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|  | CX Series Configurator Operation Instructions | 5000010356 |
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Operation and maintenance instructions – CX Configurator

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1. Introduction

The item of this paper is to summarize the installation procedure, structure and functionality of the configuration software for the CX series.

2. Installation

To start the installation, run the Setup_CX_Configurator.exe file. The screen that will appear is shown below (figure 1).




Figure 1: Installation screen.

On the left side there is a list of the software that can be installed:

- Configurator CX: the software to management the CX series.
- Driver CX: driver to connect the CX series with the Configurator.
- Bootwizard: the software to program the CPUs.

In the upper part the status and down the following list of command:

- All Software: if check all software can be installed otherwise only software select will be installed.
- INSTALL: start the installation.
- HELP: open the tutorial for the installation.
- EXIT: exit the installation menu.

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3. Login profile

The configurator provides three different access profiles:

1. User: it's default profile, the access is limited to basic functions that allow the typical network configurations.
2. Costumer: extends the user profile functionalities, if there is a password saved in the CPU this it will be required in the login.
With this profile the configurator will request a confirm if the Customer would send a command that may produce malfunction.
3. Factory: this profile is reserved to Camozzi's staff.

4. Menu

In the configurator, there are the following menu:

- Home: it's the menu shown when the configurator is run (figure 2), contains all basic functionalities for read the hardware configuration.
- Communication: contains all basic CPU setting with the allowing to change its value.
- Advanced: contains the functionalities to manage the Dummy nodes.
- System: contains the basic functionalities for the set/reset of registers and other low level functionalities.
- Topology: contains the functionalities for save the hardware configuration to an external file, import an external configuration, compare two configurations and download in the CPU an external configuration.

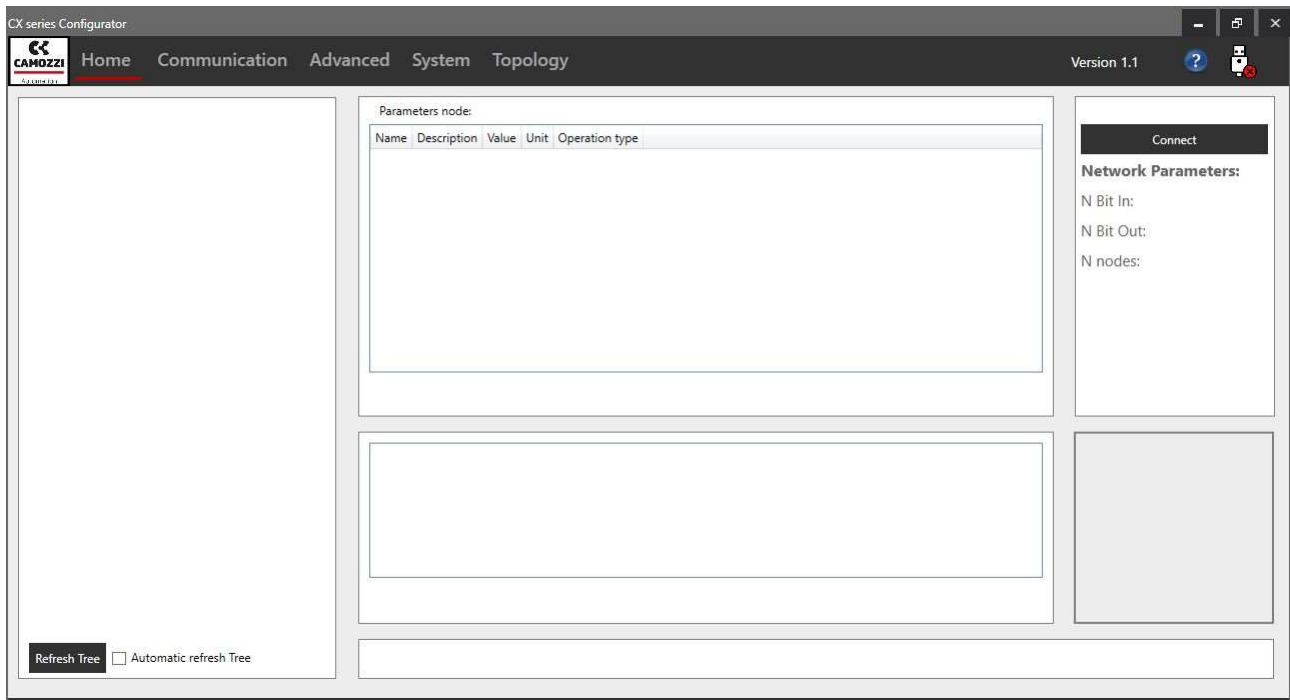


Figure 2: Menu Home.

Connected the USB cable, run the configurator and select the command “Connect” in the upper right part of home menu (figure 2). When a pop-up window appears (figure 3), then select the COM and select “Connect” command.



Figure 3: USB connect window.

If the configurator is connected with the fieldbus node, the USB symbol (figure 4) in upper right part will become green.



Figure 4: USB symbol for the connection.

For change the login profile push the button “Login” under the button “Disconnect”, in the window that will be appear (figure 5) select the profile and if required the password.


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Figure 5: Login window.

In upper part of the menu (figure 6) is always possible see the actual login profile.



Figure 6: Login profile.

The following chapters are intended for Customer profile, so with other profiles some functions could not be available.

