

CMMB106 I/O Board

BACnet[®] Communication Module User Guide



BACnet

CMMB106-BACNET-USER GUIDE
CMMB106-120821-EUL.doc



Table of Contents

CMMB106 I/O Board	1
Table of Contents	1
Introduction	2
BACnet® Overview	2
Getting Started	3
Quick Setup	3
Manual Setup	3
Copy Config	3
MAC address and Max_Master	4
Device Object Properties	5
Object Types Supported	6
Out of Service	6
Objects Table	7

Introduction

This document provides information for using the controller. This product provides a BACnet® network interface between BACnet® client devices. The controller uses the BACnet® Master Slave/Token Passing (MS/TP) protocol at the BACnet® MAC layer.

This document assumes you are familiar with BACnet® and BACnet® terminology.

BACnet® Overview

Performance

The controller uses a synchronous implementation for BACnet® messages. Each BACnet® confirmed service request is answered as quickly as possible without using Reply Postponed. In particular, MS/TP implementation performs within Tusage_delay of 15ms in order to assure Tusage_timeout values within 20ms.

Support for MS/TP

The controller supports a Full Master Node state machine for MS/TP. All parameters are configured via the DIP switches and jumpers and via the BACnet® WriteProperty service. Changes made via the WriteProperty take effect immediately and does not require a restart of the controller. For more information on the configurable properties, please refer to the *Getting Started* section on page 3.

BIBB Support

The controller generally behaves as a B-ASC type profile server. The following specific BIBBs are supported per their relevant definitions in Annex K to BACnet®: DS-RP-B, DS-RPM-B, DS-WP-B, DS-WPM-B, DM-DDB-B, DM-DOB-B, DM-DCC-B

Object Support (in general)

The controller supports a table-based fixed list of BACnet®-visible values which appear as Present_Values of various BACnet® standard object types, in addition to a Device object.

Alarms

Although the controller supports the ability to indicate various alarm conditions through value changes in properties of several of its objects, it **does not** generate BACnet® Event Notifications.

Features

The controllers also offer the following time-saving features.

Auto Baud Rate Detection

The controller automatically configures its baud rate by detecting the network speed upon connection.

Auto Device Instance Configuration

The controller automatically configures its device instance to 153000 + MAC address.

Copy Configuration

Copy the controller's entire configuration and broadcast it to other controllers of the same type on the same network.

Getting Started

The following BACnet® properties are configurable and may need to be modified to effectively establish communication on the network and to guarantee uniqueness of each device in a BACnet® system.

- **MAC Address** (Default: 000)
Set to between 000 and 254 via DIP switches on the controller.
- **Device Instance** (Default: Auto)
The controller automatically configures its device instance to 153000 + MAC address. Can also be set manually through the WriteProperty service to *Device Object.Object_Identifier*. The device's *Object_Identifier* is a combination of the *Device Object_Type* (8) and the *Device_Instance* (0-4194302), therefore its decimal or hexadecimal representation tends to be incomprehensible. For example, the *Device_Instance*=1000 has an equivalent *Object_Identifier* of 0x020003E8 hexadecimal or 33555432 decimal. While it's the device's *Object_Identifier* property that can be changed using a BACnet® WriteProperty service, this document refers mostly to *Device_Instance*.
- **Baud Rate** (Default: 0 = Auto)
The controller automatically configures its baud rate by detecting the network speed upon connection. Can also be set manually via the DIP switches. Available values are Auto, 9600, 19200, 38400, 76800.
- **Max_Master** (Default: 127)
To increase network efficiency or if there are less than 127 devices on the network, the *Max_Master* value can be configured through WriteProperty service to the *Device Object.Max_Master*. For more information, refer to the *MAC address and Max_Master* section on page 3.
- **Device Object.Object_Name**
Name of device, for example CMMB106. This value can be configured through WriteProperty service to the *Device Object.Object_Name*.

Quick Setup

Take advantage of the controller's Auto Baud Rate Detection, Auto Device Instance Configuration, and default *Max_Master* value, to get up and running with no programming.

