



Models
CMMB102

Description

The CMMB extends your BACnet or Modbus network when your application requires additional inputs and outputs on a physical controller. Combining the 8 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.

Features

Power & Communication

- 24Vac or 24Vdc supply
- BACnet® MS/TP or Modbus communication port (selectable)

Inputs & Outputs

- 4 universal inputs
- 2 universal outputs (supervised)
- 2 binary outputs (supervised)

Installation

- 4 override switches to manually control each output
- LED status indication of each input and output
- DIN rail mounting
- Removable, non-strip, raising clamp terminals
- Removable see-through panel for easy access to DIP switches



CMMB102

Network Communication

- BACnet® MS/TP or Modbus communication port (selectable via DIP switch)
- Select MAC address via DIP switch or via network

BACnet®

- MS/TP @ 9600, 19200, 38400 or 76800 bps
- Automatic baud rate detection
- Automatic device instance configuration
- Copy & broadcast configuration to other CMMB modules

Modbus

- Modbus @ 9600, 19200, 38400 or 57600 bps
- RTU Slave, 8 bits (configurable parity and stop bits)
- Connects to any Modbus master

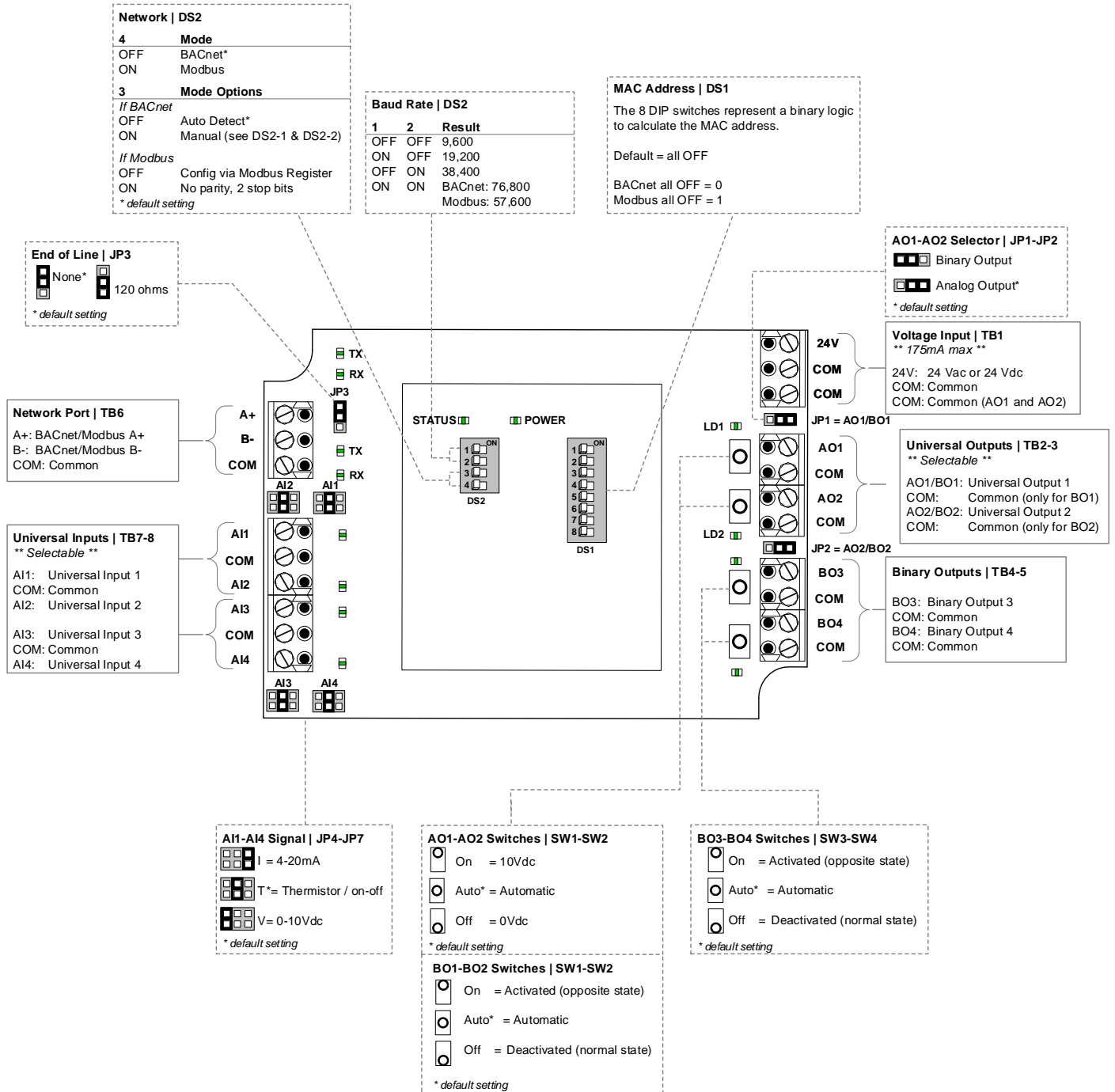
Technical Specifications

Specifications	CMMB102
Input Voltage	24 Vac or 24 Vdc
Consumption	3VA (175mA @ 24 Vac)
Universal Inputs	4 [0.00-10.00Vdc, 10KΩ/20KΩ/30KΩ, on/off (dry contact), 4.00-20.00mA] / 12b hardware resolution with oversampling
Universal Outputs	2 [0-10Vdc, pulsed signal (20mA drive), on/off] / 1mV resolution OptoFET (250mA max)
Binary Relay Outputs	2 [normally open/closed, independent common per relay, 5A resistive]
BACnet	BACnet® MS/TP @ 9600, 19200, 38400 or 76800 bps (BAS-C)
Modbus	Modbus RTU slave @ 9600, 19200, 38400 or 57600. Selectable parity and stop bit configuration: <ul style="list-style-type: none"> • No parity, 2 stop bit • Even parity, 1 stop bit • Odd parity, 1 stop bit
Communication Connections	24 AWG twisted-shield cable (Belden 9841 or equivalent)
Electrical Connections	0.8 mm ² [18 AWG] minimum
Operational Temperature	0°C to 50°C [32°F to 122°F]
Storage Temperature	-30°C to 50°C [-22°F to 122°F]
Relative Humidity	5 a 95% non condensed
Weight	0.2 kg [0.4 lb]
Dimensions A = 3.18" / 81 mm B = 4.93" / 125 mm C = 2.27" / 58 mm	