4.1 Home

This menu is divided in different sections (figure 7):

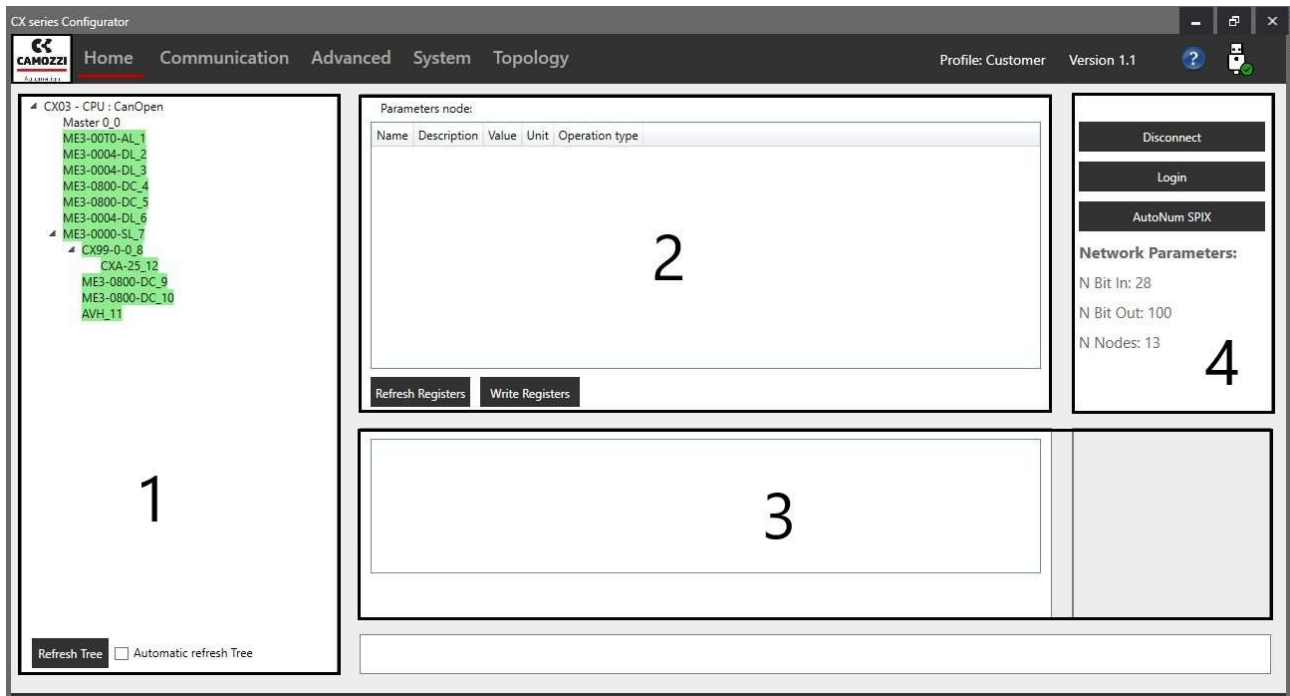


Figure 7: Home menu sections.

Section 1: show the tree where is possible see all nodes and how are positioned in the network.

Each nodes, except the CPU (or master), has a different color that identify its state (figure 8).

- Green: the node is ok.
- White: the node is in the tree but is not recognized in the network, it may not be present or not respond.
- Yellow: the node is present but malfunction, for exemption there isn't the 24V power.
- Gray: the node is a dummy node.

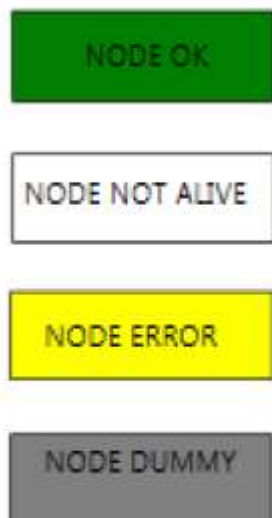


Figure 8: Colors code of node state.

In the tree (figure 9), the first two lines indicate the CPU type.

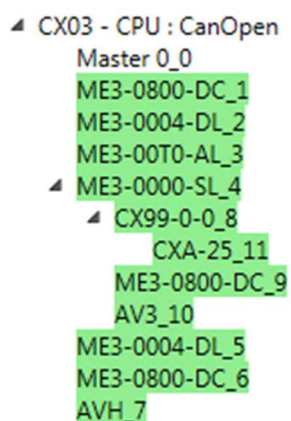



Figure 9: Tree example.

Below the CPU, there are the other nodes of network, in the following table there are all nodes that could be present.

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| Node code | Node type | Node description |
|-------------|-------------------|---|
| ME3-0800-DC | Input module | 8 digital input |
| ME3-0400-DC | Input module | 4 digital input |
| ME3-00R0-AL | Analog | 2 current outputs (4-20 mA) |
| ME3-00T0-AL | Analog | 2 voltage outputs (0-10 V) |
| ME3-00U0-AL | Analog | 1 current outputs (4-20 mA) 1 voltage outputs (0-10 V) |
| ME3-00V0-AL | Analog | 1 voltage inputs (0-10 V) 1 current outputs (4-20 mA) |
| ME3-00Z0-AL | Analog | 1 current inputs (4-20 mA) 1 current outputs (4-20 mA) |
| ME3-00K0-AL | Analog | 1 voltage inputs (0-10 V) 1 voltage outputs (0-10 V) |
| ME3-00Y0-AL | Analog | 1 current inputs (4-20 mA) 1 voltage outputs (0-10 V) |
| ME3-C000-AL | Analog | 2 current inputs (4-20 mA) |
| ME3-D000-AL | Analog | 2 voltage inputs (0-10 V) |
| ME3-E000-AL | Analog | 1 current inputs (4-20 mA) 1 voltage inputs (0-10 V) |
| ME3-0000-SL | Subnetwork module | Subnet initial module |
| CX99-0-0 | Subnetwork module | Expansion subnet module |
| ME3-0004-DL | Output module | 4 digital outputs |
| AVH | Output module | Direct interface with series HN valves island |
| AVF | Output module | Direct interface with series F valves island |
| AV3 | Output module | Direct interface with series 3 valves island |
| CXA-25 | Output module | Adapter module sub-D 25 pole |
| CXA-37 | Output module | Adapter module sub-D 25 pole 37 |

At the bottom of this section there are the commands:

- Refresh_tree: start a manual tree refresh.
- Automatic refresh tree: if select the configurator refresh cyclic automatically the tree (prefixed time).

