

## Specification

|                |                                                   |
|----------------|---------------------------------------------------|
| Supply voltage | 24Vac/dc $\pm 10\%$                               |
| Supply current | 3VA (175mA @ 24Vac)                               |
| Inputs         | 4 x <i>Universal (12-bit resolution)</i>          |
|                | 0-10Vdc                                           |
|                | Thermistor                                        |
|                | On/off (VFC)                                      |
|                | 4-20mA                                            |
| Outputs        | 2 x <i>Universal (12-bit resolution)</i>          |
|                | 0-10Vdc                                           |
|                | Pulsed signal (20mA drive)                        |
|                | On/off                                            |
|                | 2 x <i>Binary</i>                                 |
|                | NO/C Independent common per relay 5A resistive    |
| BACnet         | BACnet MS/TP (BAS-C): 9k6, 19k2, 38k4 or 76k8 bps |
| Modbus         | Modbus RTU Slave @ 9k6, 19k2, 38k4 or 57k6        |
|                | Selectable parity and stop bit conf               |
|                | No parity, 2 stop bit                             |
|                | Even parity, 1 stop bit                           |
|                | Odd parity, 1 stop bit                            |

## Connections:

|                     |                                                        |
|---------------------|--------------------------------------------------------|
| Communication       | 24AWG twisted-shield cable (Belden 9841 or equivalent) |
| Electrical          | 18AWG (0.8mm <sup>2</sup> ) at least                   |
| Ambient:            |                                                        |
| Temperature         | 0 to +50°C                                             |
| RH                  | 5 to 95% non-condensing                                |
| Storage temperature | -30 to +50°C                                           |
| Housing:            |                                                        |
| Material            | ABS                                                    |
| Dimensions          | 160 x 126 x 57mm                                       |
| Protection          | IP30                                                   |
| Country of origin   | Canada                                                 |
| Conformity          | EMC, CE & UKCA Marked                                  |

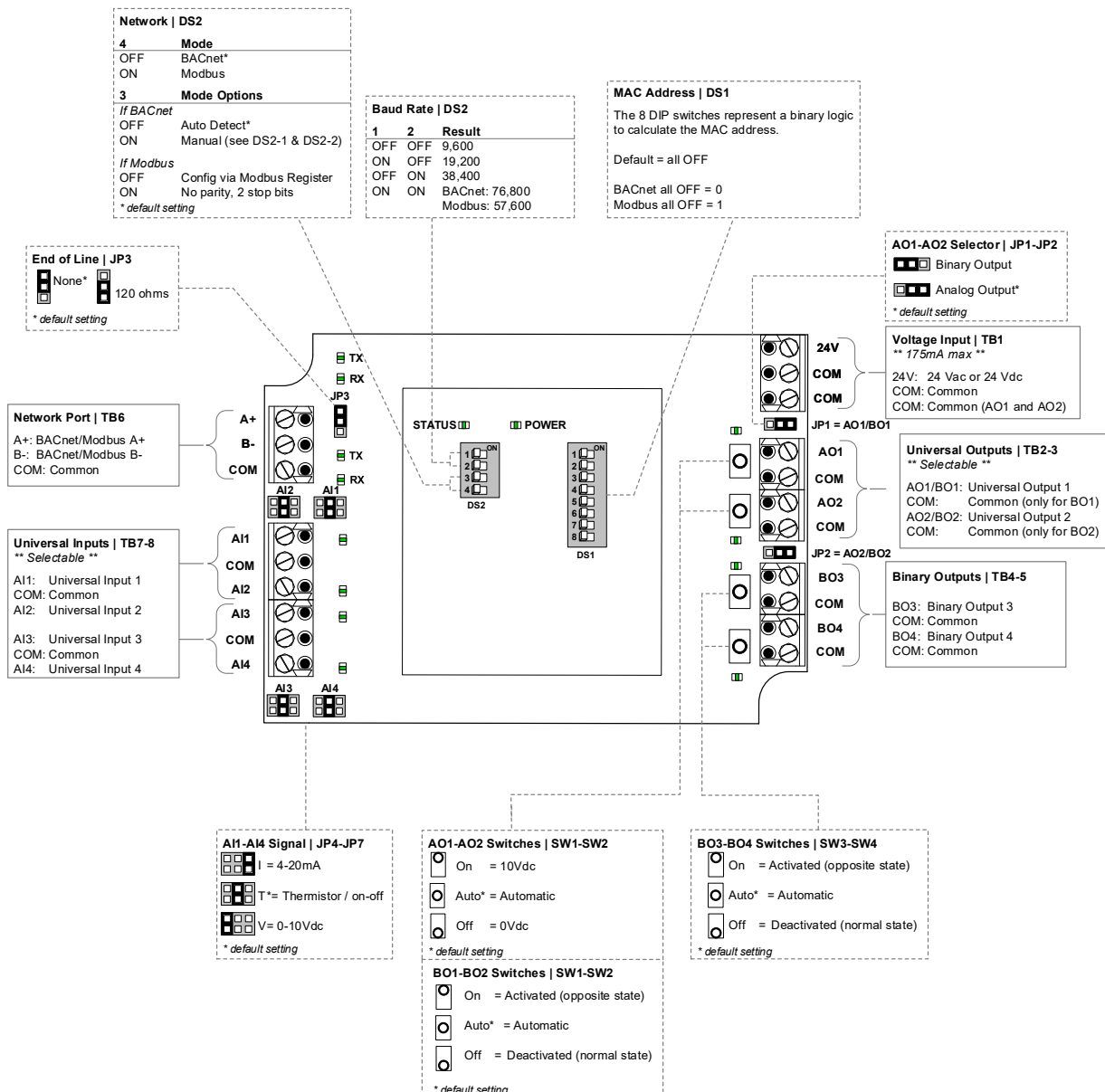
### WEEE Directive:



At the end of the products useful life please dispose as per the local regulations. Do not dispose of with normal household waste. Do not burn.



## Network Connections



## LED Indication

| Function          | LED status | Description                                                                                                                                                                                                                                            |
|-------------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power             | On         | Input voltage normal                                                                                                                                                                                                                                   |
|                   | Off        | No power                                                                                                                                                                                                                                               |
| Status            | Flashing   | Normal operation (watchdog)                                                                                                                                                                                                                            |
| RX/TX (BACnet and | Flashing   | Receiving (RX) and/or transmitting (TX) data                                                                                                                                                                                                           |
| Input Status      | On         | Input On                                                                                                                                                                                                                                               |
|                   | Off        | Input Off                                                                                                                                                                                                                                              |
|                   | Flashing   | Input not connected (thermistor setting only)                                                                                                                                                                                                          |
|                   | Analogue   | When Universal Inputs are set to analogue 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                                                                                                                                                                                                                                          |
|                   | Analogue   | When Universal and Analogue outputs are set to analogue 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 0Vdc, the LED will be off.     |

## MAC Address Settings

Use DS1 for setting MAC address for BACnet and Modbus

BACnet:

Default setting: 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:

Default setting: All switches OFF (MAC address = 1)

MAC address is binary value plus 1

| 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         |

## Network Conditions

### 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.

### BACnet Objects Table

<sup>1</sup> ID is equal to ObjectType

<sup>2</sup> Write address in present value, result will be available in description

| ID <sup>1</sup> | Name             | Description                                  | Writable?      | Notes (* = default)<br>(† = only when <i>UniversalInputxFunction</i> is set to 10K_Type3/G)                                                                          |
|-----------------|------------------|----------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AI.1            | UniversalInput1  | Universal input 1<br>mode selected by MSV.1  | Out of service | 0 to 10Volt or -40 to 100°C (150°C) <sup>†</sup> or -40 to 212°F (302°F) <sup>†</sup> or 4 to 20mA or 0 to 1<br>Resolution: 0.01Volt or 0.01°C/0.02°F or 0.01mA or 1 |
| AI.2            | UniversalInput2  | Universal input 2<br>mode selected by MSV.12 | Out of service | 0 to 10Volt or -40 to 100°C (150°C) <sup>†</sup> or -40 to 212°F (302°F) <sup>†</sup> or 4 to 20mA or 0 to 1<br>Resolution: 0.01Volt or 0.01°C/0.02°F or 0.01mA or 1 |
| AI.3            | UniversalInput3  | Universal input 3<br>mode selected by MSV.15 | Out of service | 0 to 10Volt or -40 to 100°C (150°C) <sup>†</sup> or -40 to 212°F (302°F) <sup>†</sup> or 4 to 20mA or 0 to 1<br>Resolution: 0.01Volt or 0.01°C/0.02°F or 0.01mA or 1 |
| AI.4            | UniversalInput4  | Universal input 4<br>mode selected by MSV.48 | Out of service | 0 to 10Volt or -40 to 100°C (150°C) <sup>†</sup> or -40 to 212°F (302°F) <sup>†</sup> or 4 to 20mA or 0 to 1<br>Resolution: 0.01Volt or 0.01°C/0.02°F or 0.01mA or 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%                                                                                                                                             |

