will only display the device status screen because the E2 does not have the ability to control the device.

Ø9-27-11 ♦ Press 'Log In/Out' to Log	RX-4 On	90 Unit 1 🖻 EVSE	11:00:1: *ALARM	
Controller Name				
EVSE001				
_Status		State		
		Run Current	9	
Operating Voltage	1	Percent Current	0	
Operating Frequency	6			
Soft Start	1	EUSE Activation	1	
Name Plate Current	6	EUSE State	5	
		Last Fault	8	
Temp Fault TO	6			
	-	Parameters		
Reset Reason	5	Demo Mode	1	
		Max Fault Count	5	
Press enter for a list of F2: CONDE	actions.		F5: SETUP	

Figure 13 - Device Status Screen

EVSE Configuration Tables

The following tables list the different device output statuses:

EVSE Configuration				
Address Config	Addr Rate	RS-485 Address		
RS-485 Baud Rate (Dip Switch Configurable)	Data Rate	Mapped Value (Data Rate): 0 - 115200 1 - 38400 2 - 19200 3 - 9600		
Operating Voltage (Dip Switch Configurable)	VOP	Mapped Value (Operating Voltage): 0 - 120 1 - 240		
Operating Frequency (Dip Switch Configurable)	FOP	Mapped Value (Operating Frequency): 0 - 60 Hz 1 - 50 Hz		
Soft Start		Mapped Value: 0 - Enabled 1 - Disabled		
Name Plate Current Rating	INP	Mapped Value (Name Plate Current Rating): 0 - 16A 1 - 30A 2 - 48A 3 - 60A 4 - 70A		
Automatic Reclosure on Fault Time	Temp Fault TO	Milliseconds (ms)		

EVSE Metrics					
Pilot Voltage	VP	V			
ALC Ratio	ALC Ratio				
Max Real-Time Current Vehicle is Allowed To Pull (SAE Duty Cycle Modification) (This Register is Populated by EVSE Run Parameters Below)	MaxPilotDC	V			
	Ground Fault Current, IGF	А			
Current	Charge Current, IC	А			
	Vent Current, IV	А			
Proximity Resistance	Prox Resistance	-			

	EVSE Status Registers			
Reset Reason	Reset Reason	Mapped Value (Reset Reason): 0 - Power-up Reset 1 - Software Reset 2 - Wake-up Reset 3 - RTC Generated Reset 4 - Low Voltage Detect 5 - Watchdog		
EVSE Activation	EVSE Activation	Mapped Value: 0 - EVSE Inactive 1 - EVSE Active		
EVSE State	EVSE State	Mapped Value (current State of the EVSE): 0 - Power-up Initialization 1 - Idle (Not Connected to EV) 2 - EVSE in Test Mode 3 - EVSE in Demo Mode 4 - Permissive run Disabled 5 - Service Required 6 - Temporary Fault Condition 7 - EVSE Charging 8 - EV Connected; Not Charging 9 - EV Connected; ALC, Charging Disabled		

EVSE Status Registers				
Last Fault	Last Fault	 Mapped Value (Last Fault Type): 0 - No Fault 1 - Pilot Error During Idle 2 - Pilot Error During Run 3 - Ground Fault Detected 4 - Overcurrent Detected 5 - Break Away Occurred 6 - Temporary Fault Lockout Occurred (Reset with Plug Session Cycle) 7 - Ground Impedance Fault (not used) 8 - Contactor Fault 9 - Ground Fault Test Failure 10 - EV Diode Fault 11 - Master Fault Count Exceeded (EVSE Reset Required) 12 - Firmware Checksum Fault 13 - EVSE Calibration Invalid 14 - EVSE System Clock Fault 15 - EVSE Set Inactive 		

EVSE Running Parameters Registers	Used to Modify How much Current Vehicle Pulls (Used to Calculate MaxPilotDC, which is stored in the Register Above)	
Real-Time Vehicle Current (High Priority)	Run Current	А
Percent Current (Lower Priority)	Percent Current	0.0 to 1.0

Visit our website at copeland.com/en-us/products/controls-monitoring-systems for the latest technical documentation and updates. For Technical Support call 833-409-7505 or email ColdChain.TechnicalServices@Copeland.com



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