Section 2: In the table (figure 10) there is a list of node's registers, where each line is a register and in the columns there are: register address, a description, register value, unit of measure and operation type (only read, if empty, or writable).

Parameters node: **CX03 - CPU : CanOpen**

| Name | Description | Value | Unit | Operation type |
|-------|--------------------------------|------------------------|--------|----------------|
| H0000 | Node type | CX03-0-0 CanOpen (CPU) | | |
| USB | FW version | 10.2.04 | | |
| USB | HW version | 1 | | |
| USB | Number of input bytes managed | 128 | | |
| USB | Number of output bytes managed | 128 | | |
| USB | Slave address (Rotary) | 100 | | |
| USB | Baud Rate (Dip) | 1 | Mbit/s | |
| H000A | Internal cycle time | 28 | ms | |

Figure 10: Registers list.

At the bottom of the table there are the commands:

- Refresh Registers: start a refresh of all registers.
- Write Registers: save in the node's memory all registers.

Section 3: If the node has inputs or outputs in this section is shown the state of them. In case of inputs (figure 11), under the states there are the commands for the refresh, "Refresh status" is the command for the manual refresh while the box "Automatic refresh" enable the automatic refresh.



Figure 11: Section 3 with inputs.

With outputs (figure 12) the commands under the states are:

- Change State DO: change the selected output state.
- All ON: Activate all outputs.
- All OFF: Disactivate all outputs.


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Figure 12: Section 3 with outputs.

Section 4: in this section (figure 13) there are the general commands.

- Connect/Disconnect: for connect or disconnect the Configurator to the serial node via USB.
- Login: for login with a profile.
- AutoNum SPIX: start the auto-numbering of the network.
- Handle password: set and save in the CPU's memory the password that will be required with Customer profile.
- Start log system: if select the Configurator save in an external file the commands executed.

Under this commands are indicated the “Network parameters”, the parameters are: number of inputs, number of outputs and number of nodes.

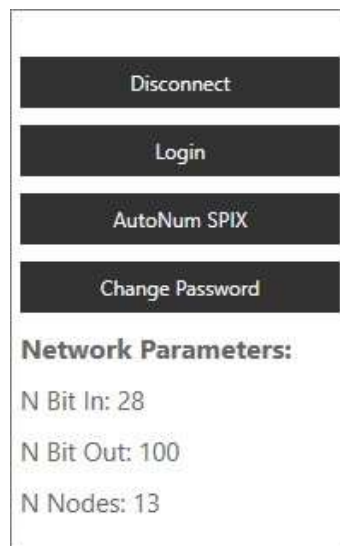

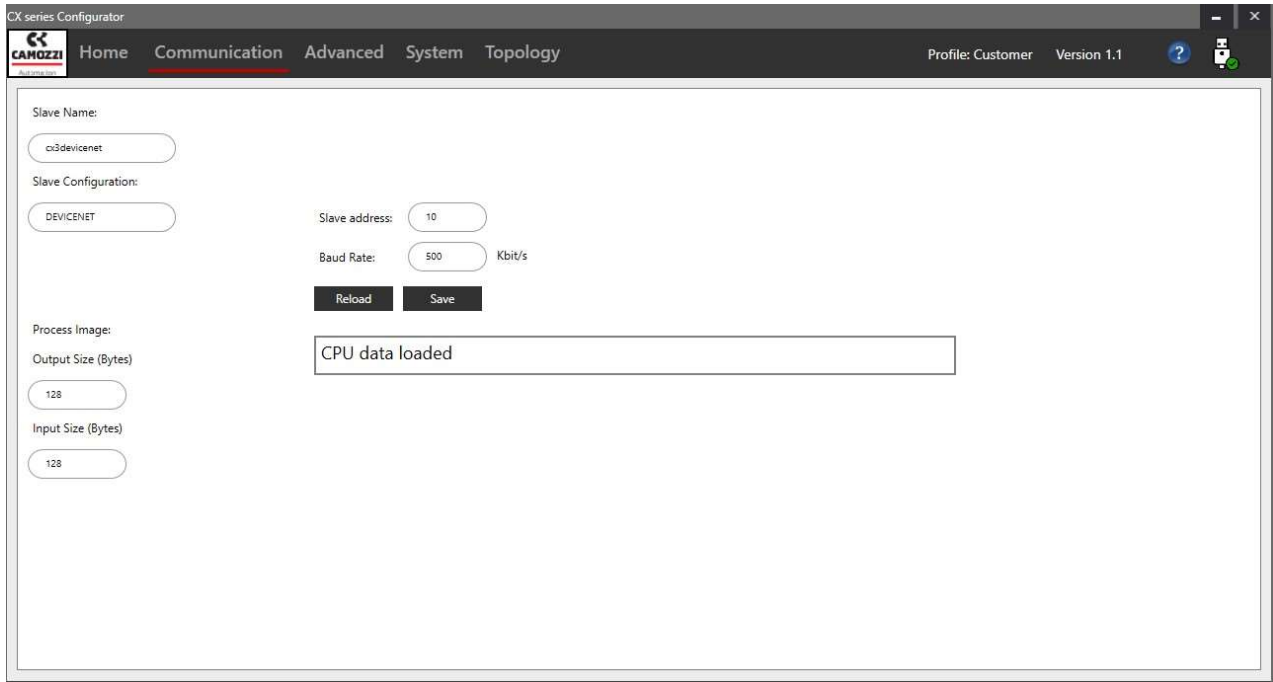


Figure 13: Section 4

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4.2 Communication

In this menu (figure 14) there are the values of registers of the CPU and information about the communication protocol.