Connections and Configurations

Please note that all jumper settings must also be set to the same value through BACnet. Some additional configurations are only available through BACnet (see Network Conditions on page 4).





MAC Address DIP Switch (DS1)

MAC address for BACnet and Modbus communication, are selectable by DIP switch DS1 using binary logic.

BACnet

- Highest MAC address is 254.
- Default is all switches OFF = MAC address 0
- If you do not change device instance in program mode, it will be automatically modified according to the MAC address.

MAC Address	DS.1 = 1	DS.2 = 2	DS.3 = 4	DS.4 = 8	DS.5 = 16	DS.6 = 32	DS.7 = 64	DS.8 = 128	Default Device Instance
0	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	153000
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	153001
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	153002
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	153003
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	153004
...
126	OFF	ON	ON	ON	ON	ON	ON	OFF	153126
...
254	OFF	ON	ON	ON	ON	ON	ON	ON	153254

Modbus

- Highest MAC address is 247.
- Default is all switches OFF = MAC address 1
- MAC address is **binary value +1**
- There is no device instance for Modbus.

MAC Address	DS.1 = 1	DS.2 = 2	DS.3 = 4	DS.4 = 8	DS.5 = 16	DS.6 = 32	DS.7 = 64	DS.8 = 128
0+1 = 1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
1+1 = 2	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF
2+1 = 3	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF
3+1 = 4	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
4+1 = 5	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
...
126+1 = 127	OFF	ON	ON	ON	ON	ON	ON	OFF
...
246+1 = 247	OFF	ON	ON	OFF	ON	ON	ON	ON

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.

RX/TX (Modbus)

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 Thermistor); 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
- Analog = When Universal and Analog outputs are set to analog values (Vdc); the LED intensity corresponds to the output 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.

Network Conditions

Please note that all jumper settings must also be set to the same value through BACnet or Modbus. The following is a list of conditions and additional BACnet or Modbus objects.