- 1) Using the DIP switches located on the controller, set a unique MAC address.
- 2) Connect the controller to the network and then power up the controller. The controller automatically configures the baud rate and device instance.
- 3) Repeat steps 1 and 2 for each controller.

Manual Setup

If your site has more than one controller network and/or you wish to use a *Device_Instance* other than 153000, you can do so via BACnet.

- 1) To increase network efficiency or if there are less than 127 devices on the network, the *Max_Master* value can be configured through WriteProperty service to the *Device Object.Max_Master*. For more information, refer to the *MAC address and Max_Master* section on page 3.
- 2) For the *Device_Instance*, refer to the *Getting Started* section above.

Copy Configuration

Copy the controller's entire configuration and broadcast it to other controllers of the same type on the same network. This is done via BACnet using AV.468, AV.469, AV.470 and BV.101 (refer to the *Objects Table* on page 7).

MAC address and Max_Master

The MAC address must be unique on the entire MS/TP network. However, having a unique MAC address and a high baud rate does not guarantee efficient operation of the controller and other MS/TP units on the MS/TP network. Some MAC address and Max_Master combinations are more efficient than others. BACnet® requires token-passing units to occasionally “poll” for other masters based on the MAC address and Max_Master. A “poor” combination of MAC addresses and Max_Master can lead to a slower network due to lost time polling for masters that are not present. Unless there are 126 other units on the MS/TP network, the default Max_Master of 127 is not the most efficient choice for the controller. The Max_Master default of 127 was selected to ensure that any master, specifically a BACnet® client, can be found when the controller is first started.

Example 1:

This example is slow and inefficient because every time either unit is required to find another master unit it has to poll 126 units until it finds the right one to pass the token.

- MAC=0, Max_Master=127
- MAC=1, Max_Master=127

Example 2:

This example is better but it's still slower. The Max_Master is set to the most efficient value; however because of the gap between the two MAC addresses, each unit must poll 4 units until it finds the right one to pass the token.

- MAC=0, Max_Master=5
- MAC=1 to MAC=4 are not used
- MAC=5, Max_Master=5

Example 3:

This example is an incorrect configuration. The MAC=0 will never find MAC=2 because it will never poll for the master MAC address=2.

- MAC=0, Max_Master=1
- MAC=2, Max_Master=2

Example 4:

As a general guideline, the most efficient set up for an MS/TP network is one in which the units are consecutively numbered starting at MAC address 0 and all have Max_Master=the maximum MAC address in the system. If consecutive numbering is not possible, then the next most efficient set up is one in which all units have Max_Master=the maximum MAC address in the system.

- MAC=0, Max_Master=3
- MAC=1, Max_Master=3
- MAC=2, Max_Master=3
- MAC=3, Max_Master=3

Device Object Properties

The following table lists all the BACnet® properties supported for the device object. The “W” indicates if the property is writable using the BACnet® WriteProperty service.

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= "BACnet I/O card"	W
Object_Type	8	
System_Status	Always OPERATIONAL (0)	
Vendor_Identifier	Always 153	
Vendor_Name	Always "Nation Environmental Products Ltd"	
Model_Name	Example : "CMMB106"	
Firmware_Revision	currently "1.02"	
Application_Software_Version	currently "1.02"	
Protocol_Version	Always 1	
Protocol_Revision	Always 4	
DataBase_Revision	Default = 0, will be incremented if Object_Name and/or Object_Identifier is modified	
Max_APDU_Length_Accepted	Always 480	
Segmentation_Supported	(3) = No Segmentation	
APDU_Timeout	60000	
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.	
Proprietary property #1002	Programmable. This proprietary property represents that 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: 15 minutes.	W

Object Types Supported

A complete list of all BACnet® objects for the controller is listed in the following section:

The Device Object has already been described. The following tables list all the BACnet® properties supported for each object type. Most of the properties are locked in. The exception is Present_Value, which represents the dynamic operating values of the device, and the Status_Flag, Event_State and Reliability properties which reflect the availability of the Present_Value. Unless otherwise specified, properties are not changeable.