The screenshot shows the 'Communication' menu of the CX series Configurator. The top navigation bar includes 'Home', 'Communication' (selected), 'Advanced', 'System', and 'Topology'. The right side of the bar shows 'Profile: Customer' and 'Version 1.1'. The main content area contains the following fields and controls:

- Slave Name:** A text field containing 'c3devicenet'.
- Slave Configuration:** A dropdown menu showing 'DEVICENET'.
- Slave address:** A text field containing '10'.
- Baud Rate:** A text field containing '500' with 'Kbit/s' next to it.
- Process Image:** Two text fields for 'Output Size (Bytes)' and 'Input Size (Bytes)', both containing '128'.
- Buttons:** 'Reload' and 'Save' buttons are located below the Baud Rate field.
- Status Box:** A box at the bottom right contains the text 'CPU data loaded'.

Figure 14: Menu Communication.

The reported values are:

- IP Address, IP Mask, IP Gateway e MAC address: for the CPUs with Ethernet interface.
- Slave address e Baud Rate: for the CPUs with CanOpen (CX03), DeviceNet (CX02) or ProfiBus (CX01).
- Slave name: the name of the CPU.
- Slave Configuration: the communication protocol of CPU.
- Process Image: the number of inputs and outputs used in data exchanged with the controller (PLC).

In according with the communication protocol used in the serial node connected, only some values are visualized.

In the lower part there are two command: "Reload" for reload the values and "Save" for save the values in CPU's memory.

For example, to change the IP address (if CPUs with Ethernet interface is connected):

1. Open the CX configurator software and login like customer profile.
2. Open the Communication menu (figure 15).

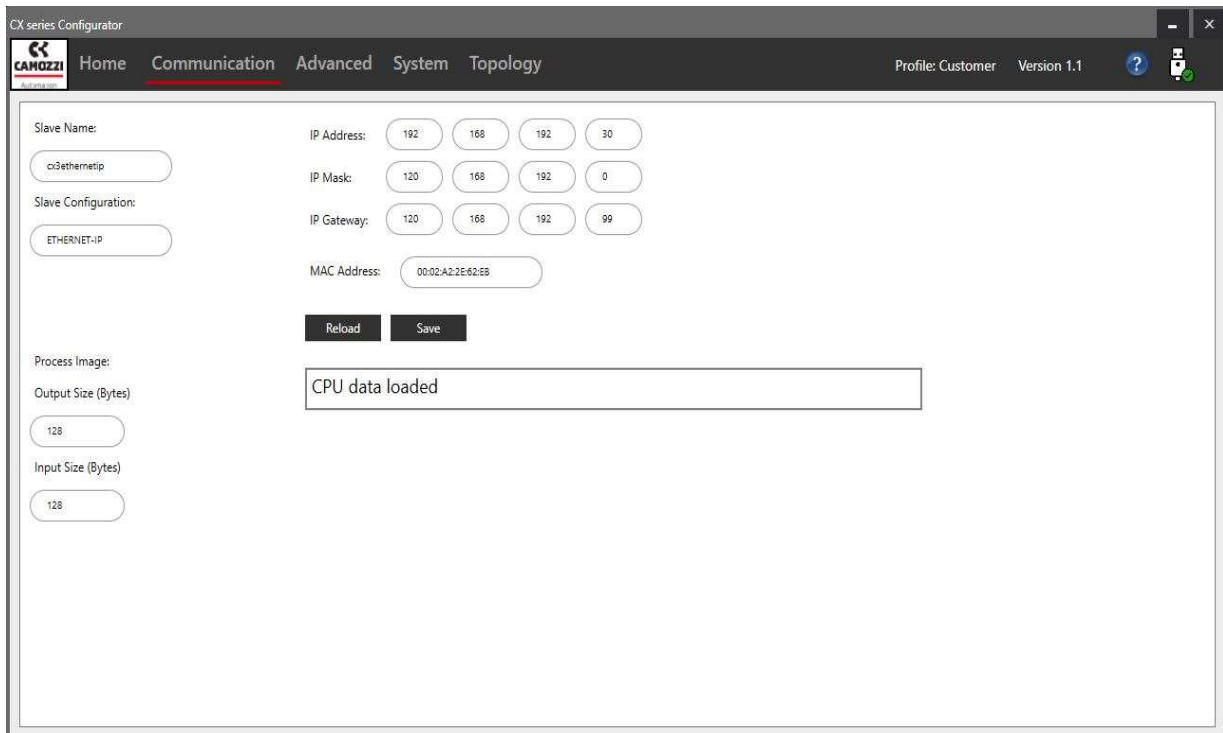


Figure 15: Communication menu with Ethernet-IP.

