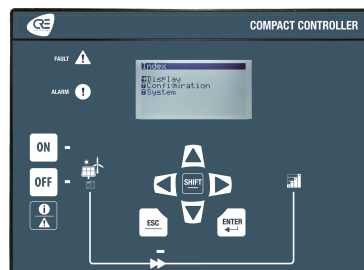# OPERATOR MANUAL

## HYBRID COMPACT



CRE TECHNOLOGY
Zone des Templiers - SOPHIA ANTIPOLIS
130 allée Charles-Victor Naudin
06410 BIOT - FRANCE
Phone: +33 (0)4.92.38.86.82
www.cretechnology.com
info@cretechnology.com

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# LIST OF FIGURES

# DESCRIPTION

## FRONT FACE

Figure 1. Front face of a HYBRID COMPACT controller

| PIN | Buttons | Functions |
|:---:|---------|-----------|
| 1 | SHIFT button | Additional functions. |
| 2 | Right arrow button | Navigation button (Right). |
| 3 | Down arrow button | Navigation button (Down). |
| 4 | Left arrow button | Navigation button (Left). |
| 5 | Up arrow button | Navigation button (Up). |
| 6 | ENTER button | Validating entry / **MENU**. |
| 7 | ESC button | Cancel entry / escape **MENU**. |
| 8 | Information button | Allows access to the active faults, active alarms, events history or information pages. |
| 9 | OFF button | **OFF** mode.<br><br>The associated LED lights up when the mode is activated. |
| 10 | ON button | **ON** mode.<br><br>The associated LED lights up when the mode is activated. |
| 11 | Alarm indicator | The LED flashes when an alarm appears.<br><br>The LED is lit when an alarm is acknowledged, but not reseted. |
| 12 | Fault indicator | The LED flashes when a fault occurs.<br><br>The LED is lit when a fault is acknowledged, but not reseted. |
| 13 | LCD screen | Screen size: 40mm x 70mm; Back-light : typical 50cd/m², configurable. Type: STN; 256 x 128 pixels. |

## Navigation keys

| Buttons | Navigation mode | Edition mode |
|---|---|---|
| ∧ ∨ | Scrolling menus/parameters | Modifying parameters values once selected: When up/down arrow buttons are used to modify values, holding the button will accelerate the entry scrolling. |
| < > | Right arrow:<br>  • Accessing a menu.<br>  • Navigating right in display/parameters pages<br>Left arrow:<br>  • Return to previous menu.<br>  • Navigating left in display/parameters pages. | NA |
| SHIFT | SHIFT + ∧ ∨ will increase/decrease the brightness of the LCD display.<br><br>SHIFT + < > will increase/decrease the contrast of the LCD display. | NA |
| ESC | Returns to previous menu. | Cancels the settings and returns to **Navigation** mode. |
| ENTER | Accessing a menu / Switching to **Edition** mode. | Validation of the modified parameter and return to **Navigation** mode. |

## Button inhibition

To inhibit front panel buttons, use the ***Controller settings ⇒ System ⇒ Buttons inhibition (i4Gen)*** page. This page shows the list of front panel buttons, tick the corresponding box to inhibit actions on the button.

It is also possible to inhibit the buttons by Modbus by modifying the variable [8102]. Each bit of the variable corresponds to a button. To know the bit associated to each button, please refer to the chapter . Ex : Bit number 6 will inhibit the "Enter" button, bit number 1 will inhibit the "Shift" button.

## External requests for button activation

It is possible to remotely activate button actions by Modbus TCP, for a remote manual control for example. If a button action is controlled by Modbus TCP, the last request received (external or from the front panel) is treated in priority and cancel the previous request.

The buttons on the front panel can be replaced by external commands via digital inputs.

# REAR FACE

Figure 2. Rear face of a HYBRID COMPACT controller
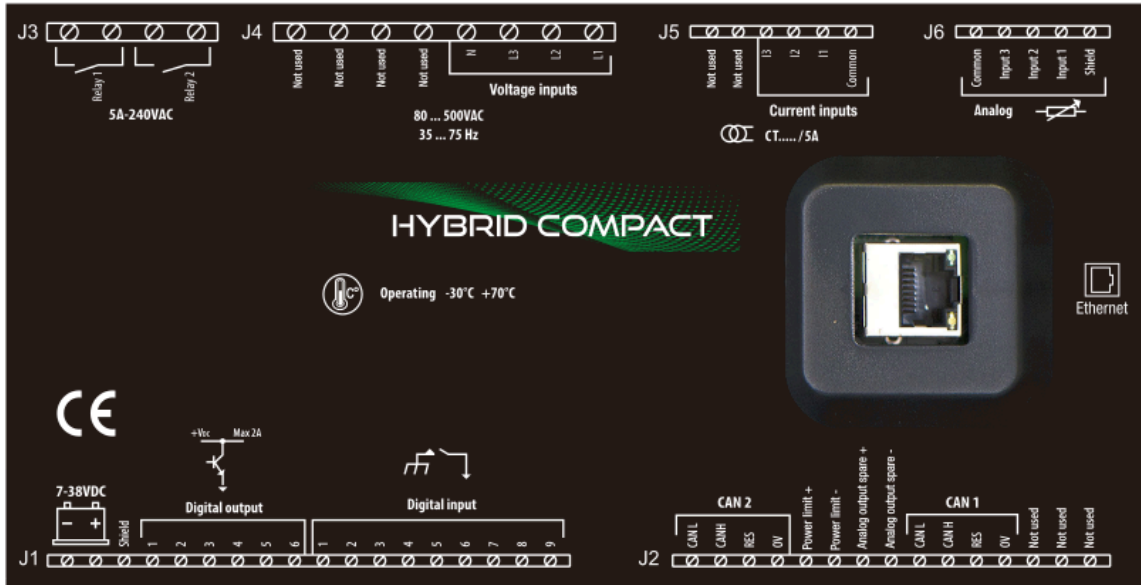


Figure 3. Simplified wiring diagram
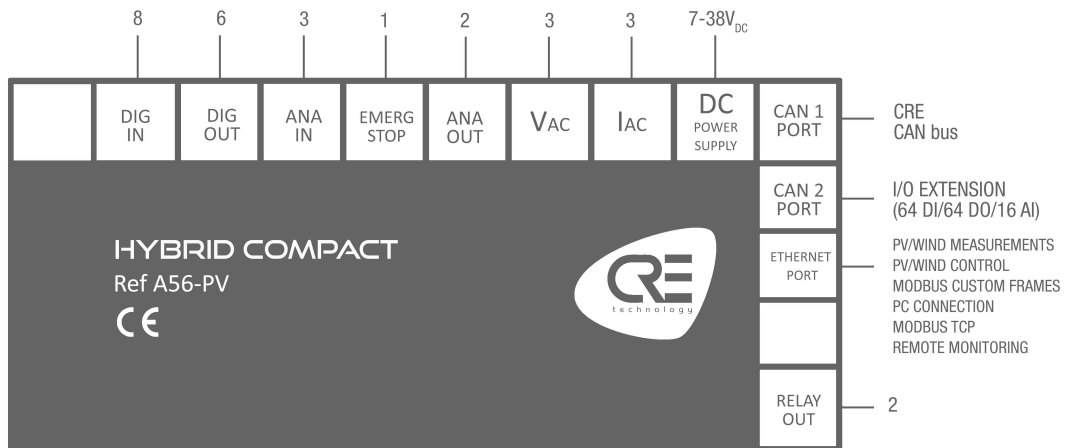
# PANEL MOUNTING

This unit is designed to be panel mounted, which provides user with access only to the front panel.

| ⚠ WARNING |
|---|
| **THIS UNIT IS NOT GROUNDED**<br>**Failure to follow these instructions may damage the unit.**<br><br>• Take all measures against Electronic Static Discharges.<br>• Do not try to open the unit. |

## Environmental requirements

- Operating temperature: -20…70°C (-4...158°F); LCD display slows down a bit under -5°C (23°F). Avoid direct exposure to the sun.
- Storage temperature: -40...70°C (-40...158°F).
- Altitude: ≤ 4000m (13123ft) for a max AC voltage of 480VAC; ≤ 5000m (16404ft) for a max AC voltage of 400VAC.

## Unpacking

Make sure the packaging contains:

- The unit
- 6 connectors.
- 1 fixing kit composed of 2 parts.
- 4 screws.
- A delivery bill.

Unpack and keep the packaging in case of return.
Make sure the unit does not show scratches or visible defaults. Otherwise describe them on the RMA sheet (available on CRE TECHNOLOGY website) and return it with the product to your distributor.

## Installation

### Preparation

- Torque of mounting brackets: 0.4Nm.
- Cut the panel with a dimension of 220x160mm (8.7x6.3in) minimum.
- Make sure the cut-out is smooth and clean.

Figure 4. Panel cutout
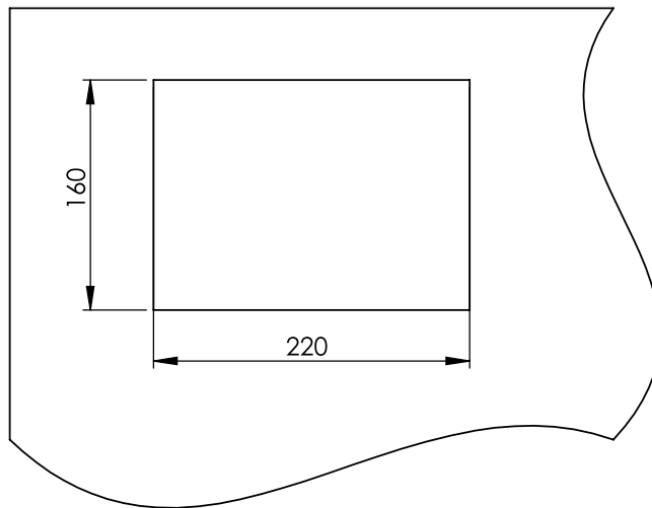


## Mounting

| | |
|---|---|
| 0 | Tool : cross-head screwdriver size 1. |
| 1 | Pass the unit through the mounting surface. |
| 2 | In the rear, cover each of the four spacers using the 2 parts of the fixing kit. |
| 3 | Screw a first corner against the mounting surface. |
| 4 | Repeat on the diagonally opposite spacer. |
| 5 | Repeat on the other diagonal and tighten equally (do not overtighten). |

# USAGE

## PASSWORD

**The menus will be automatically locked if no operation is performed during the time set in the *Controller settings ⇒ System ⇒ Password* page (Factory setting: 30 minutes).**
**The standby screen will be displayed.**

The module provides secured password access to protect configuration changes and limit data accessibility:

| Level | Default password | Authorization | Accessible pages and items |
|---|---|---|---|
| 0 | No password. Press ENTER | By default, this level is not password protected, but one can be set. | Pages of the *Controller supervision* menu only. |
| 1 | 1 | User level, settings and commissioning. | Pages of the *Controller supervision* and *Controller settings* menus. |
| 2 | 1234 | Used to change advanced settings. | Advanced settings. |

Passwords can be changed using *i4Gen Suite* software.

To access the *Controller supervision* menu, press ENTER .

To access the *Controller settings* menu, the padlock must be unlocked:

1. Press ∨ to select *Controller settings*.

2. Press ENTER to switch to password input mode (as for other settings).

3. Change the character by pressing ∧

4. Move to the next character by pressing >

5. Repeat the operation for each character.

6. Confirm the password by pressing ENTER

# LCD

## Navigation

Press `ESC` , then, select the required menu, then press `ENTER` and enter the level 1 password if necessary (Settings):

Figure 5. Index menu
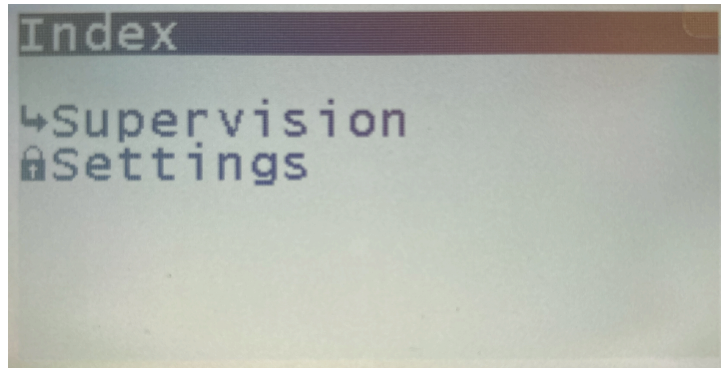


A black pointer spots the currently selected item/setting.

Two main menus are available on the LCD screen and three in the *i4Gen Suite* software:

- The menu **Controller supervision** gives all product measurements in real time.
- The menu **Controller settings** is used to adjust the controller and system settings (date/time, screen features, ...).
- The menu *i4Gen* (only available in the configuration software) is used to adjust the software settings.

To cycle through the menus and menu items, press `∨` or `∧` .

To cycle through the pages of the actual menu, press `>` or `<` .

## Edition

To change a setting:

1. Navigate to the setting to be changed.

2. Press `ENTER` to switch to **Edition** mode; the current value blinks.

3. Press `∨` or `∧` to get the new value.

4. Press `ENTER` to validate the new value, `ESC` to reject it. Module returns to **Navigation** mode.

It is also possible to modify the parameters using the Modbus TCP protocol.

## Dedicated pages

Dedicated pages includes:

- Active fault: currently active or unacknowledged faults. To reset faults, press `SHIFT` + `⊘` .

- Active alarm: currently active or unacknowledged alarms. To reset alarms, press `SHIFT` + `⊘` .

• History: a list of all alarms/faults/events that happened with their state and timestamp.

• Information pages.

Press [icon] to access the dedicated pages menu. It is then possible to navigate through these dedicated pages using the arrow buttons.

To return to the previous page, press [ESC] or [icon] .

## History

Up to 500 archived events can be displayed on the screen.

Each event is time-stamped as follows:

**jj/mm/yy   hh:mn:ss   protection name On** (or **Off**).

## Information

These pages show the current status of the controller state with the time elapsed in each state.

**Controller state** [4000] displays the current status of the unit regarding the management of the system's automatism.

**Information variables**: to display any variable, enter the code of the variable to be displayed.

# WIRING

Tool: insulated screwdriver Ø1.5 mm (0.04 in), tightening torque: 0.8 Nm (7 lb-in) max.
Accessories: 4, 5, 6, 8, 15 & 18-terminal cable connectors, protective gloves, carpet if the floor is wet.

| ⚠ WARNING |
|---|
| **THE UNIT IS NOT PROTECTED**<br>**Failure to follow these instructions may damage the unit.**<br>Use external fuses:<br><br>• Battery positive: 5A/40VDC<br><br>Install the fuses as near as possible to the unit, in a place easily accessible to the user. |

| ⚠ DANGER |
|---|
| **RISK OF ELECTRIC SHOCK, EXPLOSION OR ARCING**<br>**Failure to follow these recommendations may result in death or serious injury.**<br><br>• The module may only be installed and maintained by qualified electricians.<br>• Use personal protective equipment (PPE).<br>• Follow good safety practices for electrical work.<br>• Turn off the power before installing or replacing a fuse, and before installing the module.<br>• Use equipment adapted to check the absence of voltage.<br>• Do not use a resettable fuse. |

## General procedure

1. Make sure the cable connectors are not plugged in.

2. Take on protective gloves.

3. Connect the wires on each cable connector in accordance with the National Wiring Regulations.

4. Plug each cable connector onto the related connector.

5. Plug a direct Ethernet cord (RJ45, male-male, 100m max., 100Ω; a crossover cable such as 3-m long A53W1 is OK as long as your switch uses auto MDI/MDIX technology or if the link to PC is direct) and lock the rear door.

## Recommandations

To avoid ElectroMagnetic Interferences, shield cables appropriately; for CAN bus, see .

## Upper terminals

| Terminal blocks | Label | Description | Note |
|---|---|---|---|
| **Relay outputs** (J3) | | | Normally open. Breaking capacity: 5A, 240VAC. |
| Relay 1 | | Relay 1 + | |
| | | Relay 1 – | |
| Relay 2 | | Relay 2 + | |
| | | Relay 2 – | |

| Terminal blocks | Label | Description | Note |
|---|---|---|---|
| Inverter voltage | N | Neutral of the Inverter | Optional. |
| | L3 | Voltage of the phase 3 of the Inverter | These lines must be protected externally with 100mA/600VAC fuses. |
| | L2 | Voltage of the phase 2 of the Inverter | |
| | L1 | Voltage of the phase 1 of the Inverter | |
| Inverter current | I3 | Current of the phase 3 of the Inverter | 0…5A. Maximum rating: 15A during 10s. |
| | I2 | Current of the phase 2 of the Inverter | • Load: 1VA. Keep the lead length short to preserve accuracy (up to 0.5% full scale deviation). |
| | I1 | Current of the phase 1 of the Inverter | • Maximum value of the external CT ratio and other details can be found in *i4Gen Suite*. |
| | Common | Common point of the electrical currents. | Connect the common point of the electrical currents to this terminal.<br><br>⚠ **Important:** This terminal must also be connected to the ground. Failure to follow this instruction may damage the controller. |
| **Analog inputs** (J6) | | | 0...500Ω. |
| Analog | Common | Common of the analog inputs | Connect it to the battery minus terminal. |
| | Input 3 | Analog input 3 | |
| | Input 2 | Analog input 2 | |
| | Input 1 | Analog input 1 | |
| | Shield | Ground | Connect to the ground. |

## Lower terminals

| ⚠ WARNING |
|---|
| **RISK OF EQUIPMENT DAMAGE**<br>**Failure to follow this instruction can damage the controller.**<br>Connect battery negative to the module terminal 8...35VDC– with 1.5mm² (AWG15) cable. |

Figure 6. Wiring of the lower terminals

| Terminal block | Label | Description | Notes |
|---|---|---|---|
| **Power supply and digital inputs/outputs** (J1) | | | |
| Power supply (7-38VDC) | - | Power supply - | 1.5mm² (AWG15). |
| | + | Power supply + | 7…38VDC, consumed current: 130mA at 24V (standby and operation). |
| | Shield | Ground | Connect to the ground. |
| Digital outputs | 1 | Digital output 1 | Free digital output (max: 1.8A). Protected against short circuits. A reactive load is supported. Not isolated from power supply. |
| | 2 | Digital output 2 | |
| | 3 | Digital output 3 | |
| | 4 | Digital output 4 | |
| | 5 | Digital output 5 | |
| | 6 | Digital output 6 | |
| Digital inputs | 1 | Digital input 1 | Free digital input with 10kΩ pull-up. Accepts NO or NC contact to 0V. Not isolated from power supply. |
| | 2 | Digital input 2 | |
| | 3 | Digital input 3 | |
| | 4 | Digital input 4 | |
| | 5 | Digital input 5 | |
| | 6 | Digital input 6 | |
| | 7 | Digital input 7 | |
| | 8 | Digital input 8 | |
| | 9 | Digital input 9 | |
| **CAN 2, CAN 1, speed output, AVR output, magnetic pick-up** (J2) | | | |
| CAN 2 (for J1939 and CANopen) | CAN L | CAN low | Blue wire. |
| | CAN H | CAN high | White wire. |
| | RES | Resistor - | Connect to the "CAN H" terminal when the inner resistor must be inserted (bus ends). |
| | 0V | Shield | Use twisted pair cables. There are two possible wiring for this terminal. First wiring (**recommended in most cases**): do not connect this terminal. Second wiring: <br>• Connect the shield to the 0V terminal on all controllers. CAN1 and CAN2 has galvanic separation, so no ground loops are created. <br>• Do not connect the 0V terminal to the ground. |

| Terminal block | Label | Description | Notes |
|---|---|---|---|
| **Power limitation output** | Power limitation output | Power limit + | Analog output ±10V for power limitation to inverter. |
| | Power limitation common | Power limit - | Twisted pair; length. < 5m (16ft) if unshielded, < 50m max if shielded. |
| **Spare Analog output** | Analog output 2+ | | |
| | Analog output 2- | | |
| **CAN 1**  (for **CRE-Link®**) | CAN L | CAN low | White wire with blue strip (when using a **CRE TECHNOLOGY** cable). |
| | CAN H | CAN high | Blue wire with white strip (when using a **CRE TECHNOLOGY** cable). |
| | RES | Resistor - terminal | Connect to the "CAN H" terminal when the inner resistor must be inserted (bus ends). |
| | 0V | Shield | Use twisted pair cables.<br><br>There are two possible wiring for this terminal.<br><br>First wiring (**recommended in most cases**): do not connect this terminal.<br><br>Second wiring:<br>• Connect the shield to the 0V terminal on all controllers. CAN1 and CAN2 has galvanic separation, so no ground loops are created.<br>• Do not connect the 0V terminal to the ground. |

---

⚠ **WARNING**

**RISK OF EQUIPMENT DAMAGE**
**Failure to follow this instruction can damage the CAN transmitter/receiver.**
Switch off the unit before plugging or unplugging the CAN bus connector or disconnecting wires.

---

**Note:** In case of a power outage, the unit remains functional for 70ms at 24V, and 20ms at 12V.

## Powering the module with a 12VDC battery

A voltage drop from 12V to 6V can occur when the power consumption of the starter is too high and the battery undersized. This drop can reset the module. To counter this problem, a capacitor and a diode need to be wired as indicated in the schematic bellow:

The diode needs to be able to handle high currents (ex: Littelfuse DST2045AX). Typically select a 24000µF capacitor that handles at least 25V or higher (ex : KEMET ALS71A243DB040).

Figure 7. 12VDC power supply wiring

**D1**

+ Vbat

Diode

Capacitor

24000 µF

C1

2

1

J1_2

J1_1

- Vbat
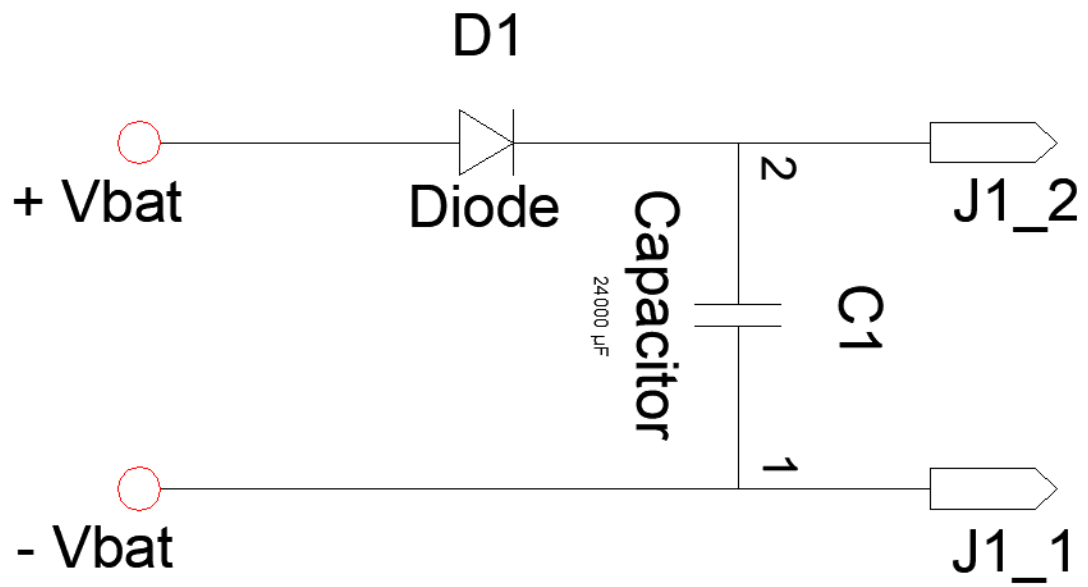
# DIGITAL INPUTS

Several parameters can be configured for each digital input:

- **Label** (only in *i4Gen Suite* software)
- **Function**
- **Direction**
- **Validity**
- **Timer ON**
- **Timer OFF**

## Label

This is the name you give to the input. If programmed accordingly, the label will be shown in the following pages: digital inputs, information, alarm, and fault.

## Validity

Validity indicates when the digital input is taken into account. This parameter can take four values:

| Value | Validity | Description |
|-------|----------|-------------|
| 0 | Never | Never active: must be selected if you do not use the input. |
| 1 | Always | Always active: the input is monitored as long as the module is powered. |
| 2 | After valid protect | The input is monitored at the end of the *Delay before activation of the protections* [2004] delay.[1] |
| 3 | Inverter on bus | The input is monitored when the Inverter is ready for use. |

[1] Configure the protection inhibition time in **Controller settings** ⇒ **General** ⇒ **Timers**.

## Direction

For each input, two options are available:

| Value | Label | Function |
|-------|-------|----------|
| 0 | Normally opened | To be used for standard cases unless the input is used as protection. |
| 1 | Normally closed | Must be selected if the input is normally connected to 0V (open when active). |

## Delays

For each input, two delays can be defined in 100ms steps between 0 and 6553s:

Figure 8. Chronogram of the digital inputs delays
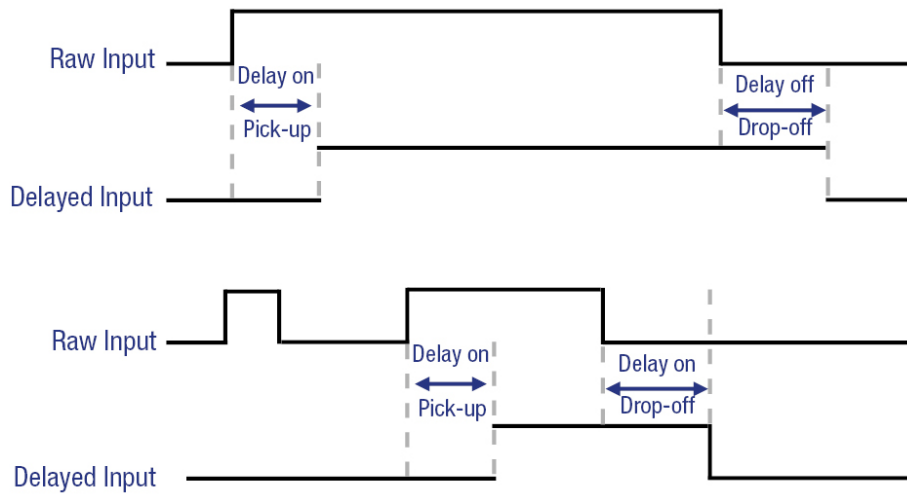


## Functions

Each input can be configured. To access all functions, use *i4Gen Suite*.
Function list is available in the chapter Software variables .

# DIGITAL/RELAYS OUTPUTS

Several parameters can be configured for each digital/relay output:

- **Label** (only in *i4Gen Suite* software)
- **Function**
- **Polarity (sometimes referred to as Direction)**
- **Pulse length: 0 means no pulse**
- **Timer ON**

## Polarity

Each output can be:

- **Normally energized**: the output is de-energized when its function is activated.
- **Normally de-energized**: the output is energized when its function is activated.

## Pulse length and activation delay

Each digital/relays output can be configured to act as a pulse. The pulses lengths are defined with the parameters [2761] to [2766] for digital outputs and [2767] to [2768] for relays output. As soon as a pulse begins, it will last for the configured duration even if the associated function is not active anymore.
Set to 0 in order to have a continuous output (no pulse).
It is also possible to delay the output activation using parameters [2793] to [2798] for digital outputs and [8250] to [8251] for relays output.
Setting the activation delay to 0 means there will be no delay.

Figure 9. Chronogram of the digital/relays outputs pulse length and activation delay
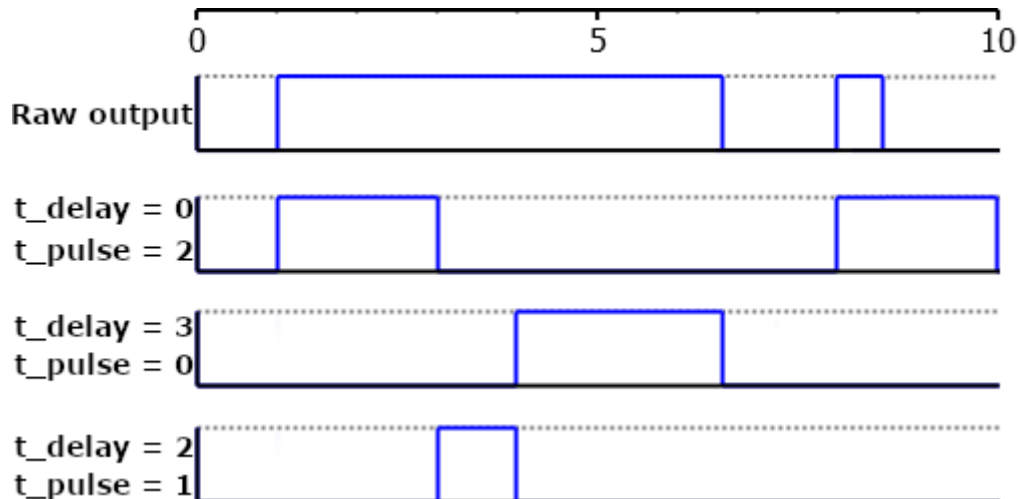


## Functions

Each output can be configured. To access all functions, use *i4Gen Suite*.
Function list is available in the chapter Software variables *(on page 91)*.

# ANALOG INPUTS

## General analog input configuration

1. **Label**: Analog input's label (limited to 14 characters).
2. **Type**: Defines the way you want to use your analog input : unused, analog input, digital input.

The analog input configuration page changes according to the selected type.

## Type set to unused

No configuration available.

## Type set to analog input

Figure 10. Analog input configuration
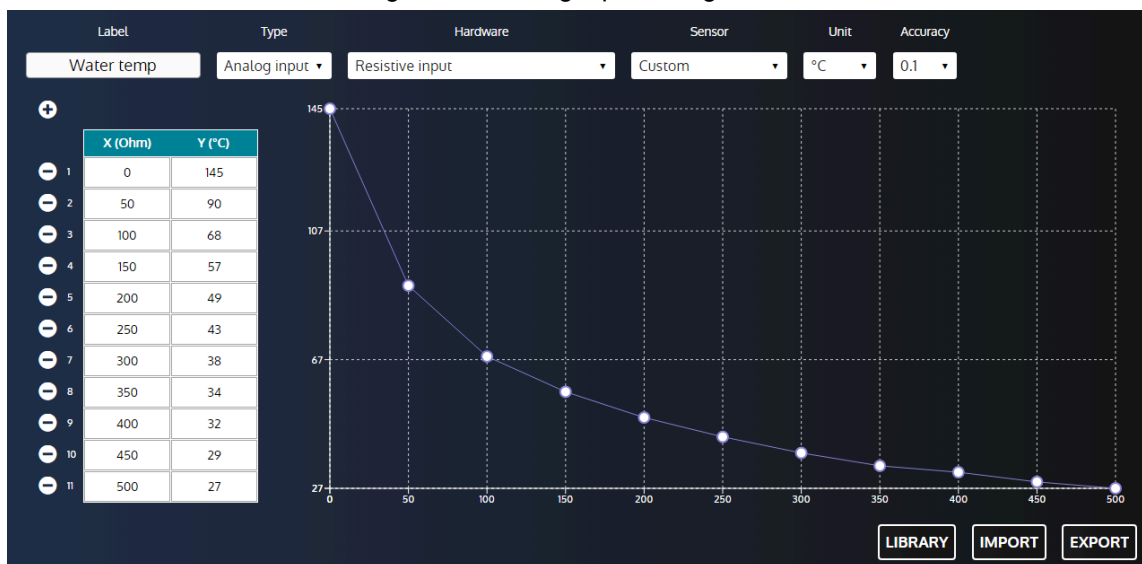


1. **Hardware**: Defines the hardware type of the analog input (resistive / 20mA transducer).
2. **Unit**: Defines the unit of the analog input.
3. **Accuracy**: Defines the accuracy of the analog input (i.e. number of decimal digits to display the measured value).
4. **Calibration points table** (up to 31 points):

   Calibration is used to estimate a reading from a resistance/current value by interpolation between 2 resistance/current values. Negative values are supported.

   To set calibration points:
   - Press the + button to add a new point.
   - Press the - button to remove an existing point.
   - To set the X-axis coordinate of a point, fill the corresponding X input.
   - To set the Y-axis coordinate of a point, fill the corresponding Y input.
5. **Curve display**: Display of the calibration points on a curve in X-axis ascending order.
6. **Library**: Opens the curve library.

Figure 11. Analog input curve library
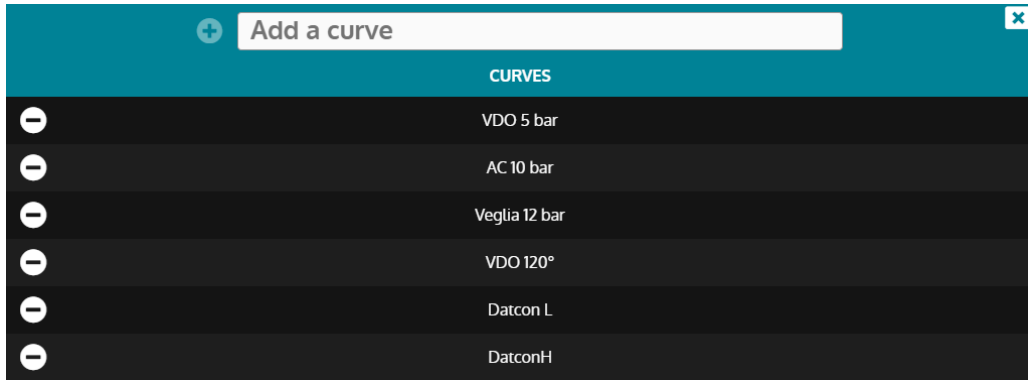


Enter a name in the input and press the + button to save the current curve into the library.
Press the - button to remove a saved curve (not available for factory curves).
Click on a curve to load it into the analog input configuration.

