Remote BACnet I/O Board
Specification and Installation Instructions

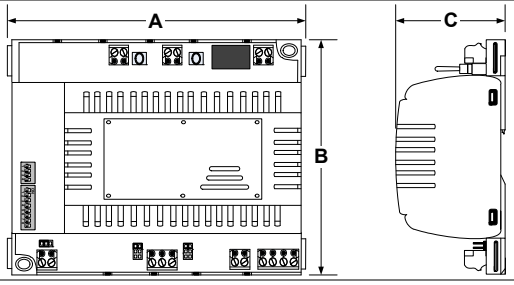
Model
CMMB1322

Description
The CMMB extends your BACnet network when your application requires additional inputs and outputs on a physical controller. Combining the inputs and outputs of the CMMB with your Building Automation System provides simple expansion of a new or existing controller and reduces unnecessary costs of additional components.

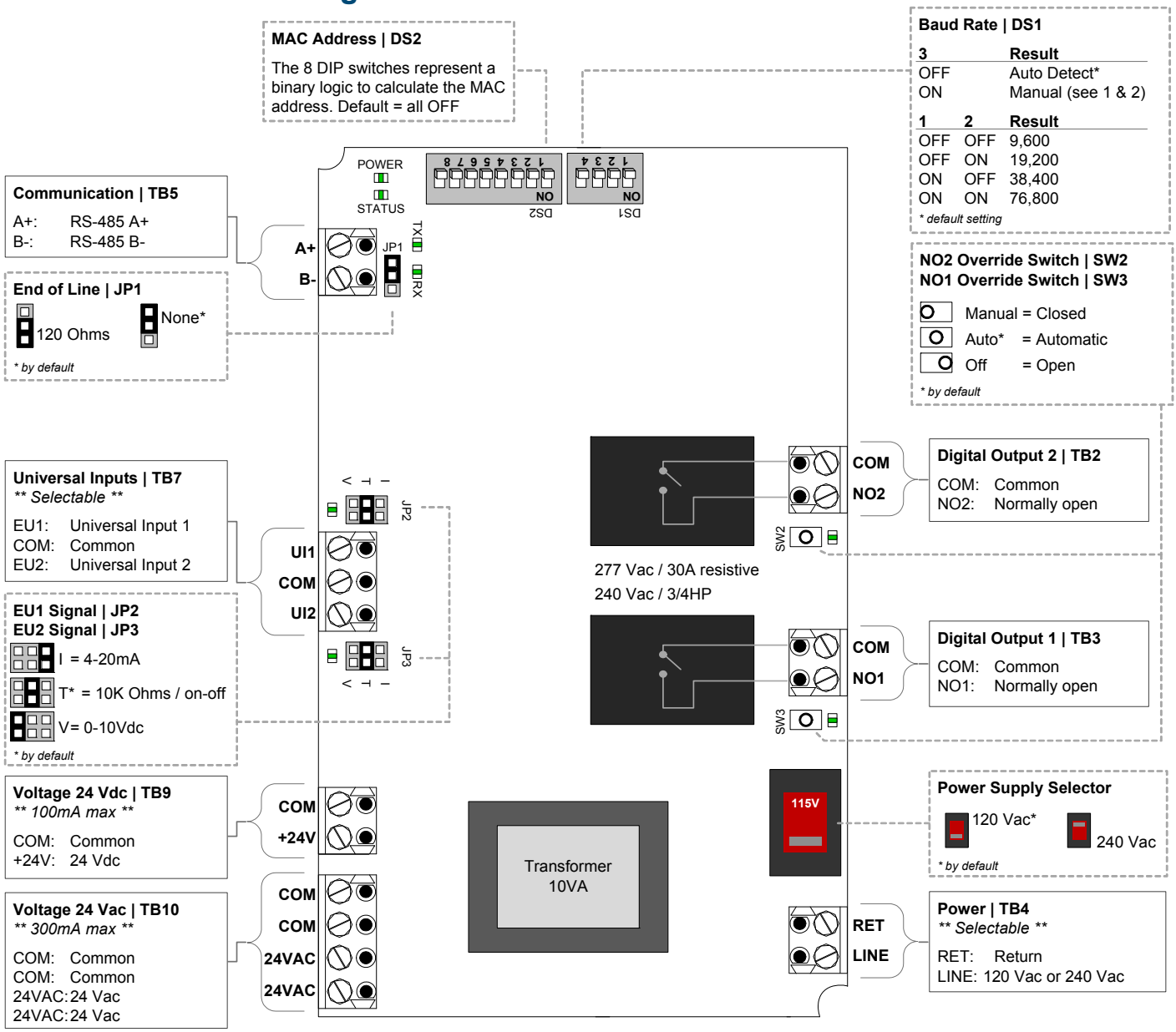
CMMB1322

Features
- 120 Vac or 240 Vac (selectable)
- 2 auxiliary supply outputs (24 Vdc and 24 Vac)
- 2 universal inputs
- 2 digital outputs
- 2 override switches to manually control each output (auto, forced on, or forced off)
- DIN rail mounting
- Removable, non-strip, raising clamp terminals
- LED status indication of each input and output
- BACnet®
    - MS/TP @ 9600, 19200, 38400 or 76800 bps
    - Automatic baud rate detection
    - Automatic device instance configuration
    - Copy and broadcast configuration to other CMMB modules