3. Selected the IP cell and insert the new one (figure 16).

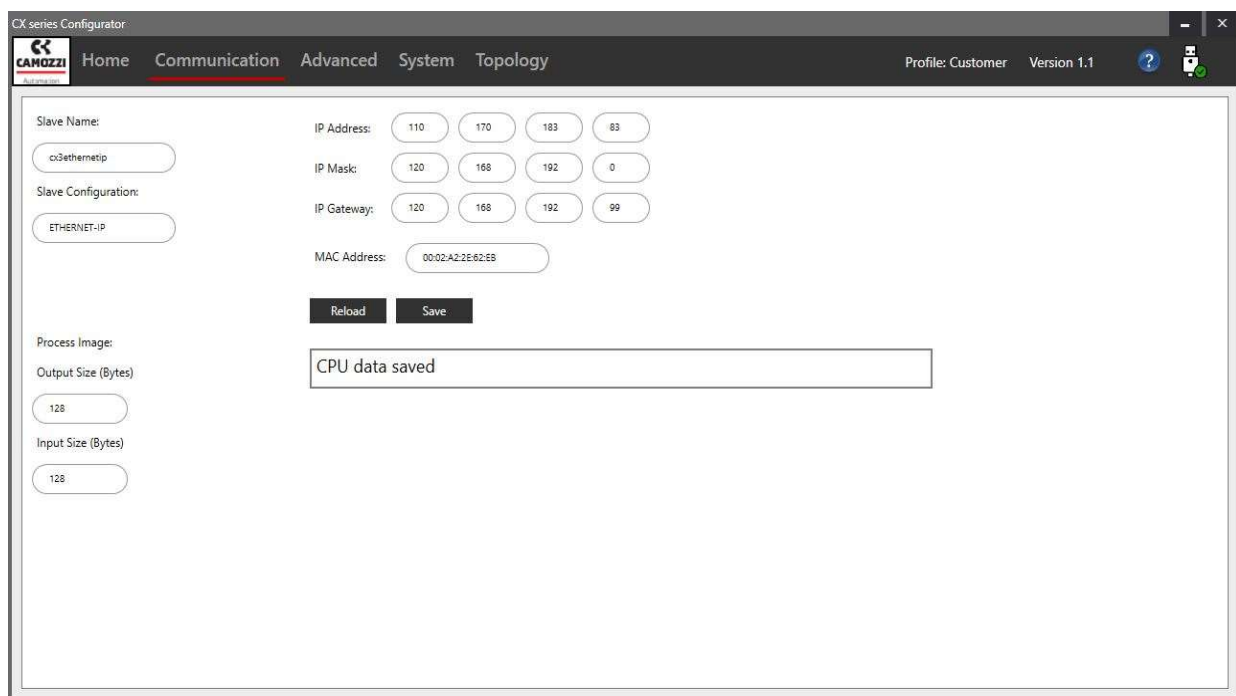


Figure 16: Change the IP address

4. Click the Save command, after the click will appear the message "CPU data saved".

4.3 Advanced

In menu Advanced (figure 17) it's possible managed the dummy nodes.

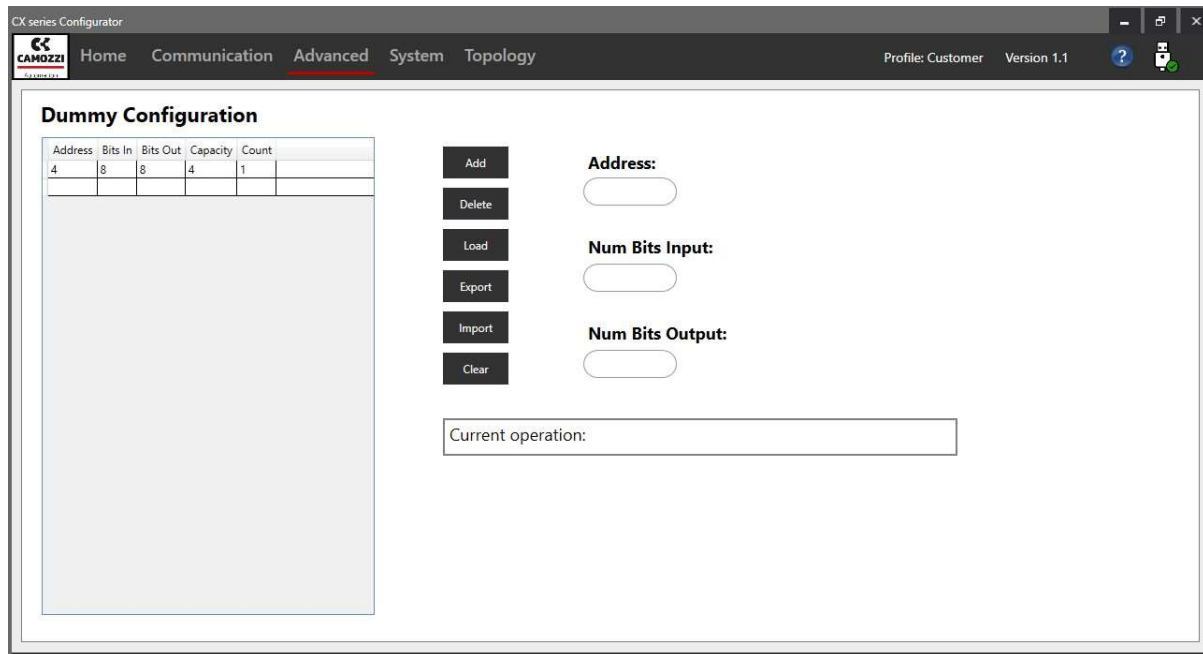


Figure 17: Menu Advanced.

Divided in three parts in the left there is a list of dummy nodes, in the right the box for insert a new dummy node and in the middle the commands to managed the dummy nodes.

The characteristic required for a new node are:

- Address: the address where the new node will be put in.
- Num Bits Input: number of inputs of the node (max 64).
- Num Bits Output: number of outputs of the node (max 64).

The commands available are:

- Add: if the required characteristics are insert, add the new node in the list.
- Delete: delete the node selected from the list.
- Load: load the nodes in the list in the network.
- Export: export the nodes list in an external file.
- Import: import the nodes list from an external file.
- Clear: delete all nodes in the list.