7. **Import**: Opens the file browser to import a curve file into the analog input configuration.

8. **Export**: Opens the file browser to export a curve file.

## How to connect analog sensors

You can use 1 or 2-wire analog sensors, or 1-wire or 2-wire logical sensors.

> **Note: Our recommendations**: In each case you must always connect the analog inputs' "common" terminal (J6) to the power supply minus terminal (J1) and also connect it to the engine block in the case of 1-wire sensor. You must use the following wiring (Incorrect wiring of the analog inputs can cause damage to the module, or cause a wrong measurement).

Figure 12. A-1 : 2 wires analog sensor
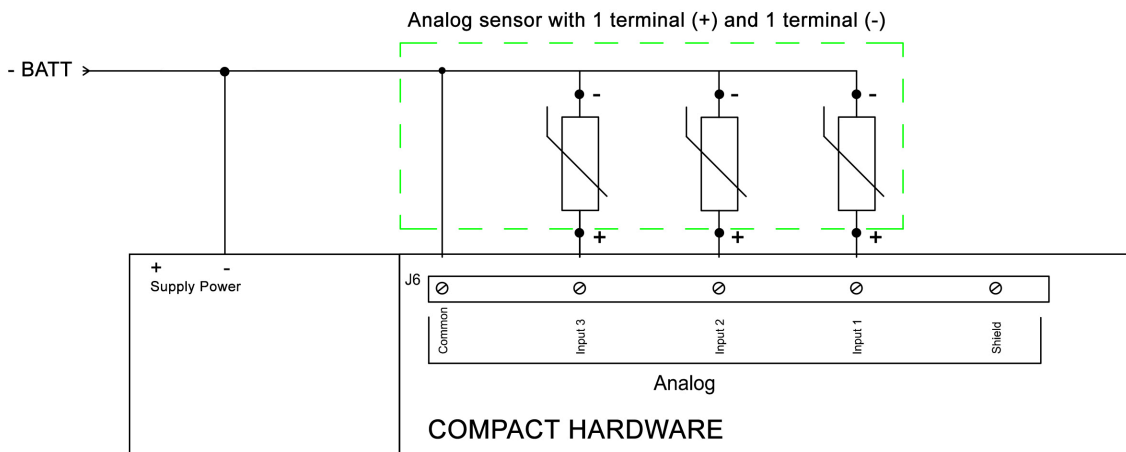
Figure 13. A-2 : 1 wire analog sensor

To act as a 0...20mA input or 4...20mA, connect the input with a 39Ω resistor between the analog input and the analog common.

The calibration of the 20mA transducer can then be performed as on a resistive analog input depending on the characteristics of the sensor.

## Type set to digital input

Figure 14. Digital input configuration



1. **Function**: Defines the digital input function.
2. **Validity**: Condition to take the digital input into account.
   - Never: The input will never be taken into account.
   - Always: The input will always be taken into account.
   - Inverter on bus: The input will be taken when the inverter is on the bus.
   - After valid protect: The input will be taken into account when the variable *Protection validation* [4681] is equal to 1. (check the chapter Digital inputs *(on page 20)* for more information)
3. **Polarity**: Digital input's polarity.
4. **Delay**: Delay until the input becomes active.

## How to connect digital sensors

When an analog input is used as a logic input, applying a 0V to the input enables it, applying nothing disables it.

Figure 15. B-1 : Digital sensor 2 wires

Digital sensor with 2 terminal contact

COMPACT HARDWARE
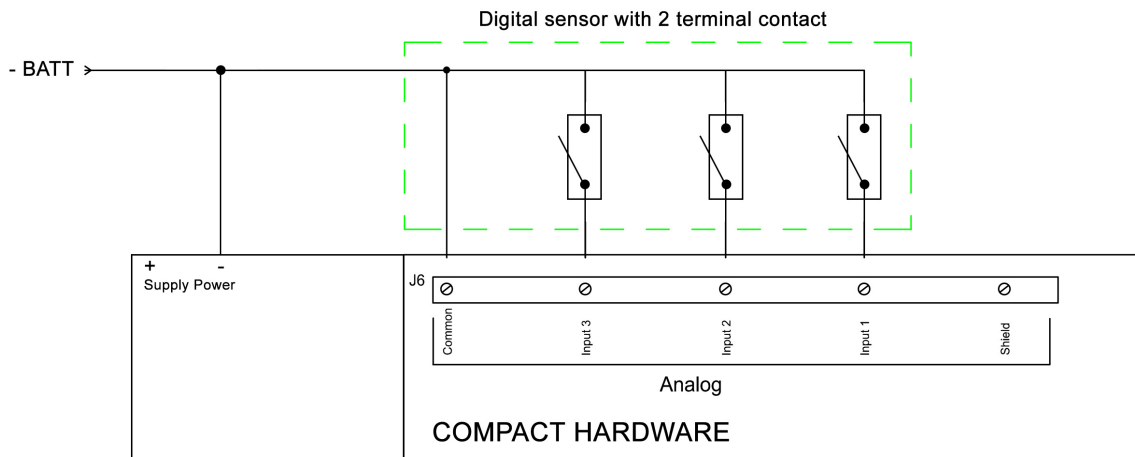
Figure 16. B-2 : Digital sensor 1 wire

Digital sensor with 1 terminal contact and chassis

COMPACT HARDWARE
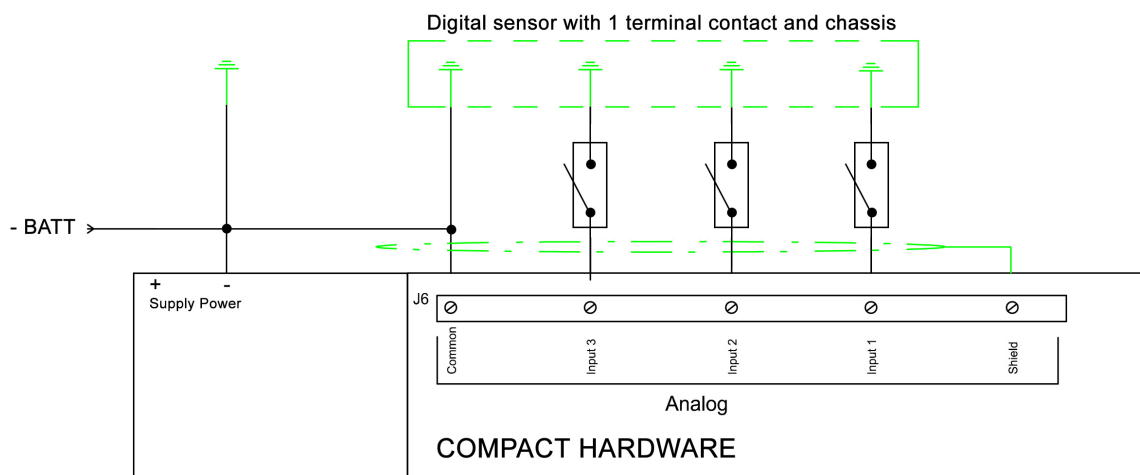
| ⚠ WARNING |
|---|
| ⚠ **THE WARRANTY WILL BE VOIDED IF THE MANUFACTURER'S INSTRUCTIONS ARE NOT RESPECTED.** |

## Protections

Several parameters can be configured from the ***Controller settings ⇒ Protections ⇒ Other protections ⇒ Analog inputs*** page:

• Level (LV): Limit value before triggering the protection. It can be a low or high threshold.

• Delay (TM): Time after which the protection is triggered.

• Control (CT): Control of the protection. It defines the action related to the protection

• Direction (SS): Polarity of the protection. It defines if the limit value is a low or high threshold

These parameters are available in the ***Controller settings ⇒ Protections ⇒ Other protections ⇒ Analog inputs*** page.

| | Protections | | | | |
|---|---|---|---|---|---|
| | **Threshold** | **Timer** | **Control** | **Direction** | **Function** |
| Analog input 1 level 1 | [2600] | [2601] | [2602] | [2606] | [2678] |
| Analog input 1 level 2 | [2603] | [2604] | [2605] | | |
| Analog input 2 level 1 | [2608] | [2609] | [2610] | [2614] | [2679] |
| Analog input 2 level 2 | [2611] | [2612] | [2613] | | |
| Analog input 3 level 1 | [2616] | [2617] | [2618] | [2622] | [2680] |
| Analog input 3 level 2 | [2619] | [2620] | [2621] | | |

# HYSTERESIS (DIGITAL INPUT)

For a given hysteresis, three different digital signals are required:

- Two digital inputs are used respectively as low threshold and high threshold signals.
- One digital output is used to control an equipment with a hysteresis

The hysteresis settings can be found in the **Controller settings ⇒ Inputs/Outputs ⇒ Digital inputs ⇒ Hysteresis on digital input** page. Each hysteresis proposes the following parameters (the first hysteresis is taken as example):

- **Hysteresis 1 enable for digital input**
- **Pulse length DO 1**
- **Direction hysteresis 1**

## Hysteresis 1 enable for digital input

Enables/disables the hysteresis.

## Pulse length DO 1

The delay to wait when the condition is met (reaching the low/high threshold) before activating the hysteresis output.

## Direction hysteresis 1

For each hysteresis, two options are available:

| Value | Label | Function |
|-------|-------|----------|
| 0 | Set on low threshold, reset on high | The associated digital output will be set when the digital input assigned to the low threshold is activated and it will reset once the digital input assigned to the high threshold is activated. <br><br> Please not that once the digital output is activated, the state of the digital input assigned to the low threshold will not matter. The digital output state can only change when the digital input assigned to the high threshold is activated. |
| 1 | Set on high threshold, reset on low | The associated digital output will be set when the digital input assigned to the high threshold is activated and it will reset once the digital input assigned to the low threshold is activated. <br><br> Please not that once the digital output is activated, the state of the digital input assigned to the high threshold will not matter. The digital output state can only change when the digital input assigned to the low threshold is activated. |

## Setting inputs for your hysteresis

To select the required digital input signals, please refer to Digital inputs *(on page 20)*. the digital input functions to be used can be found in the **Hysteresis** section of the search engine.

## Setting an output for your hysteresis

To select the digital output controlled by the hysteresis, please refer to Digital/Relays outputs *(on page 22)*. The digital output function to be used can be found in the **Hysteresis** section of the search engine.

# HYSTERESIS

For a given Hysteresis, two different signals are required:

- One variable for the measure
- One digital output for the hysteresis to activate

Open the **Controller settings ⇒ Programming ⇒ Hysteresis (i4Gen)** page. Each hysteresis proposes the following parameters (the first hysteresis is taken as example):

- **Enable Hysteresis 1**
- **Hysteresis 1**
- **Low level threshold**
- **Timer on low level threshold**
- **High level threshold**
- **Timer on high level threshold**
- **Hysteresis Direction 1**

## Enable Hysteresis 1

Enables/disables the hysteresis.

## Hysteresis 1

Chooses one among all of the variables of the product to bind the hysteresis with.

## Low level threshold

The hysteresis output will be activated when the variable reaches a value lower than or equal to the configured low level threshold value.

## Timer on low level threshold

The delay to wait once the variable value reaches the low level threshold before activating the hysteresis output.

## High level threshold

The hysteresis output will be activated when the variable reaches a value greater than or equal to the configured high level threshold value.

## Timer on high level threshold

The delay to wait once the variable value reaches the high level threshold before activating the hysteresis output.

## Hysteresis Direction 1

For each hysteresis, two options are available:

| Value | Label | Function |
|-------|-------|----------|
| 0 | Set on low threshold, reset on high | The associated digital output will be set when the low threshold value is reached and it will reset on reaching the high threshold value.<br><br>Please not that once the digital output is activated, the low threshold value will not matter. The digital output state can only change on reaching the high threshold value. |
| 1 | Set on high threshold, reset on low | The associated digital output will be set when the high threshold value is reached and it will reset on reaching the low threshold value.<br><br>Please not that once the digital output is activated, the high threshold value will not matter. The digital output state can only change on reaching the low threshold value. |

## Setting an output for your hysteresis

To set a digital output, please refer to Digital/Relays outputs *(on page 22)*. The functions to use can be found in the **Hysteresis** section of the search engine.

# SETTINGS

## PROTECTIONS

### Functionning

The protections are triggered by an internal or external event (internal protection, digital inputs, CAN bus loss, etc.). In order to protect the system, an action can be associated with the triggering of a protection. These actions are of different kinds :

- These actions can just trigger an alarm. An orange LED will flash on the product and the title of the triggered protection will appear in the alarms/faults page.
- These actions can protect the different equipments by carrying out actions that depend on the type of action configured. In this case, the LED will blink orange as long as no human intervention is required, the LED will blink red if a human intervention is required. If the LED flashes orange, the title of the protection that has been triggered can be consulted in the alarms page. If the LED flashes red, the name of the protection that has been tripped can be viewed in the faults page.

| Value | Type | Action | Description |
|-------|------|--------|-------------|
| 0 | – | Unused (no action) | – |
| 1 | Alarm/ Fault | Electrical fault | The protection opens the circuit breaker and tries to re-synchronize again after the timer [2806]. The number of resynch attempts is set by variable [2807], it means that if the fault that has tripped the circuit breaker is happening again after each attempt, the sequence will be stopped. |
| 3 | Alarm | Alarm | The protection is displayed in the alarm page. No action is performed. |
| 4 | Fault | Fault | Circuit breaker opens. |

These actions have to be configured in *i4Gen Suite* software. List of potential alarms/faults can be downloaded using the SAVE button beside "Protections configuration" in the *i4Gen ⇒ File transfer* page. A digital output can be configured to indicate that a protection is active.

**All the protections available for the product are explained in the chapter Software variables *(on page 91)*.**
**Specific protections are explained below.**

### Emergency stop

The emergency stop function can be performed in two ways:

- Connect an **Emergency stop** button to an **Emergency stop** logic input. It is a software treated emergency stop.
- Action on an alarm or a fault : select **Fault**.

### Communication

| Alarm/Fault | Description | Setting |
|-------------|-------------|---------|
| CANopen | Communication error on the CANopen protocol. | [3059] |

For **CRE-Link®** protocol errors, check CRE-Link® *(on page 76)*.

# Reattempt to close after an electrical fault

In the event of an electrical fault:

1. The module opens the circuit breaker.
2. The module will try X times according to the value configured in the parameter *Number of closing attempts* [2807].
3. The module will wait X seconds between each attempt according to the value configured in the parameter *Delay before new attempt* [2806].

**Example:**

Example with [2807] = 2:

Figure 17. Reattempt to close after an electrical fault
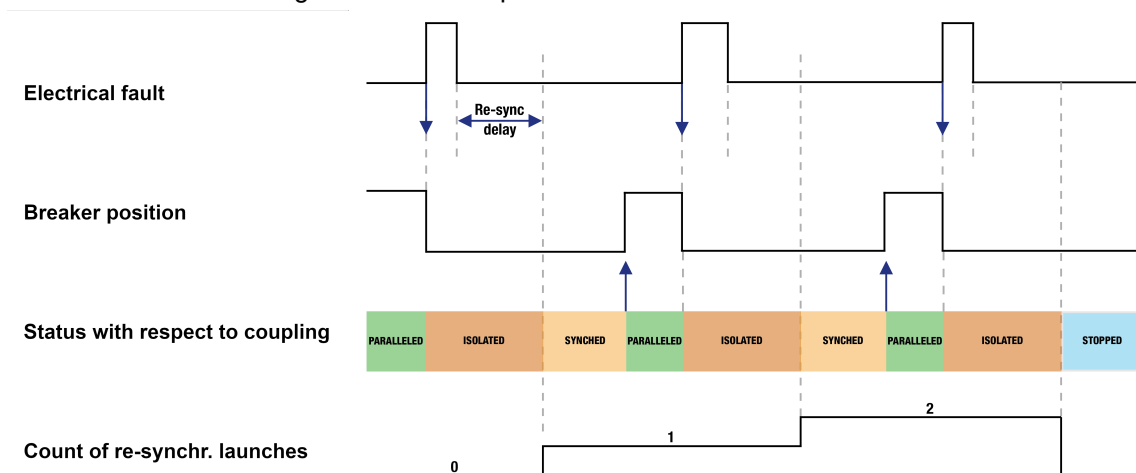


# Custom fault and alarm

User variables [8000] to [8099] can be set as alarm or fault using *i4Gen Suite*. The label of the alarms/faults can be customized by changing the label of the related user variable. A user variable set as alarm or fault can be triggered via Modbus or **Easy Flex®**.

# Audible or visual warning device

To trigger an external alarm when a protection trips, connect the alarm to a logic output configured as **Horn**. The signal duration is configurable with the parameter *Horn timer* [2478] (0 means that the alarm will be activated until a manual shutdown); alternatively, an input can be configured as **Stop horn** to manually stop the horn.

# Reset of alarms and faults

To perform an alarms/faults reset:

• Locally: SHIFT + (i/⚠)

• Remote: use the **"Reset faults"** input function.

# EVENTS

## Functionning

Events are actions performed on the installation that can be monitored by the controller. They are managed in the same way as an alarms and faults, thus they can be seen in the "history" menu where all alarms/faults/events history is listed. Events are also included in the log file together with alarms and faults. Each event can be enabled/disabled in the ***Controller settings*** ⇒ ***General*** ⇒ ***Events*** page.

| Variable number | Label | Description |
|---|---|---|
| [5000] | *Power up* | This event is recorded each time the controller is powered on. |
| [5010] | *ON mode* | This event is recorded when the controller is switched to **ON** mode (Pressing **ON** when the controller is already in **ON** mode won't trigger the event). |
| [5011] | *OFF mode* | This event is recorded when the controller is switched to **OFF** mode (Pressing **OFF** when the controller is already in **OFF** mode won't trigger the event). |

# APPLICATION

## GENERAL INFORMATION

The **HYBRID COMPACT** is a renewable energy inverter controller designed for hybrid applications that can include generators, battery inverters and mains. By using **COMPACT** controllers for all your power sources, you can ensure an optimal operation of the power plant, with isochronous control.

The **HYBRID COMPACT** is designed to answer all the issues raised by hybrid applications. Here is an overview of its main functions:

- Limitation of the active power in order to maintain the generators above their recommended low limit and prevent reverse powers
- Consignment of the reactive power to maintain the adequate power factor on the generators
- Manage the power plant reserve power
- Quick opening of the inverter on generators reverse power

It is necessary to have one **HYBRID COMPACT** controller per renewable energy inverter. In case of a problem with one of the unit, only one inverter is impacted on the installation and the rest remains functional.

In order to use your **HYBRID COMPACT** controller properly, you need to:

- Provide a power supply
- Connect your **HYBRID COMPACT** controller to the CAN bus linking all your **COMPACT** modules
- Connect an Ethernet cable in order to enable Modbus/TCP communication with your inverter
- Optional: Wire cables for the voltage and current for each phase

Thanks to the CAN bus communication between all **COMPACT** modules, each **HYBRID COMPACT** knows at any time the power of all the generators and all the renewable energy inverters. This allows the limitation of the power of the inverters without the need to designate a master module among the **HYBRID COMPACT** controllers.

The measures of the renewable energy inverter can be recuperated

- Through Modbus/TCP communication:
  - If the inverter respects the standard of the SunSpec Alliance organisation, the **HYBRID COMPACT** is "plug and play".
  - Otherwise you will have to configure the Modbus registers manually
- Through the module's voltage and current inputs

> ⚠️ **Important: Check your renewable energy inverter functionalities**
>
> Some applications or operating modes requires your renewable energy inverter to be able to:
> - Accept an active power limitation command
> - Accept a reactive power setpoint command
> - Open/close its breaker on command

# OPERATING MODES

## HYBRID COMPACT modes

The **HYBRID COMPACT** has two modes of operation:

- **ON**: closes the renewable energy inverter on bus and manage its power
- **OFF**: With an internal and/or external breaker configured, opens the breaker and disables the active and reactive power setpoints commands

# LIMITATION OF ACTIVE RENEWABLE ENERGY POWER

The active renewable energy power needs to be restricted in accordance with certain criteria, which includes:

- Maintaining the generators above a certain minimum power threshold at all times.
- Meeting a mains peak shaving setpoint when the inverter is connected to the Mains.
- Restricting the renewable energy inverter power to comply with the battery maximal current value for charging.

The **HYBRID COMPACT** controller can send a specific active power limitation setpoint to a renewable energy inverter by Modbus/TCP or by an analog output.

When used in conjunction:

- With **GENSYS COMPACT PRIME** controllers, the controller will calculate the power limitation to comply with the constraints imposed by generators.
- With **MASTER COMPACT 1B** controllers, the controller will calculate the power limitation to comply with the constraints imposed by the Mains.
- With **BAT COMPACT** controllers, the controller will calculate the power limitation to comply with the constraints imposed by batteries.

Moreover, the controller can be combined with all the mentioned controllers simultaneously.

## Power limitation mode

The parameter *Active power limitation mode* [2042] in **Controller settings** ⇒ **Electrical** ⇒ **Inverter** ⇒ **Control** defines the approach by which the controller sets the power limitation:

- When set to Not used the power limitation is disabled
- When set to Auto mode, the controller automatically calculates the power limitation to comply with the constraints imposed by different power sources. In cases where only generators are in use on the bus, the power limitation will consider the parameter *Low kW threshold generators* [2113] to establish the minimum active power required for the generators.
- When set to Fixed mode the power limitation will be adjusted to the value specified in the parameter *Active power limitation* [2116]

> **Note:** For multiple renewable energy inverters, the parameters *Active power limitation* [2116] and *Low kW threshold generators* [2113] must have the same value set across all **HYBRID COMPACT** controllers. Additionally, make certain to set the parameter *Active power limitation by* [2028] to Auto on all **HYBRID COMPACT** controllers to ensure the low limit power on the generators.

The parameter *Active power limitation by* [2028] dictates how the power limitation is communicated to the inverter:

- If the power limitation needs to be sent via Modbus/TCP set the parameter to Modbus. For detailed instructions on correctly sending the power limitation via Modbus/TCP, please refer to the Modbus/TCP chapter Modbus tables configuration *(on page 48)*.
- The power limitation can also be converted into an analog voltage output ranging from -10V to 10V when the parameter is set to Analog output. For further information, refer to the chapter Power limitation by analog output *(on page 37)*.

## Power limitation requirements

In order to appropriately employ the power limitation, various settings and parameters must be configured.

### Power limitation with the standards of the SunSpec Alliance organisation

If the **HYBRID COMPACT** controller is set to use the standards of the SunSpec Alliance organisation (for more information refer to the chapter SunSpec specification *(on page 47)*) the following Sunspec blocs must be available in the inverter and must be accessible via Modbus/TCP:

- The bloc 113 - Phase Inverter Model (Floats) **or** 103 - 3 Phase Inverter Model (Integer + SF) is needed if the measurements are taken via Modbus/TCP (for further information please refer to the chapter Measurement configuration *(on page 42)*

- The bloc 123 – Inverter Controls Immediate Controls is needed if the power limitation is set to be sent via Modbus/TCP (for further information refer to the chapter Power factor control *(on page 39)*)

## Power limitation when not using the standards of the SunSpec Alliance organisation

If the inverter is not compatible with the standards of the SunSpec Alliance organisation, the Modbus/TCP frames have to be configured manually (for further information please refer to the chapter Modbus tables configuration *(on page 48)*). The following registers need to be set in ***Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Modbus table commands (i4Gen)*** :

- If the power limitation is set to be sent via Modbus/TCP, set the Modbus/TCP register allowing to limit the power in the segment Power limitation. Ensure that the command format, offset, and resolution are appropriately configured to satisfy the inverter's prerequisites for transmitting the setpoint via Modbus/TCP. Please refer to the inverter's technical documentation for further information.

- If the measurements are taken via Modbus/TCP, the following measurements need to be set in the ***Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Modbus table measurements (i4Gen)*** page :

  ◦ *Inverter V1*, *Inverter V2* and *Inverter V3* **or** *Inverter U12*, *Inverter U23* and *Inverter U31*

  ◦ *Inverter frequency*

  ◦ *Inverter P1*, *Inverter P2* and *Inverter P3* **or** *Inverter active power*

# Power limitation by analog output

The limitation of the renewable energy active power can be achieved either through Modbus/TCP or by applying a voltage setpoint to the dedicated power limitation analog output (for further information refer to the chapter Rear face *(on page 9)*). The voltage value according to the amount of power limitation needed (0% to 100%) can go from -10V to 10V. The range is fully customisable.

## Power limitation analog output activation

To set the power limitation by analog output configure the parameter *Active power limitation by* [2028] in the page ***Controller settings ⇒ Electrical ⇒ Inverter ⇒ Control*** to Analog output.

## Range configuration

To set the voltage analog output configure the parameters in the page ***Controller settings ⇒ Dynamic ⇒ Power limitation control*** bellow:

| Variables | Label | Description |
|---|---|---|
| [2205] | *Power limitation output amplitude* | This parameter determines the amplitude of the power limitation output.<br>Power limitation output voltage = Power limitation output offset + (Power limitation (%) * Power limitation output amplitude).<br>Ex: If the Power limitation output offset is 5V and the amplitude is 2.5V, the Power limitation output may vary between a minimum correction of 2.5V (5V - 2.5V) and a maximum correction of 7.5V (5V + 2.5V). |
| [2206] | *Power limitation output offset* | This parameter determines the power limitation output offset.<br>Power limitation output voltage = Power limitation output offset + (Power limitation (%) * Power limitation output amplitude).<br>Ex: If the power limitation output offset is 5V and the amplitude is 2.5V, the power limitation output may vary between a minimum correction of 2.5V (5V + 2.5V) and a maximum correction of 7.5V (5V - 2.5V). |

# POWER FACTOR CONTROL

The purpose of the cos(φ) control is to prevent a low cos(φ) on the generators which will generate a premature wear of the alternators.

Indeed, without the use of a **COMPACT** controller dedicated to generator applications, the inverter will keep a power factor of 1, i.e. it will not take any share of reactive power. As the inverter takes a share of the active power, the amount of active power on the generating sets decreases, but the amount of reactive power remains fixed, which makes the cos(φ) drop.

The power factor will remain to 1 when the inverter is connected to the Mains.

To configure the inverter cos(φ) control, go to the menu **Controller settings ⇒ Electrical ⇒ Inverter ⇒ Control**.

The parameter *Power factor setpoint mode* [2026] allows to:

- When set to Not used, disable the cos(φ) control, in which case the inverter cos(φ) will be 1
- When set to Auto, share the reactive power with the generators, in which case the cos(φ) set on the inverter will be the same as the one on the generators
- When set to Fixed, apply a fixed cos(φ) on the inverter, in which case the cos(φ) of the inverter will have the value given in parameter *Power factor setpoint (inductive)* [2253] located on the same page

Please note that some inverters cannot maintain a low cos(φ) value. You can therefore change the parameter *Minimum inverter power factor* [2027], to set a minimum value for the cos(φ).

On the other hand, if you want to use the full range allowed by the inverter, and the inverter is compatible with the standards of the SunSpec Alliance leave this value at 0 and the **HYBRID COMPACT** controller will make sure that it does not set a cos(φ) lower than the minimum value allowed for your inverter if the information is available.

## Power factor control requirements

Various settings and parameters need to be configured to be able to control the inverter power factor

### Controlling the power factor with the standards of the SunSpec Alliance organisation

If the **HYBRID COMPACT** controller is set to use the standards of the SunSpec Alliance organisation (for more information refer to the chapter SunSpec specification *(on page 47)*) the following Sunspec blocs must be available in the inverter and must be accessible via Modbus/TCP:

- The bloc 113 - Phase Inverter Model (Floats) **or** 103 - 3 Phase Inverter Model (Integer + SF) is needed if the measurements are taken via Modbus/TCP (for further information please refer to the chapter Measurement configuration *(on page 42)*
- The bloc 123 - Inverter Controls Immediate Controls

If the bloc 121 and the parameters **PFMinQ1** and **PFMinQ4** are available in your inverter, the controller will take them into account.

### Configuration of the power factor control

This chapter is only relevant if the **HYBRID COMPACT** controller is not set to use the standards of the SunSpec Alliance organisation.

The following parameters need to be set in the **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Modbus table commands (i4Gen)** page:

- To set the power factor setpoint Modbus/TCP register, go to the **Power factor consignment** segment. Ensure that the command format, offset, and resolution are appropriately configured to satisfy the inverter's prerequisites for transmitting the setpoint via Modbus/TCP. Please refer to the inverter's technical documentation for further information.

- If the measurements are taken via Modbus/TCP (for further information please refer to the chapter Measurement configuration *(on page 42)*) the following measurements need to be set in the ***Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Modbus table measurements (i4Gen)*** page :

  ◦ *Inverter V1*, *Inverter V2* and *Inverter V3* **or** *Inverter U12*, *Inverter U23* and *Inverter U31*

  ◦ *Inverter frequency*

  ◦ *Inverter P1*, *Inverter P2* and *Inverter P3* **or** *Inverter active power*

  ◦ *Inverter Q1*, *Inverter Q2* and *Inverter Q3* **or** *Inverter reactive power*

# ON/OFF COMMAND

The buttons **ON** and **OFF** enables the inverter to connect or disconnect from the bus. Check the Operating modes *(on page 35)* chapter to get more information on each mode.

The *HYBRID COMPACT* controller can order the inverter to be connected or disconnected from the bus in two different ways:

- By sending a request to the inverter via Modbus/TCP. The reqsuest can be set in the *Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Modbus table commands (i4Gen)* page in the "Inverter's ON/OFF command" section. Check your inverter's documentation to appropriately set the ON/OFF request via Modbus/TCP if it is compatible.

- By setting in the *HYBRID COMPACT* controller a digital output or a relay output with the function *ON/OFF request* [4733].

# MEASUREMENT CONFIGURATION

Two operating modes are available to get the measures of your inverter:

- By wired inputs
- By Modbus/TCP

Go to **Controller settings** ⇒ **Electrical** ⇒ **Inverter** ⇒ **Inverter** and set the desired operating mode in the variable *Inverter's measures acquisition* [3485].

> ✏️ **Note:** All the required measures can be recuperated by wired inputs, saving you the need to configure them through Modbus frames. This is the case whether the inverter is compatible with the standards of the SunSpec Alliance organisation or not.

If the renewable energy inverter is compatible with the standards of the SunSpec Alliance organisation, the **HYBRID COMPACT** is plug and play. If it is not compatible, you will have to manually configure the Modbus frames. Check the Modbus configuration for inverters *(on page 46)* chapter for more information on the SunSpec Alliance organisation and how to configure Modbus frames.

Some inverters may not provide every measure asked in the Modbus table. In that case the **HYBRID COMPACT** can recalculate some values:

- The phase-to-phase voltages from neutral-phase voltages
- The inverter active power from the active power of each phase
- The inverter reactive power from the reactive power of each phase

Some measures can also be omitted:

- If you have the phase-to-phase voltages, you can omit the phase-to-neutral voltages
- If you have the inverter active power, you can omit the active powers per phase
- If you have the inverter reactive power, you can omit the reactive powers per phase
- The currents for every phase

> ✏️ **Note:** Make sure you have correct values on the **HYBRID COMPACT** controller measurements before proceeding with the rest of the configuration.

# COMMUNICATION LOSS MANAGEMENT

In case of a loss of the Modbus/TCP communication between the *HYBRID COMPACT* and the inverter, or in case of a loss of the CAN bus communication between the **COMPACT** controllers, most of the *HYBRID COMPACT* functions will not work anymore. There are several solutions to maintain the operation of the power plant in these extreme cases.

## Communication loss between the HYBRID COMPACT controller and the inverter

Regarding the loss of communication between the *HYBRID COMPACT* controller and the inverter, there are 2 possible outcomes:

- The *HYBRID COMPACT* controller can order the *GENSYS COMPACT PRIME* controller to use the droop command on its generator. Most inverters can be configured to control their power according to the frequency. This is the best solution in the event of a loss of communication, but it requires the droop slopes of the generators and inverters to be set properly. Please refer to the documentation of your inverter to configure this part. To use this function, go to *Controller settings ⇒ Electrical ⇒ Modbus inverter* and set the parameter *Force the power plant in droop when not connected* [2029] to "Yes".

- The *HYBRID COMPACT* controller can order the inverter to open its internal breaker thus removing the inverter from the bus. In this case, the power plant will only be powered by the generators as long as the loss of communication persists. This is less efficient than the first solution but easier to implement. To use this function, go to *Controller settings ⇒ Electrical ⇒ Modbus inverter* and set the parameter *Control on inverter's connection timeout* [3024] to "Fault".

The main goal of both outcomes is to prevent reverse power on the generators and protect the inverter.

> ⚠ **Important: Opening the inverter on communication loss**
>
> If you want to open the inverter from the bus on communication loss, you have to use a digital or relay output from the controller wired to a digital input of the inverter to command its internal breaker or directly to an external relay.
>
> Once the output is wired, configure it to "*ON/OFF request*" [4733].

## Communication loss between the HYBRID COMPACT and the other COMPACT controllers

When the communication between the *HYBRID COMPACT* and the other **COMPACT** controllers is lost, the *HYBRID COMPACT* controller will lose all information about the status and powers of the other sources. It is therefore no longer able to determine the required power level needed from the inverter. In this case, there are 2 possible choices:

- The safest solution is to remove the inverter from the bus via the *HYBRID COMPACT* controller to maintain the power plant with the remaining **COMPACT** controllers whose CAN bus is still functional. The goal is to avoid opening the circuit breakers of the generators on a reverse power, with a risk of not supplying the load anymore. This is the default configuration (*Controller settings ⇒ Protections ⇒ Other protections ⇒ CAN 1*, parameter *Control on controllers communication fault* [3052] set to "Fault").