| ID <sup>1</sup> | Name                       | Description                                                   | Writable?     | Notes (* = default)<br>(† = only when <i>UniversalInputFunction</i> is set to <i>10K_Type3/G</i> )                                                                                                                                                            |
|-----------------|----------------------------|---------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AV.226          | UniversalInput1Offset      | Universal input 1 offset                                      | Present Value | -5.00 to 5.00 °C/°F/Volt/mA (default 0*)<br>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*)<br>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*)<br>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*)<br>Resolution: 0.1 °C/°F/Volt/mA                                                                                                                                                                                     |
| AV.468          | CopyCfgStartAdd            | Copy configuration start address                              | Present Value | 0-254 Address of first CMMB to copy<br>Available only if BV.101 is set to No                                                                                                                                                                                  |
| AV.469          | CopyCfgEndAdd              | Copy configuration end address                                | Present Value | AV.468 – (AV.468 + 64)<br>Address of last CMMB to copy<br>Available only if BV.101 is set to No                                                                                                                                                               |
| AV.470          | CopyCfgResult <sup>2</sup> | Copy configuration result                                     | Present Value | AV.468 – AV.469<br>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%                                                                                                                                                                                                                                   |
| 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                                                                                                                                                                                                                               |
| BV.22           | ContactOutput1             | Binary output 1 status                                        | Present Value | 0= Open / Ouvert / Off / Arret / Normal *<br>1= Close / Fermé / On / Marche / Alarm<br>Text depends of selection in MSV.66                                                                                                                                    |
| BV.23           | ContactOutput2             | Binary output 2 status                                        | Present Value | 0= Open / Ouvert / Off / Arret / Normal *<br>1= Close / Fermé / On / Marche / Alarm<br>Text depends of selection in MSV.67                                                                                                                                    |
| BV.24           | ContactOutput3             | Binary output 3 status                                        | Present Value | 0= Open / Ouvert / Off / Arret / Normal *<br>1= Close / Fermé / On / Marche / Alarm<br>Text depends of selection in MSV.68                                                                                                                                    |
| BV.25           | ContactOutput4             | Binary output 4 status                                        | Present Value | 0= Open / Ouvert / Off / Arret / Normal *<br>1= Close / Fermé / On / Marche / Alarm<br>Text depends of selection in MSV.69                                                                                                                                    |
| BV.66           | AnalogOutput1Direction     | Polarity of analog output 1                                   | Present Value | 0= Direct *<br>1= Reverse                                                                                                                                                                                                                                     |
| BV.67           | AnalogOutput2Direction     | Polarity of analog output 2                                   | Present Value | 0= Direct *<br>1= Reverse                                                                                                                                                                                                                                     |
| BV.93           | UI1_DI_Polarity            | Polarity of universal input 1 when used in digital input mode | Present Value | 0= Direct *<br>1= Reverse                                                                                                                                                                                                                                     |
| BV.94           | UI2_DI_Polarity            | Polarity of universal input 2 when used in digital input mode | Present Value | 0= Direct *<br>1= Reverse                                                                                                                                                                                                                                     |
| BV.95           | UI3_DI_Polarity            | Polarity of universal input 3 when used in digital input mode | Present Value | 0= Direct *<br>1= Reverse                                                                                                                                                                                                                                     |
| BV.96           | UI4_DI_Polarity            | Polarity of universal input 4 when used in digital input mode | Present Value | 0= Direct *<br>1= Reverse                                                                                                                                                                                                                                     |
| BV.101          | CopyCfgExecute             | Start or stop copy configuration                              | Present Value | 0= No *<br>1= Yes<br>Start copy and give results, must be reset by user.                                                                                                                                                                                      |
| BV.102          | SystemUnit                 | Select the unit system to use on the device                   | Present Value | 0= Celsius *<br>1= Fahrenheit                                                                                                                                                                                                                                 |
| BV.103          | Inhibit Output Override    | Inhibit the override of the outputs                           | Present Value | 0= Off *<br>1= On                                                                                                                                                                                                                                             |
| BV.104          | TimeoutStatus              | Network timeout status                                        |               | 0= Inactive *<br>1= Active                                                                                                                                                                                                                                    |