Universal Inputs (AI1-AI4)

- **For temperature thermistor reading:** with the jumper set to *Thermistor*, set the AI input type to *10K_TypeG*, *10K_Type3A1*, *10K_Type4A1*, *10K_NTC*, *20K_Type6A1* or *30K_Type6A1*.
- **For on/off contact input reading:** with the hardware jumper set to *Thermistor*, set the AI input type to *Digital_Input*. The polarity can also be set to direct or reverse. For example, in Reverse an “on” signal would be recognized as an “off” signal.
- **For analog 0-10 Vdc input reading:** with the hardware jumper set to *0-10 Vdc*, set the AI input type to *0_10V*.

Universal/Analog Outputs (AO1-AO2)

- You can set the polarity to direct or reverse. For example, in reverse the output range would be 10-0 Vdc instead of 0-10 Vdc. The polarity applies to all settings 0-10Vdc, on/off and pulsed.
- You can also set the outputs to pulsed or digital on/off.
- A fixed output value can only be modified via BACnet when the override switch is in the “Automatic” position.

Binary Outputs (BO1-BO4)

- A fixed output (open/closed) can only be modified via BACnet when the override switch is in the “Automatic” position.
- The displayed text can be set to either Open/Closed, On/Off, or Alarm/Normal (BACnet only).

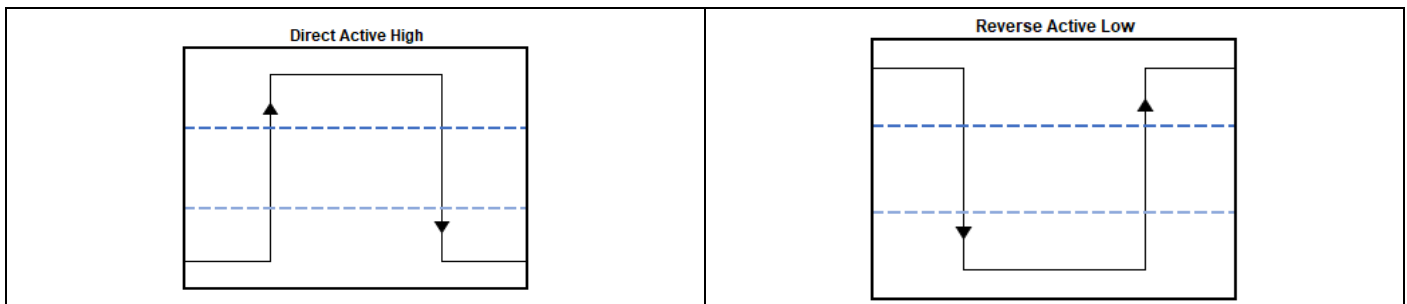
Supervised Outputs

- 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.

Pulse Counting Feature

The pulse counting feature enables counting the number of pulses detected by the inputs.

- When an active edge is detected, the Pulse Count is incremented by 1 up to the Prescaler value. When the Prescaler value is reached, the Accumulator is incremented by 1 and the Pulse Count is reset to 0.
- A value that is higher than 80% of the input’s saturation confirms a high level. A value that is lower than 20% of the input’s saturation confirms a low level.
- The maximum frequency is 100Hz and the minimum pulse length is 5ms/50%D.C.



Output Configuration

Output LEDs LD1 and LD2 will always respond to the output mode selected on **MSV.54/55** and the analog value set on **AV.72/73** irrespective of the position of JP1 and JP2. The position of JP1 and JP2 determines the output objects to be used as shown below:

JP1 and JP2 Position	Output Objects to be used		
JP1 in Analog Position	AV.52, AV.54, AV.72, AV.506, BV.66, MSV.54, MSV.110		
JP2 in Analog Position	AV.53, AV.55, AV.73, AV.507, BV.67, MSV.55, MSV.111		
JP1 in Binary Position	Common	MSV.100 = TPM	MSV.100 = On/Off
	MSV.100	AV.500	BV.22
	MSV.106		MSV.66
JP2 in Binary Position	Common	MSV.100 = TPM	MSV.100 = On/Off
	MSV.101	AV.501	BV.23
	MSV.107		MSV.67

Note: Refer to the **BACnet Objects Table** on page 5 for the description of the BACnet objects listed.