- The *GENSYS COMPACT PRIME* controller can be set to use the frequency only droop mode on its generator. To do so, refer to the *Controller settings ⇒ Protections ⇒ Other protections ⇒ CAN 1* page, parameter *Control on missing HYBRID COMPACT on CAN bus* [3060] set to "Droop Hz only + Alarm". This configuration must be done on all the *GENSYS COMPACT PRIME* controllers of the power plant.

# INVERTER PROTECTIONS

## PREVENTING GENERATORS REVERSE POWER

Most of time if the system is properly configured, there will be no generator reverse power thanks to the control of active power on the inverter. However there is always a risk of generator reverse power: even if the **HYBRID COMPACT** controller updates power limitation setpoint every 100ms, most of the inverters take several seconds to react. Therefore, if the load varies in a progressive way, there will be no generator reverse power. However, if the load drops sharply and instantaneously, the generators will be in reverse power during the time taken by the inverter to apply the setpoint sent by the **HYBRID COMPACT** controller. This situation can have serious consequences because if the generators trip their breakers on reverse power and you do not have an other grid forming source, the load might not be supplied anymore.

To avoid this situation, the most common choice is to configure each **HYBRID COMPACT** so that it opens its breaker as soon as the generators are in reverse power. The inverter production is then lost, but the load remains powered. The **HYBRID COMPACT** controller then waits a certain amount of time (adjustable timer) and orders the inverter to synchronize back to the bus.

To configure the opening of the inverter, refer to the menu **Controller settings ⇒ Protections ⇒ Generators protections** of the **HYBRID COMPACT** controller and configure the protection *Reverse kW control* [2580] on "Electrical fault" to allow the resynchronization of the inverter.

To configure the delay between two synchronization attempts and the number of synchronization attempts, refer to the **Controller settings ⇒ Inputs/Outputs ⇒ Breaker ⇒ Breaker** page.

# GENERATORS START/STOP

## GENERATORS START/STOP DEPENDING ON THE AVAILABLE RENEWABLE ENERGY POWER AND LOAD

When using renewable energy inverters with generators, it is important to make sure that the system can always provide enough power both in case of load variations and in case of renewable energy production variations. To ensure that the system will remain functional, make sure to always have a certain reserve power.

**Example:**

Consider an application with two 300kW generating sets, each generator providing 100kW at a given moment. At this point, each generator can potentially produce 200kW more power, so the total power reserve is 400kW. This means that if the load increases by 350kW, the system will remain functional, but if the load increases by 450kW, this variation will be too high for the system and an additional generator would be necessary.

The same type of problem can be encountered on hybrid applications with a decrease in renewable energy production. Keeping the same example as before, if the renewable energy power production decreases by 350kW, the system will remain functional, but if the renewable energy power production decreases by 450kW, the variation will be too important for the system.

On an application with multiple generators, there is a constant balance between:

- Running as little generators as possible to limit fuel consumption.
- Keeping enough generating sets running in case of load variation or decrease of renewable energy production. Note that renewable energy production can decrease drastically in a short timespan.

With storage batteries and a **BAT COMPACT** controller in your power plant, you can also take into account the reserve power of the storage batteries, in order to reduce the number of running generators. If you have enough reserve power, no generators will be started at all.

> ⚠ **Important: Generator start/stop settings must be set on _GENSYS COMPACT PRIME_ and/or on _BAT COMPACT_**
>
> In case the generators are started/stopped according to the power supplied by the renewable energy source, the following functions must be set:
>
> - The function "**Load dependent start/stop**" to ensure a sufficient power reserve to cover load variations.
> - The function "**Renewable energy power dependent start/stop**" to ensure a sufficient power reserve to cover renewable energy production variations.
>
> Not setting properly these two functions may lead to a complete power failure of the power plant.
>
> **Please refer to the _GENSYS COMPACT PRIME_ controller and _BAT COMPACT_ controller documentations for more information on how to setup these functions.**
>
> Make sure to set the **GENSYS COMPACT PRIME** in "Auto" mode.

# MODBUS CONFIGURATION FOR INVERTERS

## CONNECTION TO INVERTER

To establish a Modbus/TCP connection between the **HYBRID COMPACT** and its dedicated inverter, the IP address of the inverter must be set in **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Inverter IP settings**.

To check if the Modbus/TCP connection is properly established, simply check in the measurements page if data values are consistent and alive. If the values are set to 0, either the Modbus connection is not established or the system has not been started. Another way to check it is to look in the About page on the **i4Gen Suite** or on the LCD screen in **Supervision ⇒ About ⇒ Page 3**.

# SUNSPEC SPECIFICATION

First, set the inverter's IP address as described in the previous chapter.

If your inverter is compatible with the SunSpec specification, it is recommended to set the parameter [2036] "*Inverter compatible with SunSpec*" in ***Controller settings*** ⇒ ***Electrical*** ⇒ ***Modbus inverter*** to Yes.

Once configured, the ***HYBRID COMPACT*** will automatically get from the inverter the necessary Modbus registers for its measures and commands.

As mentioned in previous chapters, the ***HYBRID COMPACT*** can send several commands to the inverter:

- Limitation of active power
- Power factor control
- Inverter's breaker control

These commands can independently be activated or deactivated in the following menu: ***Controller settings*** ⇒ ***Electrical*** ⇒ ***Inverter*** ⇒ ***Control***.

> ⚠ **Important: Check your inverter compatibility with the commands set**
>
> Even if your inverter is SunSpec compliant, it doesn't necessarily support every command.
>
> Go to ***Controller settings*** ⇒ ***Electrical*** ⇒ ***Modbus inverter*** and set the behavior of the ***HYBRID COMPACT*** when the inverter is not compatible with your application with the variable *Control on inverter not compatible* [2398]

# MODBUS TABLES CONFIGURATION

In order to use and control your inverter, four pages can be found in **Controller settings** ⇒ **Electrical** ⇒ **Modbus inverter** to setup the measures and commands:

- Modbus table measurements
- Modbus table commands
- Custom measurements
- Custom commands

The two first menus are native functions managed by the controller which should cover most of applications. However, if you have more specific needs you can use custom measurements/commands to achieve them.

When configuring these frames, you will find similar settings:

Figure 18. Example of an edition form for a measurement frame



1. Register address of the measure/command.
2. Slave ID of the inverter.
3. Modbus function code to access the measure or write the command:
   ◦ Read coils (code: 0x01)
   ◦ Read discrete inputs (code: 0x02)
   ◦ Read holding registers (code: 0x03)
   ◦ Read input registers (code: 0x04)
   ◦ Write single coil (code: 0x05)
   ◦ Write single register (code: 0x06)
   ◦ Write multiple registers (code: 0x16)
4. Data type of the measure/command:
   ◦ Uint16: 16 bits unsigned integer
   ◦ Uint32: 32 bits unsigned integer
   ◦ int16: 16 bits signed integer
   ◦ int32: 32 bits signed integer
   ◦ float: 32 bits floating point number
5. The Mapping section enables you to apply a linear operation to the received or sent value. The default behavior is to process the value as is which is the equivalent off an Offset of 0 and a Resolution of 1.
6. If you are connected to the **COMPACT** unit, this section will display in real-time the received/sent value.

## Measurement frames configuration

This menu is inaccessible if [2036] "*Inverter compatible with SunSpec*" is set to Yes since the controller will use the SunSpec Alliance specification to find each register to read for its measures.

If your controller is not compatible with the SunSpec Alliance standards, you'll have to set each measure manually via this menu.

### Specificities of the Breaker state frame

This frame is used in order to get the breaker's state. It will read the value in the register set in the field "Register" and compare it to the value set in the field "Breaker closed value" to determine the breaker's state.

If the value read matches the "Breaker closed value" the **COMPACT** unit will consider the inverter's beaker as closed.

If the value read is different than the value set in the field "Breaker closed value", the **COMPACT** unit will consider the inverter's beaker as opened.

> **Note:** If your inverter has multiple registers and/or values for its breaker state, you have to uncheck the Breaker state frame to disable it and set your own custom measure frame. You can then set [4641] "*Inverter breaker feedback*" using **Easy Flex®**.

## Modbus table commands configuration

As mentioned in the previous chapters, the *HYBRID COMPACT* can send several commands to the inverter:

- Limitation of active power
- Power factor control
- Inverter's breaker control

These commands can be activated or deactivated in the following menu: ***Controller settings ⇒ Electrical ⇒ Inverter ⇒ Control***.

After activating at least one command, you can access the ***Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Modbus table commands (i4Gen)*** page to set each command Modbus frame. This menu is inaccessible if [2036] "*Inverter compatible with SunSpec*" is set to Yes since the controller will use the SunSpec Alliance specification to find each register to write for its commands.

There are two kinds of frames:

- "Command": Frame that transmits the value of the command (most of the time, a set point).
- "Activation/deactivation": Frame that transmits a value used to enable or disable the previous command (example: send 1 to activate the command and 0 to disable it)

For most inverters, you'll need both an "Activation/deactivation" frame and a "Command" frame. The former being used to enable/disable the command and the later to specify the value of the command itself.

### "Command" frames configuration

Click on a "Command" frame line to access the edition form:

Figure 19. "Command" line edition form



The only specific field in this form is the "Command format" field:

1. Change the command format (W, kW, % etc...) depending on the command type to match your inverter needs.

## "Activation/deactivation" frames configuration

Click on an "Activation/deactivation" line to access the edition form:

Figure 20. "Activation/deactivation" line edition form



Specific fields explanation:

1. Registers configuration:
   - Command activation and deactivation on single register; The inverter has a single register to activate and deactivate the command.
   - Command activation and deactivation on two registers; The inverter has two different registers, one to activate the command and the other one to deactivate it.
2. Value required by the inverter to activate the command.
3. Command type (for the activation value)
   - Cyclic: Transmit the activation value continuously (every 100ms).
   - Rising edge: Transmit the activation value only one time.
4. Value required by the inverter to deactivate the command.
5. Command type (for the deactivation value):

◦ Cyclic: Transmit the deactivation value continuously (every 100ms).

◦ Falling edge: Transmit the deactivation value only one time.

**Configuration examples**

Figure 21. Activation/deactivation on a single register with cyclic

activation command and single deactivation command for power limitation



With these settings, the controller will:

• Send the value 1 set in "Activation value" every 100ms to the register 435 when the condition for power limitation are matching.

• Send the value 0 set in "Deactivation value" only once to the register 435 once the condition for power limitation are not satisfied anymore.

Figure 22. Activation/deactivation on two different registers with

single activation and single deactivation for power limitation



With these settings, the controller will:

• Send the value 1 set in "Activation value" only once to the register 435 when the condition for power limitation are matching.

• Send the value 1 set in "Deactivation value" only once to the register 535 once the condition for power limitation are not satisfied anymore.

# CUSTOM FRAMES CONFIGURATION

In addition to the measures and commands available by default, it is possible to add your own measures and commands thanks to custom frames.

## Application customization

Other needs specific to your installation can be covered using the controller's inverter custom Modbus function available in the **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Custom measurements (i4Gen)** menu and the **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Custom commands (i4Gen)** menu. This function can be used to read and write any Modbus register from the inverter.

You can then :

- Retrieve additional data from from the inverter device using the **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Custom measurements (i4Gen)** menu
- Write any Modbus register of the inverter by using the custom Modbus transmission frames available in **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Custom commands (i4Gen)** menu. You may use **Easy Flex®** in the **Controller settings ⇒ Programming ⇒ Easy Flex (i4Gen)** page for more advanced needs.

> **Note:** If you need to read or write a Modbus register originating from a device other than the inverter, use the Modbus client feature instead (for further information refer to the chapter Modbus client *(on page 79)*).

## Custom measurements

Custom measurement frames can be set in the **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Custom measurements (i4Gen)** page. You can add a maximum of 10 custom measurement frames.

Click on the '+' button to open the edition form:

Figure 23. Custom measurements edition form



**Specific fields explanation:**

1. User variable/parameter/function where the measure value will be saved. Please note that Offset and Resolution will be applied before saving the value.

> ⚠️ **Important: Conflicted configurations**
>
> If you want to use a custom measure frame for a measure already available in **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Modbus table measurements (i4Gen)**, make sure the corresponding measure is disabled in that page.

# Custom commands

Custom command frames can be set in the **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Custom commands (i4Gen)** page. You can add a maximum of 10 custom command frames.

Click on the '+' button to open the edition form:

Figure 24. Custom commands edition form for cyclic frame



## Specific fields explanation:

1. Send:
   - Never: Disable the frame (used to keep your configuration for future use).
   - On event: Send frame on particular event.
   - Cyclic: Send frame periodically.
2. Choose between sending a constant or a controller variable's value.
3. Interval to send the frame.
4. When:
   - Always: Always send the frame.
   - Value different than 0: Send frame only if source variable is different than 0
   - Value equal to 0: Send frame only if source variable is equal to 0

> ⚠️ **Important: Difference between "Cyclic/Always" and "On event/Always" configurations**
>
> When the **Send** field is set to "Cyclic" and the **When** field is set to "Always", the frame will be sent with the time interval selected in the **Period** field without any condition.
>
> When the **Send** field is set to "On event" and the **Event type** field is set to "Always", the frame will be sent whenever the variable's value from the source variable field varies.

Figure 25. Custom commands edition form for on event frame



## Specific fields explanation:

1. Event type:

   ◦ Always: Always send the frame (on both Rising edge and Falling edge).
   ◦ Rising edge: Send frame when the source variable goes from 0 to 1.
   ◦ Falling edge: Send frame when the source variable goes from 1 to 0.

> ⚠ **Important: Conflicted configurations**
>
> If you want to use a custom command frame for a command already available in **Controller settings ⇒ Electrical ⇒ Modbus inverter ⇒ Modbus table commands (i4Gen)**, make sure the corresponding command is disabled in that page.

## Enabling and disabling a custom command frame

It is possible to enable/disable a custom command frame depending on a single/multiple conditions. To do so, uses the variable [8107] "*Disable inverter command frame*" bit 0 to 9 in **Easy Flex®** to disable the corresponding command frame.

# ADVANCED FUNCTIONS

## EASY FLEX ®

**Easy Flex®** offers a simple and innovative programming mode, allowing you to adapt the controller to your needs. Its consists of several types of instructions that can be completed with variables and operators to add specific behaviours to the controller.

## Variables

The **Easy Flex®** page has an area that contains the list of variables that can be used in the variable fields of the different instructions. Click on the **Variables** tab to display the list of variables.

Figure 26. Easy Flex® list of variables
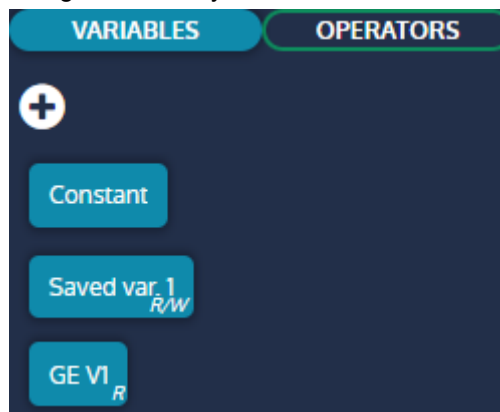


### Constant block

A Constant block is defined by default and must be used when a constant value is required in an instruction.

### Variable block

The variables of the controller can be added to the area as variable blocks. This blocks can then be used in the different instructions. there are two types of variable:

- **Read/Write**: Can be used in the read only (R) or write (W) variable fields of an instruction
- **Read only**: Can only be used in the read only (R) variable fields of an instruction (marked with the R letter)

Figure 27. Using read only and read/write variables



### How to add a variable block

To add a variable block to the variables area:

1. Click on the plus button to open the variables search engine
2. Click on a variable with a plus icon
3. Close the search engine

The variable block should now be visible in the area.

Figure 28. Adding a variable block to the Easy Flex® variables area
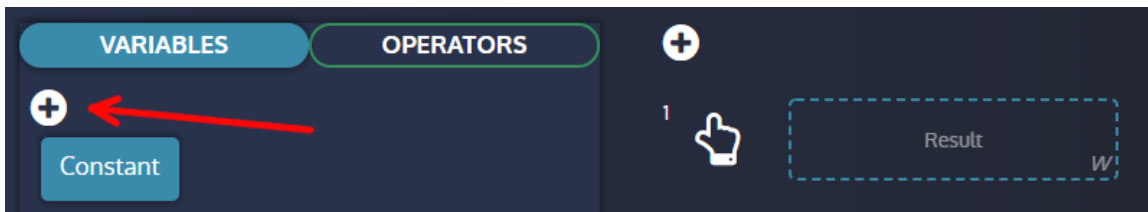


## How to use a variable block in an instruction

To use a variable block in an instruction:

1. Hold the click on the variable block to be used
2. Move the variable block to a variable field of an instruction
3. Release the click to drop the variable block in the field

The variable now belong to the instruction and will be interpreted by it.

Figure 29. Drag and drop of a variable in an instruction
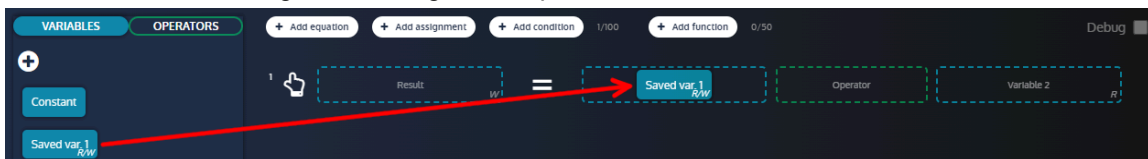


# Operators

The **Easy Flex®** page has an area that contains the list of operators that can be used in the operator field of the different instructions. Click on the **Operators** tab to display the list of operators.

Figure 30. Easy Flex® list of operators

## Test operator

A test operator return a **boolean** value in the result variable.

## Calculation operator

A calculation operator return an **analog** value in the result variable.

## How to use an operator block in an instruction

To use an operator block in an instruction:

1. Hold the click on the operator block to be used
2. Move the operator block to the operator field of an instruction
3. Release the click to drop the operator block in the field

The operator now belong to the instruction and will be interpreted by it.

Figure 31. Drag and drop of an operator in an instruction
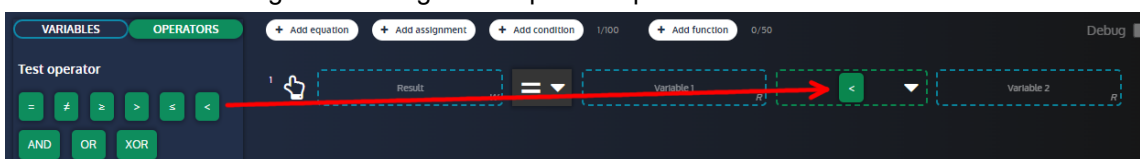


# Instructions

There are many types of instructions available in **Easy Flex®**.

## Equations

The **equation** instruction is an operation between two variables whose result is stored in a result variable.

Click on the **Add equation** button to add a new equation. A counter is displayed beside the button to indicate the number of equations defined and the maximum number of equations allowed.

> **Note:** The counter is common to the equations, assignments and conditions.

Figure 32. Example of equation



### NOT

When a variable field of an equation is filled with a variable block and the operator field is filled with a test operator, it is possible to add a NOT function to the variable to revert its boolean value.

### How to set a NOT

To set a NOT function:

1. Click on the arrow beside the variable block
2. Click on the NOT checkbox to enable/disable the function

Figure 33. Setting the NOT function of a variable block



## Timer ON/Timer OFF

When the operator field of an equation is filled with a test operator, it is possible to add a Timer ON function to delay the update of the result when the test operation is true. Following the same principle, it is also possible to add a Timer OFF to delay the update of the result when the test operation is false.

### How to set a Timer ON/Timer OFF

To set a Timer ON/Timer OFF function:

1. Click on the arrow beside the operator block
2. Set the Timer ON value in the input (in seconds) and toggle the checkbox to enable/disable the function
3. Set the Timer OFF value in the input (in seconds) and toggle the checkbox to enable/disable the function

Figure 34. Setting the Timer ON/Timer OFF function of a variable block
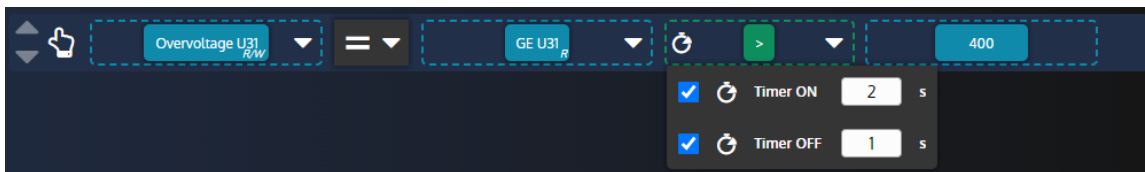


## Type of assignment

When the operator field of an equation is filled with a test operator, it is possible to change the type of assignment:

- **Equal**: The result of the test operation is stored in the result variable
- **Set**: The result variable is set only when the test operation becomes true
- **Reset**: The result variable is reset only when the test operation becomes true

### How to set the type of assignment

To set the type of assignment:

1. Click on the type of assignment list to display the list items
2. Click on the type of assignment you want

Figure 35. Setting the assignment type of an instruction
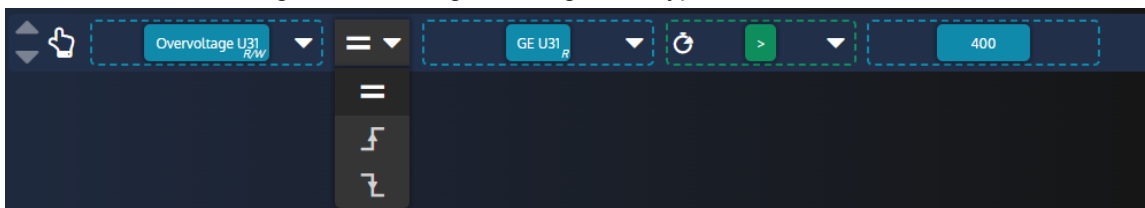


## Assignments

The **assignment** instruction assigns the value of a variable to a result variable.

Click on the **Add assignment** button to add a new assignment. A counter is displayed beside the button to indicate the number of assignments defined and the maximum number of assignments allowed.

> ✏️ **Note:** The counter is common to the equations, assignments and conditions.

Figure 36. Example of assignment



## Conditions

The **condition** instruction executes a group of instructions according to a test condition. As for equations, the NOT, Timer ON and Timer OFF functions can be used in the condition instruction.

Click on the **Add condition** button to add a new condition. A counter is displayed beside the button to indicate the number of conditions defined and the maximum number of conditions allowed.

> ✏️ **Note:** The counter is common to the equations, assignments and conditions. The maximum number of instructions per condition is 10.

**How to add/remove instructions to a condition**
- Drag and drop instructions into the condition to add them to the condition
- Drag and drop an instruction out of the condition to remove it from the condition

Figure 37. Adding an instruction to a condition



## Functions

The **function** instruction allows you to group instructions together and to assign a title and a description to this group.

Click on the **Add function** button to add a new function. A counter is displayed beside the button to indicate the number of functions defined and the maximum number of functions allowed.

**Add existing instructions to a function**

Drag and drop an existing instruction into the function to add it in.

Figure 38. Adding an instruction to a function
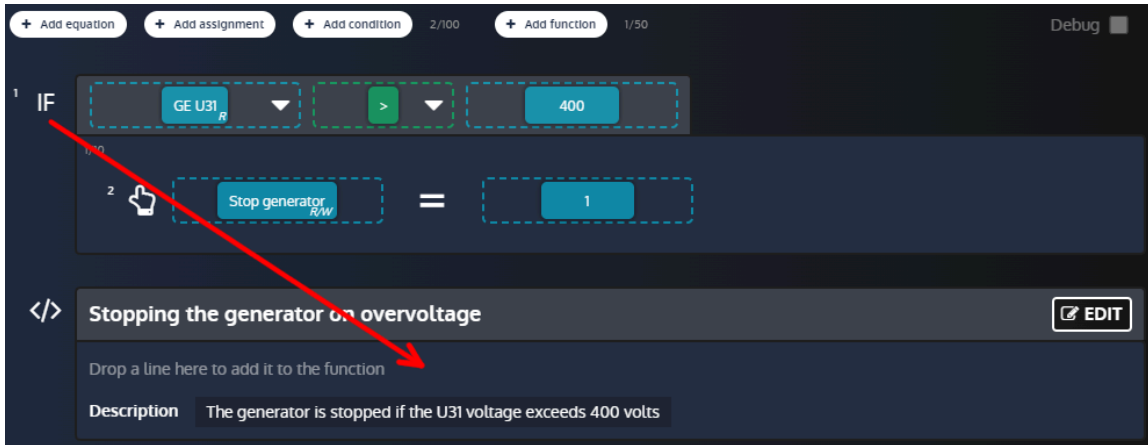


**Edit a function**

Click on the Edit button of a function to open the editing window:

1. Type in the title field to edit the title of the function (up to 100 characters per title for each function).
2. Type in the description field to edit the description of the function (up to 12500 characters shared across all functions).
3. Use the **Add** buttons to add new instructions to the function.
4. Drag and drop an instruction into the dotted area to move it out of the function.
5. Click on the **Save/Back** button to save the parameters of the function and to close the editing window.

Figure 39. Editing a function
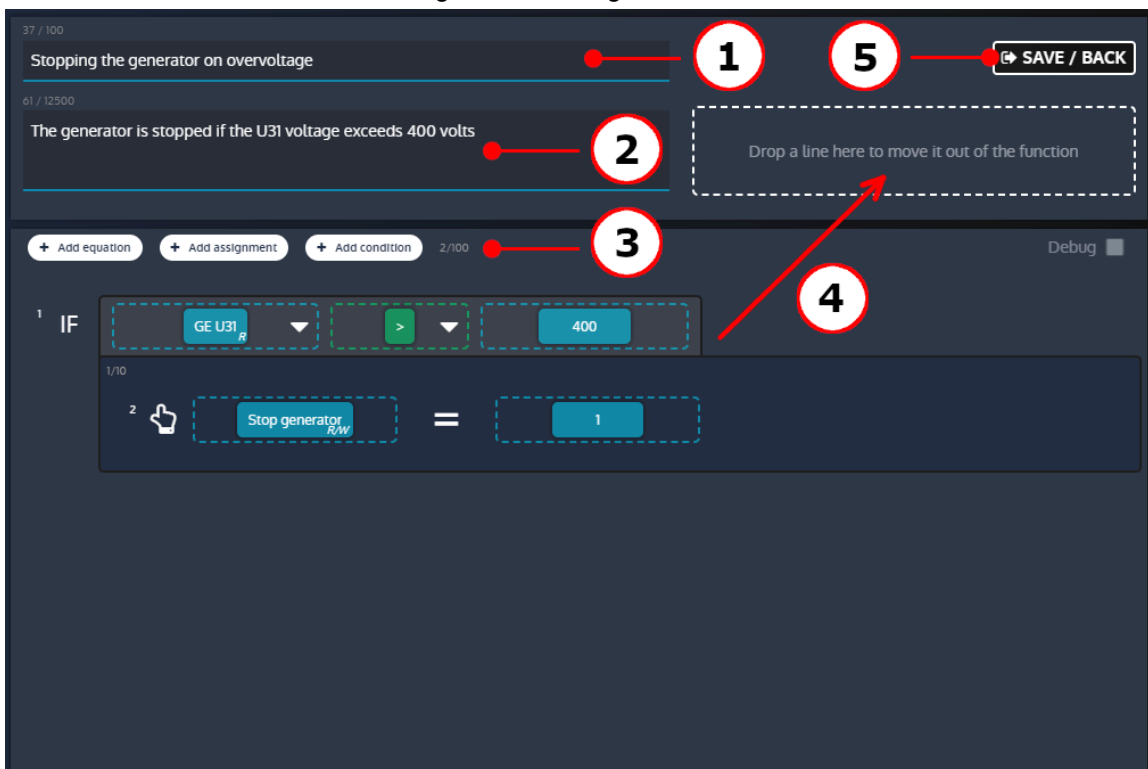


# Moving a bloc or an instruction

The declared blocks and instructions can be moved using drag and drop:

• Operators and variables blocks can be move from a line to another
• Any instruction can be moved above or below other instructions to change the execution order

## Deleting a bloc or an instruction

Blocks and instructions can be deleted in different way. To delete a block or instruction:

- Drag and drop the element to delete into the **Trash** area
- Click on the element to delete and click on the **Trash** area
- Click on the element to delete and press the **Delete** key of the keyboard

Figure 40. Deleting an instruction through drag and drop
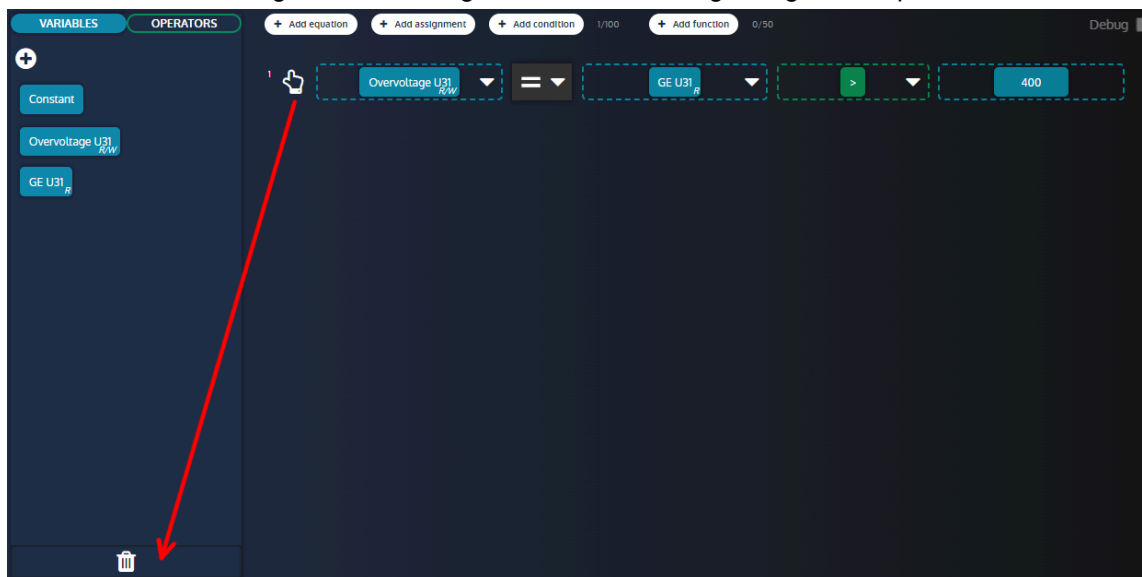


## Confirm/Cancel your changes

Once you are done setting the various instructions, you can confirm or cancel your changes.

- To confirm your changes, click on the confirm button

- To cancel your changes, click on the cancel button

## Debug mode

It is possible to activate a debug mode to watch in real time the values of the variables used in the **Easy Flex®** lines. Toggle the check box to enable/disable the debug mode. The debug mode can't be activated while modifications are in progress. Modifications can't be done while debug mode is activated.

Figure 41. Easy Flex® debug mode
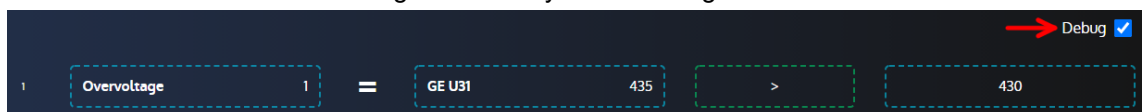


## Warnings with Easy Flex®

Variable [4214] *Easyflex error code* provides more information in case of an **Easy Flex®** warning alarm. Its value is calculated with the following formula:

**[4214] = (100 * line concerned) + type of error**

List of different types of errors:

**Error 1**

Operand 1 or 2 is invalid.

**Error 2**

Unknown operator.

**Error 3**

The result variable is empty.

**Error 4**

The result variable is read-only.

**Error 5**

The result is outside the range of the target variable.

**Error 6**

Overflow on at least one equation.

**Error 7**

Division by 0.

# USER VARIABLES

A range of user variables is available to be used in equations.

Starting from the firmware version 2.22, this range has been split into two sub-ranges:

- Saved user variables [8000] to [8049]
- Unsaved user variables [8050] to [8099]

Unsaved user variables values are lost when the module's power supply is switched off while Saved user variables values are saved in a non volatile memory so their values are kept even in case of power loss.

Prefer using Unsaved user variables for better performance if you don't need to save the value of a data in case of power cycling. Otherwise, Saved user variables and Unsaved user variables share the same behaviour as is described below.

## User variables properties

Each property of a user variable can be set.

- Label
- Unit
- Accuracy
- Variable type. It defines the way you want to use the user variable:
  ◦ For equations
  ◦ To trigger alarms or faults (depending on the variable type value)

> 📝 **Note:** Label, unit and accuracy will change the display of the user variable in the information page.

## User variable used for equations

The variable can be used:

- To store the result of an equation line (to be used in another equation line, to be displayed in the information page, to be read by modbus...).
- As an operand in an equation line.

## User variable used to trigger alarms and faults

In that case, the value of the user variable is used to trigger an alarm or a fault according to the user variable value:

- If the user variable = 0, the alarm/fault is not active.
- If the user variable > 0, the alarm/fault is active and is displayed in the alarms/faults log (with the label set before).

# ALTERNATIVE SELECTION

The **Alternative selection** page offers a supplement to **Easy Flex®** programming.

