E2 setup with Leviton EZ-MAX Plus BACnet device for 527-0409

This document will guide you through setting up and commissioning the Leviton EZ-MAX Plus BACnet device (third-party device) to the E2 controller through the RS-485 master- slave/token-passing (MS/TP) communication. This communication setup is for Leviton EZMAX Plus 8 relay panel with software version 2.72, November 29, 2012. The 527-0409 description file (.dsc) and a license key to load into the E2 controller are required for this setup.

NOTE: The Leviton EZ-MAX Plus BACnet device requires E2 firmware version 4.05F05 or higher.

Step 1: Set up the Leviton EZ-MAX Plus device communication

1. Connect a shielded twisted pair of wires to the Leviton EZ-MAX Plus on Luma-Net TB9 REM+ (R+) and REM- (R-) terminals. Connect the REM+ wire to the E2 (-) RS-485 COM terminal and the REM- wire to the E2 (+) RS-485 COM terminal. <u>Copeland recommends all RS485 wiring used by the E2 be Belden 8641 (24AWG, 300V, Copeland P/N 135-8641) or Belden 8761 (22 AWG, 300V).</u>



Figure 1 - Device Luma-Net TB9 Terminals



Configure the Leviton EZ-MAX Plus communication port by navigating to the following screens:
 a. Press Select to enter the Luma-Net setup.

SYSTEM SETUP
Luma-Net

Figure 2 - Enter Luma-Net setup

b. Make sure that **BACnet FB** is set to **EN** to enable BACnet (*Figure 3*).



Figure 3 - Set BACnet FB to EN

c. Make sure MASTER FB is set to EN for enable (Figure 4).



Figure 4 - Set Master FB to EN

3. Configure the Leviton EZ-MAX Plus BACnet communication by navigating to the following screens: a. Press **Select** to enter the BACnet communication setup.



Figure 5 - Enter BACnet setup

b. Make sure the Port field is set to Luma-Net (Figure 6).



Figure 6 - Port setup

c. Enter the BACnet unique device ID (range is from 1 to 9999). Verify that no other BACnet device has a duplicate ID.



d. Select the Baud Rate (selections: 9600, 19.2K or 38.4K).

BACnet SETUP	
Baud Rate:	

Figure 8 - Baud Rate setup

e. Enter the MAC address (range: 1 to 127). Verify that no other device has a duplicate MAC address.

Γ	BACnet SETUP
	Node ID:

Figure 9 - Node ID setup

Step 2: Upload the description file (527-0409) to the E2

- 1. Connect to your E2 using UltraSite (refer to UltraSite32 User's Guide P/N 026-1002).
- 2. Right-click the E2 icon and select Description File Upload.
- 3. Browse to the location of the description file and click **Upload**.
- 4. Once upload is complete, reboot the E2 controller.

E2 Description File Upload
To delete a file, first select from the list
5270198.dsc 5270195.dsc 5270315.dsc 527037.dsc 5270367.dsc 5270374.dsc 5270404.dsc
FILE - Click Browse to select the file to upload Browse C:\Documents and Settings\ESiriphone\My Documents\NE\V/INF0
Upload Remove Close

Figure 10 - E2 Description File Upload window

Step 3: Activate the license of the device

- 1. Log in to the E2 controller.
- 2. From the E2 front panel (or via Terminal Mode), press (Mart), 7, 9 (Licensing).
- 3. Press **F1** (*ADD FEATURE*) and enter the license key.