BACnet Objects Table

ID ¹	Name	Description	Writable?	Notes (* = default) († = only when <i>UniversalInputFunction</i> is set to <i>10K_Type3/G</i>)
AI.1	UniversalInput1	Universal input 1 mode selected by MSV.1.	Out of service	0 to 10Volt or -40 to 100°C (150°C) [†] or -40 to 212°F (302°F) [†] or 4 to 20mA or 0 to 1 Resolution: 0.01Volt or 0.01°C/0.02°F or 0.01mA or 1
AI.2	UniversalInput2	Universal input 2 mode selected by MSV.12.	Out of service	0 to 10Volt or -40 to 100°C (150°C) [†] or -40 to 212°F (302°F) [†] or 4 to 20mA or 0 to 1 Resolution: 0.01Volt or 0.01°C/0.02°F or 0.01mA or 1
AI.3	UniversalInput3	Universal input 3 mode selected by MSV.15.	Out of service	0 to 10Volt or -40 to 100°C (150°C) [†] or -40 to 212°F (302°F) [†] or 4 to 20mA or 0 to 1 Resolution: 0.01Volt or 0.01°C/0.02°F or 0.01mA or 1
AI.4	UniversalInput4	Universal input 4 mode selected by MSV.48.	Out of service	0 to 10Volt or -40 to 100°C (150°C) [†] or -40 to 212°F (302°F) [†] or 4 to 20mA or 0 to 1 Resolution: 0.01Volt or 0.01°C/0.02°F or 0.01mA or 1
AV.1	UI1PulseCount	Universal input 1 pulse count.	Present Value	0 to 16777216, Resolution: 1
AV.2	UI2PulseCount	Universal input 2 pulse count.	Present Value	0 to 16777216, Resolution: 1
AV.3	UI3PulseCount	Universal input 3 pulse count.	Present Value	0 to 16777216, Resolution: 1
AV.4	UI4PulseCount	Universal input 4 pulse count.	Present Value	0 to 16777216, Resolution: 1
AV.11	UI1Accumulator	Universal input 1 pulse counter rollovers.	Present Value	0 to 16777216, Resolution: 1
AV.12	UI2Accumulator	Universal input 2 pulse counter rollovers.	Present Value	0 to 16777216, Resolution: 1
AV.13	UI3Accumulator	Universal input 3 pulse counter rollovers.	Present Value	0 to 16777216, Resolution: 1
AV.14	UI4Accumulator	Universal input 4 pulse counter rollovers.	Present Value	0 to 16777216, Resolution: 1
AV.52	AnalogOutput1Min	Min. voltage of analog output 1.	Present Value	0* Volt to AV.54 Resolution 0.1 Volt
AV.53	AnalogOutput2Min	Min. voltage of analog output 2.	Present Value	0* Volt to AV.55 Resolution 0.1 Volt
AV.54	AnalogOutput1Max	Max. voltage of analog output 1.	Present Value	AV.52 to 10.0* Volt Resolution 0.1 Volt
AV.55	AnalogOutput2Max	Max. voltage of analog output 2.	Present Value	AV.53 to 10.0* Volt Resolution 0.1 Volt
AV.72	AnalogOutput1	Analog output 1 value.	Present Value	0-100% Resolution 0.1%
AV.73	AnalogOutput2	Analog output 2 value.	Present Value	0-100% Resolution 0.1%
AV.226	UniversalInput1Offset	Universal input 1 offset.	Present Value	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.1 °C/°F/Volt/mA
AV.227	UniversalInput2Offset	Universal input 2 offset.	Present Value	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.1 °C/°F/Volt/mA
AV.228	UniversalInput3Offset	Universal input 3 offset.	Present Value	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.1 °C/°F/Volt/mA
AV.229	UniversalInput4Offset	Universal input 4 offset.	Present Value	-5.00 to 5.00 °C/°F/Volt/mA (default 0*) Resolution: 0.1 °C/°F/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 ²	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
AV.500	TPMOutput1	TPM Output 1 value.	Present Value	0-100% Resolution 0.1%
AV.501	TPMOutput2	TPM Output 2 value.	Present Value	0-100% Resolution 0.1%
AV.506	AO1FailsafePreset	Analog output 1 failsafe preset value.	Present Value	0 to 100%, Resolution: 0.1%

¹ ID is equal to ObjectType.Instance

² Write address in present value, result will be available in description.