This function is presented as 16 selections between two values:

Figure 42. Page of the function Alternative selection
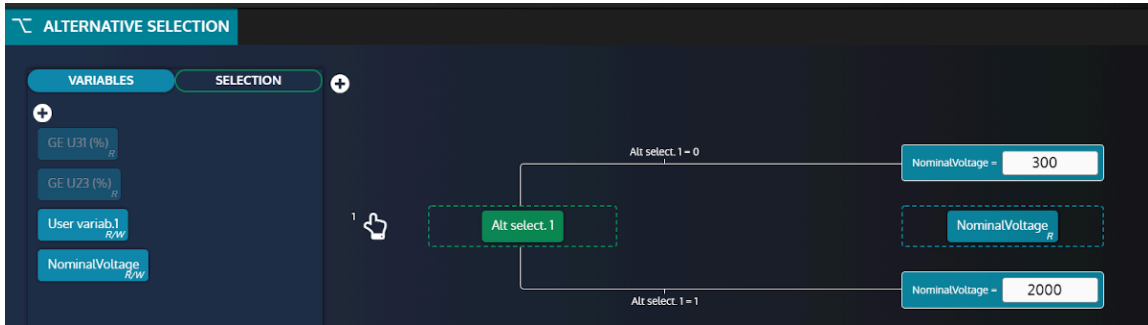


## Adding variables

To add new variables from the list of variables, click on the "+" button in the "Variables" tab(see below) :

Figure 43. Adding variables button



Use the **search engine** to find and select the variables you want to use.

## Adding selections

Selection variables are **booleans** (0 or 1) used to assign different values to the associated parameter (see below):

Figure 44. Equation block definition
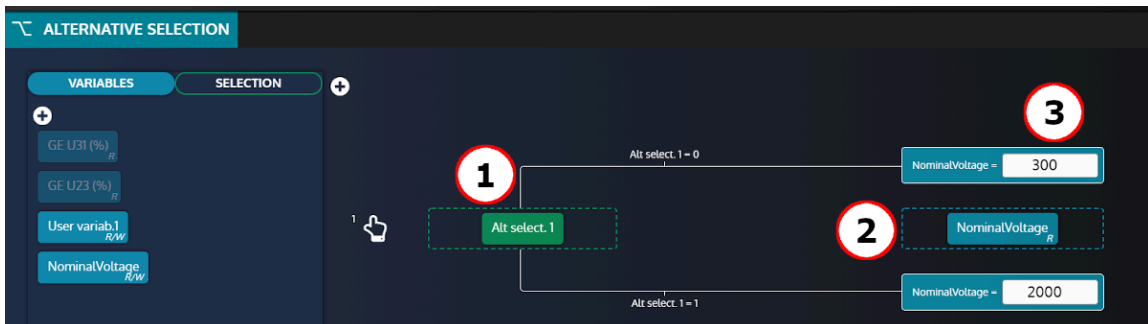


1. Selection variable (one among the 16 proposed in the SELECTION section).
2. Associated parameter.
3. Value to assign to the associated parameter depending on the value of the selection variable

Using the example above, **NominalVoltage** parameter will take 2 different values depending on **Alt select 1** :

- When **Alt select 1 = 0** then **NominalVoltage** will be set to **300**.
- When **Alt select 1 = 1** then **NominalVoltage** will be set to **2000**.

> **Note:** If a variable is set in the "Alternative selection" mode, modifying its value from the front face, via Modbus or any other source will always result of the overwrite of the value by the "Alternative selection" mode.

# SCHEDULER

The scheduler can activate any function that can be controlled by a digital input. These functions can be activated one or many times.

Scheduled items are presented as a list. Each line (item) in this list corresponds to a scheduled event.

## Scheduler list

In the *Controller settings* ⇒ *Programming* ⇒ *Scheduler (i4Gen)* page, you will have access to all events that you created.

Figure 45. Scheduler icons definition
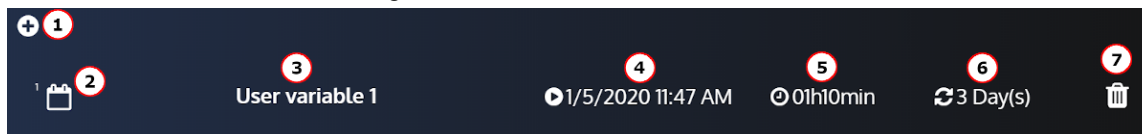


1. Add an event.
2. Number of the event.
3. Active function during the event.
4. First time the event will take effect.
5. Duration of the event.
6. Frequency.
7. Delete the event.

It is also possible to have an event without periodicity. The event will occur only once:

Figure 46. Scheduler with an event without periodicity
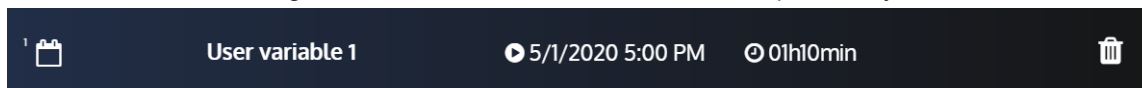


## Scheduler settings

By clicking on the event you want to modify, you will have access to these parameters which will allow you to configure the event:

Figure 47. Form of the scheduler



1. Function active during the event.
2. First date and time the event will take effect.
3. Duration of the event.
4. Expected periodicity (Only once or period on a daily, weekly, monthly basis).
5. Setting the repetition of the periodicity (X period (s)).
6. Confirm or cancel the event settings.

## Scheduler supervision

Available in the *Controller supervision* ⇒ *Scheduler (i4Gen)* page.

Figure 48. Scheduler supervision



1. Number of the event.
2. Function active during the event.

3. The next time the event will take effect (the value can be different from the configuration because this one is actualised).

4. Duration of the event.

5. Periodicity.

6. Indicator On / Off.

# MODBUS TCP MAPPING

## Configurable block

To create your own Modbus blocks, use variables [10000]…[10299] in the **Controller settings ⇒ Programming ⇒ Modbus ⇒ Modbus redirection (i4Gen)** page.

There are two ways to configure these blocks:

1. Configuration in the **Controller settings ⇒ Programming ⇒ Modbus ⇒ Modbus redirection (i4Gen)** page: enter the codes of the variables to read; Modbus readings on registers [10000]…[10299] will be the values of the pointed variables.

2. Configuration by an external device; this device must follow the following steps:
   - Write 1 in the variable [3016] to enter the modbus redirection configuration mode.
   - Write the codes of the variables to be read to the desired registers ([10000]…[10299]).
   - Write 0 in the variable [3016] to switch back to the modbus redirection display mode.

You can then read your own block, by reading the registers [10000]...[10299] through Modbus TCP.

**Example:**
If the configuration is as follows [10000] = 14; [10001]=15; [10002]=16, reading these 3 registers through Modbus TCP will give you the hours/minutes/seconds of the module (respectively the values of variables [14], [15] and [16]).

# LOGGER

The **Logger** tool is used to track value or status changes up to 10 variables at the user's choice.

The variable *State* is always recorded as long as the Logger is not set to Off.

This function is available in the **Controller settings** ⇒ **Programming** ⇒ **Logger** ⇒ **Activation (i4Gen)** page.

## Additional Functions

For each variable you can set a log period down to the second (example: 1s).
To use this function, select **Interval** in the **Log variable 1 on** field.
The **Erase Logger** button will delete all recorded variables from the module.


A lot of variables can be recorded. The list of the available variables can be found in the Software variables *(on page 91)* appendix.

# COMMUNICATIONS

## NETWORK

### Setting up PC connection

Materials required:

- A CAT 5 cross Ethernet cable (marked CROSSOVER CABLE along its sheath) for direct connection to the module from your computer.
- A CAT 5 straight Ethernet cable (marked PATCH CABLE or STRAIGHT-THROUGH CABLE along its sheath) can only be used with an Ethernet switch.

### Configuring the computer IP address

1. Connect the module with a 100Ω Ethernet cord
   Direct connection to PC: use a crossover cord. Connection through a switch: you can use either a direct or a crossover cable such as 3-m long A53W1, as long as your switch uses auto MDI/MDIX technology.

2. Power up the module using a stabilized power supply.

3. Open Windows control panel

4. Open the network interface properties window. For this do the following steps:

   a. Open the page **Network and Sharing Center**

   b. Click on **Change adapter settings**

   c. Right click on your network interface and select **Properties** (Windows 7 and above)
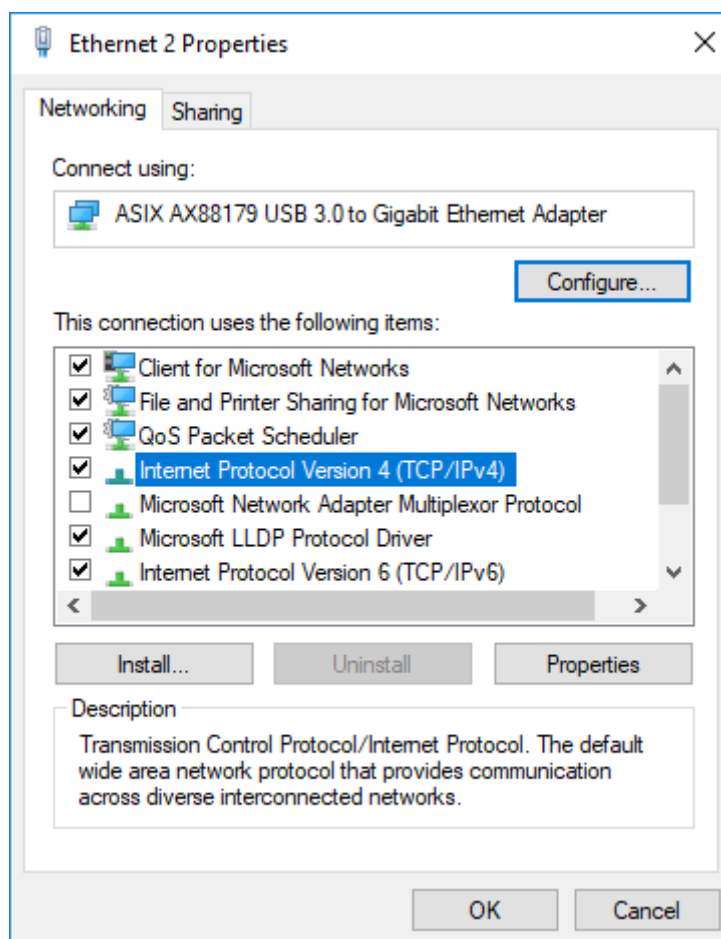
## Change the IP address of the module

IP settings of the module can be modified in ***Controller settings*** ⇒ ***System*** ⇒ ***Network***.

There are two different types of configuration:

- **DHCP (automatic)**: The module supports DHCP. If DHCP is enabled, the module must be connected to a network equipped with a DHCP server to obtain an IP address.
  On power-up, the module obtains an IP address from the DHCP Server.
  If the DHCP protocol fails, the fixed IP address of the module is used (Factory setting: 192.168.11.1).
- **Manual setup**: To manually configure the device network settings, disable the **DHCP** setting, then fill in the **IP address** and **Subnet Mask** fields.

Modbus/TCP port and HTTP port numbers can be set in both configurations.

On CORE modules, you can reset the IP address (to 192.168.11.1) by holding the button on the rear face when the module is powered on.

> **Note:** For most networks, it is not necessary to set the gateway or to change port numbers. For complex networks, please contact your network administrator to configure your router and/or the units according to your needs.

# MODBUS TCP/IP

## Abilities

An Ethernet communication can be established between a Modbus master device and the controller which acts as a Modbus slave.

The complete list of variables accessed through **i4Gen** is described in the chapter Software variables *(on page 91)*.

The complete list of every variable is described in the documentation **Modbus table** available in our website.

The Modbus master device can read/write many internal variables of the controller according to their access rights described below.

| Type | Range | Default access right |
|---|---|---|
| Readings (measurements, states,..). | [0000] … [1999] | Read only. |
| Parameters. | [2000] … [3999] | Read/Write. |
| Modes, statuses, settings,... Readings associated with digital inputs. | [4000] … [9999] [4500] … [4649], [4950]...[4999] | Read. Write (subject to activation). |

In addition, the following functions are supported:

- Reading bit fields, listed in a dedicated tab of the file and organized in 16-bit words. These variables are listed in the **Modbus table** documentation.
- Reading contiguous configurable data block.

Those functions allow a significant performance gain and help reducing the load on an Ethernet network.

## Configuration

To communicate through Modbus/TCP, define the following settings:

- The module IP address set in the **Controller settings** ⇒ **System** ⇒ **Network** page.
- The *Modbus TCP port* [3014], generally 502, set in the **Controller settings** ⇒ **System** ⇒ **Network** page.
- The Modbus/TCP rights: see further.

The module handles up to 6 simultaneous connections. This can be used for multiple HMIs for example. For more details on the Ethernet configuration, see the chapter Network *(on page 71)*.

> ⚠️ **Warning:**
> Connecting the controller to an *i4Gen* device or the *i4Gen Suite* software will utilize one Modbus connection.

> ⚠️ **Warning:**
> Connecting the controller to the inverter will utilize one Modbus connection.

## Functions

The module supports the following Modbus functions:

| Functions | Description |
|---|---|
| 01, 02 | Read logical data (Coil status, discrete input status). |
| 03, 04 | Read holding/input registers (16 bit). |
| 05 | Write logical value (single coil). |
| 06 | Write single register (16-bit variable). |
| 15 (0x0F) | Write multiple logical values (multiple coils). |
| 16 (0x10) | Write multiple registers. |

All module variables are 16-bit registers. Yet it might be useful to consider them as logical values (if they are only set to 0 or 1) to simplify the Modbus/TCP protocol communication with some external PLC. If function 01 or 02 is used to read an internal register that is different from 0, then returned value will be 1.
The module registers start from address 0. Depending on your Modbus/TCP client equipment-software, you may need to use an offset of 1 when reading/writing registers as addresses may start from address 1. In this case, request address/register number 1 to access variable 0000 inside the module.

The 32-bit variables can only be written using 0x10 function.
If a digital input modifies a piece of data also to be written via Modbus, the latest request takes over the other.

Data [10000]…[10299] can be read by block (see further).

## Access rights

The access rights depend on the parameter type and on Modbus access permissions. To manage access rights, set to 1 the corresponding bits in the register [3015]:

| Description | Bit # | Default value |
|---|---|---|
| Writing date/ time | 0 | 0 |
| Writing engine counters | 1 | 0 |
| Not used | 2 | 0 |
| Writing digital input function register | 3 | 1 |
| Not used | 4 | 0 |
| Not used | 5 | 0 |
| Not used | 6 | 0 |
| Not used | 7 | 0 |
| Reading via Modbus/TCP | 8 | 1 |
| Writing via Modbus/TCP | 9 | 1 |

Using the *Controller settings* ⇒ *Programming* ⇒ *Modbus* ⇒ *Modbus rights (i4Gen)* page, you can tick check-boxes to set those:

| Bit # | Label | Description |
|-------|-------|-------------|
| 0 | Writing to date/ time | Module time synchronization. |
| 1 | Writing to Engine counters | Manual counters adjustment (see following table). |
| 3 | Writing to digital input function register | Opens the possibility to activate a digital input function using Modbus/TCP protocol. |
| 8 | Reading using Modbus/TCP protocol | Opens the possibility to grant reading individual permissions. |
| 9 | Writing using Modbus/TCP protocol | Opens the possibility to grant writing individual permissions. |

The counters, encoded on 32 bits, include:

| Meters (MSB|LSB) | Label |
|-------|-------|
| [80] | [79] | *Inverter kWh* |
| [82] | [81] | *Inverter kVARh* |
| [84] | [83] | *Number of hours generator running* |

## Bit fields

Bit fields are meant for decreasing communication bus load. They pack up to 16 logic variables inside a single register. This way, a single Modbus/TCP request can be used to read a group of information. Each variable contains the current value of 16 logic variables such as breaker positions, faults, alarms…

They are listed out in the chapter Software variables *(on page 91)*.
The bit fields [956]…[969] have latched values: a reset is required for them to return to 0.

> ✎ **Note:** Available data are related only to faults that occurred after the latest power up sequence. Events that occurred before the module has been power cycled are listed in the fault pages but not among the variables.

**Example:**

The table below shows a Modbus/TCP client sending a reading request (function 04) of 6 registers starting from variable [79].

| Client request | | Module server response | |
|----------------|-------|------------------------|-------|
| **Field** | **Value** | **Field** | **Value** |
| Function code | 04 | Required function. | 04 |
| Starting Register (MSB) | 00 | Data bytes (= 2 * Number of requested registers). | 6 |
| Starting Register (LSB) | 79 | Value of register 0079 (MSB). | D0 |
| Count of registers (MSB) | 00 | Value of register 0079 (LSB). | D1 |
| Count of registers (LSB) | 06 | Value of register 0080 (MSB). | D2 |
| | | Value of register 0080 (LSB). | D3 |
| | | Value of register 0081 (MSB). | D4 |
| | | Value of register 0081 (LSB). | D5 |

# CRE-LINK®

## Presentation

This CAN bus is used as a communication means between units of a single Power plant to provide the following features:

- Active and reactive load sharing.
- Automatic load/unload ramp.
- Static paralleling.
- Dead bus management.
- Management of segments and Power plant.
- Other data exchange.

Standard CAN bus rules apply here. Refer to CAN bus good practices *(on page 82)* to connect units properly on CAN bus.

## Alarms/faults of the CAN bus

The CAN communication between all **CRE TECHNOLOGY** units is continuously checked by each unit on the CAN bus. The count of units connected to CAN bus must be the same as the count of units declared in each unit. In case of a problem on the bus, alarms or faults can occur:

### *Missing GENSYS COMPACT PRIME*

The **CRE-Link®** protocol cannot see one or several *GENSYS COMPACT PRIME*. The controllers might not be correctly wired on the bus CAN1 or misconfigured.

### *Missing MASTER COMPACT or BTB COMPACT*

The **CRE-Link®** protocol cannot see one or several *MASTER COMPACT*/*BTB COMPACT*/*MASTER COMPACT 1B*. The controllers might not be correctly wired on the bus CAN1 or misconfigured.

### *Missing HYBRID COMPACT*

The **CRE-Link®** protocol cannot see one or several *HYBRID COMPACT*. The controllers might not be correctly wired on the bus CAN1 or misconfigured.

### *Missing BAT COMPACT*

The **CRE-Link®** protocol cannot see one or several *BAT COMPACT*. The controllers might not be correctly wired on the bus CAN1 or misconfigured.

### *Controller communication fault*

The communication with the other products is lost. Check that the 120Ω termination resistors are used correctly (see CAN bus good practices *(on page 82)*). Check that CAN bus cable is properly connected.

### *CAN1 unknown*

An incompatible product is connected on the CAN bus. The module will not start the Generator.

### *Mismatch vers.*

A module with an incompatible version is connected on the CAN bus. The module will share the load using droop control.

> ✏️ **Note:** Problems can occur if two or more unit have the same Generator number.

For *Missing GENSYS COMPACT PRIME*, *Missing MASTER COMPACT or BTB COMPACT*, *Missing BAT COMPACT*, *Missing HYBRID COMPACT* and *Controller communication fault*, you can configure the behavior to be adopted in case of a CAN fault.

# CANOPEN

CANopen extension modules (i.e. CANopen couplers) can be used to increase the number of digital inputs/outputs and analog inputs of the module. Overall max. count of added inputs/outputs: 64 digital inputs, 64 digital outputs and 16 analog inputs. The CANopen protocol inputs/outputs are read/written every 100ms.

## Configuration

| Setting | Label | Value | Description |
|---------|-------|-------|-------------|
| [3153] | *Coupler ID #1* | 0 … 255 | Identifier of the first coupler. |
| [3154] | *Number of digital inputs #1* | 0 … 64 | Number of digital inputs on the first coupler. |
| [3155] | *Number of digital outputs #1* | 0 … 64 | Number of digital outputs on the first coupler. |
| [3165] | *Number of analog inputs #1* | 0 … 16 | Number of analog inputs on the first coupler. |
| [3156] | *Coupler ID #2* | 0 … 255 | Identifier of the second coupler. |
| [3157] | *Number of digital inputs #2* | 0 … 64 | Number of digital inputs on second coupler. |
| [3158] | *Number of digital outputs #2* | 0 … 64 | Number of digital outputs on the second coupler. |
| [3166] | *Number of analog inputs #2* | 0 … 16 | Number of analog inputs on the second coupler. |
| [3159] | *Coupler ID #3* | 0 … 255 | Identifier of the third coupler. |
| [3160] | *Number of digital inputs #3* | 0 … 64 | Number of digital inputs on the third coupler. |
| [3161] | *Number of digital outputs #3* | 0 … 64 | Number of digital outputs on the third coupler. |
| [3167] | *Number of analog inputs #3* | 0 … 16 | Number of analog inputs on the third coupler. |
| [3162] | *Coupler ID #4* | 0 … 255 | Identifier of the fourth coupler. |
| [3163] | *Number of digital inputs #4* | 0 … 64 | Number of digital inputs on the fourth coupler. |
| [3164] | *Number of digital outputs #4* | 0 … 64 | Number of digital outputs on the fourth coupler. |
| [3168] | *Number of analog inputs #4* | 0 … 16 | Number of analog inputs on the fourth coupler. |

> **Note:** The CANopen couplers ID max range changes according to the number of configured inputs/outputs (for more details, refer to *CiA 301* standard).

The assignment of I/Os is done by order of the couplers declared in the settings (not by id). The lowest variable number is associated to the lowest message number configured.

The digital inputs/outputs of the CANopen protocol have the same attributes as regular inputs/outputs except for the delay at the drop of inputs.

Each CANopen analog input value can be adjusted using a gain and an offset.

| Setting | Attribute |
|---|---|
| **Digital inputs 1 … 64** | |
| [3200] … [3231], [8550] … [8581] | Function |
| [3232] … [3263], [8582] … [8613] | Delay |
| [3264] … [3295], [8614] … [8645] | Validity |
| [3296] … [3327], [8646] … [8677] | Polarity |
| **Digital outputs 1 … 64** | |
| [3350] … [3381], [8700] … [8731] | Function |
| [3382] … [3413], [8732] … [8763] | Polarity:<br>• 0: Normally de-energized<br>• 1: Normally energized |
| **Analog inputs 1 … 16** | |
| [8351], [8353], [8355] … [8381] | Gain |
| [8350], [8352], [8354] … [8380] | Offset |

An overflow alarm (variable [609]) is available for analog inputs. When it is active, you can look at the variable [610] to know which analog inputs triggered the alarms. If you have several analog inputs causing a problem, you'll have to solve each problem one by one.

On power-up, the configuration of the CANopen extension modules is automatically initialized. The status (variable [3150]) turns to 1.
The CANopen protocol error time-out (variable [3152]) is 10.0s by default.

# Variable mapping and inputs/outputs

The CANopen protocol inputs and outputs are accessed by their code:

> • Digital inputs: [800]...[831], [1250]...[1281]
> • Digital outputs: [4751]...[4782], [5100]...[5131]
> • Analog inputs: [1050]...[1065]

# MODBUS CLIENT

## Overview

A Modbus/TCP client is implemented in the product in order to communicate with an external device that provides Modbus communication.
You may send and retrieve data to and from a unit that is connected through Modbus/TCP or through Modbus RTU if you use a Modbus/TCP to RTU gateway between the devices.

## Supported Modbus functions

Different Modbus functions may be used to read/write different kind of data in your remote device as listed below:

**Function code 01**

Read coils

**Function code 02**

Read discrete inputs

**Function code 03**

Read holding registers

**Function code 04**

Read input registers

**Function code 05**

Write single coil

**Function code 06**

Write single register

## Setup

Setup is done in page *Controller settings ⇒ Programming ⇒ Modbus (i4Gen)*. Note that you must be connected to the **COMPACT** unit in order to fully setup the communication parameters, more specifically for the remote Modbus/TCP server IP and communication port.

1. Enable communication to a Modbus/TCP server, input a name for the remote unit and optionally setup an alarm/fault in case of communication timeout. The server name will be used as alarm/fault label in case of a communication incident.

Figure 49. Modbus connection settings menu
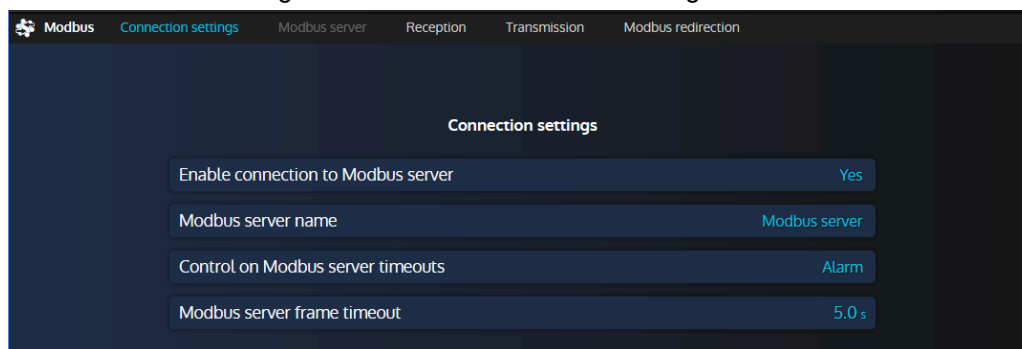


2. Input the server communication parameters (Ethernet IP address and Modbus port). The standard Modbus/TCP protocol port is 502 but this may vary according to your remote device and desired configuration.

Figure 50. Modbus server settings menu
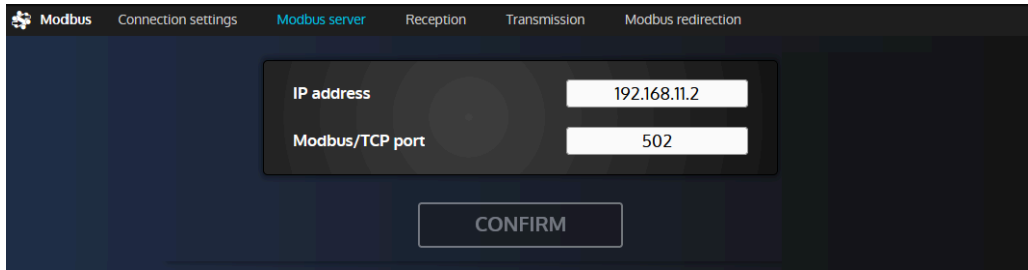


3. You may now switch to the Reception/Transmission pages in order to setup the registers you want to respectively read and write.

- Reception: a remote register is read and its computed value is written into an internal variable of the **COMPACT** unit.
- Transmission: an internal variable is computed and sent into a remote register.

You may setup up to 10 reception and 10 transmission lines.
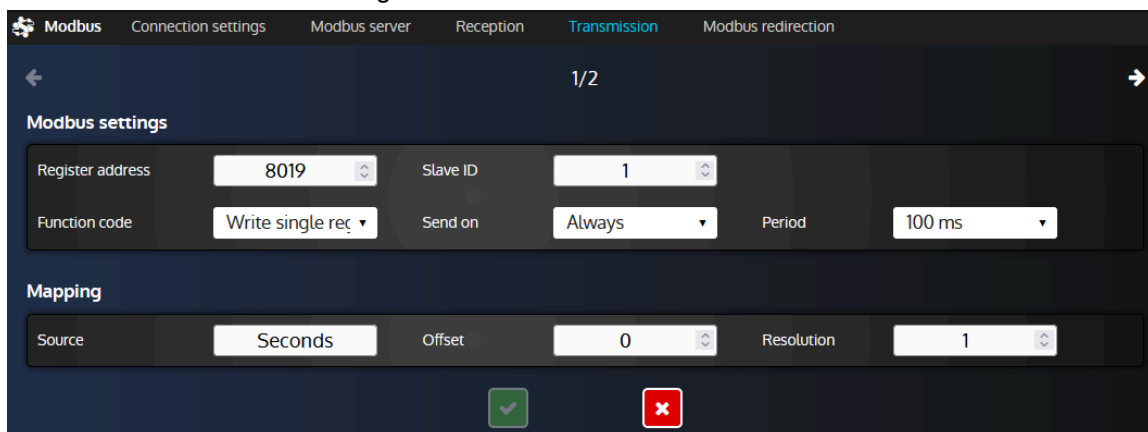
Figure 51. Modbus reception menu
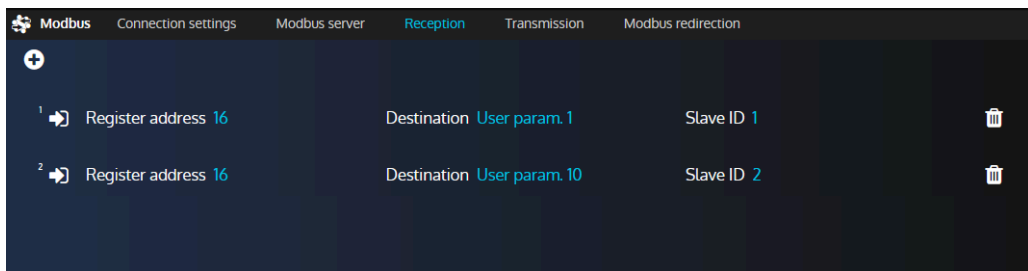


4. Click on the '+' button at the top left corner of the page to add a new reception/transmission line, or click on an existing line in order to modify its setup.

## Modbus reception/transmission settings

Figure 52. Modbus transmission menu



## Modbus settings

### Function code

Modbus function code used to read/write bits, inputs or registers.

### Register address

Address of the Modbus register inside the remote Modbus server. Note that register 1 is located at address 0.

**Slave ID**

This parameter is typically useful if you need to access a Modbus RTU (RS485) device through a Modbus/TCP to RTU gateway. This way, you can access different Modbus RTU slave devices using a single gateway (server).

**Sending condition (transmission lines only)**

**Always** will send a value at the selected period. If **Value change** is selected, register will be written only if the source value has changed. Setting this parameter to **Never** disables the transmission without deleting the whole line: it may be useful for example for testing purposes.

**Period (transmission lines only)**

Choose the transmission period when the sending parameter is set to **Always**. Different values are proposed in order to let you choose between a light communication traffic or responsiveness.

## Mapping settings

**Destination (reception lines only)**

Internal variable of the **COMPACT** controller where the result of a computed read register will be written.

**Source (transmission lines only)**

Internal variable of the **COMPACT** controller that will be used for computation. The result will be sent into the selected remote register in the Modbus server.

**Offset and Resolution**

These two parameters allow you to set a calculation rule between Modbus registers and **COMPACT** variables as detailed below. For a reception line, destination variable inside the **COMPACT** controller will get the following value: **Result = (Modbus register value) * Resolution + Offset**. For a transmission line, the value sent to the Modbus server will be: **Register value = (Source value) * Resolution + Offset**

> **✎ Note: Determining the proper gain when reading values**
>
> It is possible to always use the same formula to determine the gain (as long as the values are linear) for a value you're reading: **gain = value expected / value read via Modbus**.
> When reading values, do not forget to set the accuracy (and optionally the unit if there is any, for display purpose only) of the user variable in use via the menu *Controller settings ⇒ Programming ⇒ User variables (i4Gen)*
>
> Example:
>
> The controller is set to read the register 123 from another Modbus/TCP device and to store it in the variable "Saved var. 1" [8000]. The value is expected to have a precision of 2 digits so we did set the "Saved var. 1" variable with an accuracy of 0.01. The controller reads 5000.00 but the expected value should be 25.00. Assuming that it is a linear value, we simply use the formula as stated before to determine the gain to apply: 25/5000 = 0.005. Note that if you want to scrap everything after the comma to have the value as an integer number, you can simply change the accuracy of the "Saved var. 1" to 1 (but the gain should remain unchanged).

# CAN BUS GOOD PRACTICES

This chapter describes rules to be used to ensure reliable CAN communication. These rules must be applied to all CAN protocol communications, including the **CRE-Link®** protocol and the ECU/remote I/O CAN bus. **CRE TECHNOLOGY** recommends to always use a shielded cable to connect CAN bus.

## Cables

| ⚠ WARNING |
|---|
| **RISK OF EQUIPMENT DAMAGE**<br>**Failure to follow this instruction can damage the CAN transmitter/receiver.**<br>Switch off the unit before plugging or unplugging the CAN bus connector or disconnecting the wires. |

Cables used must be selected to respond to CAN bus specificities. Always use shielded twisted wire pairs. Deploy the CAN bus (no mesh, ring or star topology) as shown below:

Figure 53. CAN bus accepted wiring topologies



| Bus | Mesh | Ring | Star |
|---|---|---|---|
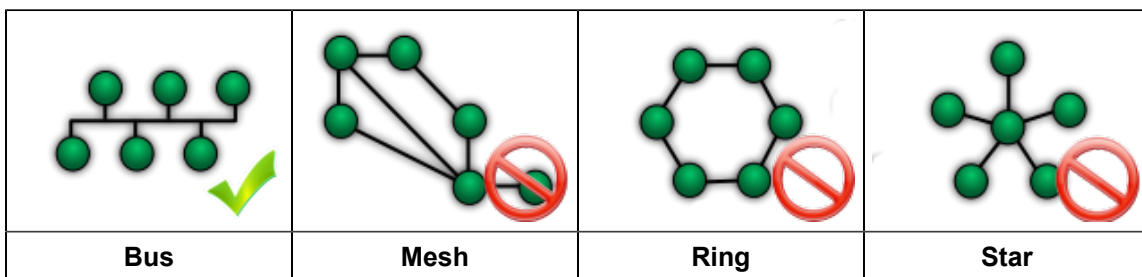
Both ends of the CAN bus must be terminated with a 120Ω resistor. The module has a 120Ω resistor for this purpose. Wiring the terminal RES to CAN H will link CAN L and CAN H with a resistor.