6-17-13 🔹 🧑 🔟	RX-400 Unit Add Licens	1 🖻	15:54:1 ULL
Licensed Features- 06/1 For controller model ty Feature	7/2013 - 15:53:24 - Rev: 4.09 De: RX-400 Maximum In-Use	620 License	ADUISORY SUMMARY Fails 0 Alarms 7 Notices 5
Log Group Digital Sensor Ct. Innovent Area Controller	Activate Feature	-FE99-C06D-31F8	NETWORK OVERVIEW BACnet IP 🔷
Rack Simulation Digital Combiner Analog Combiner Time Schedule	Enter License key to activate a Feature:		
HOILDAY SCHEDUle HVAC Simulation Analog Sensor Ctr Heat/Cool Control			
Power Monitoring	400 6		F2 Unit01
Conversion Cell	128 0		
Digital Import Point			Rev 4.05B20
Analog Import Point	64 Ø		IP 10.212.238.81
Loop/Sequence Ctrl	24 0		English-US
inter desired text			
			ES: CANCEL

Figure 11 - Add License screen

Step 4: Set up the E2 COM port for BACnet MS/TP

- 1. From the E2 front panel Home screen, press (Men.), 7, 4, 3 (TCP/IP).
- 2. Press **F1** to go to the *C3: Serial* tab.

99-0 Ico	04-13 🔶 7 🛄 Ctrl-X to Se	lect	PX Tabe		RX-400 Uni SETUP	t 1			FILL		16:59:28
04.	Coneral	100. 0	on labs	C2. Sovial	3E101	TCD/TD	PE-	Poor	Noturk		
C6-	Web Server	62.6	Suctom	CS: Serial	C4.	167717	C9.	MORE	netwrk	ADVISURY	SUMMARY
	HED SEIVEI	01.	Conous	Sotup: CEN			00.	HOLL		Fails	3
			Genera	i secup. Gen	ENHL SENV					Noticoc	28
	Serial		Value							HOLICES	20
	COM1 Connec	tion	: Serial								
	COM1 Baud		: 115.2	(baud						NETWORK (DVERVIEW
	COM2 Connec	tion	: MODBUS	-1						IONet-1	
	COM2 Baud		: 9600 b	aud						BACnet I	1STP-1 🔅
	COM2 Data S	ize		8							
	COM2 Parity)	: None								
	COM2 Stop E	lits		1							
	COM3 Connec	tion	: No Mod	20							
	COM4 Connec	tion	<u>B</u> ACnet	MSTP-1							
	COM4 DevId		=	37							
	CUM4 MSTP N	IAC		1							
	COM4 Baud	tion	: 38.4 K	baud							
	COM6 Poud		- 0600 b	l						E2 Unite	
	cono bauu		- 2000 D	100							
										Rei 4 858	65
										IP 10.21	2.238.81
										English-L	IS
Sci	oll using Ne	xt/Pr	ev keys	Connection	Type for C	OM4					
	F1: PREV TAB		F2: NEX	TAB	F3: EDI	т	F4:	LOOK	UP	F5: C	ANCEL

Figure 12 - C3: Serial Tab

3. Select the COM port the device is connected to, press (LOOK UP), and then choose the appropriate **BACnet MSTP** selection.

99-6	04-13 🔹 🥳 🗓					RX-400 OPTION	Unit 1 LOOKUP			FULL		17:02:5
C1:	General	C2:	Eng Units	C3:	Serial	C	4: TCP/IP	05	: Pee	r Netwrk	ADVISORY	SUMMARY
C6:	Web Server	C7:	System	C8:	BACnet	C	9:	C 0	: MOR	E	Fails	6
	Serial COM1 Conne COM1 Baud COM2 Baud COM2 Data COM2 Parit COM2 Parit COM2 Stop COM4 Conne COM4 Conne COM4 HSTP COM4 Baud COM6 Baud	ctio ctio Size y Bits ctio ctio MAC ctio	Opt Descript Not Used IONet-1 IONet-2 IONet-3 ISD1.0 Lennox HODBUS-2 HODBUS-2 MODBUS-3 CHTL BACnet H	ion I	ist Sel Select:	lection	Select 3 13 14 15 16 19 22 23 24 33 34 55 55 55 55 55 55 55 55 55 5				Alarms Notices NETWORK 10Net-1 BACnet E2 Unit0 Rev 4.05	0 20 OUERUIEW MSTP-1 ● 1 FØ5
			BACnet M	STP-	3		36				IP 10.21	2.238.81
											English-	US
Use	e Up-Down Ar	row I	keys or func	tion	keys to	select	t entry. P	ress BA	ICK.			
	F1: SELECT					F3: BE	GINNING		F4: FI	ND	F5: 0	CANCEL