ID ¹	Name	Description	Writable?	Notes (* = default) († = only when <i>UniversalInputFunction</i> is set to <i>10K_Type3/G</i>)
AV.507	AO2FailsafePreset	Analog output 2 failsafe preset value.	Present Value	0 to 100%, Resolution: 0.1%
AV.508	TimeoutValue	Network Timeout value.	Present Value	5 to 600 sec, Resolution: 5 sec
AV.509	UI1PulsePrescaler	Universal input 1 pulse counter rollover threshold.	Present Value	0 to 16777216, Resolution: 1
AV.510	UI2PulsePrescaler	Universal input 2 pulse counter rollover threshold.	Present Value	0 to 16777216, Resolution: 1
AV.511	UI3PulsePrescaler	Universal input 3 pulse counter rollover threshold.	Present Value	0 to 16777216, Resolution: 1
AV.512	UI4PulsePrescaler	Universal input 4 pulse counter rollover threshold.	Present Value	0 to 16777216, Resolution: 1
BV.22	ContactOutput1	Binary 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	Binary 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.24	ContactOutput3	Binary output 3 status.	Present Value	0= Open / Ouvert / Off / Arret / Normal * 1= Close / Fermé / On / Marche / Alarm Text depends of selection in MSV.68
BV.25	ContactOutput4	Binary output 4 status.	Present Value	0= Open / Ouvert / Off / Arret / Normal * 1= Close / Fermé / On / Marche / Alarm Text depends of selection in MSV.69
BV.66	AnalogOutput1Direction	Polarity of analog output 1.	Present Value	0= Direct * 1= Reverse
BV.67	AnalogOutput2Direction	Polarity of analog output 2.	Present Value	0= Direct * 1= Reverse
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.95	UI3_DI_Polarity	Polarity of universal input 3 when used in digital input mode.	Present Value	0= Direct * 1= Reverse
BV.96	UI4_DI_Polarity	Polarity of universal input 4 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. <i>CopyCfgExecute</i> does not apply to the failsafe settings on the outputs.
BV.102	SystemUnit	Select the unit system to use on the device.	Present Value	0= Celsius * 1= Fahrenheit
BV.103	Inhibit Output Override	Inhibit the override of the outputs.	Present Value	0= Off * 1= On
BV.104	TimeoutStatus	Network timeout status.	Present Value	0= Inactive * 1= Active
MSV.1	UniversalInput1Function	Selected analog input 1 mode.	Present Value	1= 0_10V 6= 10K_Type2 2= 4_20mA 7= 20K_Type6A1 3= 10K_Type3/G * 8= 30K_Type6A1 4= 10K_Type3A1 9= Digital_Input 5= 10K_Type4A1 10= 10K_NTC_Carel
MSV.12	UniversalInput2Function	Selected analog input 2 mode.	Present Value	1= 0_10V 6= 10K_Type2 2= 4_20mA 7= 20K_Type6A1 3= 10K_Type3/G * 8= 30K_Type6A1 4= 10K_Type3A1 9= Digital_Input 5= 10K_Type4A1 10= 10K_NTC_Carel
MSV.15	UniversalInput3Function	Selected analog input 3 mode.	Present Value	1= 0_10V 6= 10K_Type2 2= 4_20mA 7= 20K_Type6A1 3= 10K_Type3/G * 8= 30K_Type6A1 4= 10K_Type3A1 9= Digital_Input 5= 10K_Type4A1 10= 10K_NTC_Carel
MSV.48	UniversalInput4Function	Selected analog input 4 mode.	Present Value	1= 0_10V 6= 10K_Type2 2= 4_20mA 7= 20K_Type6A1 3= 10K_Type3/G * 8= 30K_Type6A1 4= 10K_Type3A1 9= Digital_Input 5= 10K_Type4A1 10= 10K_NTC_Carel