The next figure gives the example of three units connected through a CAN bus. Do NOT install any resistor nor link the terminal RES and CAN H together in the middle unit.
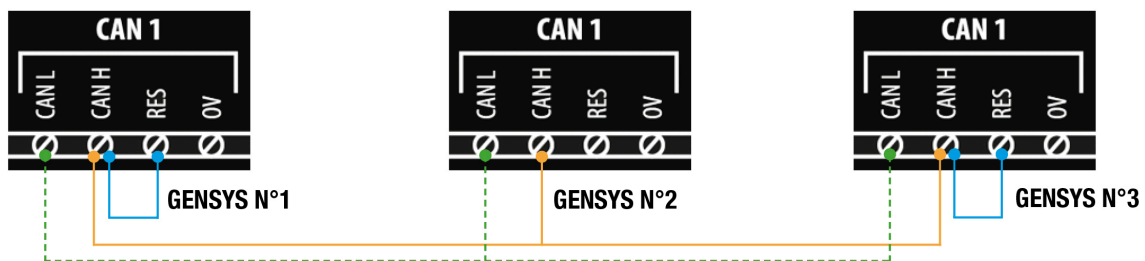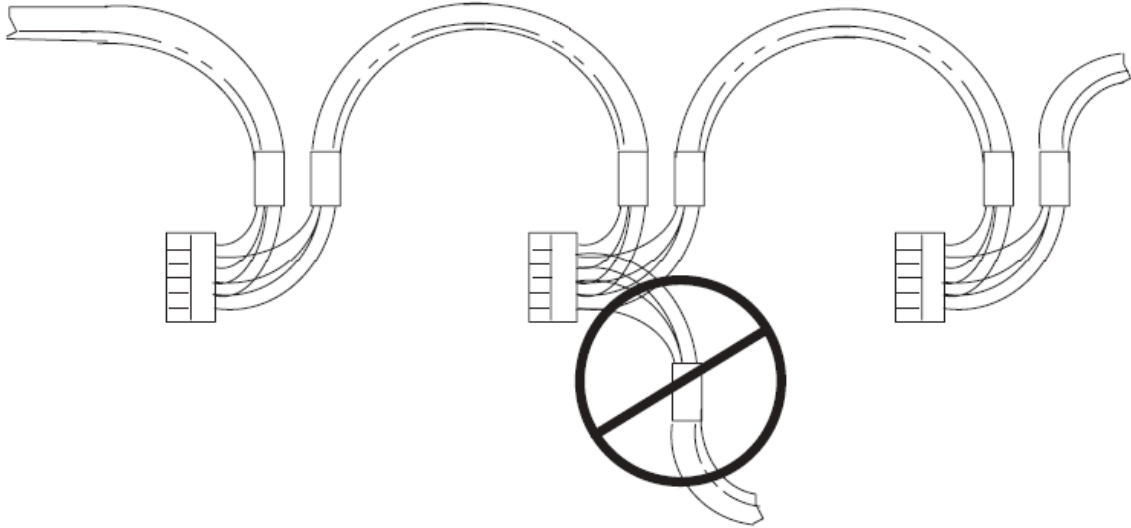
Figure 54. CAN bus wiring example

Figure 55. Wrong placement of the termination resistor on the CAN bus



| ⚠ WARNING |
|---|
| **RISK OF EQUIPMENT DAMAGE**<br>**Failure to follow this instruction may damage the CAN transmitter/receiver and the controller itself.**<br>Do not, in any cases, connect the "0V" pin to the "-" pin of the power supply. |

> **Note: CRE TECHNOLOGY** provides a complete range of products aimed at installing your CAN bus (cords, wires, connectors…). Please contact your local **CRE TECHNOLOGY** distributor to help you to choose equipment that fits your needs.

## Maximum length and bit rate

The maximal length of a CAN bus depends mostly on the communication speed, but also on the quality of wires and connectors used.

The following table shows the maximal length of a CAN bus depending on the bit rate:

| Bit rate (kbit/s) | Maximal length (m) |
|---|---|
| 10 | 5000 |
| 20 | 2500 |
| 50 | 1000 |
| 125 | 500 |
| 250 | 250 |
| 500 | 100 |
| 800 | 50 |

The next table lists the standard bit rate of each CAN protocol that can be used by a **CRE TECHNOLOGY** unit:

| Bus | Protocol | Bit rate (kbit/s) | Note |
|---|---|---|---|
| CAN1 | **CRE-Link®** | 125 | 125 kbit/s recommended. Can be changed using parameter [3050]. |
| CAN2 | CANopen | 125 (default) | Can be selected between 125/250/500/1000 kbit/s using parameter [3051] in the **Controller settings ⇒ General ⇒ CAN** page. |

# APPENDICES

## ENTER A CODE

A code can be used to change a controller type into another (for example, a **GENSYS COMPACT PRIME** can be transformed into a **HYBRID COMPACT**) or to add an option to your controller (i.e. MTU MDEC compatibility). Please contact **CRE TECHNOLOGY** for further information on how to obtain a code.

> **Note:** When entering a code, it is preferable that no other devices than **i4Gen Suite** is connected to the controller.

1. To enter a code, go to the **Controller settings** ⇒ **System** ⇒ **Code (i4Gen)** page.
2. Click the "Confirm" button to send the code to the controller. A success message will show and the controller will restart.

You can now reconnect to the controller:

- If the code entered was to add an option, see the list of active options in the About page.
- If the code entered was to change the controller type, start a firmware update with the appropriated firmware version from the **Controller settings** ⇒ **System** ⇒ **Update (i4Gen)** page.

# TROUBLESHOOTING

To get a history of alarms-faults, stop the Generator, connect to *i4Gen* ⇒ *File transfer* and click on the **Save** button beside **History - Alarms/Faults/Events/Logger**.

To restore factory settings from *i4Gen Suite* software, navigate to the *Controller settings* ⇒ *System* ⇒ *Reset factory settings (i4Gen)* page, and click on the **Reset** button.

## Alarm/Fault messages

### Message "Isolated product"

Check the related connections, including the one of internal resistor (Connect the "RES" terminal and the "CAN H" terminal).

Check the related settings: Quantity of generators, number of each Generator.

### Message "Missing product"

Check the other products. One of them is not supplied or disconnected.

### Message "Missing master"

Check the *MASTER COMPACT*/*MASTER COMPACT 1B*/*BTB COMPACT* products. One of them is not supplied or disconnected.

### Message "Missing HYBRID"

Check the *HYBRID COMPACT* products. One of them is not supplied or disconnected.

### Message "Missing BAT"

Check the *BAT COMPACT* products. One of them is not supplied or disconnected.

### Message "Unknown product"

Check the other products. One of them is not compatible.

### Message "Mismatch version"

Check the other products. One of them uses a version which is not compatible.

### Cannot connect with PC

Consider deactivating the firewall and adding an Anti-virus exception.

Check the network wiring, see Network

## Error Messages When Transferring a File to the Module

> 📝 **Note:** "…" indicate a variable number, a label number or a text number according the error message. It will help you to locate your error in your configuration file.

### ERROR 002: Unknown file type

The file type sent is unknown. Check the selected file.

### ERROR 004: Write data or checksum error

### ERROR 008: Update failed. Please restart update.

Writing memory error during update process. Restart module update.

**ERROR 011: No write right on variable ….**

Access to this variable is not allowed. Only parameters can be modified.

**ERROR 012: No write right on label ….**

Access to this label is not allowed. Check your configuration file.

**ERROR 013: Text …. doesn't exist.**

Access to this text is not possible because it does not exist. Check compatibility of the version/type of the module and the configuration file.

**ERROR 014: No write right on …. Unit**

Access to this unit is not allowed. Check your configuration file.

**ERROR 015: Need password level 2 to write on …. Variable**

Actual password is not sufficient to access such configuration/control level.

**ERROR 017: Configuration not allowing …. variable value**

The actual setting of the module does not allow modifying this parameter with this value. Check your configuration file and the value of the parameter before sending again your configuration file.

**ERROR 018: Variable …. out of range**

The value of the parameter is out of range. Check your configuration file before sending again.

**ERROR 019: Wrong value for …. variable**

An unexpected value has been detected on this parameter. Check the value of the parameter before sending again.

Ex: a text character has been detected instead of a number.

**ERROR 020: Unknown language file**

The language file sent does not correspond to a language file for the module. Check the selected language file.

**ERROR 021: Too many languages already downloaded**

The maximum number of language supported by the module has been reached.

**ERROR 022: Wrong language file version**

The language file version is above the module version. Update your module to the latest version or get the language file compatible with your module version.

**ERROR 023: Label …. does not exist.**

Modifying this label is not allowed. Check the label number before sending the configuration file again.

**ERROR 024: Unit …. does not exist.**

Modifying this unit is not allowed. Check the unit number before sending the configuration file again.

**ERROR 025: Wrong accuracy value on …. (0,1,2 or 3)**

The value of the accuracy is out of range. The value must be between 0 and 3.

**ERROR 026: Wrong unit value on …. (from 0 to xxx)**

The value of the unit is out of range. The value must be between 0 and xxx.

**ERROR 027: No header in language file**

No header or wrong header of the language file. Check the selected language file before send it again.

**ERROR 028: No filename found or too long**

No filename or filename is too long. The maximum size of a filename is 40 characters. Rename file and send it again.

**ERROR 029: Wrong accuracy on parameter ….**

The value of the modified parameter has not the right accuracy. Check the value of your parameter before sending again your configuration file.

Ex: Below, it is missing the digit at the tenth 5.0<u>0</u>

V02205 5.0_ ESG amplitude +000.00 +010.00V

**ERROR 030: Data out of range in Easy Flex®**

The result of the operation is outside the range value of the output variable.

**ERROR 031: Invalid TXT file version**

The TXT file is not valid because it comes from a non-compatible firmware.

For example: TXT file from 1.xx version are only compatible with product using 1.xx version. TXT file from 2.xx version are only compatible with product using 2.xx version. Etc...

# Warning

Warnings do not prevent the module to work but inform the user of a potential problem in its configuration file.

**WARNING 001: Wrong size of label ….**

**WARNING 002: Wrong character entered in label ….**

**WARNING 003: Wrong size of text ….**

**WARNING 004: Wrong character entered in text ….**

These warnings indicate that the entered labels/texts are too long or that a character is not supported by the module.

Invalid characters will be replaced by "?". The valid characters are the followings:

- *0123456789.-*
- *ABCDEFGHIJKLMNOPQRSTUVWXYZ*
- *!#$()*+/:;=[]^_?*
- *abcdefghijklmnopqrstuvwxyz*

The maximum size of a label is 14 characters and 28 characters for a text.

Modify labels/texts according to the rules above.

**WARNING 005: Too many errors...**

All errors/warnings messages could not be displayed. There are probably other problems in your configuration file. Solve displayed problems and send your configuration file again in order to display the additional error/warning messages.

**WARNING 006: No unit specify on unit ….**

**WARNING 007: No value specify on parameter ….**

**WARNING 008: No text specify on text ….**

**WARNING 009: No label specify on label ….**

These warnings indicate that no value has been filled inside the configuration file for a unit/parameter/text or label. The values will stay unchanged.

**WARNING 011: Variable …. does not exist.**

The parameter does not exist. Check compatibility of the version/type of the module and the configuration file.

# CERTIFICATIONS

Figure 56. Declaration of conformity



### DECLARATION UE DE CONFORMITE
### EU DECLARATION OF CONFORMITY

Cette Déclaration de Conformité est conforme à la norme européenne EN17050-1 :2004 "Critères généraux pour les déclarations de conformité des fournisseurs".

This Declaration of Conformity is suitable to the European Standard EN 17050-1:2004 "General criteria for supplier's declaration of conformity".

**Nous, We,** CRE Technology

**Adresse du fabricant :**
**Manufacturer's Address:** 130, Allée Charles Victor NAUDIN
Zone des Templiers - Sophia Antipolis
06410 BIOT
FRANCE

déclarons sous notre seule responsabilité, que les produits délivrés:
declare under our sole responsibility that the products as originally delivered:

**Nom du produit :**
**Product Name:** PV COMPACT HMI
PV COMPACT CORE

**Référence produit :**
**Regulatory Model:** A56-PV-00-x (HMI)
A56-PV-10-x (CORE)

**Version(s) produit :**
**Product Version:** All

satisfont aux exigences essentielles des Directives Européennes ci-dessous et portent en conséquence le marquage CE :
Comply with the essential requirements of the following applicable European Directives, and carries the CE marking accordingly:

Low Voltage Directive 2014/35/EU
RoHS Directive (2011/65/EU) (EU)2015/863

(Reach) SVHC List 16th January 2020

| CEM/EMC | Standard | Date | Description |
|---|---|---|---|
| | EN61326-1 CISPR11 EN55011 EN55022 | 2013 2010 + A1 (2011) 2012 | EMC general requirements – Industrial environment - class A |
| | EN61000-4-2 | 2009 | Electrostatic Discharges |
| | EN61000-4-3 | 2006 + A2 (2010) | Radiated, RF, electromagnetic field immunity test |
| | EN61000-4-4 | 2013 | Electrical Fast Transients |
| | EN61000-4-5 | 2014 | Surge immunity test |
| | EN61000-4-6 | 2014 | Conducted disturbances immunity |
| | EN61000-6-2 | 2006 | Generic standards. Immunity for industrial environments |
| | EN61000-6-4 | 2010 | Generic standards. Emissions for industrial environments |
| Sécurité/Safety | Standard | Date | Description |
| | EN62368-1 | 2014 + A11 | Information technology equipment. Safety. General requirements |

Cette Déclaration de Conformité s'applique aux produits listés ci-dessus et placés sur le marché après le:
This DoC applies to above-listed products placed on the market after:

January 31st, 2022

**SIGNATURE**

**BIOT – France for CRE Technology**
**Responsable Qualité - Quality Manager**

CRE TECHNOLOGY – 130 Allée Charles Victor NAUDIN - Zone des Templiers, Sophia Antipolis - 06410 BIOT - FRANCE
Tél: +33 (0) 4 92 38 86.82 / Fax: +33 (0) 4 92 38 86.83
SARL au Capital de 500000 Euros - RCS Antibes 488 625 583 - TVA : FR 54 488 625 583
RD_Ffr_050D

Certifications are available for download as PDF files at www.cretechnology.com in the download area.

# SOFTWARE

# VARIABLES

# TABLE OF CONTENTS

# DYNAMIC

## POWER LIMITATION CONTROL

| Variable | Power limitation output amplitude [2205] |
|---|---|
| Unit | V |
| Init value | 10.00 |
| Min value | 0.00 |
| Max value | 10.00 |
| Description | This parameter determines the amplitude of the power limitation output.<br><br>Power limitation output voltage = Power limitation output offset + (Power limitation (%) * Power limitation output amplitude).<br><br>Ex: If the Power limitation output offset is 5V and the amplitude is 2.5V, the Power limitation output may vary between a minimum correction of 2.5V (5V - 2.5V) and a maximum correction of 7.5V (5V + 2.5V). |

| Variable | Power limitation output offset [2206] |
|---|---|
| Unit | V |
| Init value | 0.00 |
| Min value | -10.00 |
| Max value | 10.00 |
| Description | This parameter determines the power limitation output offset.<br><br>Power limitation output voltage = Power limitation output offset + (Power limitation (%) * Power limitation output amplitude).<br><br>Ex: If the power limitation output offset is 5V and the amplitude is 2.5V, the power limitation output may vary between a minimum correction of 2.5V (5V + 2.5V) and a maximum correction of 7.5V (5V - 2.5V). |

# GENERAL

## APPLICATION

### General

| Variable | My number [2001] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 1 |
| Max value | 32 |
| Description | This parameter is used to define the product identifier for communication between products.<br>It must be unique for each controller 'type':<br>- Number GENSYS COMPACT from first to last (32 maximum)<br>- Number MASTER COMPACT, MASTER COMPACT 1B and BTB COMPACT from first to last (32 maximum)<br>- Number HYBRID COMPACT from first to last (32 maximum)<br>- Number BAT COMPACT from first to last (max. 32) |

| Variable | Number of GENSYS COMPACT PRIME [2000] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 32 |
| Description | Number of GENSYS COMPACT PRIME on the power plant. This parameter is used for the CAN communication between products. |

| Variable | Number of MASTER COMPACT/BTB COMPACT [2017] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 32 |
| Description | Number of MASTER COMPACT / MASTER COMPACT 1B / BTB (combined) on the power plant. This parameter is used for the CAN communication between products. |

| Variable | Number of HYBRID COMPACT [2025] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 32 |
| Description | Number of HYBRID COMPACT on the power plant. This parameter is used for the CAN communication between products. |

| Variable | Number of BAT COMPACT [2030] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Number of BAT COMPACT on the power plant. This parameter is used for the CAN communication between products. |

## Mode

| Variable | Power on mode [2012] |
|---|---|
| Unit | - |
| Init value | 2 |
| List | 1: Off<br>2: On |
| Description | This parameter is used to select the mode of the product when the power supply is applied. 2 values can be used :<br>- OFF : The product will switch-on on OFF mode<br>- ON : The product will switch-on on ON mode |

# TIMERS

## Start sequence

| | |
|---|---|
| **Variable** | Delay before activation of the protections [2004] |
| **Unit** | s |
| **Init value** | 10.0 |
| **Min value** | 0.0 |
| **Max value** | 999.9 |
| **Description** | Waiting time before activating protections once the inverter is ready. |

## Others

| | |
|---|---|
| **Variable** | Horn timer [2478] |
| **Unit** | s |
| **Init value** | 1.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Duration of activation of the horn which is activated each time an alarm or fault occurs on the product. The value 0 means that the horn will sound until the alarms/ faults on the product are manually acknowledged. |

# CAN

## CAN 1

| Variable | CAN 1 baud rate [3050] |
|---|---|
| Unit | - |
| Init value | 125 |
| List | 125: 125 kBit/s<br>250: 250 kBit/s<br>500: 500 kBit/s<br>1000: 1000 kBit/s |
| Description | CAN bus speed 1:<br>- Used for communication between products with the proprietary CRE protocol (Only for communicating products).<br>- Used for the connection of inputs/outputs with the CANopen protocol when the MTU MDEC protocol is activated on CAN 2 (Only for products with engine control). Higher speed results in a reduction of the maximum bus distance. |

## CAN 2

| Variable | CAN 2 baud rate [3051] |
|---|---|
| Unit | - |
| Init value | 125 |
| List | 125: 125 kBit/s<br>250: 250 kBit/s<br>500: 500 kBit/s<br>1000: 1000 kBit/s |
| Description | CAN bus speed 2:<br>- Used for connecting inputs/outputs with the CANopen protocol (Except when using the MDEC protocol, in which case the CANopen inputs/outputs must be connected to CAN 1). If the J1939 protocol is disabled, this parameter determines the communication speed of the CAN 2 bus.<br>- Used for the communication between the product and the ECU with the J1939 protocol (Only for products with engine control). When the J1939 protocol is enabled, the CAN 2 bus speed is forced to 250kb/s. This parameter will not impact the bus speed.<br>- Used for the communication between the product and the ECU with the MDEC protocol (Only for products with engine control). When the MDEC protocol is enabled, the CAN 2 bus speed is forced to 125kb/s. This parameter will not impact the bus speed.<br>A higher speed results in a reduction of the maximum bus distance. |

## Segment

| Variable | Segment number [2020] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 1 |
| Max value | 33 |
| Description | Segment number of the unit |

# EVENTS

| | |
|---|---|
| **Variable** | Record power up [8300] |
| **Unit** | - |
| **Init value** | 1 |
| **List** | 0: No<br>1: Yes |
| **Description** | Records controller power up event |

| | |
|---|---|
| **Variable** | Record operating mode [8304] |
| **Unit** | - |
| **Init value** | 1 |
| **List** | 0: No<br>1: Yes |
| **Description** | Records controller mode switching events (ON, OFF) |

| | |
|---|---|
| **Variable** | Record inverter production status [8305] |
| **Unit** | - |
| **Init value** | 1 |
| **List** | 0: No<br>1: Yes |
| **Description** | Records inverter on load |

## METERS

| Variable | Inverter kWh [79] |
|---|---|
| Unit | kWh |
| Init value | 0 |
| Min value | 0 |
| Max value | 4294967295 |
| Description | Generator kWH (lower bytes) |

| Variable | Inverter kVARh [81] |
|---|---|
| Unit | kVARh |
| Init value | 0 |
| Min value | 0 |
| Max value | 4294967295 |
| Description | Generator kVARH (lower bytes) |

# ELECTRICAL

## INVERTER

### Inverter

#### General

| Variable | Nominal active power [2105] |
|---|---|
| Unit | kW |
| Init value | 300 |
| Min value | 1 |
| Max value | 32500 |
| Description | This parameter is used to set the nominal active power (kW). All the protections based on the active power and the control loops are calculated as a percentage of this value. |

| Variable | Nominal reactive power [2106] |
|---|---|
| Unit | kVAR |
| Init value | 220 |
| Min value | 1 |
| Max value | 32500 |
| Description | This parameter is used to set the nominal reactive power (kVAR). All the protections based on the reactive power and the control loops are calculated as a percentage of this value. |

| Variable | Nominal voltage [2102] |
|---|---|
| Unit | V |
| Init value | 400 |
| Min value | 0 |
| Max value | 65535 |
| Description | This parameter is used to set the nominal voltage:<br>- Three-phase and two-phase: Enter a phase-to-phase voltage.<br>- Single-phase: Enter a phase-to-neutral voltage.<br><br>All the protections based on the voltage as well as the control loops are calculated as a percentage of this value.<br>For low voltage (400VAC, 440VAC, 480VAC, etc...) or high voltage (20.000VAC, 33.000VAC, etc...) applications, this variable must be adjusted. |

| Variable | Nominal frequency [2153] |
|---|---|
| Unit | Hz |
| Init value | 50.00 |
| Min value | 0.00 |
| Max value | 100.00 |
| Description | This parameter is used to set the nominal frequency.<br>All the protections based on the frequency as well as the control loops are calculated as a percentage of this value.<br>For 50 or 60 Hz applications, this variable must be adjusted. |

| Variable | PT ratio [2100] |
|---|---|
| Unit | - |
| Init value | 1.00 |
| Min value | 0.00 |
| Max value | 655.35 |
| Description | This parameter allows you to set the ratio between the voltage present on the busbar and the voltage connected to the module.<br>Example: Busbar voltage 20.000Vac / Voltage connected to the module 100 Vac: PT ratio value = 20.000/100 = 200.<br>This PT ratio can be calculated or is indicated on the measuring transformers. |

| Variable | CT ratio [2101] |
|---|---|
| Unit | - |
| Init value | 200.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | This parameter is used to set the ratio between the current on the busbar and the current connected to the module.<br>Example: Busbar current 1000A / Current connected to the module 5A: CT ratio value = 1000/5 = 200.<br>This CT ratio can be calculated or is indicated on the measuring current transformers. |

## Measurements

| Variable | Inverter's measures acquisition [2114] |
|---|---|
| Unit | - |
| Init value | 1 |
| List | 0: By wired inputs<br>1: By Modbus/TCP |
| Description | Type of inverter measurement acquisition :<br>- By hardware inputs : Physically wire the inputs to the controller<br>- By Modbus : Configure the Modbus connection on the controller |

# Control

## Setpoint

| Variable | Active power limitation mode [2042] |
|---|---|
| Unit | - |
| Init value | 1 |
| List | 0: Not used<br>1: Auto<br>2: Fixed |
| Description | Configures the active power limitation mode:<br>- If this parameter is set to 'Not used', then the controller will never limit the inverter's active power.<br>- If this parameter is set to 'Auto', then the controller will limit inverter power according to product settings (Low limit to be maintained on generators, Mains setpoint to be respected, etc.), load value, production from other sources. See technical documentation for further details.<br>- If this parameter is set to 'Fixed', then the controller will limit inverter power to the value set in the 'kW limitation' variable. The 'kW limitation' parameter can be written in Modbus by an external PLC. |

| Variable | Low kW threshold generators [2113] |
|---|---|
| Unit | % |
| Init value | 30.0 |
| Min value | 0.0 |
| Max value | 100.0 |
| Description | This parameter is used to define the low power limit of generators when the active power limitation of renewable energy inverters is managed automatically. The active power of the renewable energy inverters will be limited so that the generators never fall below the value defined in this parameter. This setpoint is expressed as a percentage of the nominal active power of the generators. |

| Variable | Active power limitation [2116] |
|---|---|
| Unit | % |
| Init value | 100.0 |
| Min value | 0.0 |
| Max value | 100.0 |
| Description | This parameter is used to set the inverter's active power limitation when the 'Active power limitation mode' parameter is set to 'Fixed'. This parameter can be written in Modbus by an external PLC.<br>- Set this value to 100% to not limit the inverter.<br>- Set this value to 0% to limit the inverter completely.<br>The value entered is a percentage of the inverter's nominal value. |

| Variable | Active power limitation by [2028] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Modbus<br>1: Analog output |
| Description | This parameter defines the method by which the inverter will be limited:<br>- Modbus: By selecting 'Modbus', the product will send frames using the Modbus protocol to limit inverter power. If the SunSpec protocol is configured, the frame is sent automatically, and only the inverter's IP address needs to be configured. If the SunSpec protocol is not configured, please set the address of the register dedicated to active power limitation.<br>- Analog output: By selecting 'Analog output', the product will send a voltage that is proportional to the desired power limitation on an analog output. Set the amplitude and offset of this analog output. The offset value corresponds to the voltage applied for an inverter power demand of 0% of nominal. The offset + amplitude value corresponds to the voltage applied for an inverter power demand of 100% of nominal. |

| Variable | Power factor setpoint mode [2026] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Auto<br>1: Fixed<br>2: Not used |
| Description | Configures the power factor setpoint mode :<br>- If this parameter is set to 'Not used', then the controller will never set the inverter's power factor.<br>- If this parameter is set to 'Auto', then the controller will set the inverter's power factor according to the sources present on the bus ( reactive power sharing with generators if there is no grid, power factor equal to 1 if there is a grid on the bus, etc.). The final power factor setpoint is limited by the value configured in the 'Minimum inverter power factor' parameter. See technical documentation for details.<br>- If this parameter is set to 'Fixed', then the controller will set the power factor to the value set in the 'Power factor setpoint (inductive)' variable. The 'Power factor setpoint (inductive)' parameter can be written in Modbus by an external controller. The final power factor setpoint is limited by the value set in the 'Minimum inverter power factor' parameter. |

| Variable | Power factor setpoint (inductive) [2253] |
|---|---|
| **Unit** | - |
| **Init value** | 0.80 |
| **Min value** | 0.00 |
| **Max value** | 1.00 |
| **Description** | This parameter is used to set the inverter power factor setpoint when the 'Power factor setpoint mode' parameter is set to 'Fixed'. This parameter can be written in Modbus by an external PLC.<br>The value entered is an inductive power factor. |


| Variable | Minimum inverter power factor [2027] |
|---|---|
| **Unit** | - |
| **Init value** | 0.00 |
| **Min value** | 0.00 |
| **Max value** | 1.00 |
| **Description** | This parameter is used to set the inverter's minimum power factor value.<br>When the SunSpec protocol is used, the inverter already sets a minimum value for the power factor in a register. This value will be taken into account by the automated system.<br>However, if the inverter does not use the SunSpec protocol, or if a more restrictive minimum value is desired for the inverter's power factor, it can be entered in this parameter. |

## Command

| Variable | ON/OFF command (Modbus) [2037] |
|---|---|
| **Unit** | - |
| **Init value** | 1 |
| **List** | 0: No<br>1: Yes |
| **Description** | This parameter defines if the automated system can activate/deactivate the inverter via Modbus.<br>If the inverter uses the SunSpec protocol, only the inverter IP address needs to be configured.<br>If the inverter does not use the SunSpec protocol, please configure the inverter's ON/OFF register address.<br>If the inverter does not provide a register to enable/disable it, a digital output of the product configured as 'ON/OFF request' can be used. |

# BUS

| Variable | Nominal frequency [2153] |
|---|---|
| Unit | Hz |
| Init value | 50.00 |
| Min value | 0.00 |
| Max value | 100.00 |
| Description | This parameter is used to set the nominal frequency.<br>All the protections based on the frequency as well as the control loops are calculated as a percentage of this value.<br>For 50 or 60 Hz applications, this variable must be adjusted. |

# MODBUS INVERTER

## General

| Variable | Inverter compatible with SunSpec [2036] |
|---|---|
| Unit | - |
| Init value | 1 |
| List | 0: No<br>1: Yes |
| Description | This parameter defines whether or not the inverter is SunSpec compatible:<br>- No: The inverter is not compatible with the SunSpec standard; the measurement and command registers must be manually entered in the product's Modbus tables.<br>- Yes: The inverter is compatible with the SunSpec standard (model 103 or 113 for measurements, model 123 for commands). In this case, the registers are determined automatically. |

| Variable | Control on inverter not compatible [2398] |
|---|---|
| Unit | - |
| Init value | 3 |
| List | 0: Unused<br>3: Alarm<br>4: Fault |
| Description | You can choose to enable or disable the alarm that triggers when the inverter is not compatible with the SunSpec or is missing mandatory SunSpec blocs. |

## Connection settings

| Variable | Control on inverter's connection timeout [3024] |
|---|---|
| Unit | - |
| Init value | 3 |
| List | 0: Unused<br>3: Alarm<br>4: Fault |
| Description | This parameter determines the behavior of the product in the event of loss of Modbus connection to the inverter.<br>See technical documentation for description of possible actions. |

| Variable | Inverter Modbus requests timeout [3033] |
| --- | --- |
| Unit | s |
| Init value | 2.0 |
| Min value | 1.0 |
| Max value | 10.0 |
| Description | This parameter defines the time after which a Modbus request to the inverter will expire. |

| Variable | Timeout period for setpoints on loss of communication [3034] |
| --- | --- |
| Unit | s |
| Init value | 10 |
| Min value | 1 |
| Max value | 2000 |
| Description | This parameter only works with SunSpec-compatible inverters.<br>It defines the time during which the inverter will maintain the last setpoint sent in the event of loss of Modbus communication. |

| Variable | Force the power plant in droop when not connected [2029] |
| --- | --- |
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | This parameter is used to define whether the automated system should force generators to droop when a Modbus connection to the inverter is lost.<br>This method makes it possible to manage inverter power even in the event of loss of Modbus connection, but it requires very specific inverter settings.<br>Another, simpler method is to open the inverters with a digital output in the event of loss of Modbus connection, to ensure that the generators are not put into reverse power. |

# INPUTS/OUTPUTS

## DIGITAL INPUTS

### Digital inputs

### Input 1 (Customisable) [250]

| Variable | Function configured on DI 1 [2700] |
|---|---|
| Unit | - |
| Init value | 4505 |
| Min value | 0 |
| Max value | 10299 |
| Description | Digital Input 1 associated function (Default value: Generator breaker feedback) |

| Variable | Polarity NO/NC on DI 1 [2736] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of Digital Input 1 (0=Normaly Open/1=Normaly Close) |

| Variable | Validity on digital input 1 [2727] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Digital Input 1 activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | Timer ON Digital Input 1 [2709] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 1 activation timer |

| Variable | Timer OFF Digital Input 1 [2718] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 1 desactivation timer |

## Input 2 (Customisable) [251]

| Variable | Function configured on DI 2 [2701] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Digital Input 2 associated function (Default value: Remote start) |

| Variable | Polarity NO/NC on DI 2 [2737] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of Digital Input 2 (0=Normaly Open/1=Normaly Close) |

| Variable | Validity on digital input 2 [2728] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Digital Input 2 activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | Timer ON Digital Input 2 [2710] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 2 activation timer |

| Variable | Timer OFF Digital Input 2 [2719] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 2 desactivation timer |

## Input 3 (Customisable) [252]

| Variable | Function configured on DI 3 [2702] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Digital Input 3 associated function  (Default value: Emergency stop) |

| Variable | Polarity NO/NC on DI 3 [2738] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of Digital Input 3 (0=Normaly Open/1=Normaly Close) |

| Variable | Validity on digital input 3 [2729] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Digital Input 3 activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | Timer ON Digital Input 3 [2711] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 3 activation timer |

| Variable | Timer OFF Digital Input 3 [2720] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 3 desactivation timer |

## Input 4 (Customisable) [253]

| Variable | Function configured on DI 4 [2703] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Digital Input 4 associated function  (Default value: Mains breaker feedback on COMPACT MAINS ) |

| | |
|---|---|
| **Variable** | Polarity NO/NC on DI 4 [2739] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of Digital Input 4 (0=Normaly Open/1=Normaly Close) |

| | |
|---|---|
| **Variable** | Validity on digital input 4 [2730] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Digital Input 4 activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | Timer ON Digital Input 4 [2712] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Digital Input 4 activation timer |

| | |
|---|---|
| **Variable** | Timer OFF Digital Input 4 [2721] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Digital Input 4 desactivation timer |

## Input 5 (Customisable) [254]

| Variable | Function configured on DI 5 [2704] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Digital Input 5 associated function |

| Variable | Polarity NO/NC on DI 5 [2740] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of Digital Input 5 (0=Normaly Open/1=Normaly Close) |

| Variable | Validity on digital input 5 [2731] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Digital Input 5 activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | Timer ON Digital Input 5 [2713] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 5 activation timer |

| Variable | Timer OFF Digital Input 5 [2722] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 5 desactivation timer |

## Input 6 (Customisable) [255]

| Variable | Function configured on DI 6 [2705] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Digital Input 6 associated function |

| Variable | Polarity NO/NC on DI 6 [2741] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of Digital Input 6 (0=Normaly Open/1=Normaly Close) |

| Variable | Validity on digital input 6 [2732] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Digital Input 6 activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | Timer ON Digital Input 6 [2714] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 6 activation timer |

| Variable | Timer OFF Digital Input 6 [2723] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 6 desactivation timer |