Object Type	Supported	Optional Properties Supported	Writable Properties	If "Out of Service" is True
Analog Input	☑	Reliability Description Min_Present_Value Max_Present_Value Resolution	Out_of_Service	Present_Value Status_Flag
Analog Value	☑	Reliability Description	Present_Value ¹ Out_of_Service ²	Present_Value Status_Flag
Binary Input	☑	Reliability Active_Text Inactive_Text Description	Out_of_Service	Present_Value Status_Flag
Binary Value	☑	Reliability Active_Text Inactive_Text Description	Present_Value ³ Out_of_Service ⁴	Present_Value Status_Flag
Device	☑	Max_Master Max_Info_Frame Description #1000 (Address; Read Only) #1001 (Baud Rate; Read Only) #1002 (Time Out)	Object_Identifier Object_Name Max_Master Description #1002	N/A
Multi-State Value ⁵	☑	Description Reliability States_Text	Present_Value ⁶	N/A

Out of Service

These controllers offer the use of the "Out of Service" writable property. When set to true, this property disconnects the object from the physical input, enabling you to input other values. This could be useful for special applications or when troubleshooting. For example, you can ignore the temperature read from a sensor and input the desired temperature value in order to perform specific tests.

For security reasons there is a timeout that will set the Out of Service property back to false after 15 minutes. This value can be modified to between 0 and 120 minutes (see proprietary property #1002).

¹ Present_Value property is writable for every AV object.

² Out_of_Service property is writable for objects that Present_Value is not writable. Object will automatically return to normal after a programmable period of time. See Proprietary property #1002 of Device object.

³ Present_Value property is writable for every BV object.

⁴ Out_of_Service property is writable for objects that Present_Value is not writable. See list above. Object will automatically return to normal after a programmable period of time. See Proprietary property #1002 of Device object.

⁵ MSV object states number and text can vary depending of system set-up. Use carefully.

⁶ Present_Value property is writable for every MSV object.

Objects Table

The controllers use the following BACnet® object table. 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