ID ¹	Name	Description	Writable?	Notes (* = default) († = only when <i>UniversalInputxFunction</i> is set to <i>10K_Type3/G</i>)
MSV.54	AnalogOutput1Mode	Select analog output 1 mode.	Present Value	1= Analog * 2= On_Off 3= Pulsing
MSV.55	AnalogOutput2Mode	Select analog output 2 mode.	Present Value	1= Analog * 2= On_Off 3= Pulsing
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
MSV.68	ContactOutput3Text	Contact output 3 inactive & active text.	Present Value	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	1= Open_Close * 2= Ouvert_Fermé 3= On_Off 4= Marche_Arret 5= Alarm_Normal
MSV.100	OptofetOutput1Mode	Select Optofet output 1 mode.	Present Value	1= On_Off * 2= TimePulseModulation
MSV.101	OptofetOutput2Mode	Select Optofet output 2 mode.	Present Value	1= On_Off * 2= TimePulseModulation
MSV.106	CfgBO1FailsafeMode	Configuration of the binary output 1 failsafe mode.	Present Value	1= LastState * 2= Open 3= Close
MSV.107	CfgBO2FailsafeMode	Configuration of the binary output 2 failsafe mode.	Present Value	1= LastState * 2= Open 3= Close
MSV.108	CfgBO3FailsafeMode	Configuration of the binary output 3 failsafe mode.	Present Value	1= LastState * 2= Open 3= Close
MSV.109	CfgBO4FailsafeMode	Configuration of the binary output 4 failsafe mode.	Present Value	1= LastState * 2= Open 3= Close
MSV.110	CfgAO1FailsafeMode	Configuration of the analog output 1 failsafe mode.	Present Value	1= LastState * 2= Preset
MSV.111	CfgAO2FailsafeMode	Configuration of the analog output 2 failsafe mode.	Present Value	1= LastState * 2= Preset

Modbus Registers

- Register address
 - As per protocol base (base 0); for PLC add 1 to protocol base.
 - As per holding register (base 40001)
- Functions :
 - 03 Read Holding Register
 - 06 Write Single Register
 - 16 Write Multiple Registers
- Error Codes :
 - 02 Illegal Data Address
 - 03 Illegal Value
 - 06 Slave Device Busy
- W = Writable register, [blank] = read only.
- No Real number in modbus register, use scale to calculate real number. Register = Real number * Scale => Real number = Register / Scale. Scale could be 1, 10 or 100
- Attention when writing a register that contains a bit string. If bit is writable (conditional or not), the write will always be accepted. If bit is reserved or not writable, the write will be ignored and will keep its actual state.
- Use READ-MODIFY-WRITE sequence.

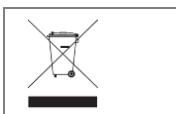
Protocol Base	Holding Register	Description	Data Type	MSB/LSB		Units/Values	Writable	Default Value	
								MB	LB
0	40001	MSB = Neptronic Device ID LSB = MAC Address	Unsigned	105 (69h)	[1..247] (1h- F7h)	* MAC address is writable if all DIP switches of DS2 are OFF.	W*	69h	1h
1	40002	Device Baud Rate	Unsigned Scale 0.01	[96] [192] [384] [576]		9,600 19,200 38,400 57,600		96	
2	40003	COM Port Configuration IMPORTANT: The default value is "no parity, 2 stop bits". To change the value, you must set DIP switch DS1-3 to OFF. If set to ON, it will always remain at the default value. Refer to Connections and Configurations on page 2.	Unsigned	[0..2]		0 = no parity, 2 stop bits 1 = even parity, 1 stop bit 2 = odd parity, 1 stop bit	W	0	
3	40004	Product Name (characters 8 & 7)	2 x ASCII	char 8	char 7	Valid ASCII character: 32 (20h) – 122 (7ah), Empty = 0	W	43h [C]	40h [M]
4	40005	Product Name (characters 6 & 5)	2 x ASCII	char 6	char 5	Valid ASCII character: 32 (20h) – 122 (7ah), Empty = 0	W	40h [M]	42h [B]
5	40006	Product Name (characters 4 & 3)	2 x ASCII	char 4	char 3	Valid ASCII character: 32 (20h) – 122 (7ah), Empty = 0	W	31h [1]	30h [0]
6	40007	Product Name (characters 2 & 1)	2 x ASCII	char 2	char 1	Valid ASCII character: 32 (20h) – 122 (7ah), Empty = 0	W	36h [6]	20h []
7	40008	Firmware Version	Unsigned Scale 100	103		1.03		103	
8	40009	Application Version	Unsigned Scale 100	100		1.00		100	