## Input 7 (Customisable) [256]

| Variable | Function configured on DI 7 [2706] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Digital Input 7 associated function |

| Variable | Polarity NO/NC on DI 7 [2742] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of Digital Input 7 (0=Normaly Open/1=Normaly Close) |

| Variable | Validity on digital input 7 [2733] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Digital Input 7 activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | Timer ON Digital Input 7 [2715] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 7 activation timer |

| Variable | Timer OFF Digital Input 7 [2724] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 7 desactivation timer |

## Input 8 (Customisable) [257]

| Variable | Function configured on DI 8 [2707] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Digital Input 8 associated function |

| Variable | Polarity NO/NC on DI 8 [2743] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of Digital Input 8 (0=Normaly Open/1=Normaly Close) |

| Variable | Validity on digital input 8 [2734] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Digital Input 8 activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | Timer ON Digital Input 8 [2716] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 8 activation timer |

| Variable | Timer OFF Digital Input 8 [2725] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 8 desactivation timer |

## Input 9 (Customisable) [258]

| | |
|---|---|
| **Variable** | Function configured on DI 9 [2708] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Digital Input 9 associated function |

| | |
|---|---|
| **Variable** | Polarity NO/NC on DI 9 [2744] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of Digital Input 9 (0=Normaly Open/1=Normaly Close) |

| | |
|---|---|
| **Variable** | Validity on digital input 9 [2735] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Digital Input 9 activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | Timer ON Digital Input 9 [2717] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Digital Input 9 activation timer |

| Variable | Timer OFF Digital Input 9 [2726] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital Input 9 desactivation timer |

# Hysteresis on digital input

## Hysteresis on digital input 1

| Variable | Hysteresis 1 enable for digital input [2769] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | This parameter enables the first hysteresis function on logic threshold to be activated.<br>To do this:<br>- Configure a digital input as 'Hysteresis low threshold DI1' and wire the hysteresis low threshold logic signal to this input.<br>- Configure a digital input as 'Hysteresis high threshold DI1' and wire the hysteresis high threshold logic signal to this input.<br>- Configure a digital output as 'Hysteresis output activation on DI1' and wire this output to the hysteresis control<br>- Select the direction of activation/deactivation of the control |

| Variable | Timer ON hysteresis 1 [2777] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | This parameter allows to set the time between the moment when the activation threshold is reached and the moment when the command is activated. |

| Variable | Direction hysteresis 1 [2785] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | This parameter allows to set the direction in which the hysteresis should work. 2 choices are possible:<br>- Activate the command when the low threshold is active and deactivate it when the high threshold is active<br>- Activate the command when the high threshold is active and deactivate it when the low threshold is active |

## Hysteresis on digital input 2

| Variable | Hysteresis 2 enable for digital input [2770] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | This parameter enables the second hysteresis function on logic threshold to be activated.<br>To do this:<br>- Configure a digital input as 'Hysteresis low threshold DI2' and wire the hysteresis low threshold logic signal to this input.<br>- Configure a digital input as 'Hysteresis high threshold DI2' and wire the hysteresis high threshold logic signal to this input.<br>- Configure a digital output as 'Hysteresis output activation on DI2' and wire this output to the hysteresis control<br>- Select the direction of activation/deactivation of the control |

| Variable | Timer ON hysteresis 2 [2778] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | This parameter allows to set the time between the moment when the activation threshold is reached and the moment when the command is activated. |

| Variable | Direction hysteresis 2 [2786] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | This parameter allows to set the direction in which the hysteresis should work. 2 choices are possible:<br>- Activate the command when the low threshold is active and deactivate it when the high threshold is active<br>- Activate the command when the high threshold is active and deactivate it when the low threshold is active |

## Hysteresis on digital input 3

| Variable | Hysteresis 3 enable for digital input [2771] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | This parameter enables the third hysteresis function on logic threshold to be activated.<br>To do this:<br>- Configure a digital input as 'Hysteresis low threshold DI3' and wire the hysteresis low threshold logic signal to this input.<br>- Configure a digital input as 'Hysteresis high threshold DI3' and wire the hysteresis high threshold logic signal to this input.<br>- Configure a digital output as 'Hysteresis output activation on DI3' and wire this output to the hysteresis control<br>- Select the direction of activation/deactivation of the control |

| Variable | Timer ON hysteresis 3 [2779] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | This parameter allows to set the time between the moment when the activation threshold is reached and the moment when the command is activated. |

| Variable | Direction hysteresis 3 [2787] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | This parameter allows to set the direction in which the hysteresis should work. 2 choices are possible:<br>- Activate the command when the low threshold is active and deactivate it when the high threshold is active<br>- Activate the command when the high threshold is active and deactivate it when the low threshold is active |

## Hysteresis on digital input 4

| Variable | Hysteresis 4 enable for digital input [2772] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | This parameter enables the fourth hysteresis function on logic threshold to be activated.<br>To do this:<br>- Configure a digital input as 'Hysteresis low threshold DI4' and wire the hysteresis low threshold logic signal to this input.<br>- Configure a digital input as 'Hysteresis high threshold DI4' and wire the hysteresis high threshold logic signal to this input.<br>- Configure a digital output as 'Hysteresis output activation on DI4' and wire this output to the hysteresis control<br>- Select the direction of activation/deactivation of the control |

| Variable | Timer ON hysteresis 4 [2780] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | This parameter allows to set the time between the moment when the activation threshold is reached and the moment when the command is activated. |

| Variable | Direction hysteresis 4 [2788] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | This parameter allows to set the direction in which the hysteresis should work. 2 choices are possible:<br>- Activate the command when the low threshold is active and deactivate it when the high threshold is active<br>- Activate the command when the high threshold is active and deactivate it when the low threshold is active |

## Hysteresis on digital input 5

| Variable | Hysteresis 5 enable for digital input [2773] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | This parameter enables the fifth hysteresis function on logic threshold to be activated.<br>To do this:<br>- Configure a digital input as 'Hysteresis low threshold DI5' and wire the hysteresis low threshold logic signal to this input.<br>- Configure a digital input as 'Hysteresis high threshold DI5' and wire the hysteresis high threshold logic signal to this input.<br>- Configure a digital output as 'Hysteresis output activation on DI5' and wire this output to the hysteresis control<br>- Select the direction of activation/deactivation of the control |

| Variable | Timer ON hysteresis 5 [2781] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | This parameter allows to set the time between the moment when the activation threshold is reached and the moment when the command is activated. |

| Variable | Direction hysteresis 5 [2789] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | This parameter allows to set the direction in which the hysteresis should work. 2 choices are possible:<br>- Activate the command when the low threshold is active and deactivate it when the high threshold is active<br>- Activate the command when the high threshold is active and deactivate it when the low threshold is active |

## Hysteresis on digital input 6

| Variable | Hysteresis 6 enable for digital input [2774] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | This parameter enables the sixth hysteresis function on logic threshold to be activated.<br>To do this:<br>- Configure a digital input as 'Hysteresis low threshold DI6' and wire the hysteresis low threshold logic signal to this input.<br>- Configure a digital input as 'Hysteresis high threshold DI6' and wire the hysteresis high threshold logic signal to this input.<br>- Configure a digital output as 'Hysteresis output activation on DI6' and wire this output to the hysteresis control<br>- Select the direction of activation/deactivation of the control |

| Variable | Timer ON hysteresis 6 [2782] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | This parameter allows to set the time between the moment when the activation threshold is reached and the moment when the command is activated. |

| Variable | Direction hysteresis 6 [2790] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | This parameter allows to set the direction in which the hysteresis should work. 2 choices are possible:<br>- Activate the command when the low threshold is active and deactivate it when the high threshold is active<br>- Activate the command when the high threshold is active and deactivate it when the low threshold is active |

## Hysteresis on digital input 7

| Variable | Hysteresis 7 enable for digital input [2775] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | This parameter enables the seventh hysteresis function on logic threshold to be activated.<br>To do this:<br>- Configure a digital input as 'Hysteresis low threshold DI7' and wire the hysteresis low threshold logic signal to this input.<br>- Configure a digital input as 'Hysteresis high threshold DI7' and wire the hysteresis high threshold logic signal to this input.<br>- Configure a digital output as 'Hysteresis output activation on DI7' and wire this output to the hysteresis control<br>- Select the direction of activation/deactivation of the control |

| Variable | Timer ON hysteresis 7 [2783] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | This parameter allows to set the time between the moment when the activation threshold is reached and the moment when the command is activated. |

| Variable | Direction hysteresis 7 [2791] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | This parameter allows to set the direction in which the hysteresis should work. 2 choices are possible:<br>- Activate the command when the low threshold is active and deactivate it when the high threshold is active<br>- Activate the command when the high threshold is active and deactivate it when the low threshold is active |

## Hysteresis on digital input 8

| Variable | Hysteresis 8 enable for digital input [2776] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | This parameter enables the eighth hysteresis function on logic threshold to be activated.<br>To do this:<br>- Configure a digital input as 'Hysteresis low threshold DI8' and wire the hysteresis low threshold logic signal to this input.<br>- Configure a digital input as 'Hysteresis high threshold DI8' and wire the hysteresis high threshold logic signal to this input.<br>- Configure a digital output as 'Hysteresis output activation on DI8' and wire this output to the hysteresis control<br>- Select the direction of activation/deactivation of the control |

| Variable | Timer ON hysteresis 8 [2784] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | This parameter allows to set the time between the moment when the activation threshold is reached and the moment when the command is activated. |

| Variable | Direction hysteresis 8 [2792] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | This parameter allows to set the direction in which the hysteresis should work. 2 choices are possible:<br>- Activate the command when the low threshold is active and deactivate it when the high threshold is active<br>- Activate the command when the high threshold is active and deactivate it when the low threshold is active |

# DIGITAL/RELAYS OUTPUTS

## Digital outputs

### Output 1 (Customisable) [4350]

| Variable | Function configured DO 1 [2745] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Output 1 Associated function |

| Variable | Polarity NE/ND DO 1 [2751] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Polarity (0=Normaly De-energized / 1=Normaly Energized) Digital output 1 |

| Variable | Pulse length DO 1 [2761] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital ouput 1 pulse timer (0 = no pulse, continous activation) |

| Variable | Activation delay DO 01 [2793] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Delay before physical activation of logic output 1 |

## Output 2 (Customisable) [4351]

| Variable | Function configured DO 2 [2746] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Output 2 Associated function |

| Variable | Polarity NE/ND DO 2 [2752] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Polarity (0=Normaly De-energized / 1=Normaly Energized) Digital output 2 |

| Variable | Pulse length DO 2 [2762] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital ouput 2 pulse timer (0 = no pulse, continous activation) |

| Variable | Activation delay DO 02 [2794] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Delay before physical activation of logic output 2 |

## Output 3 (Customisable) [4352]

| | |
|---|---|
| **Variable** | Function configured DO 3 [2747] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Output 3 Associated function |

| | |
|---|---|
| **Variable** | Polarity NE/ND DO 3 [2753] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Polarity (0=Normaly De-energized / 1=Normaly Energized) Digital output 3 |

| | |
|---|---|
| **Variable** | Pulse length DO 3 [2763] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Digital ouput 3 pulse timer (0 = no pulse, continous activation) |

| | |
|---|---|
| **Variable** | Activation delay DO 03 [2795] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Delay before physical activation of logic output 3 |

## Output 4 (Customisable) [4353]

| | |
|---|---|
| **Variable** | Function configured DO 4 [2748] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Output 4 Associated function |

| | |
|---|---|
| **Variable** | Polarity NE/ND DO 4 [2754] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Polarity (0=Normaly De-energized / 1=Normaly Energized) Digital output 4 |

| | |
|---|---|
| **Variable** | Pulse length DO 4 [2764] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Digital ouput 4 pulse timer (0 = no pulse, continous activation) |

| | |
|---|---|
| **Variable** | Activation delay DO 04 [2796] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Delay before physical activation of logic output 4 |

## Output 5 (Customisable) [4354]

| | |
|---|---|
| **Variable** | Function configured DO 5 [2749] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Output 5 Associated function |

| | |
|---|---|
| **Variable** | Polarity NE/ND DO 5 [2755] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Polarity (0=Normaly De-energized / 1=Normaly Energized) Digital output 5 |

| | |
|---|---|
| **Variable** | Pulse length DO 5 [2765] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Digital ouput 5 pulse timer (0 = no pulse, continous activation) |

| | |
|---|---|
| **Variable** | Activation delay DO 05 [2797] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Delay before physical activation of logic output 5 |

## Output 6 (Customisable) [4355]

| Variable | Function configured DO 6 [2750] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Output 6 Associated function |

| Variable | Polarity NE/ND DO 6 [2756] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Polarity (0=Normaly De-energized / 1=Normaly Energized) Digital output 6 |

| Variable | Pulse length DO 6 [2766] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Digital ouput 6 pulse timer (0 = no pulse, continous activation) |

| Variable | Activation delay DO 06 [2798] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Delay before physical activation of logic output 6 |

# Relay outputs

## Relay 1 (Customisable) [4356]

| Variable | Output function Relay 1 [2757] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Relay 1 Associated function |

| Variable | Direction NO/NC Relay 1 [2759] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Relay 1 Direction (0=Normaly Open / 1=Normaly Closed) |

| Variable | Pulse length R 1 [2767] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Relay ouput 1 pulse timer (0 = no pulse, continous activation) |

| Variable | Activation delay relay 1 [8250] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Delay before physical activation of relay 1 |

## Relay 2 (Customisable) [4357]

| Variable | Output function Relay 2 [2758] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Relay 2 Associated function |

| Variable | Direction NO/NC Relay 2 [2760] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Relay 2 Direction (0=Normaly Open / 1=Normaly Closed) |

| Variable | Pulse length R 2 [2768] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Relay ouput 2 pulse timer (0 = no pulse, continous activation) |

| Variable | Activation delay relay 2 [8251] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Delay before physical activation of relay 2 |

# BREAKER

## General

| Variable | Delay before new attempt [2806] |
|---|---|
| Unit | s |
| Init value | 30.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Delay before another attempt for an electrical fault. When an electrical fault is detected, the module opens its breaker and waits for an amount of time specified in this variable to attempt to close it again. |

| Variable | Delay before reset the number of attempts [2813] |
|---|---|
| Unit | s |
| Init value | 30.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Time before the number of attempts is reset when an electrical fault has been set. If no electrical fault has been detected during the amount of time set by this parameter, the number of attempts is reset. |

## Breaker

| Variable | Number of closing attempts [2807] |
|---|---|
| Unit | - |
| Init value | 3 |
| Min value | 0 |
| Max value | 15 |
| Description | Number of attempts for an electrical fault. When an electrical fault is detected, the module automatically tries to close its breaker to see if the fault has disapeared. If it isn't the case the module will try again until it has reached the number set in this variable |

# CANOPEN

## Digital inputs

### CANopen DI 1 (Customisable) [800]

| Variable | CANopenFuncI1 [3200] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I1 [3296] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 1 [3264] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I1 [3232] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 2 (Customisable) [801]

| Variable | CANopenFuncI2 [3201] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I2 [3297] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 2 [3265] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I2 [3233] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 3 (Customisable) [802]

| Variable | CANopenFuncI3 [3202] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I3 [3298] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 3 [3266] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I3 [3234] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 4 (Customisable) [803]

| Variable | CANopenFuncI4 [3203] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I4 [3299] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 4 [3267] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I4 [3235] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 5 (Customisable) [804]

| | |
|---|---|
| **Variable** | CANopenFuncI5 [3204] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I5 [3300] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 5 [3268] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I5 [3236] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 6 (Customisable) [805]

| Variable | CANopenFuncI6 [3205] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I6 [3301] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 6 [3269] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I6 [3237] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 7 (Customisable) [806]

| Variable | CANopenFuncI7 [3206] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I7 [3302] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 7 [3270] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I7 [3238] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 8 (Customisable) [807]

| Variable | CANopenFuncI8 [3207] |
| --- | --- |
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I8 [3303] |
| --- | --- |
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 8 [3271] |
| --- | --- |
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I8 [3239] |
| --- | --- |
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 9 (Customisable) [808]

| Variable | CANopenFuncI9 [3208] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I9 [3304] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 9 [3272] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I9 [3240] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 10 (Customisable) [809]

| Variable | CANopenFuncI10 [3209] |
| --- | --- |
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I10 [3305] |
| --- | --- |
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 10 [3273] |
| --- | --- |
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I10 [3241] |
| --- | --- |
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 11 (Customisable) [810]

| Variable | CANopenFuncI11 [3210] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I11 [3306] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 11 [3274] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I11 [3242] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 12 (Customisable) [811]

| Variable | CANopenFuncI12 [3211] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I12 [3307] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 12 [3275] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I12 [3243] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 13 (Customisable) [812]

| Variable | CANopenFuncI13 [3212] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I13 [3308] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 13 [3276] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I13 [3244] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 14 (Customisable) [813]

| Variable | CANopenFuncI14 [3213] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I14 [3309] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 14 [3277] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I14 [3245] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 15 (Customisable) [814]

| Variable | CANopenFuncI15 [3214] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I15 [3310] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 15 [3278] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I15 [3246] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 16 (Customisable) [815]

| Variable | CANopenFuncI16 [3215] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I16 [3311] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 16 [3279] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I16 [3247] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 17 (Customisable) [816]

| Variable | CANopenFuncI17 [3216] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I17 [3312] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 17 [3280] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I17 [3248] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 18 (Customisable) [817]

| Variable | CANopenFuncI18 [3217] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I18 [3313] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 18 [3281] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I18 [3249] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 19 (Customisable) [818]

| Variable | CANopenFuncI19 [3218] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I19 [3314] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 19 [3282] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I19 [3250] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 20 (Customisable) [819]

| Variable | CANopenFuncI20 [3219] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I20 [3315] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 20 [3283] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I20 [3251] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 21 (Customisable) [820]

| Variable | CANopenFuncI21 [3220] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I21 [3316] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 21 [3284] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I21 [3252] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 22 (Customisable) [821]

| Variable | CANopenFuncI22 [3221] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I22 [3317] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 22 [3285] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I22 [3253] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 23 (Customisable) [822]

| Variable | CANopenFuncI23 [3222] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I23 [3318] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 23 [3286] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I23 [3254] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 24 (Customisable) [823]

| | |
|---|---|
| **Variable** | CANopenFuncI24 [3223] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I24 [3319] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 24 [3287] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I24 [3255] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 25 (Customisable) [824]

| Variable | CANopenFuncI25 [3224] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I25 [3320] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 25 [3288] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I25 [3256] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 26 (Customisable) [825]

| Variable | CANopenFuncI26 [3225] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I26 [3321] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 26 [3289] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I26 [3257] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 27 (Customisable) [826]

| | |
|---|---|
| **Variable** | CANopenFuncI27 [3226] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I27 [3322] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 27 [3290] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I27 [3258] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 28 (Customisable) [827]

| | |
|---|---|
| **Variable** | CANopenFuncI28 [3227] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I28 [3323] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 28 [3291] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I28 [3259] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 29 (Customisable) [828]

| Variable | CANopenFuncI29 [3228] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I29 [3324] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 29 [3292] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I29 [3260] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 30 (Customisable) [829]

| Variable | CANopenFuncI30 [3229] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I30 [3325] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 30 [3293] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I30 [3261] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 31 (Customisable) [830]

| Variable | CANopenFuncI31 [3230] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I31 [3326] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 31 [3294] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I31 [3262] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 32 (Customisable) [831]

| Variable | CANopenFuncI32 [3231] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I32 [3327] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 32 [3295] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I32 [3263] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 33 (Customisable) [1250]

| Variable | CANopenFuncI33 [8550] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I33 [8646] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 33 [8614] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I33 [8582] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 34 (Customisable) [1251]

| Variable | CANopenFuncI34 [8551] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I34 [8647] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 34 [8615] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I34 [8583] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 35 (Customisable) [1252]

| Variable | CANopenFuncI35 [8552] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I35 [8648] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 35 [8616] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I35 [8584] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 36 (Customisable) [1253]

| Variable | CANopenFuncI36 [8553] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I36 [8649] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 36 [8617] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I36 [8585] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 37 (Customisable) [1254]

| | |
|---|---|
| **Variable** | CANopenFuncI37 [8554] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I37 [8650] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 37 [8618] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I37 [8586] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 38 (Customisable) [1255]

| | |
|---|---|
| **Variable** | CANopenFuncI38 [8555] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I38 [8651] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 38 [8619] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I38 [8587] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 39 (Customisable) [1256]

| Variable | CANopenFuncI39 [8556] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I39 [8652] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 39 [8620] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I39 [8588] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 40 (Customisable) [1257]

| Variable | CANopenFuncI40 [8557] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I40 [8653] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 40 [8621] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I40 [8589] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 41 (Customisable) [1258]

| | |
|---|---|
| **Variable** | CANopenFuncI41 [8558] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I41 [8654] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 41 [8622] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I41 [8590] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 42 (Customisable) [1259]

| Variable | CANopenFuncI42 [8559] |
| --- | --- |
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I42 [8655] |
| --- | --- |
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 42 [8623] |
| --- | --- |
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I42 [8591] |
| --- | --- |
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 43 (Customisable) [1260]

| | |
|---|---|
| **Variable** | CANopenFuncI43 [8560] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I43 [8656] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 43 [8624] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I43 [8592] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 44 (Customisable) [1261]

| Variable | CANopenFuncI44 [8561] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I44 [8657] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 44 [8625] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I44 [8593] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 45 (Customisable) [1262]

| Variable | CANopenFuncI45 [8562] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I45 [8658] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 45 [8626] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I45 [8594] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 46 (Customisable) [1263]

| Variable | CANopenFuncI46 [8563] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I46 [8659] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 46 [8627] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I46 [8595] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 47 (Customisable) [1264]

| | |
|---|---|
| **Variable** | CANopenFuncI47 [8564] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I47 [8660] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 47 [8628] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I47 [8596] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 48 (Customisable) [1265]

| | |
|---|---|
| **Variable** | CANopenFuncI48 [8565] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I48 [8661] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 48 [8629] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I48 [8597] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 49 (Customisable) [1266]

| Variable | CANopenFuncI49 [8566] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I49 [8662] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 49 [8630] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I49 [8598] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 50 (Customisable) [1267]

| Variable | CANopenFuncI50 [8567] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I50 [8663] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 50 [8631] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I50 [8599] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 51 (Customisable) [1268]

| | |
|---|---|
| **Variable** | CANopenFuncI51 [8568] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I51 [8664] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 51 [8632] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I51 [8600] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 52 (Customisable) [1269]

| Variable | CANopenFuncI52 [8569] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I52 [8665] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 52 [8633] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I52 [8601] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 53 (Customisable) [1270]

| Variable | CANopenFuncI53 [8570] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I53 [8666] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 53 [8634] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I53 [8602] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 54 (Customisable) [1271]

| Variable | CANopenFuncI54 [8571] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I54 [8667] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 54 [8635] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I54 [8603] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 55 (Customisable) [1272]

| | |
|---|---|
| **Variable** | CANopenFuncI55 [8572] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I55 [8668] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 55 [8636] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I55 [8604] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 56 (Customisable) [1273]

| Variable | CANopenFuncI56 [8573] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I56 [8669] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 56 [8637] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I56 [8605] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 57 (Customisable) [1274]

| Variable | CANopenFuncI57 [8574] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I57 [8670] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 57 [8638] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I57 [8606] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 58 (Customisable) [1275]

| Variable | CANopenFuncI58 [8575] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I58 [8671] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 58 [8639] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I58 [8607] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 59 (Customisable) [1276]

| | |
|---|---|
| **Variable** | CANopenFuncI59 [8576] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I59 [8672] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 59 [8640] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I59 [8608] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 60 (Customisable) [1277]

| Variable | CANopenFuncI60 [8577] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I60 [8673] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 60 [8641] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I60 [8609] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 61 (Customisable) [1278]

| | |
|---|---|
| **Variable** | CANopenFuncI61 [8578] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I61 [8674] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 61 [8642] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I61 [8610] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 62 (Customisable) [1279]

| Variable | CANopenFuncI62 [8579] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I62 [8675] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 62 [8643] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I62 [8611] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 63 (Customisable) [1280]

| | |
|---|---|
| **Variable** | CANopenFuncI63 [8580] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| | |
|---|---|
| **Variable** | CANopenDir I63 [8676] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | Direction of logic input Normally open or Normally closed |

| | |
|---|---|
| **Variable** | Validity on CANopen digital input 63 [8644] |
| **Unit** | - |
| **Init value** | 1 |
| **Min value** | 0 |
| **Max value** | 3 |
| **Description** | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| | |
|---|---|
| **Variable** | CANopenTM I63 [8612] |
| **Unit** | s |
| **Init value** | 0.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Function execution delay, user can add execution delay after logic input status change |

## CANopen DI 64 (Customisable) [1281]

| Variable | CANopenFuncI64 [8581] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | selection of the function, which will be executed when the logic input changes state . (see functions on logic inputs for more details about functions) |

| Variable | CANopenDir I64 [8677] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | Direction of logic input Normally open or Normally closed |

| Variable | Validity on CANopen digital input 64 [8645] |
|---|---|
| Unit | - |
| Init value | 1 |
| Min value | 0 |
| Max value | 3 |
| Description | Activation validity (0=Never/1=Always/2=Post Starting/3= rpm & Volt Stabilized) |

| Variable | CANopenTM I64 [8613] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | Function execution delay, user can add execution delay after logic input status change |

# Digital outputs

## CANopen DO 1 (Customisable) [4751]

| | |
|---|---|
| **Variable** | CANopenFuncO1 [3350] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO1 [3382] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 2 (Customisable) [4752]

| | |
|---|---|
| **Variable** | CANopenFuncO2 [3351] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO2 [3383] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 3 (Customisable) [4753]

| | |
|---|---|
| **Variable** | CANopenFuncO3 [3352] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO3 [3384] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 4 (Customisable) [4754]

| | |
|---|---|
| **Variable** | CANopenFuncO4 [3353] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO4 [3385] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 5 (Customisable) [4755]

| Variable | CANopenFuncO5 [3354] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO5 [3386] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 6 (Customisable) [4756]

| Variable | CANopenFuncO6 [3355] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO6 [3387] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 7 (Customisable) [4757]

| | |
|---|---|
| **Variable** | CANopenFuncO7 [3356] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO7 [3388] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 8 (Customisable) [4758]

| | |
|---|---|
| **Variable** | CANopenFuncO8 [3357] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO8 [3389] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 9 (Customisable) [4759]

| Variable | CANopenFuncO9 [3358] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO9 [3390] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 10 (Customisable) [4760]

| Variable | CANopenFuncO10 [3359] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO10 [3391] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 11 (Customisable) [4761]

| | |
|---|---|
| **Variable** | CANopenFuncO11 [3360] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO11 [3392] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 12 (Customisable) [4762]

| | |
|---|---|
| **Variable** | CANopenFuncO12 [3361] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO12 [3393] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 13 (Customisable) [4763]

| | |
|---|---|
| **Variable** | CANopenFuncO13 [3362] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO13 [3394] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 14 (Customisable) [4764]

| | |
|---|---|
| **Variable** | CANopenFuncO14 [3363] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO14 [3395] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 15 (Customisable) [4765]

| Variable | CANopenFuncO15 [3364] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO15 [3396] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 16 (Customisable) [4766]

| Variable | CANopenFuncO16 [3365] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO16 [3397] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 17 (Customisable) [4767]

| | |
|---|---|
| **Variable** | CANopenFuncO17 [3366] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO17 [3398] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 18 (Customisable) [4768]

| | |
|---|---|
| **Variable** | CANopenFuncO18 [3367] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO18 [3399] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 19 (Customisable) [4769]

| | |
|---|---|
| **Variable** | CANopenFuncO19 [3368] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO19 [3400] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 20 (Customisable) [4770]

| | |
|---|---|
| **Variable** | CANopenFuncO20 [3369] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO20 [3401] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 21 (Customisable) [4771]

| | |
|---|---|
| **Variable** | CANopenFuncO21 [3370] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO21 [3402] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 22 (Customisable) [4772]

| | |
|---|---|
| **Variable** | CANopenFuncO22 [3371] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO22 [3403] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 23 (Customisable) [4773]

| | |
|---|---|
| **Variable** | CANopenFuncO23 [3372] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO23 [3404] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 24 (Customisable) [4774]

| | |
|---|---|
| **Variable** | CANopenFuncO24 [3373] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO24 [3405] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 25 (Customisable) [4775]

| | |
|---|---|
| **Variable** | CANopenFuncO25 [3374] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO25 [3406] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 26 (Customisable) [4776]

| | |
|---|---|
| **Variable** | CANopenFuncO26 [3375] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO26 [3407] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 27 (Customisable) [4777]

| | |
|---|---|
| **Variable** | CANopenFuncO27 [3376] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO27 [3408] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 28 (Customisable) [4778]

| | |
|---|---|
| **Variable** | CANopenFuncO28 [3377] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO28 [3409] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 29 (Customisable) [4779]

| Variable | CANopenFuncO29 [3378] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO29 [3410] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 30 (Customisable) [4780]

| Variable | CANopenFuncO30 [3379] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO30 [3411] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 31 (Customisable) [4781]

| | |
|---|---|
| **Variable** | CANopenFuncO31 [3380] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO31 [3412] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 32 (Customisable) [4782]

| | |
|---|---|
| **Variable** | CANopenFuncO32 [3381] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO32 [3413] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 33 (Customisable) [5100]

| | |
|---|---|
| **Variable** | CANopenFuncO33 [8700] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO33 [8732] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 34 (Customisable) [5101]

| | |
|---|---|
| **Variable** | CANopenFuncO34 [8701] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO34 [8733] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 35 (Customisable) [5102]

| | |
|---|---|
| **Variable** | CANopenFuncO35 [8702] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO35 [8734] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 36 (Customisable) [5103]

| | |
|---|---|
| **Variable** | CANopenFuncO36 [8703] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO36 [8735] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 37 (Customisable) [5104]

| | |
|---|---|
| **Variable** | CANopenFuncO37 [8704] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO37 [8736] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 38 (Customisable) [5105]

| | |
|---|---|
| **Variable** | CANopenFuncO38 [8705] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO38 [8737] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 39 (Customisable) [5106]

| | |
|---|---|
| **Variable** | CANopenFuncO39 [8706] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO39 [8738] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 40 (Customisable) [5107]

| | |
|---|---|
| **Variable** | CANopenFuncO40 [8707] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO40 [8739] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 41 (Customisable) [5108]

| | |
|---|---|
| **Variable** | CANopenFuncO41 [8708] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO41 [8740] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 42 (Customisable) [5109]

| | |
|---|---|
| **Variable** | CANopenFuncO42 [8709] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO42 [8741] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 43 (Customisable) [5110]

| | |
|---|---|
| **Variable** | CANopenFuncO43 [8710] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO43 [8742] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 44 (Customisable) [5111]

| | |
|---|---|
| **Variable** | CANopenFuncO44 [8711] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO44 [8743] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 45 (Customisable) [5112]

| Variable | CANopenFuncO45 [8712] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO45 [8744] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 46 (Customisable) [5113]

| Variable | CANopenFuncO46 [8713] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO46 [8745] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 47 (Customisable) [5114]

| | |
|---|---|
| **Variable** | CANopenFuncO47 [8714] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO47 [8746] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 48 (Customisable) [5115]

| | |
|---|---|
| **Variable** | CANopenFuncO48 [8715] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO48 [8747] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 49 (Customisable) [5116]

| | |
|---|---|
| **Variable** | CANopenFuncO49 [8716] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO49 [8748] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 50 (Customisable) [5117]

| | |
|---|---|
| **Variable** | CANopenFuncO50 [8717] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO50 [8749] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 51 (Customisable) [5118]

| | |
|---|---|
| **Variable** | CANopenFuncO51 [8718] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO51 [8750] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 52 (Customisable) [5119]

| | |
|---|---|
| **Variable** | CANopenFuncO52 [8719] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO52 [8751] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 53 (Customisable) [5120]

| Variable | CANopenFuncO53 [8720] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO53 [8752] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 54 (Customisable) [5121]

| Variable | CANopenFuncO54 [8721] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Status change of the open or closed logic output, depending on the selected function |

| Variable | CANopenModeO54 [8753] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 1 |
| Description | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 55 (Customisable) [5122]

| | |
|---|---|
| **Variable** | CANopenFuncO55 [8722] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO55 [8754] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 56 (Customisable) [5123]

| | |
|---|---|
| **Variable** | CANopenFuncO56 [8723] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO56 [8755] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 57 (Customisable) [5124]

| | |
|---|---|
| **Variable** | CANopenFuncO57 [8724] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO57 [8756] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 58 (Customisable) [5125]

| | |
|---|---|
| **Variable** | CANopenFuncO58 [8725] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO58 [8757] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 59 (Customisable) [5126]

| | |
|---|---|
| **Variable** | CANopenFuncO59 [8726] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO59 [8758] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 60 (Customisable) [5127]

| | |
|---|---|
| **Variable** | CANopenFuncO60 [8727] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO60 [8759] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 61 (Customisable) [5128]

| | |
|---|---|
| **Variable** | CANopenFuncO61 [8728] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO61 [8760] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 62 (Customisable) [5129]

| | |
|---|---|
| **Variable** | CANopenFuncO62 [8729] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO62 [8761] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 63 (Customisable) [5130]

| | |
|---|---|
| **Variable** | CANopenFuncO63 [8730] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO63 [8762] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

## CANopen DO 64 (Customisable) [5131]

| | |
|---|---|
| **Variable** | CANopenFuncO64 [8731] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Status change of the open or closed logic output, depending on the selected function |

| | |
|---|---|
| **Variable** | CANopenModeO64 [8763] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 1 |
| **Description** | selection of the direction of the logic output, normally energized or de-energized |

# Analog inputs

## Analog inputs 1

| Variable | CANopen AI 1 (Customisable) [1050] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 1 |

| Variable | CANopen Gain AI 01 [8351] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 1 value |

| Variable | CANopen Offset AI 01 [8350] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 1 value |