ID ⁷	Name	Description	Writable Property	CMMB106	Notes (* = default)
AI.11	UniversalInput1	Universal input 1 mode selected by MSV.1	Out of service	X	0-10Volt or -40-100°C or -40-212°F or 0-1 Resolution 0.01Volt or 0.01°C/0.02°F
AI.12	UniversalInput2	Universal input 2 mode selected by MSV.12	Out of service	X	0-10Volt or -40-100°C or -40-212°F or 0-1 Resolution 0.01Volt or 0.01°C/0.02°F
AI.13	UniversalInput3	Universal input 3 mode selected by MSV.15	Out of service	X	0-10Volt or -40-100°C or -40-212°F or 0-1 Resolution 0.01Volt or 0.01°C/0.02°F
AI.14	UniversalInput4	Universal input 4 mode selected by MSV.48	Out of service	X	0-10Volt or -40-100°C or -40-212°F or 0-1 Resolution 0.01Volt or 0.01°C/0.02°F
AI.15	UniversalInput5	Universal input 5 mode selected by MSV.56	Out of service	X	0-10Volt or -40-100°C or -40-212°F or 0-1 Resolution 0.01Volt or 0.01°C/0.02°F
AI.16	UniversalInput6	Universal input 6 mode selected by MSV.57	Out of service	X	0-10Volt or -40-100°C or -40-212°F or 0-1 Resolution 0.01Volt or 0.01°C/0.02°F
AI.17	UniversalInput7	Universal input 7 mode selected by MSV.58	Out of service	X	0-10Volt or -40-100°C or -40-212°F or 0-1 Resolution 0.01Volt or 0.01°C/0.02°F
AI.18	UniversalInput8	Universal input 8 mode selected by MSV.59	Out of service	X	0-10Volt or -40-100°C or -40-212°F or 0-1 Resolution 0.01Volt or 0.01°C/0.02°F
AV.52	AnalogOutput1Min	Min. voltage of analog output 1	Present Value	X	0* Volt to AV.54 Resolution 0.1 Volt
AV.53	AnalogOutput2Min	Min. voltage of analog output 2	Present Value	X	0* Volt to AV.55 Resolution 0.1 Volt
AV.54	AnalogOutput1Max	Max. voltage of analog output 1	Present Value	X	AV.52 to 10.0* Volt Resolution 0.1 Volt
AV.55	AnalogOutput2Max	Max. voltage of analog output 2	Present Value	X	AV.53 to 10.0* Volt Resolution 0.1 Volt
AV.72	AnalogOutput1	Analog output 1 value	Present Value	X	0-10 Volt Resolution 0.01Volt
AV.73	AnalogOutput2	Analog output 2 value	Present Value	X	0-10 Volt Resolution 0.01Volt
AV.118	AnalogOutput3Min	Min. voltage of analog output 3	Present Value	X	0* Volt to AV.120 Resolution 0.1 Volt
AV.119	AnalogOutput4Min	Min. voltage of analog output 4	Present Value	X	0* Volt to AV.121 Resolution 0.1 Volt
AV.120	AnalogOutput3Max	Max. voltage of analog output 3	Present Value	X	AV.118 to 10.0* Volt Resolution 0.1 Volt
AV.121	AnalogOutput4Max	Max. voltage of analog output 4	Present Value	X	AV.119 to 10.0* Volt Resolution 0.1 Volt
AV.124	AnalogOutput3	Analog output 3 value	Present Value	X	0-100%
AV.125	AnalogOutput4	Analog output 4 value	Present Value	X	0-100%
AV.226	UniversalInput1Offset	Universal input 1 offset	Present Value	X	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.01 °C/°F/Volt/mA
AV.227	UniversalInput2Offset	Universal input 2 offset	Present Value	X	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.01 °C/°F/Volt/mA
AV.228	UniversalInput3Offset	Universal input 3 offset	Present Value	X	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.01 °C/°F/Volt/mA
AV.229	UniversalInput4Offset	Universal input 4 offset	Present Value	X	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.01 °C/°F/Volt/mA
AV.230	UniversalInput5Offset	Universal input 5 offset	Present Value	X	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.01 °C/°F/Volt/mA
AV.231	UniversalInput6Offset	Universal input 6 offset	Present Value	X	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.01 °C/°F/Volt/mA
AV.232	UniversalInput7Offset	Universal input 7 offset	Present Value	X	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.01 °C/°F/Volt/mA
AV.233	UniversalInput8Offset	Universal input 8 offset	Present Value	X	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.01 °C/°F/Volt/mA
AV.235	SD1_Type_ADD	Remote sensor model and Modbus address		X	See STLD24 document for information