Protocol Base	Holding Register	Description	Data Type	MSB/LSB	Units/Values	Writable	Default Value	
							MB	LB
9	40010	System Status 1	Bit String	[B0..B15]	0 = Normal 1 = Fault ----- B0 = System operation		0000, 0001, 1111, 1110b	
10	40011	System Status 2	Bit String	[B0..B15]	Always 0		0000, 0000, 0000, 0000b	
11	40012	Analog Input 1			0-10V: Type: Unsigned, Scale:100, Unit: Volt, Range: 0.00-10.00V, Resolution: 0.01 4-20mA: Type: Unsigned, Scale:100, Unit: mA, Range: 4.00-20.00 mA, Resolution: 0.01 10K Type 3A1, 10K Type 4AI, 10K Type 2, 20K Type 6AI, 30K Type 6AI: Type: Signed, Scale:100, Unit: °C, Range: -40.00 - 100.00 °C, Resolution: 0.01 Type: Signed, Scale:100, Unit: °F, Range: -40.00 - 212.00 °F, Resolution: 0.02 10K Type 3/G: Type: Signed, Scale:100, Unit: °C, Range: -40.00 - 150.00 °C, Resolution: 0.01 Type: Signed, Scale:100, Unit: °F, Range: -40.00 - 302.00 °F, Resolution: 0.02 DI: Type: Unsigned, Scale:1, No Unit, Range: 0-1, Resolution: 1		0	
12	40013	Analog Input 2					0	
13	40014	Analog Input 3					0	
14	40015	Analog Input 4					0	
15 to 19	40016 to 40020	<i>Reserved</i>						
20	40021	Analog Output 1	Unsigned Scale 10	[0..1000]	Unit: %, Range: 0-100.0%, Resolution: 0.1	W	0	
21	40022	Analog Output 2					0	
22 to 23	40023 to 40024	<i>Reserved</i>					0	
24	40025	Relay Output	Bit String	[B0..B5]	B0 = Relay 1 B1 = Relay 2 B2 = Relay 3 B3 = Relay 4 B4 to B5 = Reserved	W	0000, 0000, 0000, 0000b	
25	40026	Output Overwrite Status <i>Indicates that the output is overridden by the hardware switch (SW1-SW4).</i>	Bit String	[B0..B9]	B0 = Relay 1 B1 = Relay 2 B2 = Relay 3 B3 = Relay 4 B4 = AO1 B5 = AO2 B6 to B9 = Reserved		0000, 0000, 0000, 0000b	
26	40027	Universal Input 1 Function	Unsigned	[1..10]	1= 0_10V 2= 4_20mA 3= 10K_Type3/G * 4= 10K_Type3A1 5= 10K_Type4A1 6= 10K_Type2 7= 20K_Type6A1 8= 30K_Type6A1 9= Digital_Input 10= 10K_NTC_Carel	W	3	
27	40028	Universal Input 2 Function					3	
28	40029	Universal Input 3 Function					3	
29	40030	Universal Input 4 Function					3	
30 to 33	40031 to 40034	<i>Reserved</i>						

Protocol Base	Holding Register	Description	Data Type	MSB/LSB	Units/Values	Writable	Default Value	
							MB	LB
34	40035	Universal Input 1 Offset	Signed Scale 100	[0..100]	Range: +/- 5.00, Resolution: 0.1	W	0	
35	40036	Universal Input 2 Offset					0	
36	40037	Universal Input 3 Offset					0	
37	40038	Universal Input 4 Offset					0	
38 to 41	40039 to 40042	<i>Reserved</i>						
42	40043	Analog Output 1 Mode	Unsigned	[1..3]	1 = Analog 2 = On/Off 3 = Pulse	W	1	
43	40044	Analog Output 1 Minimum Voltage	Signed Scale 10	[0..100]	Unit: Volt, Range: 0 V - Register 44, Resolution: 0.1	W	0	
44	40045	Analog Output 1 Maximum Voltage			Unit: Volt, Range: Register 43 - 10.0V, Resolution: 0.1		100	
45	40046	Analog Output 2 Mode	Unsigned	[1..3]	1 = Analog 2 = On/Off 3 = Pulse	W	1	
46	40047	Analog Output 2 Minimum Voltage	Signed Scale 10	[0..100]	Unit: Volt, Range: 0 V - Register 47, Resolution: 0.1	W	0	
47	40048	Analog Output 2 Maximum Voltage			Unit: Volt, Range: Register 46 - 10.0V, Resolution: 0.1		100	
48 to 53	40049 to 40054	<i>Reserved</i>						
54	40055	System Options <i>* = digital input mode only</i>	Bit String	[B0..B15]	0 = Direct 1 = Reverse ----- B0 = AO1 polarity B1 = AO2 polarity B2 to B3 = <i>Reserved</i> B4 = AI1 polarity * B5 = AI2 polarity * B6 = AI3 polarity * B7 = AI4 polarity * B8 to B13 = <i>Reserved</i> 0 = Off 1 = On ----- B14 = Inhibit Output Override ----- 0 = Celsius 1 = Fahrenheit ----- B15 = System Unit	W	0000, 0000, 0000, 0000b	
55	40056	TPM Output 1	Unsigned Scale 10	[0..1000]	Unit: %, Range: 0-100.0%, Resolution: 0.1	W	0	
56	40057	TPM Output 2					0	
57 to 60	40058 to 40061	<i>Reserved</i>						
61	40062	Optofet Output 1 Mode	Bit String	[1, 2]	1 = On_Off 2 = TimePulseModulation	W	1	
62	40063	Optofet Output 2 Mode					1	