Technical Specifications

Description	CMMB1322
Input Voltage	120 Vac or 240 Vac (selectable)
Consumption	4VA
Auxiliary Supply Outputs	- 1 output: 24 Vdc (100 mA max) - 1 output: 24 Vac (300 mA max) - thermal fuse (resettable)
Inputs	- 2 universal inputs - 0-10Vdc, Thermistor 10KΩ (type 3), on/off (dry contact), 4-20mA - 12 bit resolution
Supervised Outputs	- 2 relay outputs (277 Vac / 30A resistive | 240 Vac / 3/4HP) - independent common per relay - normally open
Communication Protocol	- BACnet® MS/TP @ 9600, 19200, 38400 or 76800 bps - BACnet® Application Specific Controller (B-ASC)
Communication Connections	24 AWG twisted-shield cable (Belden 9841 or equivalent)
Electrical Connections	0.8 mm^2 [18 AWG] minimum
Operational Temperature	0ºC to 50ºC [32ºF to 122ºF]
Storage Temperature	-30ºC to 50ºC [-22ºF to 122ºF]
Relative Humidity	5 to 95% non condensed
Weight	0.4 kg [0.9 lb]
Dimensions: A = 6.30” |160 mm B = 5.00” |126 mm C = 2.25” | 57 mm	

Connections and Configurations



LEDs

Power

On = Input voltage normal
Off = No power

Status

Flashing = Normal operation (watchdog)

RX/TX (BACnet)

Flashing = Receiving (RX) and/or transmitting (TX) data.

Input Status

On = Input on
Off = Input off
Flashing = Input not connected (thermistor setting only)
Analog = When Universal Inputs are set to analog values (Vdc, mA, or 10KΩ); the LED intensity corresponds to the input value. For example: At 10Vdc, the LED will be fully on. At 5Vdc, the LED will be at 50% intensity. At 0 Vdc, the LED will be off.

Output Status

On = Activated
Off = Deactivated
Flashing = Output pulsed

BACnet Configurations

Please note that all jumper settings must also be set to the same value through BACnet. The following is a list of additional configurations that are only available through BACnet.

Universal Inputs (UI1-UI2)

- When the jumper is set to Thermistor, you can select either °C or °F or you can set the input as a digital on/off input (MSV).
- If the universal input is set as a digital on/off input, you can also set the polarity to direct or reverse (BV). For example, in Reverse an “on” signal would be recognized as an “off” signal.
- When the jumper is set to 0-10 Vdc, you can also set the range to 0-5 Vdc (MSV).

Digital Outputs (Relays)

- A fixed output (open/closed) can only be modified via BACnet when the override switch is in the “Automatic” position (BV).
- The displayed text can be set to either Open/Closed, On/Off, or Alarm/Normal.
- All outputs are fully supervised via BACnet. This provides the actual state of the output including any manual overrides done using the on-board switches.

BACnet Device Object Properties

Property	Value	Writable
Object_Identifier	Programmable where the instance part of the Object_Identifier is in the range of 0-4194302. The device instance must be unique system-wide. The default value for the device instance=153000 (Vendor_Identifier*1000 + MSTP ADD (dipswitch))	W
Object_Name	Programmable up to 32 characters. The device name must be unique system-wide. The default value is Model_Name	W
Description	Programmable up to 32 characters. The default value is "BACnet I/O card"	W
Object_Type	Device	
System_Status	Always OPERATIONAL (0)	
Vendor_Identifier	Always 153	
Vendor_Name	Always Neptronic	
Model_Name	Example, CMMB1322	
Firmware_Revision	currently, 1.01	
Application_Software_Version	currently, 1.01	
Protocol_Version	Always 1	
Protocol_Revision	Always 4	
DataBase_Revision	Default = 0, will be incremented if Object_Name and/or Odject_Identifier is modified	
Max_APDU_Length_Accepted	Always 480	
Segmentation_Supported	(3) = No Segmentation	
APDU_Timeout	60,000	
Number_of_APDU_Retries	Always 0	
Protocol_Services_Supported	Always 0x00, 0x0B, 0xC0, 0x02, 0x60 (i.e. a bitstring in BACnet® order) - writeProperty, readProperty - writePropertyMultiple, readPropertyMultiple - deviceCommunicationControl - unconfirmedPrivateTransfer - who-Is, who-Has	
Protocol_Object_Types_ Supported	Always 0x00, 0xB4, 0x80, 0x10 (i.e. a bitstring in BACnet® order) - analog-input, analog-value, binary-input, binary-value - device - multi-state-value	
Object_List	Per the standard. Because of restrictions on the size of the transmit buffers, the entire **Object_List** cannot be returned at once, rather the **Object_List** must be read, one-at-a-time.	
Device_Address_Binding	Always empty	
Max_Master	Programmable in the range of 1-127 (Default value=127)	W
Max_Info_Frames	Always 1	
Proprietary property #1000	• Read only • This proprietary property represents the MS/TP MAC address in the range of 0-254	
Proprietary property #1001	• Read only • This proprietary property represents the MS/TP baud rate • Values are 0 (auto), 9600, 19200, 38400, 76800 • Default is Auto	
Proprietary property #1002	• Programmable • This proprietary property represents the period of time that an object in/out of service will automatically return to normal. Range = 0-120 minutes (unsigned type) • Writing 0 means no automatic return to normal • Default is 15 minutes	W

