

 Automation	CX Series Configurator Operation Instructions	5000010356
		Ver. 03

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.

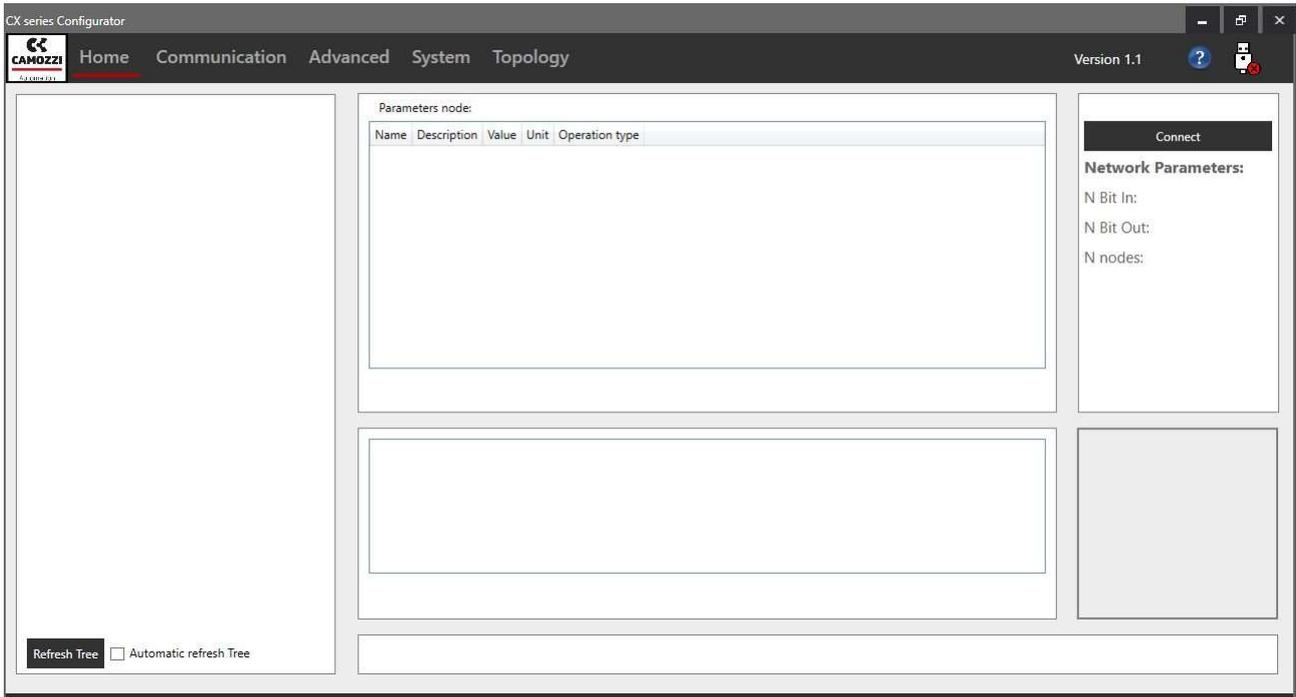


Figure 2: Menu Home.

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.

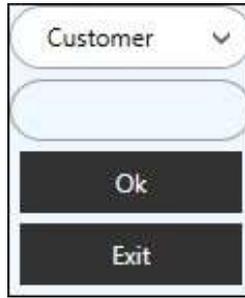


Figure 5: Login window.

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):