Protocol Base	Holding Register	Description	Data Type	MSB/LSB	Units/Values	Writable	Default Value	
							MB	LB
63 to 66	40064 to 40067	<i>Reserved</i>						
67	40068	Binary Output 1 Fail Safe Mode	Unsigned	[1..3]	1= LastState 2= Open 3= Close	W	1	
68	40069	Binary Output 2 Fail Safe Mode	Unsigned	[1..3]	1= LastState 2= Open 3= Close	W	1	
69	40070	Binary Output 3 Fail Safe Mode	Unsigned	[1..3]	1= LastState 2= Open 3= Close	W	1	
70	40071	Binary Output 4 Fail Safe Mode	Unsigned	[1..3]	1= LastState 2= Open 3= Close	W	1	
71	40072	Analog Output 1 Fail Safe Mode	Unsigned	[1,2]	1= LastState 2= Preset	W	1	
72	40073	Analog Output 1 Fail Safe Preset Value	Unsigned Scale 10	[0..1000]	Unit: %, Range: 0 – 100.00 %, Resolution: 0.1	W	100	
73	40074	Analog Output 2 Fail Safe Mode	Unsigned	[1,2]	1= LastState 2= Preset	W	1	
74	40075	Analog Output 2 Fail Safe Preset Value	Unsigned Scale 10	[0..1000]	Unit: %, Range: 0 – 100.00 %, Resolution: 0.1	W	100	
75	40076	Timeout Status	Unsigned	[0,1]	0= Inactive 1= Active		0	
76	40077	Network Timeout Value	Unsigned Scale 1	[5..600]	Unit: Seconds (sec), Range: 5 – 600 sec, Resolution: 5 sec	W	30	
77	40078	UI1 Pulse Prescaler (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	1	
78	40079	UI1 Pulse Prescaler (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
79	40080	UI2 Pulse Prescaler (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	1	
80	40081	UI2 Pulse Prescaler (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
81	40082	UI3 Pulse Prescaler (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	1	
82	40083	UI3 Pulse Prescaler (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
83	40084	UI4 Pulse Prescaler (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	1	
84	40085	UI4 Pulse Prescaler (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
85 to 92	40086 to 40093	<i>Reserved</i>						

Protocol Base	Holding Register	Description	Data Type	MSB/LSB	Units/Values	Writable	Default Value	
							MB	LB
93	40094	UI1 Pulse Count (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	0	
94	40095	UI1 Pulse Count (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
95	40096	UI2 Pulse Count (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	0	
96	40097	UI2 Pulse Count (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
97	40098	UI3 Pulse Count (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	0	
98	40099	UI3 Pulse Count (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
99	40100	UI4 Pulse Count (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	0	
100	40101	UI4 Pulse Count (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
101 to 108	40102 to 40109	<i>Reserved</i>						
109	40110	UI1 Accumulator (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	0	
110	40111	UI1 Accumulator (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
111	40112	UI2 Accumulator (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	0	
112	40113	UI2 Accumulator (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
113	40114	UI3 Accumulator (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	0	
114	40115	UI3 Accumulator (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
115	40116	UI4 Accumulator (0)	Unsigned Scale 1	[0...16777216]	Range: 0 to 16777216, Resolution: 1	W	0	
116	40117	UI4 Accumulator (1)		[0...16777216]	Range: 0 to 16777216, Resolution: 1			
117 to 124	40118 to 40125	<i>Reserved</i>						



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