Figure 13 - Configuring COM Port Connection

4. Set the Baud Rate for the chosen port. Press **F**4 to look up the appropriate speed. *NOTE: The third-party device can only handle 9600, 19.2K and 38.4K.*

69-6	4-13	• 🖪 🛄				RX-400 Option I	Init 1 .OOKUP			FULL		17:07:49
C1: C6:	Gener Web S	al Gerver	C2: C7:	Eng Units System	C3: Seria C8: BACne	1 C4 t C9	: TCP/IP :	C5: C0:	Peer MORE	Netwrk	ADVISORY Fails	SUMMARY 0 0
	Seri COM1 COM2 COM2 COM2 COM2 COM2 COM4 COM4 COM4 COM4 COM4 COM4 COM6	al Connec Baud Data S Parity Stop E Connec Connec DevId MSTP H Baud Connec Baud	tio tio fits tio tio tio	Opi Descripi <u>4809 bat</u> 9600 bat 19.2 Kb 38.4 Kb 57.6 Kb 76.8 Kb	tion List St Select: tion d ud uud uud uud	election : :	Select 2 3 4 5 9				Notices Network (IOMet-1 BACnet BACnet Rev 4.051 IP 10.21	20 DUERUIEW 4STP-1 505 2.238.81
lise	lin-D	NWN Ari	nw k	eus or func	tion keus t	n select	entru. P	Press BAC	К.		English-	IS
0.510	F1: 1	SELECT			citon keys t	F3: BEG		F4	END)	F5: (ANCEL

Figure 14 - Selecting the Baud Rate

Step 5: Add the device in the E2

- 1. From the E2 Home screen, press (May), 7, 7, 7, 2 (Connected I/O Boards & Controllers).
- 2. Press **F2** (*NEXT TAB*) to shift over to the *C4: Third Party* tab. The name of the device will display in the list. Highlight the device name and enter the number of devices to add under the **Quantity** field.
- 3. Press **()** to save the changes.

09-05-13 🔶 🥝 🗓	M		RX-400 Unit 1		<u>ه</u>		10:46:18
Use Ctrl-X to S	elect CX Tabs		SETUP		FULL		
C1: This Unit	C2: IO Network	C3: ECT	C4: Third I	Partų	C5: Echelon	ADVISORY	SUMMARY
C6:	C7:	C8:	C9:		C0:	Fails	5
	Num Ne	twork Ctr]	ls: NetSetup			Alarms	6
	Third Partu Boa	rd Tune	Quantitu	Max		Notices	20
	#1 : ACO	RN VAC	0	1			
	#2 : IPR	D CO2	9	10		NETWORK	OVERVIEW
	#3 : Lev	iton	_ 1	1		IONet-1	
	#4 : Loc	hinvar	6	2		BACnet	MSTP-1 🌻
	#5 : Mun	ters HCUc	6	1			
						E2 UnitØ	1
						Rev 4.05 IP 10.21	F05 2.238.81
						English-	US
Enter 0 to 1	Enter desired n	umber of t	these boards				
F1: PREV TA	B F2: NEX1	TAB	F3: EDIT			F5: (CANCEL

Figure 15 - C4: Third Party Tab

Step 6: Commission the device

- 1. From the E2 Home screen, press (Mark), 🐐, 🐈, 🚼 (Network Summary).
- 2. Press **F4** for *COMMISSION* and select **BACnet MSTP**.