## Analog inputs 2

| Variable | CANopen AI 2 (Customisable) [1051] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 2 |

| Variable | CANopen Gain AI 02 [8353] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 2 value |

| Variable | CANopen Offset AI 02 [8352] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 2 value |

## Analog inputs 3

| Variable | CANopen AI 3 (Customisable) [1052] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 3 |

| Variable | CANopen Gain AI 03 [8355] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 3 value |

| Variable | CANopen Offset AI 03 [8354] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 3 value |

## Analog inputs 4

| Variable | CANopen AI 4 (Customisable) [1053] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 4 |

| Variable | CANopen Gain AI 04 [8357] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 4 value |

| Variable | CANopen Offset AI 04 [8356] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 4 value |

## Analog inputs 5

| Variable | CANopen AI 5 (Customisable) [1054] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 5 |

| Variable | CANopen Gain AI 05 [8359] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 5 value |

| Variable | CANopen Offset AI 05 [8358] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 5 value |

## Analog inputs 6

| Variable | CANopen AI 6 (Customisable) [1055] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 6 |

| Variable | CANopen Gain AI 06 [8361] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 6 value |

| Variable | CANopen Offset AI 06 [8360] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 6 value |

## Analog inputs 7

| Variable | CANopen AI 7 (Customisable) [1056] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 7 |

| Variable | CANopen Gain AI 07 [8363] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 7 value |

| Variable | CANopen Offset AI 07 [8362] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 7 value |

## Analog inputs 8

| Variable | CANopen AI 8 (Customisable) [1057] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 8 |

| Variable | CANopen Gain AI 08 [8365] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 8 value |

| Variable | CANopen Offset AI 08 [8364] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 8 value |

## Analog inputs 9

| Variable | CANopen AI 9 (Customisable) [1058] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 9 |

| Variable | CANopen Gain AI 09 [8367] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 9 value |

| Variable | CANopen Offset AI 09 [8366] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 9 value |

## Analog inputs 10

| Variable | CANopen AI 10 (Customisable) [1059] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 10 |

| Variable | CANopen Gain AI 10 [8369] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 10 value |

| Variable | CANopen Offset AI 10 [8368] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 10 value |

## Analog inputs 11

| Variable | CANopen AI 11 (Customisable) [1060] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 11 |

| Variable | CANopen Gain AI 11 [8371] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 11 value |

| Variable | CANopen Offset AI 11 [8370] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 11 value |

## Analog inputs 12

| Variable | CANopen AI 12 (Customisable) [1061] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 12 |

| Variable | CANopen Gain AI 12 [8373] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 12 value |

| Variable | CANopen Offset AI 12 [8372] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 12 value |

## Analog inputs 13

| Variable | CANopen AI 13 (Customisable) [1062] |
|----------|-------------------------------------|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 13 |

| Variable | CANopen Gain AI 13 [8375] |
|----------|---------------------------|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 13 value |

| Variable | CANopen Offset AI 13 [8374] |
|----------|-----------------------------|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 13 value |

## Analog inputs 14

| Variable | CANopen AI 14 (Customisable) [1063] |
|----------|-------------------------------------|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 14 |

| Variable | CANopen Gain AI 14 [8377] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 14 value |

| Variable | CANopen Offset AI 14 [8376] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 14 value |

## Analog inputs 15

| Variable | CANopen AI 15 (Customisable) [1064] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 15 |

| Variable | CANopen Gain AI 15 [8379] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 15 value |

| Variable | CANopen Offset AI 15 [8378] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 15 value |

## Analog inputs 16

| Variable | CANopen AI 16 (Customisable) [1065] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | CANopen analog input 16 |

| Variable | CANopen Gain AI 16 [8381] |
|---|---|
| Unit | - |
| Init value | 1.000 |
| Min value | 0.000 |
| Max value | 10.000 |
| Description | Gain for CANopen analog input 16 value |

| Variable | CANopen Offset AI 16 [8380] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Offset for CANopen analog input 16 value |

# PROTECTIONS

## INVERTER PROTECTIONS

### Over/under frequency

**Over frequency**

| Variable | Over frequency threshold [2400] |
|---|---|
| Unit | % |
| Init value | 105.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Over frequency timer [2401] |
|---|---|
| Unit | s |
| Init value | 30.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Over frequency control [2402] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Under frequency

| Variable | Under frequency threshold [2403] |
|---|---|
| Unit | % |
| Init value | 90.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Under frequency timer [2404] |
|---|---|
| Unit | s |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Under frequency control [2405] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Over frequency 2

| Variable | Over frequency threshold 2 [2436] |
|---|---|
| Unit | % |
| Init value | 110.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Over frequency timer 2 [2437] |
|---|---|
| Unit | s |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Over frequency control 2 [2438] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Under frequency 2

| Variable | Under frequency threshold 2 [2439] |
|---|---|
| Unit | % |
| Init value | 90.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Under frequency timer 2 [2440] |
|---|---|
| Unit | s |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Under frequency control 2 [2441] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

# Over/under voltage

## Over voltage

| Variable | Over voltage threshold [2406] |
|---|---|
| Unit | % |
| Init value | 110.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Over voltage timer [2407] |
|---|---|
| Unit | s |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Over voltage control [2408] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Under voltage

| Variable | Under voltage threshold [2409] |
|---|---|
| Unit | % |
| Init value | 90.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Under voltage timer [2410] |
|---|---|
| Unit | s |
| Init value | 20.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Under voltage control [2411] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Over voltage 2

| Variable | Over voltage threshold 2 [2442] |
|---|---|
| Unit | % |
| Init value | 110.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Over voltage timer 2 [2443] |
|---|---|
| Unit | s |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Over voltage control 2 [2444] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Under voltage 2

| Variable | Under voltage threshold 2 [2445] |
|---|---|
| Unit | % |
| Init value | 90.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Under voltage timer 2 [2446] |
|---|---|
| Unit | s |
| Init value | 20.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Under voltage control 2 [2447] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

# Over current

## Over current

| Variable | Over current threshold [2430] |
|---|---|
| Unit | A |
| Init value | 500 |
| Min value | 0 |
| Max value | 65535 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Over current timer [2431] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Over current control [2432] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Over current 2

| Variable | Over current threshold 2 [2466] |
|---|---|
| Unit | A |
| Init value | 500 |
| Min value | 0 |
| Max value | 65535 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Over current timer 2 [2467] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Over current control 2 [2468] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

# Maximum/Minimum kW

## Maximum kW

| Variable | Maximum kW threshold [2415] |
|---|---|
| Unit | % |
| Init value | 110.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Maximum kW timer [2416] |
|---|---|
| Unit | s |
| Init value | 60.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Maximum kW control [2417] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Minimum kW

| Variable | Minimum kW threshold [2412] |
|---|---|
| Unit | % |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Minimum kW timer [2413] |
|---|---|
| Unit | s |
| Init value | 120.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Minimum kW control [2414] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Maximum kW 2

| Variable | Maximum kW threshold 2 [2451] |
|---|---|
| Unit | % |
| Init value | 110.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Maximum kW timer 2 [2452] |
|---|---|
| Unit | s |
| Init value | 60.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Maximum kW control 2 [2453] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

### Minimum kW 2

| Variable | Minimum kW threshold 2 [2448] |
|---|---|
| Unit | % |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Minimum kW timer 2 [2449] |
|---|---|
| Unit | s |
| Init value | 120.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Minimum kW control 2 [2450] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Maxi kVAR/Mini kVAR

### Maximum kVAR

| Variable | Maximum kVAR threshold [2424] |
|---|---|
| Unit | % |
| Init value | 110.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Maximum kVAR timer [2425] |
|---|---|
| Unit | s |
| Init value | 30.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Maximum kVAR control [2426] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Minimum kVar

| Variable | Minimum kVAR threshold [2421] |
|---|---|
| Unit | % |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Minimum kVAR timer [2422] |
|---|---|
| Unit | s |
| Init value | 120.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Minimum kVAR control [2423] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Maximum kVAR 2

| Variable | Maximum kVAR threshold 2 [2460] |
|---|---|
| Unit | % |
| Init value | 110.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Maximum kVAR timer 2 [2461] |
|---|---|
| Unit | s |
| Init value | 30.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Maximum kVAR control 2 [2462] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

**Minimum kVar 2**

| Variable | Minimum kVAR threshold 2 [2457] |
|---|---|
| Unit | % |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Minimum kVAR timer 2 [2458] |
|---|---|
| Unit | s |
| Init value | 120.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Minimum kVAR control 2 [2459] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

# Voltage/Current unbalance

### Voltage unbalance

| Variable | Voltage unbalance threshold [2486] |
|---|---|
| Unit | % |
| Init value | 5.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Voltage unbalance timer [2487] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Voltage unbalance control [2488] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Current unbalance

| Variable | Current unbalance threshold [2492] |
|---|---|
| Unit | % |
| Init value | 40.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Current unbalance timer [2493] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Current unbalance control [2494] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Voltage unbalance 2

| Variable | Voltage unbalance threshold 2 [2489] |
|---|---|
| Unit | % |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Voltage unbalance timer 2 [2490] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Voltage unbalance control 2 [2491] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Current unbalance 2

| Variable | Current unbalance threshold 2 [2495] |
|---|---|
| Unit | % |
| Init value | 60.0 |
| Min value | 0.0 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Current unbalance timer 2 [2496] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Current unbalance control 2 [2497] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

# GENERATORS PROTECTIONS

## Reverse kW

| Variable | Reverse kW threshold [2578] |
|---|---|
| Unit | % |
| Init value | 10.0 |
| Min value | 0.1 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Reverse kW timer [2579] |
|---|---|
| Unit | s |
| Init value | 20.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Reverse kW control [2580] |
|---|---|
| Unit | - |
| Init value | 1 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Reverse kW 2

| Variable | Reverse kW threshold 2 [2581] |
|---|---|
| Unit | % |
| Init value | 10.0 |
| Min value | 0.1 |
| Max value | 200.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Reverse kW timer 2 [2582] |
|---|---|
| Unit | s |
| Init value | 20.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Reverse kW control 2 [2583] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

# OTHER PROTECTIONS

## Analog inputs

### Analog input 1

| Variable | Analog input 1 threshold [2600] |
|---|---|
| Unit | bar |
| Init value | 0.0 |
| Min value | -3276.8 |
| Max value | 3276.7 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 1 timer [2601] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 1 control [2602] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Analog input 1 threshold 2 [2603] |
|---|---|
| Unit | bar |
| Init value | 0.0 |
| Min value | -3276.8 |
| Max value | 3276.7 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 1 timer 2 [2604] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 1 control 2 [2605] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Direction analog input 1 protection [2606] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Minimum<br>1: Maximum |
| Description | This setpoint define if the both threshold level for analog input 1 are minimum or maximum limit.<br>If the setpoint is on "Minimum" then the action of vaiables 2602 and 2605 will activate from thresholds level set and below.<br>If the setpoint is on "Maximum" then the action of vaiables 2602 and 2605 will activate from thresholds level set and above. |

## Analog input 2

| Variable | Analog input 2 threshold [2608] |
|---|---|
| Unit | °C |
| Init value | 0.0 |
| Min value | -3276.8 |
| Max value | 3276.7 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 2 timer [2609] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 2 control [2610] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Analog input 2 threshold 2 [2611] |
|---|---|
| Unit | °C |
| Init value | 0.0 |
| Min value | -3276.8 |
| Max value | 3276.7 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 2 timer 2 [2612] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 2 control 2 [2613] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Direction analog input 2 protection [2614] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Minimum<br>1: Maximum |
| Description | This setpoint define if the both threshold level for analog input 2 are minimum or maximum limit.<br>If the setpoint is on "Minimum" then the action of vaiables 2610 and 2613 will activate from thresholds level set and below.<br>If the setpoint is on "Maximum" then the action of vaiables 2610 and 2613 will activate from thresholds level set and above. |

## Analog input 3

| Variable | Analog input 3 threshold [2616] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 3 timer [2617] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 3 control [2618] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Analog input 3 threshold 2 [2619] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 3 timer 2 [2620] |
|---|---|
| Unit | s |
| Init value | 0.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Analog input 3 control 2 [2621] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>1: Electrical fault<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Direction analog input 3 protection [2622] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Minimum<br>1: Maximum |
| Description | This setpoint define if the both threshold level for analog input 3 are minimum or maximum limit.<br>If the setpoint is on "Minimum" then the action of vaiables 2618 and 2621 will activate from thresholds level set and below.<br>If the setpoint is on "Maximum" then the action of vaiables 2618 and 2621 will activate from thresholds level set and above. |

# Battery

## Maximum battery voltage

| Variable | Max. voltage battery threshold [2359] |
|---|---|
| Unit | V |
| Init value | 30.0 |
| Min value | 0.0 |
| Max value | 35.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Max. voltage battery timer [2360] |
|---|---|
| Unit | s |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Max. voltage battery control [2361] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>3: Alarm |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Minimum battery voltage

| Variable | Min. voltage battery threshold [2356] |
|---|---|
| Unit | V |
| Init value | 18.0 |
| Min value | 0.0 |
| Max value | 35.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Min. voltage battery timer [2357] |
|---|---|
| Unit | s |
| Init value | 60.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Min. voltage battery control [2358] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>3: Alarm |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Maximum battery voltage 2

| Variable | Max. voltage battery threshold 2 [2377] |
|---|---|
| Unit | V |
| Init value | 32.0 |
| Min value | 0.0 |
| Max value | 35.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Max. voltage battery timer 2 [2378] |
|---|---|
| Unit | s |
| Init value | 5.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Max. voltage battery control 2 [2379] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>3: Alarm |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## Minimum battery voltage 2

| Variable | Min. voltage battery threshold 2 [2374] |
|---|---|
| Unit | V |
| Init value | 15.0 |
| Min value | 0.0 |
| Max value | 35.0 |
| Description | Threshold to be exceeded to trigger the associated control for this protection. |

| Variable | Min. voltage battery timer 2 [2375] |
|---|---|
| Unit | s |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer defining how long the value should exceed the treshold before triggering the control associated to this protection. |

| Variable | Min. voltage battery control 2 [2376] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Unused<br>3: Alarm |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

# CAN 1

| Variable | Control on controllers communication fault [3052] |
|---|---|
| Unit | - |
| Init value | 4 |
| List | 0: Unused<br>3: Alarm<br>4: Fault (soft shutdown)<br>8: Droop Hz/V + Alarm |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Control on missing GENSYS COMPACT PRIME on CAN bus [3054] |
|---|---|
| Unit | - |
| Init value | 3 |
| List | 0: Unused<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Control on missing MASTER COMPACT/BTB COMPACT on CAN bus [3057] |
|---|---|
| Unit | - |
| Init value | 3 |
| List | 0: Unused<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Control on missing HYBRID COMPACT on CAN bus [3060] |
|---|---|
| Unit | - |
| Init value | 3 |
| List | 0: Unused<br>3: Alarm<br>4: Open breaker |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | Control on missing BAT COMPACT on CAN bus [3061] |
|---|---|
| Unit | - |
| Init value | 3 |
| List | 0: Unused<br>3: Alarm<br>4: Open breaker |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

## CANopen

| Variable | Control on CANopen error [3059] |
|---|---|
| Unit | - |
| Init value | 3 |
| List | 0: Unused<br>3: Alarm<br>4: Fault |
| Description | Action performed on protection's trigger. Actions' description is available in the technical documentation. |

| Variable | CANopen error timer [3152] |
|---|---|
| Unit | s |
| Init value | 10.0 |
| Min value | 0.0 |
| Max value | 6553.5 |
| Description | CANopen error timer |

# PROGRAMMING

## HYSTERESIS

### Hysteresis 1

| Variable | Enable Hysteresis 1 [2657] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | Enable hysteresis on analog input 1 with thresholds E2660 (Low Level) & E2663 (High Level) |

| Variable | Low level threshold [2660] |
|---|---|
| Unit | bar |
| Init value | 0.0 |
| Min value | -3276.8 |
| Max value | 3276.7 |
| Description | Low level threshold for digital output activation on hysteresis 1 |

| Variable | Timer on low level threshold [2666] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer before set/reset digital output on hysteresis low threshold 1 |

| Variable | High level threshold [2663] |
|---|---|
| Unit | bar |
| Init value | 0.0 |
| Min value | -3276.8 |
| Max value | 3276.7 |
| Description | High level threshold for digital output activation on hysteresis 1 |

# PROGRAMMING

| Variable | Timer on high level threshold [2669] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer before set/reset digital output on hysteresis high threshold 1 |

| Variable | Hysteresis Direction 1 [2672] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | Hysteresis 1 Direction (0 : Set on low thresh. - Reset on high thresh. / 1 : Set on high thresh. - Reset on low thresh) |

## Hysteresis 2

| Variable | Enable Hysteresis 2 [2658] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | Enable hysteresis on analog input 2 with thresholds E2661 (Low Level) & E2664 (High Level) |

| Variable | Low level threshold [2661] |
|---|---|
| Unit | °C |
| Init value | 0.0 |
| Min value | -3276.8 |
| Max value | 3276.7 |
| Description | Low level threshold for digital output activation on hysteresis 2 |

| Variable | Timer on low level threshold [2667] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer before set/reset digital output on hysteresis low threshold 2 |

| Variable | High level threshold [2664] |
|---|---|
| Unit | °C |
| Init value | 0.0 |
| Min value | -3276.8 |
| Max value | 3276.7 |
| Description | High level threshold for digital output activation on hysteresis 2 |

| Variable | Timer on high level threshold [2670] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer before set/reset digital output on hysteresis high threshold 2 |

| Variable | Hysteresis Direction 2 [2673] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| Description | Hysteresis 2 Direction (0 : Set on low thresh. - Reset on high thresh. / 1 : Set on high thresh. - Reset on low thresh) |

## Hysteresis 3

| Variable | Enable Hysteresis 3 [2659] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: No<br>1: Yes |
| Description | Enable hysteresis on analog input 3 with thresholds E2662 (Low Level) & E2665 (High Level) |

| Variable | Low level threshold [2662] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | Low level threshold for digital output activation on hysteresis 3 |

| Variable | Timer on low level threshold [2668] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer before set/reset digital output on hysteresis low threshold 3 |

| Variable | High level threshold [2665] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | -32768 |
| Max value | 32767 |
| Description | High level threshold for digital output activation on hysteresis 3 |

| Variable | Timer on high level threshold [2671] |
|---|---|
| Unit | s |
| Init value | 3.0 |
| Min value | 0.0 |
| Max value | 999.9 |
| Description | Timer before set/reset digital output on hysteresis high threshold 3 |

| | |
|---|---|
| **Variable** | Hysteresis Direction 3 [2674] |
| **Unit** | - |
| **Init value** | 0 |
| **List** | 0: Set on low threshold, reset on high threshold<br>1: Set on high threshold, reset on low threshold |
| **Description** | Hysteresis 3 Direction (0 : Set on low thresh. - Reset on high thresh. / 1 : Set on high thresh. - Reset on low thresh) |

# MODBUS

## Connection settings

| | |
|---|---|
| **Variable** | Enable connection to Modbus server [3031] |
| **Unit** | - |
| **Init value** | 0 |
| **List** | 0: No<br>1: Yes |
| **Description** | Enable connection to a Modbus server for custom read/write requests |

| | |
|---|---|
| **Variable** | Control on Modbus server timeouts [3030] |
| **Unit** | - |
| **Init value** | 3 |
| **List** | 0: Unused<br>3: Alarm<br>4: Fault |
| **Description** | Control on TCP connection loss or frame timeout with Modbus server |

| | |
|---|---|
| **Variable** | Modbus server frame timeout [3032] |
| **Unit** | s |
| **Init value** | 5.0 |
| **Min value** | 0.0 |
| **Max value** | 6553.5 |
| **Description** | Timeout in ms for no response to a frame emitted from the Modbus server |

## Modbus rights

| | |
|---|---|
| **Variable** | Write date/time [3015.0] |
| **Description** | - |

| | |
|---|---|
| **Variable** | Write engine meters [3015.1] |
| **Description** | - |

| | |
|---|---|
| **Variable** | Write input functions [3015.3] |
| **Description** | - |

| Variable | Reading via Modbus TCP [3015.8] |
|---|---|
| Description | - |

| Variable | Writing via Modbus TCP [3015.9] |
|---|---|
| Description | - |

# LOGGER

## Activation

| Variable | Activation [3610] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Off<br>1: On |
| Description | Archiving mode OFF = NEVER / ALWAYS / POST STARTING / STABILIZED, event archiving can be activated depending on engine status.<br>Warning: erase will delete all faults, alarms and archived data. |

## Variables 1-5

### Log 1

| Variable | Variable 1 to log [3600] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Logger of the variable to archive |

| Variable | Log variable 1 on [3622] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Value change<br>1: Interval |
| Description | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at specific intervals, defined by the user ([3612])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| Variable | Logging period variable 1 [3612] |
|---|---|
| Unit | s |
| Init value | 1 |
| Min value | 1 |
| Max value | 9999 |
| Description | Time in second of interval between each archiving |

## Log 2

| Variable | Variable 2 to log [3601] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Logger of the variable to archive |

| Variable | Log variable 2 on [3623] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Value change<br>1: Interval |
| Description | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at a periodic interval, defined by the user ([3613])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| Variable | Logging period variable 2 [3613] |
|---|---|
| Unit | s |
| Init value | 1 |
| Min value | 1 |
| Max value | 9999 |
| Description | Time in second of interval between each archiving |

## Log 3

| Variable | Variable 3 to log [3602] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Logger of the variable to archive |

| Variable | Log variable 3 on [3624] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Value change<br>1: Interval |
| Description | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at a periodic interval, defined by the user ([3614])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| Variable | Logging period variable 3 [3614] |
|---|---|
| Unit | s |
| Init value | 1 |
| Min value | 1 |
| Max value | 9999 |
| Description | Time in second of interval between each archiving |

## Log 4

| Variable | Variable 4 to log [3603] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Logger of the variable to archive |

| Variable | Log variable 4 on [3625] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Value change<br>1: Interval |
| Description | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at a periodic interval, defined by the user ([3615])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| Variable | Logging period variable 4 [3615] |
|---|---|
| Unit | s |
| Init value | 1 |
| Min value | 1 |
| Max value | 9999 |
| Description | Time in second of interval between each archiving |

## Log 5

| Variable | Variable 5 to log [3604] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Logger of the variable to archive |

| Variable | Log variable 5 on [3626] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Value change<br>1: Interval |
| Description | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at a periodic interval, defined by the user ([3616])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| | |
|---|---|
| **Variable** | Logging period variable 5 [3616] |
| **Unit** | s |
| **Init value** | 1 |
| **Min value** | 1 |
| **Max value** | 9999 |
| **Description** | Time in second of interval between each archiving |

# Variables 6-10

## Log 6

| | |
|---|---|
| **Variable** | Variable 6 to log [3605] |
| **Unit** | - |
| **Init value** | 0 |
| **Min value** | 0 |
| **Max value** | 10299 |
| **Description** | Logger of the variable to archive |

| | |
|---|---|
| **Variable** | Log variable 6 on [3627] |
| **Unit** | - |
| **Init value** | 0 |
| **List** | 0: Value change<br>1: Interval |
| **Description** | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at a periodic interval, defined by the user ([3617])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| | |
|---|---|
| **Variable** | Logging period variable 6 [3617] |
| **Unit** | s |
| **Init value** | 1 |
| **Min value** | 1 |
| **Max value** | 9999 |
| **Description** | Time in second of interval between each archiving |

## Log 7

| Variable | Variable 7 to log [3606] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Logger of the variable to archive |

| Variable | Log variable 7 on [3628] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Value change<br>1: Interval |
| Description | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at a periodic interval, defined by the user ([3618])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| Variable | Logging period variable 7 [3618] |
|---|---|
| Unit | s |
| Init value | 1 |
| Min value | 1 |
| Max value | 9999 |
| Description | Time in second of interval between each archiving |

## Log 8

| Variable | Variable 8 to log [3607] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Logger of the variable to archive |

| Variable | Log variable 8 on [3629] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Value change<br>1: Interval |
| Description | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at a periodic interval, defined by the user ([3619])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| Variable | Logging period variable 8 [3619] |
|---|---|
| Unit | s |
| Init value | 1 |
| Min value | 1 |
| Max value | 9999 |
| Description | Time in second of interval between each archiving |

## Log 9

| Variable | Variable 9 to log [3608] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Logger of the variable to archive |

| Variable | Log variable 9 on [3630] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Value change<br>1: Interval |
| Description | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at a periodic interval, defined by the user ([3620])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| Variable | Logging period variable 9 [3620] |
|---|---|
| Unit | s |
| Init value | 1 |
| Min value | 1 |
| Max value | 9999 |
| Description | Time in second of interval between each archiving |

## Log 10

| Variable | Variable 10 to log [3609] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 10299 |
| Description | Logger of the variable to archive |

| Variable | Log variable 10 on [3631] |
|---|---|
| Unit | - |
| Init value | 0 |
| List | 0: Value change<br>1: Interval |
| Description | A variable can be logged in two different ways:<br>- Interval: The variable will be logged at a periodic interval, defined by the user ([3621])<br>- Value change: The variable will be logged each time the value of the variable has been changed |

| Variable | Logging period variable 10 [3621] |
|---|---|
| Unit | s |
| Init value | 1 |
| Min value | 1 |
| Max value | 9999 |
| Description | Time in second of interval between each archiving |

# SYSTEM

## LCD DISPLAY

### Screen saving

| | |
|---|---|
| **Variable** | Screensaver timeout [3551] |
| **Unit** | min |
| **Init value** | 5 |
| **Min value** | 0 |
| **Max value** | 120 |
| **Description** | Timeout  Screen saver (0=infini) |

### Backlight

| | |
|---|---|
| **Variable** | Backlight timeout [3552] |
| **Unit** | min |
| **Init value** | 5 |
| **Min value** | 0 |
| **Max value** | 120 |
| **Description** | Timeout  Backlight (0=infini) |

| | |
|---|---|
| **Variable** | LCD screen backlight [3555] |
| **Unit** | % |
| **Init value** | 100 |
| **Min value** | 0 |
| **Max value** | 100 |
| **Description** | LCD backlight intensity |

| | |
|---|---|
| **Variable** | LCD screen contrast [3554] |
| **Unit** | % |
| **Init value** | 50 |
| **Min value** | 0 |
| **Max value** | 100 |
| **Description** | LCD contrast intensity |

# DATE/TIME

| Variable | Day of the week [10] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 6 |
| Description | Day of the week (RTC) |

| Variable | Day [11] |
|---|---|
| Unit | days |
| Init value | 0 |
| Min value | 1 |
| Max value | 31 |
| Description | Day (RTC) |

| Variable | Month [12] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 1 |
| Max value | 12 |
| Description | Month (RTC) |

| Variable | Year [13] |
|---|---|
| Unit | - |
| Init value | 0 |
| Min value | 0 |
| Max value | 99 |
| Description | Year (RTC) |

| Variable | Hours [14] |
|---|---|
| Unit | h |
| Init value | 0 |
| Min value | 0 |
| Max value | 23 |
| Description | Hours (RTC) |

| Variable | Minutes [15] |
|---|---|
| Unit | min |
| Init value | 0 |
| Min value | 0 |
| Max value | 59 |
| Description | Minutes (RTC) |

# BUTTONS INHIBITION

| Variable | On button inhibition [8102.14] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

| Variable | Off button inhibition [8102.13] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

| Variable | Fault/Alarm/info button inhibition [8102.7] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

| Variable | Esc button inhibition [8102.6] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

| Variable | Enter button inhibition [8102.5] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

| Variable | Up arrow button inhibition [8102.4] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

| Variable | Left arrow button inhibition [8102.3] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

| Variable | Down arrow button inhibition [8102.2] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

| Variable | Right arrow button inhibition [8102.1] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

| Variable | Shift button inhibition [8102.0] |
|---|---|
| Description | Allows to disable (1) or enable (0) the button |

# LIST OF INPUTS

## INVERTER

| Variable | Inverter breaker feedback [4641] |
|---|---|
| Description | Allows to manually set the state of the inverter breaker. |

# LIST OF INPUTS

## INVERTER

## INPUTS/OUTPUTS

| | |
|---|---|
| **Variable** | Digital output 1 forced [4630] |
| **Description** | Activating this input will force activation of digital ouput 1. |

| | |
|---|---|
| **Variable** | Digital output 2 forced [4631] |
| **Description** | Activating this input will force activation of digital ouput 2. |

| | |
|---|---|
| **Variable** | Digital output 3 forced [4632] |
| **Description** | Activating this input will force activation of digital ouput 3. |

| | |
|---|---|
| **Variable** | Digital output 4 forced [4633] |
| **Description** | Activating this input will force activation of digital ouput 4. |

| | |
|---|---|
| **Variable** | Digital output 5 forced [4634] |
| **Description** | Activating this input will force activation of digital ouput 5. |

| | |
|---|---|
| **Variable** | Digital output 6 forced [4635] |
| **Description** | Activating this input will force activation of digital ouput 6. |

| | |
|---|---|
| **Variable** | Relay 1 forced [4950] |
| **Description** | Activating this input will force activation of relay ouput 1. |

| | |
|---|---|
| **Variable** | Relay 2 forced [4951] |
| **Description** | Activating this input will force activation of relay ouput 2. |

## ALARMS/FAULTS

| Variable | Emergency stop [4505] |
|---|---|
| Description | Disconnects the inverter from the bus (if configured). |

| Variable | Electrical fault [4507] |
|---|---|
| Description | External electrical fault : Activation opens the circuit-breaker and keeps it open. After an adjustable delay (circuit-breaker menu/Delay before new attempt), a new attempt will be performed to close the circuit-breaker. The maximum number of attempts can be set in breaker settings (number of closing attempts). If the fault is still present after the last attempt, the circuit-breaker will open and the system will stop on fault. |

| Variable | Remote fault [4526] |
|---|---|
| Description | Disconnects the inverter from the bus (if configured). |

| Variable | Remote alarm [4527] |
|---|---|
| Description | Alarm only - non critical event activated by external device - Orange led is displayed an event logged. |

# ALTERNATIVE SELECTIONS

| Variable | Alternative selection 1 [4594] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 2 [4595] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 3 [4596] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 4 [4597] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 5 [4598] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 6 [4599] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 7 [4600] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 8 [4601] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 9 [4602] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 10 [4603] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 11 [4604] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 12 [4605] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 13 [4606] |
|---|---|
| Description | Available variable to toggle a parameter between 2 values. See Alternative selection function. |

| Variable | Alternative selection 14 [4607] |
|---|---|
| Description | 14th available variable to switch a parameter between 2 values |

| Variable | Alternative selection 15 [4608] |
|---|---|
| Description | 15th available variable to switch a parameter between 2 values |

| Variable | Alternative selection 16 [4609] |
|---|---|
| Description | 16th available variable to switch a parameter between 2 values |

# HYSTERESIS

| Variable | Hysteresis low threshold DI1 [4614] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis low threshold. |

| Variable | Hysteresis low threshold DI2 [4615] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis low threshold. |

| Variable | Hysteresis low threshold DI3 [4616] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis low threshold. |

| Variable | Hysteresis low threshold DI4 [4617] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis low threshold. |

| Variable | Hysteresis low threshold DI5 [4618] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis low threshold. |

| Variable | Hysteresis low threshold DI6 [4619] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis low threshold. |

| Variable | Hysteresis low threshold DI7 [4620] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis low threshold. |

| Variable | Hysteresis low threshold DI8 [4621] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis low threshold. |

| Variable | Hysteresis high threshold DI1 [4622] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis high threshold. |

| Variable | Hysteresis high threshold DI2 [4623] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis high threshold. |

| Variable | Hysteresis high threshold DI3 [4624] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis high threshold. |

| Variable | Hysteresis high threshold DI4 [4625] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis high threshold. |

| Variable | Hysteresis high threshold DI5 [4626] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis high threshold. |

| Variable | Hysteresis high threshold DI6 [4627] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis high threshold. |

| Variable | Hysteresis high threshold DI7 [4628] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis high threshold. |

| Variable | Hysteresis high threshold DI8 [4629] |
|---|---|
| Description | Activate to trigger the corresponding hysteresis high threshold. |

# REMOTE BUTTONS

| Variable | Remote faults reset [4506] |
|---|---|
| Description | External reset. Aknowledgement of alarm/fault present in display pages (same action as shift+I reset). |

| Variable | ON mode request [4513] |
|---|---|
| Description | ON mode external request |

| Variable | Stop horn [4530] |
|---|---|
| Description | External horn stop request. Used when Horn output is configured. |

| Variable | Led test [4580] |
|---|---|
| Description | Activates all LEDs of the module in order to check that the LEDs work |

| Variable | OFF mode request [4590] |
|---|---|
| Description | Puts the product into off mode, same effect as OFF key |

# LIST OF OUTPUTS

## COMMANDS

| Variable | Horn [4663] |
|---|---|
| Description | External horn or warning light. Activated whenever a fault/alarm triggers. The output is disable on acknowledgment or reset. Horn timer is adjustable in timer menu (0s = permanent activation). |

| Variable | ON/OFF request [4733] |
|---|---|
| Description | ON/OFF request to control the inverter's internal breaker. |

| Variable | Faults reset [4737] |
|---|---|
| Description | Active when a Fault RESET is requested on controller. |

# INVERTER

| Variable | Inverter running [4670] |
|---|---|
| Description | Status report: Active if the inverter is producing on the bus. |