| ID <sup>1</sup> | Name                    | Description                                        | Writable?     | Notes (* = default)<br>(† = only when <i>UniversalInputxFunction</i> is set to 10K_Type3/G) |                                                                      |
|-----------------|-------------------------|----------------------------------------------------|---------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>MSV.1</b>    | UniversalInput1Function | Selected analog input 1 mode                       | Present Value | 1= 0_10V<br>2= 4_20mA<br>3= 10K_Type3/G *<br>4= 10K_Type3A1<br>5= 10K_Type4A1               | 6= 10K_Type2<br>7= 20K_Type6A1<br>8= 30K_Type6A1<br>9= Digital_Input |
| <b>MSV.12</b>   | UniversalInput2Function | Selected analog input 2 mode                       | Present Value | 1= 0_10V<br>2= 4_20mA<br>3= 10K_Type3/G *<br>4= 10K_Type3A1<br>5= 10K_Type4A1               | 6= 10K_Type2<br>7= 20K_Type6A1<br>8= 30K_Type6A1<br>9= Digital_Input |
| <b>MSV.15</b>   | UniversalInput3Function | Selected analog input 3 mode                       | Present Value | 1= 0_10V<br>2= 4_20mA<br>3= 10K_Type3/G *<br>4= 10K_Type3A1<br>5= 10K_Type4A1               | 6= 10K_Type2<br>7= 20K_Type6A1<br>8= 30K_Type6A1<br>9= Digital_Input |
| <b>MSV.48</b>   | UniversalInput4Function | Selected analog input 4 mode                       | Present Value | 1= 0_10V<br>2= 4_20mA<br>3= 10K_Type3/G *<br>4= 10K_Type3A1<br>5= 10K_Type4A1               | 6= 10K_Type2<br>7= 20K_Type6A1<br>8= 30K_Type6A1<br>9= Digital_Input |
| <b>MSV.54</b>   | AnalogOutput1Mode       | Select analog output 1 mode                        | Present Value | 1= Analog *<br>2= On_Off<br>3= Pulsing                                                      |                                                                      |
| <b>MSV.55</b>   | AnalogOutput2Mode       | Select analog output 2 mode                        | Present Value | 1= Analog *<br>2= On_Off<br>3= Pulsing                                                      |                                                                      |
| <b>MSV.66</b>   | ContactOutput1Text      | Contact output 1 inactive & active text            | Present Value | 1= Open_Close *<br>2= Ouvert_Fermé<br>3= On_Off<br>4= Marche_Arret<br>5= Alarm_Normal       |                                                                      |
| <b>MSV.67</b>   | ContactOutput2Text      | Contact output 2 inactive & active text            | Present Value | 1= Open_Close *<br>2= Ouvert_Fermé<br>3= On_Off<br>4= Marche_Arret<br>5= Alarm_Normal       |                                                                      |
| <b>MSV.68</b>   | ContactOutput3Text      | Contact output 3 inactive & active text            | Present Value | 1= Open_Close *<br>2= Ouvert_Fermé<br>3= On_Off<br>4= Marche_Arret<br>5= Alarm_Normal       |                                                                      |
| <b>MSV.69</b>   | ContactOutput4Text      | Contact output 4 inactive & active text            | Present Value | 1= Open_Close *<br>2= Ouvert_Fermé<br>3= On_Off<br>4= Marche_Arret<br>5= Alarm_Normal       |                                                                      |
| <b>MSV.100</b>  | OptofetOutput1Mode      | Select Optofet output 1 mode                       | Present Value | 1= On_Off *<br>2= TimePulseModulation                                                       |                                                                      |
| <b>MSV.101</b>  | OptofetOutput2Mode      | Select Optofet output 2 mode                       | Present Value | 1= On_Off *<br>2= TimePulseModulation                                                       |                                                                      |
| <b>MSV.106</b>  | CfgBO1FailsafeMode      | Configuration of the binary output 1 failsafe mode | Present Value | 1= LastState *<br>2= Open<br>3= Close                                                       |                                                                      |
| <b>MSV.107</b>  | CfgBO2FailsafeMode      | Configuration of the binary output 2 failsafe mode | Present Value | 1= LastState *<br>2= Open<br>3= Close                                                       |                                                                      |
| <b>MSV.108</b>  | CfgBO3FailsafeMode      | Configuration of the binary output 3 failsafe mode | Present Value | 1= LastState *<br>2= Open<br>3= Close                                                       |                                                                      |
| <b>MSV.109</b>  | CfgBO4FailsafeMode      | Configuration of the binary output 4 failsafe mode | Present Value | 1= LastState *<br>2= Open<br>3= Close                                                       |                                                                      |
| <b>MSV.110</b>  | CfgAO1FailsafeMode      | Configuration of the analog output 1 failsafe mode | Present Value | 1= LastState *<br>2= Preset                                                                 |                                                                      |
| <b>MSV.111</b>  | CfgAO2FailsafeMode      | Configuration of the analog output 2 failsafe mode | Present Value | 1= LastState *<br>2= Preset                                                                 |                                                                      |