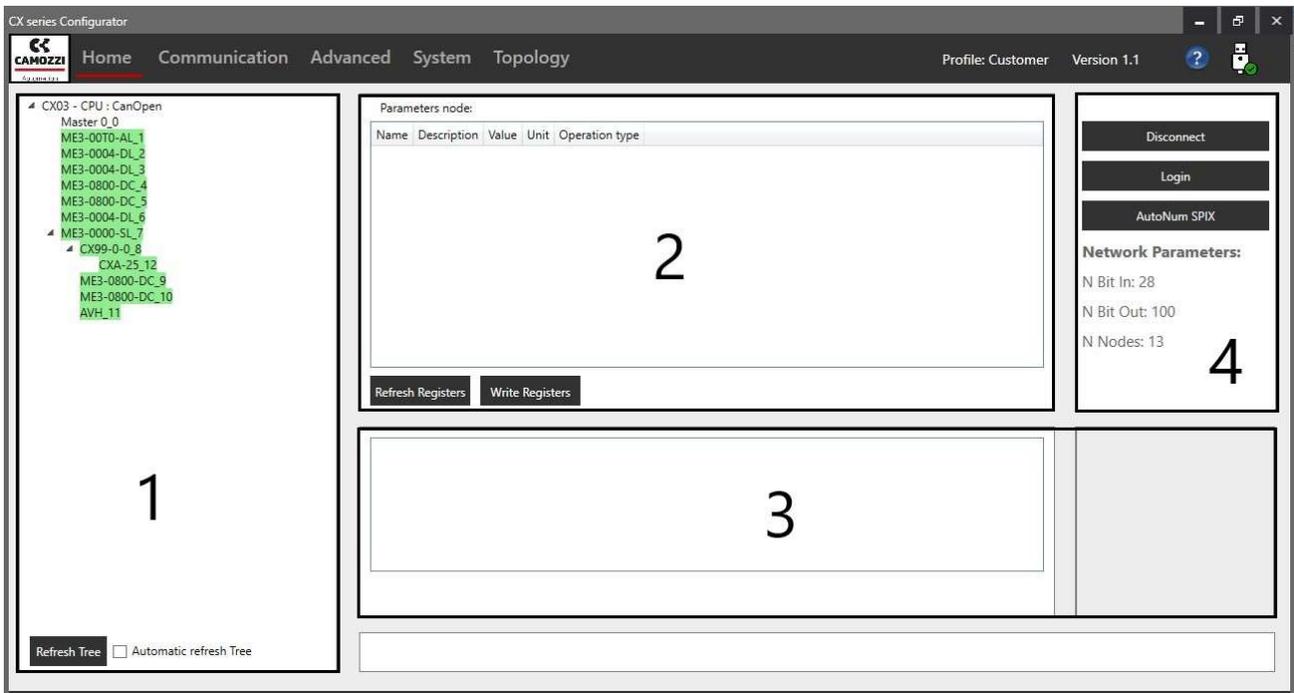


Figure 7: Home menu sections.

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.

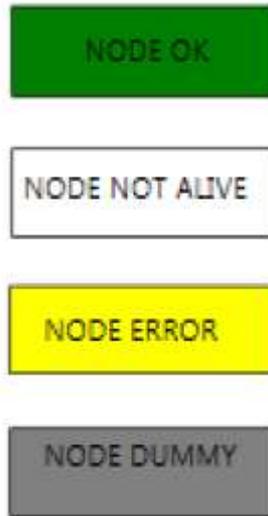


Figure 8: Colors code of node state.

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

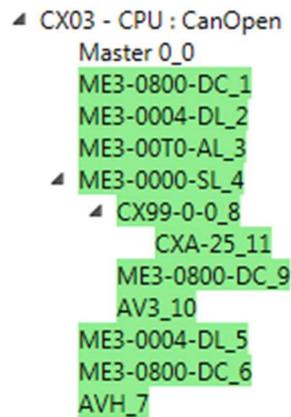


Figure 9: Tree example.

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

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.

In 1 Bit 0	In 2 Bit 1	In 3 Bit 2	In 4 Bit 3	In 5 Bit 4	In 6 Bit 5	In 7 Bit 6	In 8 Bit 7
---------------	---------------	---------------	---------------	---------------	---------------	---------------	---------------

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.



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.