4.4 System

In this menu there are the commands useful for manage the system (figure 18).

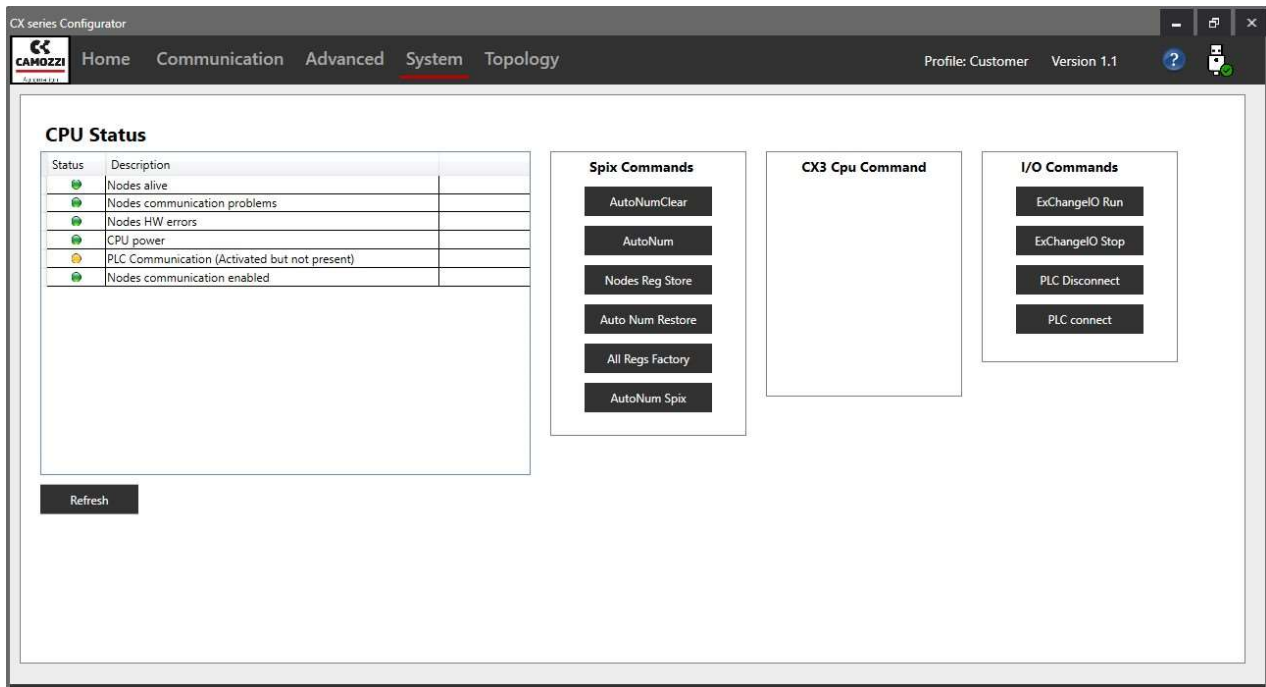


Figure 18: Menu System.

On the left there is a list of alarms with a button named “Refresh” to reload them, the other functions are divided in submenu:


Spix Moduls Commands

- AutoNumClear: cancel the autonumbering in the nodes’ memory.
- AutoNum: start the autonumbering.
- Nodes Reg Store: store all registers in nodes’ memory.
- Auto Num Restore: store the autonumbering in nodes’ memory.
- All Regs Factory: report all nodes’ registers to factory condition.
- AutoNum Spix: it’s the same command that there is in home menu.

CX3 Cpu Command: the commands in this menu are reserved to Camozzi’s staff.

I/O Commands

- ExChangeIO Run: able the comunication in the internal SPIX.
- ExChangeIO Stop: disable the communication in the internal SPIX.
- PLC Disconnect: disable the communication between PLC and CPU.
- PLC Connect: able the communication between PLC and CPU.

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4.5 Topology

In this section (figure 19), is possible to control the network structure, export it, import and compare an external structure (not the registers only the tree) with the actual.