09-05-13 🔹 🥳		RX-400 U Network S	Init 1 Summary	ki FULL	10:47:5
Name E2 Unit01 1661_001 880_001 480_001 Leviton081	Type RX400-Refri 16AI 8R0 4A0 Leviton	Notwork S Notwork S Select Network 1. <u>BACnet MSTP-1</u> 2. BACnet IP DHOMEC NOTE 1.	Rev Rev 1 4.05F05 1 0.00 1 0.00 1 0.00 553 0.00	FULL Status This Controller Online Online Online	ADUISORY SUMMARY Fails 0 Alarms 0 Notices 20 NETWORK OVERVIEW IONet-1 BACnet MSTP-1 0
					E2 Unit01 Rev 4.05F05 IP 10.212.238.81
Press menu n	umber or scroll	to selection			engrisn-05
					E5: CANCEL

Figure 16 - Network Summary Screen

3. Once BACnet MSTP is selected, the E2 controller will scan the network for available BACnet devices.

39-05-13 🍬 	3 m	RX-400 BACnet C	Unit 1 OMMISSIO	FULL	10:49:4
Name	Туре	Network Address	Rev	Status	ADVISORY SUMMARY Fails 0
E2 Unit01 16AI_001 8R0 001	RX400-Refrig 16AI 8RO	Ethernet: IONet-1: IONet-1:	1 4.05F05 1 0.00 1 0.00	This Controller Online Online	Notices 20
4A0_001 Leviton001	PoPr		N	e	NETWORK OVERVIEW IONet-1 BACnet MSTP-1 ()
	Press "F5: CANCEL	" to stop scan for	 BACnet devic	es	
	Status [1	
					E2 Unit01
					Rev 4.05F05 IP 10.212.238.81
					English-US

Figure 17 - BACnet Device Commissioning

4. Next, select the BACnet device ID and Node ID.

09-05-13 🔍 🖓 🛄		RX-400 U Network Su	nit 1 Immary	FULL.	10:51:1
Name	Туре	Notwork Addrocc		Status	ADVISORY SUMMARY Fails 0
E2 Unit01 16AI_001 8R0_001 4A0_001 Leviton001	RX400-Ref 16AI 8R0 4A0 Leviton	BACnet MSTP-1 Devices 6553. (09)	1 4.05F05 1 0.00 1 0.00 - 1 0.00 - 0.00	This Controller Online Online Online Unknown	Notices 20 Notices 20 NETWORK OVERVIEW IONet-1 0 BACnet MSTP-1 0
Press menu ni	umber or scroj	ll to selection		F4: RESCAN	E2 Unit01 Rev 4.05F05 IP 10.212.238.01 English-US F5: CANCEL

Figure 18 - Selecting the BACnet Device ID and Node ID



99-05-13 🔹 🥝		RX-400 Un Network Su	it 1 Immary	FULL	10:56:08
Name	Туре	Unknown Device Notwork Addrocc	6553 Rev	Status	ADVISORY SUMMARY Fails 0
E2 Unit01 16AI_001	RX400-Ref 16AI		1 4.05F0	5 This Controller Online	Notices 21
880_001 4A0_00 Levito	Setting Devic	e Object Id: Unknown	Device	6553	NETWORK OVERUIEW IONet-1 ● BACnet MSTP-1 ●
	Specify Dev Dev	ice Object Id Of Contro iceId: 6553	oller		
	BACnet Devi	ce Id is set			
				J	E2 Unit01
					Rev 4.05F05 IP 10.212.238.81
					English-US
					EE. CONCEL

Figure 19 - BACnet Device ID Setup Complete

6. Once the device is commissioned, addressed and wired properly, the device should appear online on the *Network Summary* screen.

Control points

Object Instance		Control point	Present value	
Binary output (BO)	1252	RELAY 01252	Read/write	Active; inactive; relinquished
Binary input (BI)	1240	Switch, occupancy sensor or contact closure input 1240	Read only	Active; inactive
Analog input (AI)	1240	Photocell 1240	Read only	0-255 foot candles

Table 1 - Control points

The E2 is configured to read only the Leviton EZ-MAX Plus physical 8 input and display the input value as binary input for switches or as analog input for photocell, depending on how the Leviton EZ-MAZ Plus physical input is configured on the device.

Binary output relay priority array

For E2 to control the relays through BACnet® at any priority, it is important to understand how priorities are used in EZ-MAX Plus and how they may impact the integration in E2 systems. Each relay in EZ-MAX Plus has 16 priority levels. This is known as the "priority array" for each relay.