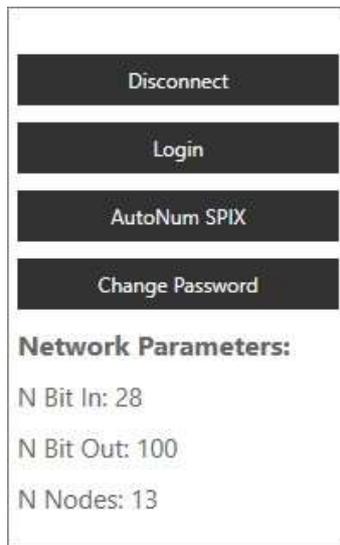


Figure 13: Section 4

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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.

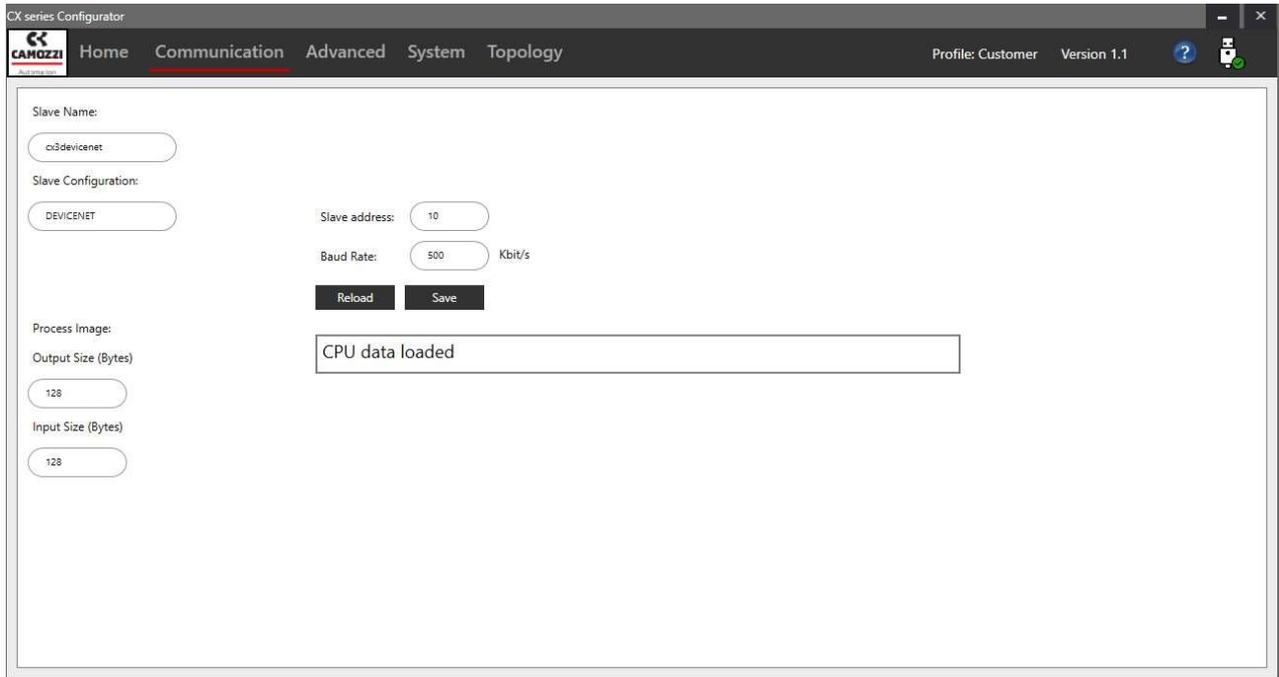


Figure 14: Menu Communication.

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).