⁷ ID is equal to ObjectType.Instance

ID ⁷	Name	Description	Writable Property	CMMB106	Notes (* = default)
AV.236	SD1_Baudrate	Remote sensor baud rate of Modbus communication	Present Value	X	See STLD24 document for information
AV.237	SD1_Firmware_version	Remote sensor version		X	See STLD24 document for information
AV.238	SD1_Status_Config	Remote sensor config and status	Present Value	X	See STLD24 document for information
AV.239	SD1_Intern_Temp	Remote sensor internal temp.		X	See STLD24 document for information
AV.240	SD1_Temp_SetPoint	Remote sensor temp. setpoint	Present Value	X	See STLD24 document for information
AV.241	SD1_Min_Temp_SetPoint	Remote sensor min. setpoint	Present Value	X	See STLD24 document for information
AV.242	SD1_Max_Temp_SetPoint	Remote sensor max. setpoint	Present Value	X	See STLD24 document for information
AV.243	SD1_Int_Temp_Offset	Remote sensor internal temperature offset	Present Value	X	See STLD24 document for information
AV.244 to AV.248	Reserved for future use				
AV.249	SD1_Extern_Temp	Remote sensor external temp.		X	See STLD24 document for information
AV.250	SD1_Extern_Temp_Offset	Remote sensor external temperature offset	Present Value	X	See STLD24 document for information
AV.251	SD1_Button_Cfg_Status	Remote sensor button configuration and status	Present Value	X	See STLD24 document for information
AV.252	SD1_Let76	Remote sensor text characters 7 and 6	Present Value	X	See STLD24 document for information
AV.253	SD1_Let54	Remote sensor text characters 5 and 4	Present Value	X	See STLD24 document for information
AV.254	SD1_Let32	Remote sensor text characters 3 and 2	Present Value	X	See STLD24 document for information
AV.255	SD1_Let1	Remote sensor text character 1	Present Value	X	See STLD24 document for information
AV.256	SD1_Digit43	Remote sensor digit number 4 and 3	Present Value	X	See STLD24 document for information
AV.257	SD1_Digit21	Remote sensor digit number 2 and 1	Present Value	X	See STLD24 document for information
AV.258	SD1_Icon1	Remote sensor icon to display	Present Value	X	See STLD24 document for information
AV.259	SD1_Icon1_Blink	Remote sensor icon to blink	Present Value	X	See STLD24 document for information
AV.260	SD1_Icon2	Remote sensor icon to display	Present Value	X	See STLD24 document for information
AV.261	SD1_Icon2_Blink	Remote sensor icon to blink	Present Value	X	See STLD24 document for information
AV.262	SD1_Icon3	Remote sensor icon to display	Present Value	X	See STLD24 document for information
AV.263	SD1_Icon3_Blink	Remote sensor icon to blink	Present Value	X	See STLD24 document for information
AV.264	SD2_Type_ADD	Remote sensor model and Modbus address		X	See STLD24 document for information
AV.265	SD2_Baudrate	Remote sensor baud rate of Modbus communication	Present Value	X	See STLD24 document for information
AV.266	SD2_Firmware_version	Remote sensor version		X	See STLD24 document for information
AV.267	SD2_Status_Config	Remote sensor config and status	Present Value	X	See STLD24 document for information
AV.268	SD2_Intern_Temp	Remote sensor internal temp.		X	See STLD24 document for information
AV.269	SD2_Temp_SetPoint	Remote sensor temp. setpoint	Present Value	X	See STLD24 document for information
AV.270	SD2_Min_Temp_SetPoint	Remote sensor min. setpoint	Present Value	X	See STLD24 document for information
AV.271	SD2_Max_Temp_SetPoint	Remote sensor max. setpoint	Present Value	X	See STLD24 document for information
AV.272	SD2_Int_Temp_Offset	Remote sensor internal temperature offset	Present Value	X	See STLD24 document for information
AV.273 to AV.277	Reserved for future use				
AV.278	SD2_Extern_Temp	Remote sensor external temp.		X	See STLD24 document for information
AV.279	SD2_Extern_Temp_Offset	Remote sensor external temperature offset	Present Value	X	See STLD24 document for information
AV.280	SD2_Button_Cfg_Status	Remote sensor button configuration and status	Present Value	X	See STLD24 document for information
AV.281	SD2_Let76	Remote sensor text characters 7 and 6	Present Value	X	See STLD24 document for information