### Modbus Register

- 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 = Sontay Device ID<br>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<br>Scale 0.01 | [96]<br>[192]<br>[384]<br>[576] |                    | 9,600<br>19,200<br>38,400<br>57,600                                                       | W        | 96            |         |
| 2             | 40003            | COM Port Configuration<br><b>IMPORTANT:</b> 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 <a href="#">Connections and Configurations</a> on page 1. | Unsigned               | [0..2]                          |                    | 0 = no parity, 2 stop bits<br>1 = even parity, 1 stop<br>bit2 = odd parity, 1 stop<br>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<br>Scale 100  | 103                             |                    | 1.03                                                                                      |          | 103           |         |
| 8             | 40009            | Application Version                                                                                                                                                                                                                                                                | Unsigned<br>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<br>1 = Fault<br>-----<br>B0 = System operation |          | 0000, 0001, 1111,<br>1110b |    |
| 10            | 40011            | System Status 2 | Bit String                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | [B0..B15] | Always 0                                                  |          | 0000, 0000, 0000,<br>0000b |    |
| 11            | 40012            | Analog Input 1  | 0-10V: Type: Unsigned, Scale:100, Unit: Volt, Range: 0.00-10.00V, Resolution: 0.01<br>4-20mA: Type: Unsigned, Scale:100, Unit: mA, Range: 4.00-20.00 mA, Resolution: 0.01<br>10K Type 3AI, 10K Type 4AI, 10K Type 2, 20K Type 6AI, 30K Type 6AI:<br>Type: Signed, Scale:100, Unit: °C, Range: -40.00 - 100.00 °C, Resolution: 0.01<br>Type: Signed, Scale:100, Unit: °F, Range: -40.00 - 212.00 °F, Resolution: 0.02<br>10K Type 3/G:<br>Type: Signed, Scale:100, Unit: °C, Range: -40.00 - 150.00 °C, Resolution: 0.01<br>Type: Signed, Scale:100, Unit: °F, Range: -40.00 - 302.00 °F, Resolution: 0.02<br>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   | Reserved        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |                                                           |          |                            |    |
| 20            | 40021            | Analog Output 1 | Unsigned<br>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   | Reserved        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |                                                           |          | 0                          |    |