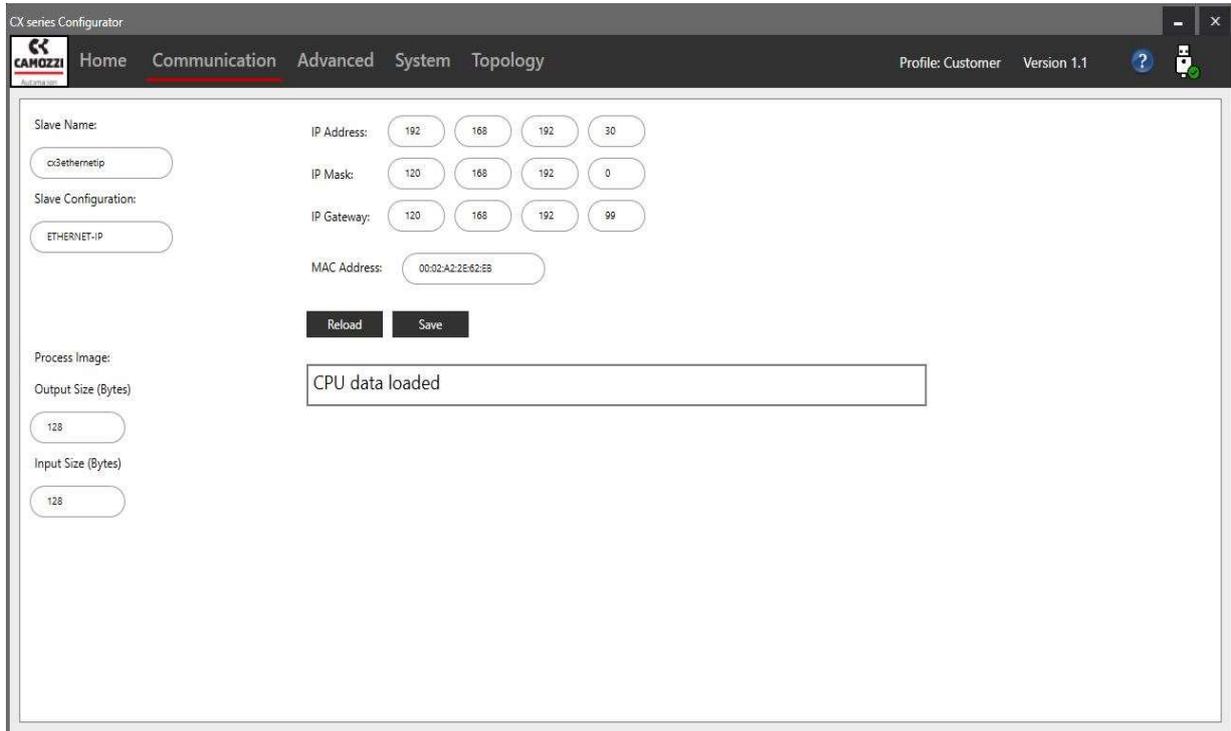


Figure 15: Communication menu with Ethernet-IP.