ID ⁷	Name	Description	Writable Property	CMMB106	Notes (* = default)
AV.282	SD2_Let54	Remote sensor text characters 5 and 4	Present Value	X	See STLD24 document for information
AV.283	SD2_Let32	Remote sensor text characters 3 and 2	Present Value	X	See STLD24 document for information
AV.284	SD2_Let1	Remote sensor text character 1	Present Value	X	See STLD24 document for information
AV.285	SD2_Digit43	Remote sensor digit number 4 and 3	Present Value	X	See STLD24 document for information
AV.286	SD2_Digit21	Remote sensor digit number 4 and 3	Present Value	X	See STLD24 document for information
AV.287	SD2_Icon1	Remote sensor icon to display	Present Value	X	See STLD24 document for information
AV.288	SD2_Icon1_Blink	Remote sensor icon to blink	Present Value	X	See STLD24 document for information
AV.289	SD2_Icon2	Remote sensor icon to display	Present Value	X	See STLD24 document for information
AV.290	SD2_Icon2_Blink	Remote sensor icon to blink	Present Value	X	See STLD24 document for information
AV.291	SD2_Icon3	Remote sensor icon to display	Present Value	X	See STLD24 document for information
AV.292	SD2_Icon3_Blink	Remote sensor icon to blink	Present Value	X	See STLD24 document for information
AV.467	NumberOfSlaveSensor	Number of remote sensors	Present Value	X	0*-2 (# of STLD24 connected to CMMB)
AV.468	CopyCfgStartAdd	Copy configuration start address	Present Value	X	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	X	AV.468 – (AV.468 + 64) Address of last CMMB to copy Available only if BV.101 is set to No
AV.470	CopyCfgResult ⁸	Copy configuration result	Present Value	X	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
BI.1	DigitalInput1	Digital input 1 status	Out of service	X	0= Open / Ouvert * 1= Close / Fermé Text depends of selection in MSV.76
BI.2	DigitalInput2	Digital input 2 status	Out of service	X	0= Open / Ouvert * 1= Close / Fermé Text depends of selection in MSV.76
BV.22	ContactOutput1	Digital output 1 status	Present Value	X	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	X	0= Open / Ouvert / Off / Arret / Normal * 1= Close / Fermé / On / Marche / Alarm Text depends of selection in MSV.67
BV.24	ContactOutput3	Digital output 3 status	Present Value	X	0= Open / Ouvert / Off / Arret / Normal * 1= Close / Fermé / On / Marche / Alarm Text depends of selection in MSV.68
BV.25	ContactOutput4	Digital output 4 status	Present Value	X	0= Open / Ouvert / Off / Arret / Normal * 1= Close / Fermé / On / Marche / Alarm Text depends of selection in MSV.69
BV.26	ContactOutput5	Digital output 5 status	Present Value	X	0= Open / Ouvert / Off / Arret / Normal * 1= Close / Fermé / On / Marche / Alarm Text depends of selection in MSV.70
BV.27	ContactOutput6	Digital output 6 status	Present Value	X	0= Open / Ouvert / Off / Arret / Normal * 1= Close / Fermé / On / Marche / Alarm Text depends of selection in MSV.71
BV.33	DigitalInput1Polarity	Polarity of digital input 1	Present Value	X	0= Direct * 1= Reverse
BV.34	DigitalInput2Polarity	Polarity of digital input 2	Present Value	X	0= Direct * 1= Reverse
BV.66	AnalogOutput1Direction	Polarity of analog output 1	Present Value	X	0= Direct * 1= Reverse

⁸ Write address in present value, result will be available in description.