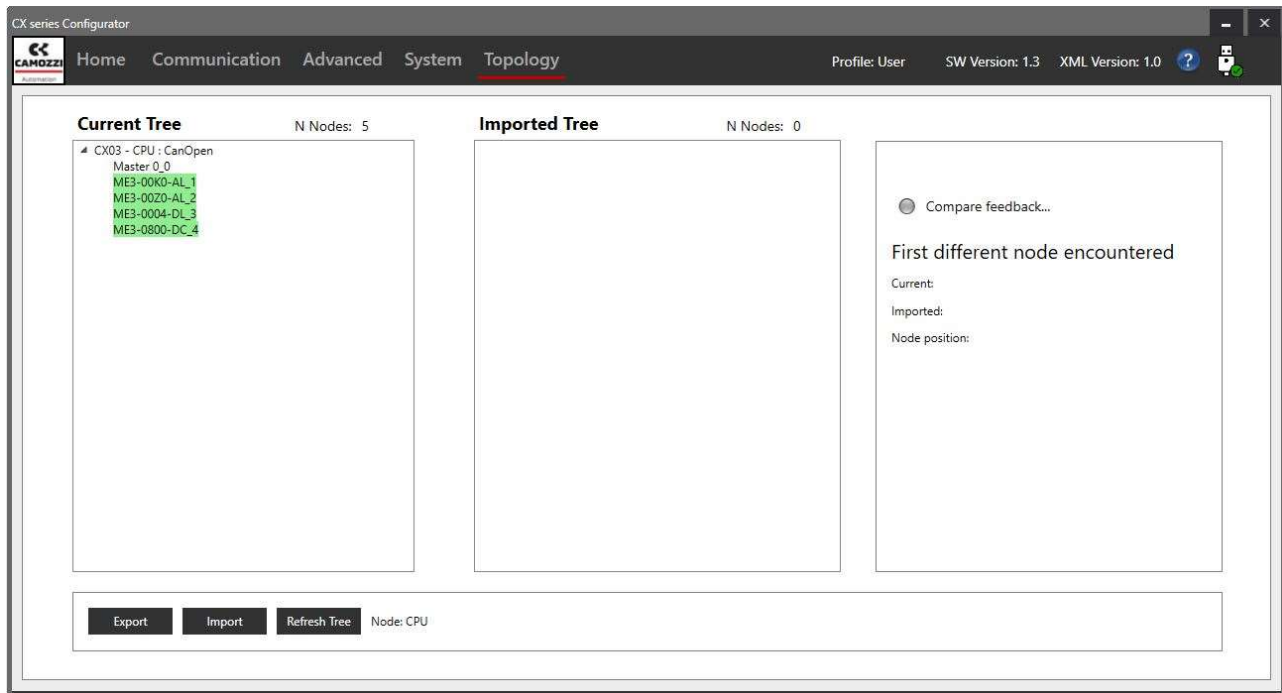


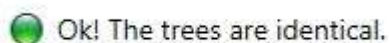
Figure 19: Menu Topology.

In upper part are shown the current tree and the imported tree, under these trees there are the commands.

The commands are:


- Export: export the current tree to an external file.
- Import: import a tree from an external file.
- Compare: compare the current tree with the imported tree.
- Refresh_tree: refresh the current tree.

If a tree is imported the function “compare” will be enabled. If the two trees are equal the “Compare feedback” will become green.



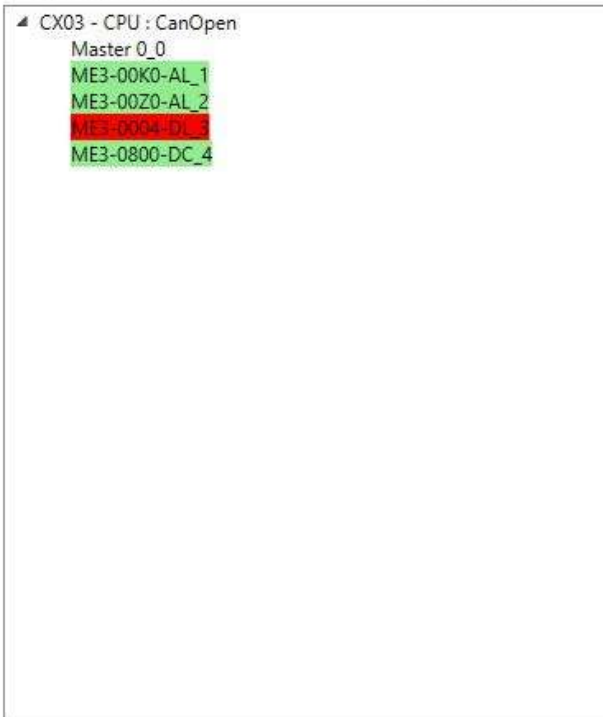
Ok! The trees are identical.


If the two trees are different the “Compare feedback” will become red and the configurator will indicate the first different node.

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Imported Tree

N Nodes: 5



 Wrong! The trees are different.

First different node encountered

| | |
|----------------|---------------|
| Current: | Missing node |
| Imported: | ME3-0004-DL_3 |
| Node position: | 3 |

5. Nodes' registers


In the following chapters are shown a list of all registers divided by the node type, remember that in bases of the login profile not all register could be visible or writeble.

5.1 Register H0008: State

The state register there is in all nodes except the CPUs and give the information on the node.

The information in the state register are:


- Node OK: the node works properly.
- Node Running: the node communicates with CPU.
- Short circuit: there is a short circuit, if the node is an input node the short circuit is on the supply and when it will be removed the node start to work correctly. If the node is an output node the short circuit is on one of the outputs connectors and when it will be removed the node don't start to work correctly until the power is removed and returned.
- Overload group 1: if input or output connectors are divided in two groups, it indicates that there is an overload in the first group.
- Overload group 2: it indicates that there is an overload in the second group.
- Voltage absent: there isn't a power supply.

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- Under Voltage: the electronic board's supply is under the set level in the appropriate register.
- Output mismatch: there isn't a correct match between the output value commanded by the configurator and the physic value of output.


5.2 CPU

| REGISTER NAME | ADDRESS | DESCRIPTION |
|--------------------------------|---------|--|
| Node type | H0000 | Code and communication protocol |
| FW version | USB | Firmware version |
| HW version | USB | Hardware version |
| Number of input bytes managed | USB | Size of input data exchanged with the controller (PLC) |
| Number of output bytes managed | USB | Size of output data exchanged with the controller (PLC) |
| Slave name | USB | CPU name, based on the communication protocol may be necessary |
| Slave IP address | USB | IP address (only for Ethernet protocol serial node) |
| Subnet mask | USB | IP Mask (only for Ethernet protocol serial node) |
| Gateway | USB | Gateway (only for Ethernet protocol serial node) |
| MacAddress | USB | Mac address (only for Ethernet protocol serial node) |
| Slave address (Rotary) | USB | Address set with rotary (only for standard protocol serial node) |
| Baud Rate (Dip) | USB | Baud Rate set with dipswitch on the board (only for standard protocol serial node) |
| Internal cycle time | H000A | Internal cycle time for the SPIx scanning |