Object Table Information

The humidifiers use the following BACnet object tables, categorized on the basis of their ID. The type is the BACnet Object type, the instance is the BACnet Object. Together, the type and instance form the **BACnet Object_Identifier** for an object according to the following C-language algorithm: **object_identifier=(unsigned long)((unsigned long)type<<22)+instance**

Analog Input (AI)

ID	Name	Description	Writable Property	Notes
AI.1	UniversalInput1	Universal input 1 mode selected by MSV.1	Out of service	0-10Volt or -40-100ºC or -40-212ºF or 0-1 Resolution 0.01Volt or 0.01ºC/0.02ºF
AI.2	Extern Temp	Universal input 1 mode selected by MSV.12	Out of service	0-10Volt or -40-100ºC or -40-212ºF or 0-1 Resolution 0.01Volt or 0.01ºC/0.02ºF

Analog Value (AV)

ID	Name	Description	Writable Property	Notes
AV.165	MSTPBaudRate	MSTP Baud Rate	N/A	9600, 19200, 38400, 76800
AV.166	MSTPAdd	MSTP MAC Address	N/A	0 to 127
AV.167	DeviceInstance	Device Instance	Present Value	0 to 4194302
AV.226	UniversalInput1Offset	Universal input 1 offset	Present Value	-5.00 to 5.00 °C/ºF/Volt/mA (default 0*) Resolution: 0.01 °C/ºF/Volt/mA
AV.227	UniversalInput2Offset	Universal input 2 offset	Present Value	-5.00 to 5.00 °C/ºF/Volt/mA (default 0*) Resolution: 0.01 °C/ºF/Volt/mA
AV.468	CopyCfgStartAdd	Copy configuration start address	Present Value	0-254 Address of first CMMB to copy Available only if BV.101 is set to No
AV.469	CopyCfgEndAdd	Copy configuration end address	Present Value	AV.468 – (AV.468 + 64) Address of last CMMB to copy Available only if BV.101 is set to No
AV.470	CopyCfgResult[1]	Copy configuration result	Present Value	AV.468 – AV.469 Result of copy is available on Description property and is available only if BV.101 is set to Yes. Results: Succeed, Prog_Error, Type_Error, Model_Error, FW_Error, Mem_Error, Size_Error, Comm_Error, SlaveDevice, InProgress, AllSucceed

Binary Value (BV)

ID	Name	Description	Writable Property	Notes *(* = default)*
BV.22	ContactOutput1	Digital output 1 status	Present Value	0= Open / Ouvert / Off / Arret / Normal * 1= Close / Fermé / On / Marche / Alarm Text depends of selection in MSV.66
BV.23	ContactOutput2	Digital output 2 status	Present Value	0= Open / Ouvert / Off / Arret / Normal * 1= Close / Fermé / On / Marche / Alarm Text depends of selection in MSV.67
BV.93	UI1_DI_Polarity	Polarity of universal input 1 when used in digital input mode	Present Value	0= Direct * 1= Reverse
BV.94	UI2_DI_Polarity	Polarity of universal input 2 when used in digital input mode	Present Value	0= Direct * 1= Reverse
BV.101	CopyCfgExecute	Start or stop copy configuration	Present Value	0= No * 1= Yes Start copy and give results, must be reset by user.

[1] Write address in present value, result will be available in description.

Multi-State Value (MSV)

ID	Name	Description	Writable Property	Notes *(* = default)*
MSV.1	UniversalInput1Function	Selected analog input 1 mode	Present Value	1= Extern_Sensor_C * 2= Extern_Sensor_F 3= 0_10Volt 4= DigitalInput 5= 0_5Volt 6= 4_20mA
MSV.12	UniversalInput2Function	Selected analog input 2 mode	Present Value	1= Extern_Sensor_C * 2= Extern_Sensor_F 3= 0_10Volt 4= DigitalInput 5= 0_5Volt 6= 4_20mA
MSV.66	ContactOutput1Text	Contact output 1 inactive & active text	Present Value	1= Open_Close * 2= Ouvert_Fermé 3= On_Off 4= Marche_Arret 5= Alarm_Normal
MSV.67	ContactOutput2Text	Contact output 2 inactive & active text	Present Value	1= Open_Close * 2= Ouvert_Fermé 3= On_Off 4= Marche_Arret 5= Alarm_Normal

Notes

Recycling at end of life: please return this product to your Neptronic local distributor for recycling. If you need to find the nearest Neptronic authorized distributor, please consult **www.neptronic.com**.

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