Priority	Default in EZ-MAX Plus
1 - Highest	Internal main bypass switch (cannot be changed)
2	Emergency power (cannot be changed)
3	Internal relay bypass (cannot be changed)
4	Front panel override - front panel ALL ON button
5	No function for this priority setting
6	No function for this priority setting
7	Photocell
8	LV and digital switches, schedule, Luma-Net, red relay manual push buttons
9	No function for this priority setting
10	No function for this priority setting
11	No function for this priority setting
12	No function for this priority setting
13	No function for this priority setting
14	No function for this priority setting
15	No function for this priority setting
16 - Lowest	No function for this priority setting

Table 2 - Binary output relay priority array

Each priority can be individually controlled by setting to ON, OFF, or RELEASED (Relinquished: removes priority command). The last highest priority that is not released determines the state of the relay.

The E2 priority setting for relay control is defaulted at 5 and can be changed in the E2 Leviton application *Setup* screen under the *C5*: *Priority* tab.

NOTE: Priority levels 1, 2 and 3 can **NOT** be used. If the E2 priority level is changed to 1, 2 or 3, the third-party device will ignore the command. If priority levels are set the same between the E2 and EZ-MAX Plus, the last priority command will take precedent.

09-0 IIse	05-13 🔹 🦪 Ctrl-X to	🔟 Select CX Tabs	RX	-400 Unit 1 SETUP	<u>í</u>	17:17:5
C1:	General	C2: Inputs	C3: Outputs	04:	C5: Priority	ADVISORY SUMMARY
		l	eviton: Leviton	901		Fails 0 Alarms 0 Notices 22
	Priority	Value				
	Relay[1]	WrPrio :	5			
	Relay[2]_	WrPrio :	5			NETWORK OVERVIEW
	[Relay[3]	WrPrio :	5			IONet-1
	[Kelay[4]	WrPrio :	5			BACnet MSIP-1 🌻
	Relay[5]	Wrrrio : WeBeio :	5			
	Relau[7]	WrPrio -	5			
	Relau[8]	WrPrin :	5			
						E2 Unit01
						Rev 4.05F05 IP 10.212.238.81
						English-US
Ent	ter 0 to 16	Relay[1].BO N	rite Priority			
	F1: PREV T	AB 🔶 F2: NE	ХТ ТАВ	F3: EDIT	F4: STATUS	F5: CANCEL

Figure 20 - C5: Priority Tab

The relay can be controlled by another application or the input can be set to a fixed value on the E2 Leviton application *Setup* screen under the *C2: Inputs* tab.

09-05-13 🔹 🥳 Use Ctrl-X to	Select CX Tabs	RX	-400 Unit 1 SETUP	B FULL	17:24:48
C1: General	C2: Inputs	C3: Outputs	C4:	C5: Priority	ADVISORY SUMMARY
		Fails 0 Alarms 0 Notices 22			
Inputs	Valu	e			
RELAY 1	:	:	:		
RELAY 2	: E2 U	nit01:TIME SCHED	001 :OUTPUT		NETWORK OVERVIEW
RELAY 3	:	:	:		IONet-1 🔶
RELAY 4	: E2 U	nit01:TIME SCHED	001 :OUTPUT		BACnet MSTP-1 🌼
RELAY 5		ON			
RELAY 6	:		:		
RELAY 7					
RELAY 8	:	:	:		
					E2 Unit01
					Rev 4.05F05 IP 10.212.238.81
					English-US
Enter State:	Use Next/Prev	keys Relay 5			
F1: PREU T	AB F2: N	EXT TAB	F3: EDIT	F4: STATUS	F5: CANCEL

Figure 21 - C2: Inputs Tab

To issue RELEASED (Relinquished), simply delete the pointer or fixed value.

NOTE: When communication is lost, the third-party device will retain the last E2 relay priority command (if highest). To remove the E2 command (RELEASED), push the RED relay manual pushbutton on the Leviton EZ-MAX Plus panel.



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