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5.3 Inputs modules

| REGISTER NAME | ADDRESS | DESCRIPTION |
|--------------------------|---------|--|
| Node type | H0000 | Inputs module code |
| Address first input bit | H0006 | Offset of first input bit, that is the position of the first input within the sequence of the inputs |
| Number of inputs managed | H0004 | Number of inputs managed by the node, that is the number of bit within the sequence of the inputs |
| Address | H0001 | Node number in the tree |
| HW version | H0009 | Hardware version |
| SPIx version | H0009 | SPIx version |
| FW version | H0009 | Firmware version |


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| State | H0008 | Decoding of the binary code of the state, see chapter 5.1 |
| Number of SPIx errors | H000B | Number of SPIx errors |
| Anti-Bounce Time | H000D | When the input changes value it's the minimum time for which the physical signal must remain in the new state |
| Extension time | H000E | When the input change it's the minimum time that the configurator must read the new value |
| Electrical board voltage | H0014 | Electrical board voltage supplied to the board |
| Voltage value first group | H0015 | Voltage value supplied to first group of input |
| Voltage value second group | H0016 | Voltage value supplied to second group of input |

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5.4 Subnetwork modules


| REGISTER NAME | ADDRESS | DESCRIPTION |
|-----------------------|---------|---|
| Node type | H0000 | Subnetwork module code |
| Address | H0001 | Node number in the tree |
| HW version | H0009 | Hardware version |
| SPIx version | H0009 | SPIx version |
| FW version | H0009 | Firmware version |
| State | H0008 | Decoding of the binary code of the state, see chapter 5.1 |
| Number of SPIx errors | H000B | Number of SPIx errors |

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| Electrical board voltage | H000D | Electrical board voltage supplied to the board |
|--------------------------|-------|--|

5.5 Analog


| REGISTER NAME | ADDRESS | DESCRIPTION |
|---------------------------|---------|---|
| Node type | H0000 | Analog type code |
| Address | H0001 | Node number within the tree |
| Number of inputs managed | H0004 | Number of inputs managed by the node, that is the number of bit within the sequence of the inputs |
| Number of outputs managed | H0005 | Number of outputs managed by the node, that is the number of bit within the sequence of the outputs |
| HW version | H0009 | Hardware version |
| SPIx version | H0009 | SPIx version |

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|--|---------------------------------|--|
| FW version | H0009 | Firmware version |
| State | H0008 | Decoding of the binary code of the state, see chapter 5.1 |
| Type of channel 1 | H000D if output, H000F if input | Indicates if the channel 1 is an input or an output |
| Channel 1 input filter (if channel 1 is an input) | H000F | Set the value of channel 1 input filter |
| Channel 1 signal type | H000D if output, H000F if input | Indicates if the signal of channel 1 is in voltage or in current |
| Channel 1 resolution | H000D if output, H000F if input | Set the resolution of channel 1 |
| Address channel 1 first bit | H0006 | Offset of first bit of channel, that is the position of the first bit within the sequence of the inputs or outputs |
| Type of channel 2 | H000E if output, H0010 if input | Indicates if the channel 2 is an input or an output |
| Channel 2 input filter (if channel 2 is an input) | H0010 | Set the value of channel 2 input filter |

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| Channel 2 signal type | H000E if output, H0010 if input | Indicates if the signal of channel 2 is in voltage or in current |
| Channel 2 resolution | H000E if output, H0010 if input | Set the resolution of channel 2 |
| Address channel 2 first bit | H0007 | Offset of first bit, that is the position of the first bit within the sequence of the inputs or outputs |
| Activation failsafe of channel 1 (if channel 1 is an output) | H0011 | If selected, when the communication falls the output go to failsafe value |
| Failsafe value of channel 1 | H0011 | Set the failsafe value of channel 1 |
| Activation failsafe of channel 2 (if channel 2 is an output) | H0012 | If selected, when the communication falls the output go to failsafe value |
| Failsafe value of channel 2 | H0012 | Set the failsafe value of channel 2 |
| Electrical board voltage | H0013 | Electrical board voltage supplied to the board |
| Voltage value first group | H0014 | Voltage value supplied to first connector |

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| Voltage value second group | H0015 | Voltage value supplied to second connector |
|----------------------------|-------|--|

5.6 Outputs modules

| REGISTER NAME | ADDRESS | DESCRIPTION |
|---------------------------|---------|---|
| Node type | H0000 | Outputs module code |
| Address first output bit | H0007 | Offset of first output bit, that is the position of the first output within the sequence of the outputs |
| Number of outputs managed | H0005 | Number of outputs managed by the node, that is the number of bit within the sequence of the outputs |
| Address | H0001 | Node number in the tree |
| HW version | H0009 | Hardware version |
| SPIx version | H0009 | SPIx version |

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| FW version | H0009 | Firmware version |
| State | H0008 | Decoding of the binary code of the state, see chapter 5.1 |
| PWM activation (DRV) (if ME3-0004-DL) | H000D | If selected, the PWM is enabled |
| PWM Duty Cycle (DRV) (if ME3-0004-DL) | H000D | Set the PWM's duty cycle |
| PWM frequency (DRV) (if ME3-0004-DL) | H000D | PWM's frequency, depend by the duty cycle |
| PWM activation time (DRV) (if ME3-0004-DL) | H000D | PWM's activation time, the wait time before PWM start |
| Activation failsafe | H000E/H000F/H0010/H0011 | When it's active if the communication falls the output go to failsafe value |
| Failsafe's value | H000E/H000F/H0010/H0011 | Set the failsafe's value |
| Outputs mapping | H0032 ... H0051 | Set the address for the output |

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|----------------------------|-------|---|
| Electrical board voltage | H0012 | Electrical board voltage supplied to the board |
| Voltage value first group | H0013 | Voltage value supplied to first connector |
| Voltage value second group | H0014 | Voltage value supplied to second connector |