ID ⁷	Name	Description	Writable Property	CMMB106	Notes (* = default)
BV.67	AnalogOutput2Direction	Polarity of analog output 2	Present Value	X	0= Direct * 1= Reverse
BV.68	AnalogOutput3Direction	Polarity of analog output 3	Present Value	X	0= Direct * 1= Reverse
BV.69	AnalogOutput4Direction	Polarity of analog output 4	Present Value	X	0= Direct * 1= Reverse
BV.93	UI1_DI_Polarity	Polarity of universal input 1 when used in digital input mode	Present Value	X	0= Direct * 1= Reverse
BV.94	UI2_DI_Polarity	Polarity of universal input 2 when used in digital input mode	Present Value	X	0= Direct * 1= Reverse
BV.95	UI3_DI_Polarity	Polarity of universal input 3 when used in digital input mode	Present Value	X	0= Direct * 1= Reverse
BV.96	UI4_DI_Polarity	Polarity of universal input 4 when used in digital input mode	Present Value	X	0= Direct * 1= Reverse
BV.97	UI5_DI_Polarity	Polarity of universal input 5 when used in digital input mode	Present Value	X	0= Direct * 1= Reverse
BV.98	UI6_DI_Polarity	Polarity of universal input 6 when used in digital input mode	Present Value	X	0= Direct * 1= Reverse
BV.99	UI7_DI_Polarity	Polarity of universal input 7 when used in digital input mode	Present Value	X	0= Direct * 1= Reverse
BV.100	UI8_DI_Polarity	Polarity of universal input 8 when used in digital input mode	Present Value	X	0= Direct * 1= Reverse
BV.101	CopyCfgExecute	Start or stop copy configuration	Present Value	X	0= No * 1= Yes Start copy and give results, must be reset by user.
MSV.1	UniversalInput1Function	Selected analog input 1 mode	Present Value	X	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	X	1= Extern_Sensor_C * 2= Extern_Sensor_F 3= 0_10Volt 4= DigitalInput 5= 0_5Volt 6= 4_20mA
MSV.15	UniversalInput3Function	Selected analog input 3 mode	Present Value	X	1= Extern_Sensor_C * 2= Extern_Sensor_F 3= 0_10Volt 4= DigitalInput 5= 0_5Volt 6= 4_20mA
MSV.48	UniversalInput4Function	Selected analog input 4 mode	Present Value	X	1= Extern_Sensor_C * 2= Extern_Sensor_F 3= 0_10Volt 4= DigitalInput 5= 0_5Volt 6= 4_20mA
MSV.54	AnalogOutput1Mode	Select analog output 1 mode	Present Value	X	1= Analog * 2= On_Off 3= Pulsing
MSV.55	AnalogOutput2Mode	Select analog output 2 mode	Present Value	X	1= Analog * 2= On_Off 3= Pulsing
MSV.57	UniversalInput5Function	Selected analog input 5 mode	Present Value	X	1= Extern_Sensor_C * 2= Extern_Sensor_F 3= 0_10Volt 4= DigitalInput 5= 0_5Volt 6= 4_20mA

ID ⁷	Name	Description	Writable Property	CMMB106	Notes (* = default)
MSV.58	UniversalInput6Function	Selected analog input 6 mode	Present Value	X	1= Extern_Sensor_C * 2= Extern_Sensor_F 3= 0_10Volt 4= DigitalInput 5= 0_5Volt 6= 4_20mA
MSV.59	UniversalInput7Function	Selected analog input 7 mode	Present Value	X	1= Extern_Sensor_C * 2= Extern_Sensor_F 3= 0_10Volt 4= DigitalInput 5= 0_5Volt 6= 4_20mA
MSV.60	UniversalInput8Function	Selected analog input 8 mode	Present Value	X	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	X	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	X	1= Open_Close * 2= Ouvert_Fermé 3= On_Off 4= Marche_Arret 5= Alarm_Normal
MSV.68	ContactOutput3Text	Contact output 3 inactive & active text	Present Value	X	1= Open_Close * 2= Ouvert_Fermé 3= On_Off 4= Marche_Arret 5= Alarm_Normal
MSV.69	ContactOutput4Text	Contact output 4 inactive & active text	Present Value	X	1= Open_Close * 2= Ouvert_Fermé 3= On_Off 4= Marche_Arret 5= Alarm_Normal
MSV.70	ContactOutput5Text	Contact output 5 inactive & active text	Present Value	X	1= Open_Close * 2= Ouvert_Fermé 3= On_Off 4= Marche_Arret 5= Alarm_Normal
MSV.71	ContactOutput6Text	Contact output 6 inactive & active text	Present Value	X	1= Open_Close * 2= Ouvert_Fermé 3= On_Off 4= Marche_Arret 5= Alarm_Normal
MSV.76	DigitalInput1Text	Digital input 1 inactive & active text	Present Value	X	1= Open_Close * 2= Ouvert_Fermé
MSV.77	DigitalInput2Text	Digital input 2 inactive & active text	Present Value	X	1= Open_Close * 2= Ouvert_Fermé
MSV.81	AnalogOutput3Mode	Select analog output 3 mode	Present Value	X	1= Analog * 2= On_Off 3= Pulsing
MSV.82	AnalogOutput4Mode	Select analog output 4 mode	Present Value	X	1= Analog * 2= On_Off 3= Pulsing