## INPUTS/OUTPUTS

| Variable | Input 1 (Customisable) [250] |
|---|---|
| Description | Digital input n°1 of the product.<br>Select a normally open polarity if the input is connected to 0V when the input should be considered active.<br>Select a normally closed polarity if the input is connected to 0V when the input must be considered inactive.<br>The validity indicates when the digital input should be taken into account.<br>The T ON delay allows you to add a delay between the moment when the digital input is physically activated and the moment when the product considers it active for the automated system.<br>The T OFF time delay allows you to add a delay between the moment when the digital input is physically disabled and the moment when the product considers it inactive for the automated system. |

| Variable | Input 2 (Customisable) [251] |
|---|---|
| Description | Digital input n°2 of the product.<br>Select a normally open polarity if the input is connected to 0V when the input should be considered active.<br>Select a normally closed polarity if the input is connected to 0V when the input must be considered inactive.<br>The validity indicates when the digital input should be taken into account.<br>The T ON delay allows you to add a delay between the moment when the digital input is physically activated and the moment when the product considers it active for the automated system.<br>The T OFF time delay allows you to add a delay between the moment when the digital input is physically disabled and the moment when the product considers it inactive for the automated system. |

| Variable | Input 3 (Customisable) [252] |
|---|---|
| Description | Digital input n°3 of the product.<br>Select a normally open polarity if the input is connected to 0V when the input should be considered active.<br>Select a normally closed polarity if the input is connected to 0V when the input must be considered inactive.<br>The validity indicates when the digital input should be taken into account.<br>The T ON delay allows you to add a delay between the moment when the digital input is physically activated and the moment when the product considers it active for the automated system.<br>The T OFF time delay allows you to add a delay between the moment when the digital input is physically disabled and the moment when the product considers it inactive for the automated system. |

| Variable | Input 4 (Customisable) [253] |
|---|---|
| Description | Digital input n°4 of the product. Select a normally open polarity if the input is connected to 0V when the input should be considered active. Select a normally closed polarity if the input is connected to 0V when the input must be considered inactive. The validity indicates when the digital input should be taken into account. The T ON delay allows you to add a delay between the moment when the digital input is physically activated and the moment when the product considers it active for the automated system. The T OFF time delay allows you to add a delay between the moment when the digital input is physically disabled and the moment when the product considers it inactive for the automated system. |

| Variable | Input 5 (Customisable) [254] |
|---|---|
| Description | Digital input n°5 of the product. Select a normally open polarity if the input is connected to 0V when the input should be considered active. Select a normally closed polarity if the input is connected to 0V when the input must be considered inactive. The validity indicates when the digital input should be taken into account. The T ON delay allows you to add a delay between the moment when the digital input is physically activated and the moment when the product considers it active for the automated system. The T OFF time delay allows you to add a delay between the moment when the digital input is physically disabled and the moment when the product considers it inactive for the automated system. |

| Variable | Input 6 (Customisable) [255] |
|---|---|
| Description | Digital input n°6 of the product. Select a normally open polarity if the input is connected to 0V when the input should be considered active. Select a normally closed polarity if the input is connected to 0V when the input must be considered inactive. The validity indicates when the digital input should be taken into account. The T ON delay allows you to add a delay between the moment when the digital input is physically activated and the moment when the product considers it active for the automated system. The T OFF time delay allows you to add a delay between the moment when the digital input is physically disabled and the moment when the product considers it inactive for the automated system. |

| Variable | Input 7 (Customisable) [256] |
|---|---|
| Description | Digital input n°7 of the product.<br>Select a normally open polarity if the input is connected to 0V when the input should be considered active.<br>Select a normally closed polarity if the input is connected to 0V when the input must be considered inactive.<br>The validity indicates when the digital input should be taken into account.<br>The T ON delay allows you to add a delay between the moment when the digital input is physically activated and the moment when the product considers it active for the automated system.<br>The T OFF time delay allows you to add a delay between the moment when the digital input is physically disabled and the moment when the product considers it inactive for the automated system. |

| Variable | Input 8 (Customisable) [257] |
|---|---|
| Description | Digital input n°8 of the product.<br>Select a normally open polarity if the input is connected to 0V when the input should be considered active.<br>Select a normally closed polarity if the input is connected to 0V when the input must be considered inactive.<br>The validity indicates when the digital input should be taken into account.<br>The T ON delay allows you to add a delay between the moment when the digital input is physically activated and the moment when the product considers it active for the automated system.<br>The T OFF time delay allows you to add a delay between the moment when the digital input is physically disabled and the moment when the product considers it inactive for the automated system. |

| Variable | Input 9 (Customisable) [258] |
|---|---|
| Description | Digital input n°9 of the product.<br>Select a normally open polarity if the input is connected to 0V when the input should be considered active.<br>Select a normally closed polarity if the input is connected to 0V when the input must be considered inactive.<br>The validity indicates when the digital input should be taken into account.<br>The T ON delay allows you to add a delay between the moment when the digital input is physically activated and the moment when the product considers it active for the automated system.<br>The T OFF time delay allows you to add a delay between the moment when the digital input is physically disabled and the moment when the product considers it inactive for the automated system. |

| Variable | Analog 1 (Customisable) [259] |
|---|---|
| Description | Digital input 10  (Analog1 set as Digital input) |

| Variable | Analog 2 (Customisable) [260] |
|---|---|
| Description | Digital input 11  (Analog2 set as Digital input) |

| Variable | Analog 3 (Customisable) [261] |
|---|---|
| Description | Digital input 12  (Analog3 set as Digital input) |

| Variable | Physical status of digital input 1 [953.0] |
|---|---|
| Description | Physical state of the digital input (without application of polarity, validity and time delays) |

| Variable | Physical status of digital input 2 [953.1] |
|---|---|
| Description | Physical state of the digital input (without application of polarity, validity and time delays) |

| Variable | Physical status of digital input 3 [953.2] |
|---|---|
| Description | Physical state of the digital input (without application of polarity, validity and time delays) |

| Variable | Physical status of digital input 4 [953.3] |
|---|---|
| Description | Physical state of the digital input (without application of polarity, validity and time delays) |

| Variable | Physical status of digital input 5 [953.4] |
|---|---|
| Description | Physical state of the digital input (without application of polarity, validity and time delays) |

| Variable | Physical status of digital input 6 [953.5] |
|---|---|
| Description | Physical state of the digital input (without application of polarity, validity and time delays) |

| Variable | Physical status of digital input 7 [953.6] |
|---|---|
| Description | Physical state of the digital input (without application of polarity, validity and time delays) |

| Variable | Physical status of digital input 8 [953.7] |
|---|---|
| Description | Physical state of the digital input (without application of polarity, validity and time delays) |

| Variable | Physical status of digital input 9 [953.8] |
|---|---|
| Description | Physical state of the digital input (without application of polarity, validity and time delays) |

| Variable | Output 1 (Customisable) [4350] |
|---|---|
| Description | Real time displayed status of Digital Output 1 |

| Variable | Output 2 (Customisable) [4351] |
|---|---|
| Description | Real time displayed status of Digital Output 2 |

| Variable | Output 3 (Customisable) [4352] |
|---|---|
| Description | Real time displayed status of Digital Output 3 |

| Variable | Output 4 (Customisable) [4353] |
|---|---|
| Description | Real time displayed status of Digital Output 4 |

| Variable | Output 5 (Customisable) [4354] |
|---|---|
| Description | Real time displayed status of Digital Output 5 |

| Variable | Output 6 (Customisable) [4355] |
|---|---|
| Description | Real time displayed status of Digital Output 6 |

| Variable | Relay 1 (Customisable) [4356] |
|---|---|
| Description | Real time displayed status of Relay Output 1 |

| Variable | Relay 2 (Customisable) [4357] |
|---|---|
| Description | Real time displayed status of Relay Output 2 |

# I/O CAN BUS EXPANSION

| | |
|---|---|
| **Variable** | CANopen DI 1 (Customisable) [800] |
| **Description** | CANopen digital Input 1 |

| | |
|---|---|
| **Variable** | CANopen DI 2 (Customisable) [801] |
| **Description** | CANopen digital Input 2 |

| | |
|---|---|
| **Variable** | CANopen DI 3 (Customisable) [802] |
| **Description** | CANopen digital Input 3 |

| | |
|---|---|
| **Variable** | CANopen DI 4 (Customisable) [803] |
| **Description** | CANopen digital Input 4 |

| | |
|---|---|
| **Variable** | CANopen DI 5 (Customisable) [804] |
| **Description** | CANopen digital Input 5 |

| | |
|---|---|
| **Variable** | CANopen DI 6 (Customisable) [805] |
| **Description** | CANopen digital Input 6 |

| | |
|---|---|
| **Variable** | CANopen DI 7 (Customisable) [806] |
| **Description** | CANopen digital Input 7 |

| | |
|---|---|
| **Variable** | CANopen DI 8 (Customisable) [807] |
| **Description** | CANopen digital Input 8 |

| | |
|---|---|
| **Variable** | CANopen DI 9 (Customisable) [808] |
| **Description** | CANopen digital Input 9 |

| | |
|---|---|
| **Variable** | CANopen DI 10 (Customisable) [809] |
| **Description** | CANopen digital Input 10 |

| Variable | CANopen DI 11 (Customisable) [810] |
|---|---|
| Description | CANopen digital Input 11 |

| Variable | CANopen DI 12 (Customisable) [811] |
|---|---|
| Description | CANopen digital Input 12 |

| Variable | CANopen DI 13 (Customisable) [812] |
|---|---|
| Description | CANopen digital Input 13 |

| Variable | CANopen DI 14 (Customisable) [813] |
|---|---|
| Description | CANopen digital Input 14 |

| Variable | CANopen DI 15 (Customisable) [814] |
|---|---|
| Description | CANopen digital Input 15 |

| Variable | CANopen DI 16 (Customisable) [815] |
|---|---|
| Description | CANopen digital Input 16 |

| Variable | CANopen DI 17 (Customisable) [816] |
|---|---|
| Description | CANopen digital Input 17 |

| Variable | CANopen DI 18 (Customisable) [817] |
|---|---|
| Description | CANopen digital Input 18 |

| Variable | CANopen DI 19 (Customisable) [818] |
|---|---|
| Description | CANopen digital Input 19 |

| Variable | CANopen DI 20 (Customisable) [819] |
|---|---|
| Description | CANopen digital Input 20 |

| Variable | CANopen DI 21 (Customisable) [820] |
|---|---|
| Description | CANopen digital Input 21 |

| Variable | CANopen DI 22 (Customisable) [821] |
|---|---|
| **Description** | CANopen digital Input 22 |

| Variable | CANopen DI 23 (Customisable) [822] |
|---|---|
| **Description** | CANopen digital Input 23 |

| Variable | CANopen DI 24 (Customisable) [823] |
|---|---|
| **Description** | CANopen digital Input 24 |

| Variable | CANopen DI 25 (Customisable) [824] |
|---|---|
| **Description** | CANopen digital Input 25 |

| Variable | CANopen DI 26 (Customisable) [825] |
|---|---|
| **Description** | CANopen digital Input 26 |

| Variable | CANopen DI 27 (Customisable) [826] |
|---|---|
| **Description** | CANopen digital Input 27 |

| Variable | CANopen DI 28 (Customisable) [827] |
|---|---|
| **Description** | CANopen digital Input 28 |

| Variable | CANopen DI 29 (Customisable) [828] |
|---|---|
| **Description** | CANopen digital Input 29 |

| Variable | CANopen DI 30 (Customisable) [829] |
|---|---|
| **Description** | CANopen digital Input 30 |

| Variable | CANopen DI 31 (Customisable) [830] |
|---|---|
| **Description** | CANopen digital Input 31 |

| Variable | CANopen DI 32 (Customisable) [831] |
|---|---|
| **Description** | CANopen digital Input 32 |

| | |
|---|---|
| **Variable** | CANopen DI 33 (Customisable) [1250] |
| **Description** | CANopen digital Input 33 |

| | |
|---|---|
| **Variable** | CANopen DI 34 (Customisable) [1251] |
| **Description** | CANopen digital Input 34 |

| | |
|---|---|
| **Variable** | CANopen DI 35 (Customisable) [1252] |
| **Description** | CANopen digital Input 35 |

| | |
|---|---|
| **Variable** | CANopen DI 36 (Customisable) [1253] |
| **Description** | CANopen digital Input 36 |

| | |
|---|---|
| **Variable** | CANopen DI 37 (Customisable) [1254] |
| **Description** | CANopen digital Input 37 |

| | |
|---|---|
| **Variable** | CANopen DI 38 (Customisable) [1255] |
| **Description** | CANopen digital Input 38 |

| | |
|---|---|
| **Variable** | CANopen DI 39 (Customisable) [1256] |
| **Description** | CANopen digital Input 39 |

| | |
|---|---|
| **Variable** | CANopen DI 40 (Customisable) [1257] |
| **Description** | CANopen digital Input 40 |

| | |
|---|---|
| **Variable** | CANopen DI 41 (Customisable) [1258] |
| **Description** | CANopen digital Input 41 |

| | |
|---|---|
| **Variable** | CANopen DI 42 (Customisable) [1259] |
| **Description** | CANopen digital Input 42 |

| | |
|---|---|
| **Variable** | CANopen DI 43 (Customisable) [1260] |
| **Description** | CANopen digital Input 43 |

| Variable | CANopen DI 44 (Customisable) [1261] |
|---|---|
| Description | CANopen digital Input 44 |

| Variable | CANopen DI 45 (Customisable) [1262] |
|---|---|
| Description | CANopen digital Input 45 |

| Variable | CANopen DI 46 (Customisable) [1263] |
|---|---|
| Description | CANopen digital Input 46 |

| Variable | CANopen DI 47 (Customisable) [1264] |
|---|---|
| Description | CANopen digital Input 47 |

| Variable | CANopen DI 48 (Customisable) [1265] |
|---|---|
| Description | CANopen digital Input 48 |

| Variable | CANopen DI 49 (Customisable) [1266] |
|---|---|
| Description | CANopen digital Input 49 |

| Variable | CANopen DI 50 (Customisable) [1267] |
|---|---|
| Description | CANopen digital Input 50 |

| Variable | CANopen DI 51 (Customisable) [1268] |
|---|---|
| Description | CANopen digital Input 51 |

| Variable | CANopen DI 52 (Customisable) [1269] |
|---|---|
| Description | CANopen digital Input 52 |

| Variable | CANopen DI 53 (Customisable) [1270] |
|---|---|
| Description | CANopen digital Input 53 |

| Variable | CANopen DI 54 (Customisable) [1271] |
|---|---|
| Description | CANopen digital Input 54 |

| **Variable** | CANopen DI 55 (Customisable) [1272] |
|---|---|
| **Description** | CANopen digital Input 55 |

| **Variable** | CANopen DI 56 (Customisable) [1273] |
|---|---|
| **Description** | CANopen digital Input 56 |

| **Variable** | CANopen DI 57 (Customisable) [1274] |
|---|---|
| **Description** | CANopen digital Input 57 |

| **Variable** | CANopen DI 58 (Customisable) [1275] |
|---|---|
| **Description** | CANopen digital Input 58 |

| **Variable** | CANopen DI 59 (Customisable) [1276] |
|---|---|
| **Description** | CANopen digital Input 59 |

| **Variable** | CANopen DI 60 (Customisable) [1277] |
|---|---|
| **Description** | CANopen digital Input 60 |

| **Variable** | CANopen DI 61 (Customisable) [1278] |
|---|---|
| **Description** | CANopen digital Input 61 |

| **Variable** | CANopen DI 62 (Customisable) [1279] |
|---|---|
| **Description** | CANopen digital Input 62 |

| **Variable** | CANopen DI 63 (Customisable) [1280] |
|---|---|
| **Description** | CANopen digital Input 63 |

| **Variable** | CANopen DI 64 (Customisable) [1281] |
|---|---|
| **Description** | CANopen digital Input 64 |

| **Variable** | CANopen DO 1 (Customisable) [4751] |
|---|---|
| **Description** | CANopen digital output 1 |

| Variable | CANopen DO 2 (Customisable) [4752] |
|---|---|
| **Description** | CANopen digital output 2 |

| Variable | CANopen DO 3 (Customisable) [4753] |
|---|---|
| **Description** | CANopen digital output 3 |

| Variable | CANopen DO 4 (Customisable) [4754] |
|---|---|
| **Description** | CANopen digital output 4 |

| Variable | CANopen DO 5 (Customisable) [4755] |
|---|---|
| **Description** | CANopen digital output 5 |

| Variable | CANopen DO 6 (Customisable) [4756] |
|---|---|
| **Description** | CANopen digital output 6 |

| Variable | CANopen DO 7 (Customisable) [4757] |
|---|---|
| **Description** | CANopen digital output 7 |

| Variable | CANopen DO 8 (Customisable) [4758] |
|---|---|
| **Description** | CANopen digital output 8 |

| Variable | CANopen DO 9 (Customisable) [4759] |
|---|---|
| **Description** | CANopen digital output 9 |

| Variable | CANopen DO 10 (Customisable) [4760] |
|---|---|
| **Description** | CANopen digital output 10 |

| Variable | CANopen DO 11 (Customisable) [4761] |
|---|---|
| **Description** | CANopen digital output 11 |

| Variable | CANopen DO 12 (Customisable) [4762] |
|---|---|
| **Description** | CANopen digital output 12 |

| Variable | CANopen DO 13 (Customisable) [4763] |
|---|---|
| Description | CANopen digital output 13 |

| Variable | CANopen DO 14 (Customisable) [4764] |
|---|---|
| Description | CANopen digital output 14 |

| Variable | CANopen DO 15 (Customisable) [4765] |
|---|---|
| Description | CANopen digital output 15 |

| Variable | CANopen DO 16 (Customisable) [4766] |
|---|---|
| Description | CANopen digital output 16 |

| Variable | CANopen DO 17 (Customisable) [4767] |
|---|---|
| Description | CANopen digital output 17 |

| Variable | CANopen DO 18 (Customisable) [4768] |
|---|---|
| Description | CANopen digital output 18 |

| Variable | CANopen DO 19 (Customisable) [4769] |
|---|---|
| Description | CANopen digital output 19 |

| Variable | CANopen DO 20 (Customisable) [4770] |
|---|---|
| Description | CANopen digital output 20 |

| Variable | CANopen DO 21 (Customisable) [4771] |
|---|---|
| Description | CANopen digital output 21 |

| Variable | CANopen DO 22 (Customisable) [4772] |
|---|---|
| Description | CANopen digital output 22 |

| Variable | CANopen DO 23 (Customisable) [4773] |
|---|---|
| Description | CANopen digital output 23 |

| | |
|---|---|
| **Variable** | CANopen DO 24 (Customisable) [4774] |
| **Description** | CANopen digital output 24 |

| | |
|---|---|
| **Variable** | CANopen DO 25 (Customisable) [4775] |
| **Description** | CANopen digital output 25 |

| | |
|---|---|
| **Variable** | CANopen DO 26 (Customisable) [4776] |
| **Description** | CANopen digital output 26 |

| | |
|---|---|
| **Variable** | CANopen DO 27 (Customisable) [4777] |
| **Description** | CANopen digital output 27 |

| | |
|---|---|
| **Variable** | CANopen DO 28 (Customisable) [4778] |
| **Description** | CANopen digital output 28 |

| | |
|---|---|
| **Variable** | CANopen DO 29 (Customisable) [4779] |
| **Description** | CANopen digital output 29 |

| | |
|---|---|
| **Variable** | CANopen DO 30 (Customisable) [4780] |
| **Description** | CANopen digital output 30 |

| | |
|---|---|
| **Variable** | CANopen DO 31 (Customisable) [4781] |
| **Description** | CANopen digital output 31 |

| | |
|---|---|
| **Variable** | CANopen DO 32 (Customisable) [4782] |
| **Description** | CANopen digital output 32 |

| | |
|---|---|
| **Variable** | CANopen DO 33 (Customisable) [5100] |
| **Description** | CANopen digital output 33 |

| | |
|---|---|
| **Variable** | CANopen DO 34 (Customisable) [5101] |
| **Description** | CANopen digital output 34 |

| Variable | CANopen DO 35 (Customisable) [5102] |
|---|---|
| Description | CANopen digital output 35 |

| Variable | CANopen DO 36 (Customisable) [5103] |
|---|---|
| Description | CANopen digital output 36 |

| Variable | CANopen DO 37 (Customisable) [5104] |
|---|---|
| Description | CANopen digital output 37 |

| Variable | CANopen DO 38 (Customisable) [5105] |
|---|---|
| Description | CANopen digital output 38 |

| Variable | CANopen DO 39 (Customisable) [5106] |
|---|---|
| Description | CANopen digital output 39 |

| Variable | CANopen DO 40 (Customisable) [5107] |
|---|---|
| Description | CANopen digital output 40 |

| Variable | CANopen DO 41 (Customisable) [5108] |
|---|---|
| Description | CANopen digital output 41 |

| Variable | CANopen DO 42 (Customisable) [5109] |
|---|---|
| Description | CANopen digital output 42 |

| Variable | CANopen DO 43 (Customisable) [5110] |
|---|---|
| Description | CANopen digital output 43 |

| Variable | CANopen DO 44 (Customisable) [5111] |
|---|---|
| Description | CANopen digital output 44 |

| Variable | CANopen DO 45 (Customisable) [5112] |
|---|---|
| Description | CANopen digital output 45 |

| Variable | CANopen DO 46 (Customisable) [5113] |
|---|---|
| Description | CANopen digital output 46 |

| Variable | CANopen DO 47 (Customisable) [5114] |
|---|---|
| Description | CANopen digital output 47 |

| Variable | CANopen DO 48 (Customisable) [5115] |
|---|---|
| Description | CANopen digital output 48 |

| Variable | CANopen DO 49 (Customisable) [5116] |
|---|---|
| Description | CANopen digital output 49 |

| Variable | CANopen DO 50 (Customisable) [5117] |
|---|---|
| Description | CANopen digital output 50 |

| Variable | CANopen DO 51 (Customisable) [5118] |
|---|---|
| Description | CANopen digital output 51 |

| Variable | CANopen DO 52 (Customisable) [5119] |
|---|---|
| Description | CANopen digital output 52 |

| Variable | CANopen DO 53 (Customisable) [5120] |
|---|---|
| Description | CANopen digital output 53 |

| Variable | CANopen DO 54 (Customisable) [5121] |
|---|---|
| Description | CANopen digital output 54 |

| Variable | CANopen DO 55 (Customisable) [5122] |
|---|---|
| Description | CANopen digital output 55 |

| Variable | CANopen DO 56 (Customisable) [5123] |
|---|---|
| Description | CANopen digital output 56 |

| Variable | CANopen DO 57 (Customisable) [5124] |
|---|---|
| Description | CANopen digital output 57 |

| Variable | CANopen DO 58 (Customisable) [5125] |
|---|---|
| Description | CANopen digital output 58 |

| Variable | CANopen DO 59 (Customisable) [5126] |
|---|---|
| Description | CANopen digital output 59 |

| Variable | CANopen DO 60 (Customisable) [5127] |
|---|---|
| Description | CANopen digital output 60 |

| Variable | CANopen DO 61 (Customisable) [5128] |
|---|---|
| Description | CANopen digital output 61 |

| Variable | CANopen DO 62 (Customisable) [5129] |
|---|---|
| Description | CANopen digital output 62 |

| Variable | CANopen DO 63 (Customisable) [5130] |
|---|---|
| Description | CANopen digital output 63 |

| Variable | CANopen DO 64 (Customisable) [5131] |
|---|---|
| Description | CANopen digital output 64 |

# POWER PLANT

| Variable | Generator No.1 circuit breaker position [562.0] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.2 circuit breaker position [562.1] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.3 circuit breaker position [562.2] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.4 circuit breaker position [562.3] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.5 circuit breaker position [562.4] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.6 circuit breaker position [562.5] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.7 circuit breaker position [562.6] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.8 circuit breaker position [562.7] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.9 circuit breaker position [562.8] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.10 circuit breaker position [562.9] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.11 circuit breaker position [562.10] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.12 circuit breaker position [562.11] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.13 circuit breaker position [562.12] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.14 circuit breaker position [562.13] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.15 circuit breaker position [562.14] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.16 circuit breaker position [562.15] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.17 circuit breaker position [563.0] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.18 circuit breaker position [563.1] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.19 circuit breaker position [563.2] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.20 circuit breaker position [563.3] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.21 circuit breaker position [563.4] |
|---|---|
| Description | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.22 circuit breaker position [563.5] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.23 circuit breaker position [563.6] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.24 circuit breaker position [563.7] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.25 circuit breaker position [563.8] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.26 circuit breaker position [563.9] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.27 circuit breaker position [563.10] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.28 circuit breaker position [563.11] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.29 circuit breaker position [563.12] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.30 circuit breaker position [563.13] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.31 circuit breaker position [563.14] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Generator No.32 circuit breaker position [563.15] |
|---|---|
| **Description** | 0 if circuit breaker opened, 1 if circuit breaker closed |

| Variable | Mains/tie breaker No.1 circuit breaker position [976.0] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.2 circuit breaker position [976.1] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.3 circuit breaker position [976.2] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.4 circuit breaker position [976.3] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.5 circuit breaker position [976.4] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.6 circuit breaker position [976.5] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.7 circuit breaker position [976.6] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.8 circuit breaker position [976.7] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.9 circuit breaker position [976.8] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.10 circuit breaker position [976.9] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.11 circuit breaker position [976.10] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.12 circuit breaker position [976.11] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.13 circuit breaker position [976.12] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.14 circuit breaker position [976.13] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.15 circuit breaker position [976.14] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.16 circuit breaker position [976.15] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.17 circuit breaker position [977.0] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.18 circuit breaker position [977.1] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.19 circuit breaker position [977.2] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.20 circuit breaker position [977.3] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.21 circuit breaker position [977.4] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.22 circuit breaker position [977.5] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.23 circuit breaker position [977.6] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.24 circuit breaker position [977.7] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.25 circuit breaker position [977.8] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.26 circuit breaker position [977.9] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.27 circuit breaker position [977.10] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.28 circuit breaker position [977.11] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed. On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed. On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

OPERATOR MANUAL

| Variable | Mains/tie breaker No.29 circuit breaker position [977.12] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.30 circuit breaker position [977.13] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.31 circuit breaker position [977.14] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains/tie breaker No.32 circuit breaker position [977.15] |
|---|---|
| Description | On MASTER COMPACT 1B, 0 if circuit breaker opened, 1 if circuit breaker closed.<br>On MASTER COMPACT, 0 if at least 1 of the 2 circuit breakers is opened, 1 if both circuit breakers are closed.<br>On BTB COMPACT, 0 if circuit breaker opened, 1 if circuit breaker closed. |

| Variable | Mains presence on the common bus bar [4032] |
|---|---|
| Description | Status report: There is currently a mains closed on the bus bar |

# INVERTER PROTECTIONS

| Variable | Inverter over frequency level 1 [4250.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter over frequency level 2 [4250.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter under frequency level 1 [4251.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter under frequency level 2 [4251.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter over voltage level 1 [4252.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter over voltage level 2 [4252.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter under voltage level 1 [4253.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter under voltage level 2 [4253.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter minimum KW level 1 [4254.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter minimum KW level 2 [4254.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter maximum KW level 1 [4255.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter maximum KW level 2 [4255.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter minimum KVAR level 1 [4257.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter minimum KVAR level 2 [4257.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter maximum KVAR level 1 [4258.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter maximum KVAR level 2 [4258.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter maximum current level 1 [4260.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter maximum current level 2 [4260.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter voltage unbalance level 1 [4268.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter voltage unbalance level 2 [4268.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

| Variable | Inverter current unbalance level 1 [4269.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Inverter current unbalance level 2 [4269.1] |
|----------|---------------------------------------------|
| Description | Active when the level 2 protection triggered. |

# GENERATORS PROTECTIONS

| Variable | Generators reverse KW level 1 [4306.0] |
|---|---|
| Description | Active when the level 1 protection triggered. |

| Variable | Generators reverse KW level 2 [4306.1] |
|---|---|
| Description | Active when the level 2 protection triggered. |

# OTHER PROTECTIONS

| | |
|---|---|
| **Variable** | Battery minimum voltage level 1 [4202.0] |
| **Description** | Active when the level 1 protection triggered. |

| | |
|---|---|
| **Variable** | Battery minimum voltage level 2 [4202.1] |
| **Description** | Active when the level 2 protection triggered. |

| | |
|---|---|
| **Variable** | Battery maximum voltage level 1 [4203.0] |
| **Description** | Active when the level 1 protection triggered. |

| | |
|---|---|
| **Variable** | Battery maximum voltage level 2 [4203.1] |
| **Description** | Active when the level 2 protection triggered. |

# COMMUNICATION

| Variable | Controller communication fault [600] |
|---|---|
| Description | Communication cannot be established. Check the wiring between the controllers, the product number and the number of controllers declared for each part number. |

| Variable | Missing GENSYS COMPACT PRIME [605] |
|---|---|
| Description | Missing at least one GENSYS COMPACT PRIME module on the CAN bus |

| Variable | Missing MASTER COMPACT or BTB COMPACT [608] |
|---|---|
| Description | Absence of at least one MASTER COMPACT or BTB COMPACT module on the CAN bus |

| Variable | Missing HYBRID COMPACT [612] |
|---|---|
| Description | Missing at least one HYBRID module on the CAN bus |

| Variable | Missing BAT COMPACT [613] |
|---|---|
| Description | Missing at least one BAT COMPACT module on the CAN Bus |

| Variable | Inverter's connection timed out [903] |
|---|---|
| Description | Inverter's connection timed out |

| Variable | Modbus server (Customisable) [904] |
|---|---|
| Description | Modbus server connection timeout. The associated label can be changed for display when the error occurs. |

| Variable | CANopen fault [4750] |
|---|---|
| Description | Communication with I/O extension cannot be established. Check the wiring and power supply of the CANopen extension module |

## STATUSES

| Variable | Electrical faults summary [4656] |
|---|---|
| Description | Fault report: Active if at least one protection configured as an electrical fault is active. |

| Variable | Alarms summary [4658] |
|---|---|
| Description | Fault report: Active if at least one protection configured as an alarm is active. |

| Variable | Faults summary [4659] |
|---|---|
| Description | Fault report:Active if at least one protection configured as Soft shut down is active. |

| Variable | Default LED [4664] |
|---|---|
| Description | Status report: Active if the fault LED on the front of the product is lit (active on fault, reset on acknowledge and reset command). |

| Variable | Alarm LED [4665] |
|---|---|
| Description | Status report: Active if the alarm LED on the front of the product is lit (active on alarm, reset on acknowledge and reset command). |

| Variable | ON LED [4666] |
|---|---|
| Description | Status report: Active if the ON LED on the front of the product is lit |

| Variable | OFF LED [4667] |
|---|---|
| Description | Status report: Active if the OFF LED on the front of the product is lit |

| Variable | Protection validation [4681] |
|---|---|
| Description | Status report: Active when all protections are activated after starting sequence (Under frequency, under voltage, oil pressure, temperature, etc...) |

| Variable | Production LED [4734] |
|---|---|
| Description | Status report: Active if the Production LED on the front of the product is lit |

# HYSTERESIS

| Variable | Hysteresis 1 output [4710] |
|---|---|
| Description | Activation of analog Hysteresis function n°1, configuration of funtion is in Configuration/programming/Hysteresis |

| Variable | Hysteresis 2 output [4711] |
|---|---|
| Description | Activation of analog Hysteresis function n°2, configuration of funtion is in Configuration/programming/Hysteresis |

| Variable | Hysteresis 3 output [4712] |
|---|---|
| Description | Activation of analog Hysteresis function n°3, configuration of funtion is in Configuration/programming/Hysteresis |

| Variable | Hysteresis output activation on DI1 [4713] |
|---|---|
| Description | Output activation for 'Hysteresis on digital input' n°1. Function is managed by configurable low/high digital inputs in Digital Input menu. |

| Variable | Hysteresis output activation on DI2 [4714] |
|---|---|
| Description | Output activation for 'Hysteresis on digital input' n°2. Function is managed by configurable low/high digital inputs in Digital Input menu. |

| Variable | Hysteresis output activation on DI3 [4715] |
|---|---|
| Description | Output activation for 'Hysteresis on digital input' n°3. Function is managed by configurable low/high digital inputs in Digital Input menu. |

| Variable | Hysteresis output activation on DI4 [4716] |
|---|---|
| Description | Output activation for 'Hysteresis on digital input' n°4. Function is managed by configurable low/high digital inputs in Digital Input menu. |

| Variable | Hysteresis output activation on DI5 [4717] |
|---|---|
| Description | Output activation for 'Hysteresis on digital input' n°5. Function is managed by configurable low/high digital inputs in Digital Input menu. |

| Variable | Hysteresis output activation on DI6 [4718] |
|---|---|
| Description | Output activation for 'Hysteresis on digital input' n°6. Function is managed by configurable low/high digital inputs in Digital Input menu. |

| Variable | Hysteresis output activation on DI7 [4719] |
|---|---|
| Description | Output activation for 'Hysteresis on digital input' n°7. Function is managed by configurable low/high digital inputs in Digital Input menu. |

| Variable | Hysteresis output activation on DI8 [4720] |
|---|---|
| Description | Output activation for 'Hysteresis on digital input' n°8. Function is managed by configurable low/high digital inputs in Digital Input menu. |

# REMOTE BUTTONS

| Variable | Shift button [951.0] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |

| Variable | Right arrow button [951.1] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |

| Variable | Down arrow button [951.2] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |

| Variable | Left arrow button [951.3] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |

| Variable | Up arrow button [951.4] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |

| Variable | Enter button [951.5] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |

| Variable | Esc button [951.6] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |

| Variable | Fault/Alarm/info button [951.7] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |

| Variable | Off button [951.13] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |

| Variable | On button [951.14] |
|---|---|
| Description | Active (1) if the button is pressed. Inactive (0) otherwise. |