|          |                |                                                                                                             |                  |          |                                                                               |                                                                      |   |                         |
|----------|----------------|-------------------------------------------------------------------------------------------------------------|------------------|----------|-------------------------------------------------------------------------------|----------------------------------------------------------------------|---|-------------------------|
| 22 to 23 | 40023 to 40024 | Reserved                                                                                                    |                  |          |                                                                               |                                                                      |   | 0                       |
| 24       | 40025          | Relay Output                                                                                                | Bit String       | [B0..B5] | B0 = Relay 1<br>B1 = Relay 2<br>B2 = Relay 3                                  | B3 = Relay 4<br>B4 to B5 = Reserved                                  | W | 0000, 0000, 0000, 0000b |
| 25       | 40026          | Output Overwrite Status<br><i>Indicates that the output is overridden by the hardware switch (SW1-SW4).</i> | Bit String       | [B0..B9] | B0 = Relay 1<br>B1 = Relay 2<br>B2 = Relay 3<br>B3 = Relay 4                  | B4 = AO1<br>B5 = AO2<br>B6 to B9 = Reserved                          |   | 0000, 0000, 0000, 0000b |
| 26       | 40027          | Universal Input 1 Function                                                                                  | Unsigned         | [1..9]   | 1= 0_10V<br>2= 4_20mA<br>3 = 10K_Type 3/G<br>4= 10K_Type3A1<br>5= 10K_Type4A1 | 6= 10K_Type2<br>7= 20K_Type6A1<br>8= 30K_Type6A1<br>9= Digital_Input | 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 | Reserved                                                                                                    |                  |          |                                                                               |                                                                      |   |                         |
|          |                |                                                                                                             |                  |          |                                                                               |                                                                      |   |                         |
|          |                |                                                                                                             |                  |          |                                                                               |                                                                      |   |                         |
| 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 | Reserved                                                                                                    |                  |          |                                                                               |                                                                      |   |                         |

| Protocol Base | Holding Register | Description                                   | Data Type         | MSB/LSB   | Units/Values                                                                                                                                                                                                                                                                                                                                                   | Writable | Default Value           |    |
|---------------|------------------|-----------------------------------------------|-------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------|----|
|               |                  |                                               |                   |           |                                                                                                                                                                                                                                                                                                                                                                |          | MB                      | LB |
| 42            | 40043            | Analog Output 1 Mode                          | Unsigned          | [1..3]    | 1 = Analog<br>2 = On/Off<br>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<br>2 = On/Off<br>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   | Reserved                                      |                   |           |                                                                                                                                                                                                                                                                                                                                                                |          |                         |    |
| 54            | 40055            | System Options<br>* = digital input mode only | Bit String        | [B0..B15] | 0 = Direct<br>1 = Reverse<br>-----<br>B0 = AO1 polarity<br>B1 = AO2 polarity<br>B2 to B3 = Reserved<br>B4 = AI1 polarity *<br>B5 = AI2 polarity *<br>B6 = AI3 polarity *<br>B7 = AI4 polarity *<br>B8 to B13 = Reserved<br>0 = Off<br>1 = On<br>-----<br>B14 = Inhibit Output Override<br>-----<br>0 = Celsius<br>1 = Fahrenheit<br>-----<br>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   | Reserved                                      |                   |           |                                                                                                                                                                                                                                                                                                                                                                |          |                         |    |

| Protocol Base | Holding Register | Description                            | Data Type         | MSB/LSB   | Units/Values                                               | Writable | Default Value |    |
|---------------|------------------|----------------------------------------|-------------------|-----------|------------------------------------------------------------|----------|---------------|----|
|               |                  |                                        |                   |           |                                                            |          | MB            | LB |
| 61            | 40062            | Optofet Output 1 Mode                  | Bit String        | [1, 2]    | 1 = On_Off<br>2 = TimePulseModulation                      | W        | 1             |    |
| 62            | 40063            | Optofet Output 2 Mode                  |                   |           |                                                            |          | 1             |    |
| 63 to 66      | 40064 to 40067   | Reserved                               |                   |           |                                                            |          |               |    |
| 67            | 40068            | Binary Output 1 Fail Safe Mode         | Unsigned          | [1..3]    | 1= LastState<br>2= Open<br>3= Close                        | W        | 1             |    |
| 68            | 40069            | Binary Output 2 Fail Safe Mode         | Unsigned          | [1..3]    | 1= LastState<br>2= Open<br>3= Close                        | W        | 1             |    |
| 69            | 40070            | Binary Output 3 Fail Safe Mode         | Unsigned          | [1..3]    | 1= LastState<br>2= Open<br>3= Close                        | W        | 1             |    |
| 70            | 40071            | Binary Output 4 Fail Safe Mode         | Unsigned          | [1..3]    | 1= LastState<br>2= Open<br>3= Close                        | W        | 1             |    |
| 71            | 40072            | Analog Output 1 Fail Safe Mode         | Unsigned          | [1,2]     | 1= LastState<br>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<br>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<br>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            |    |

Whilst every effort has been made to ensure the accuracy of this specification, Sontay cannot accept responsibility for damage, injury, loss or expense resulting from errors or omissions. In the interest of technical improvement, this specification may be altered without notice.