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

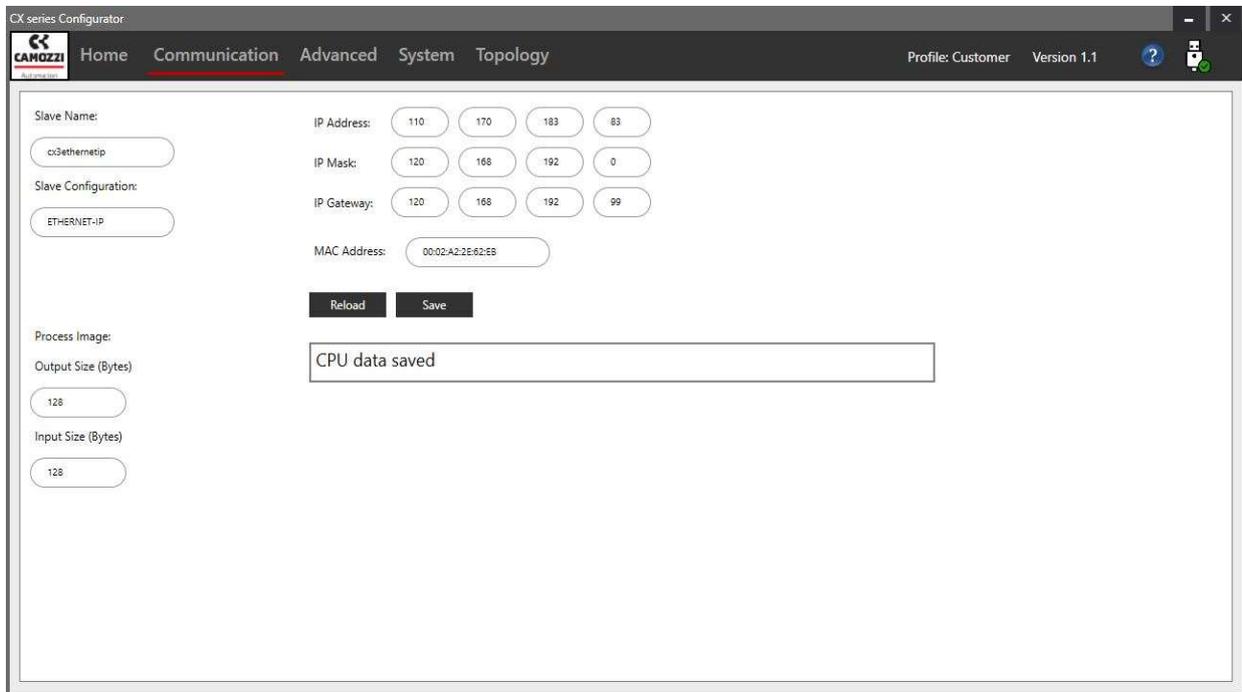


Figure 16: Change the IP address

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.

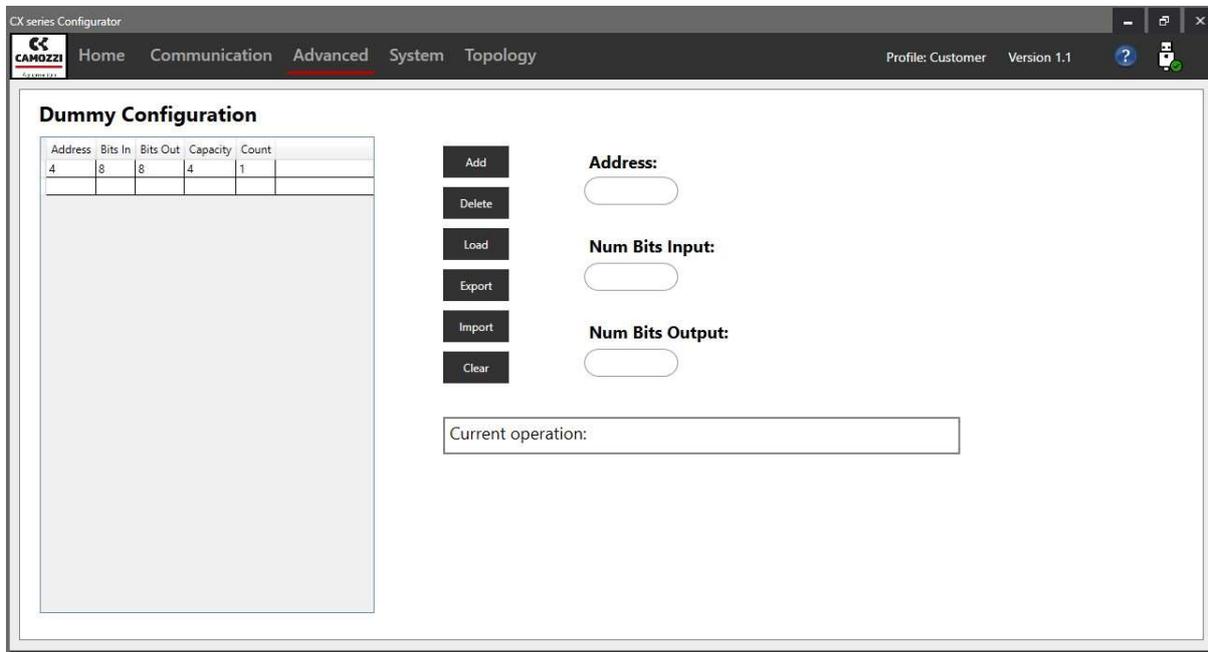


Figure 17: Menu Advanced.

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).

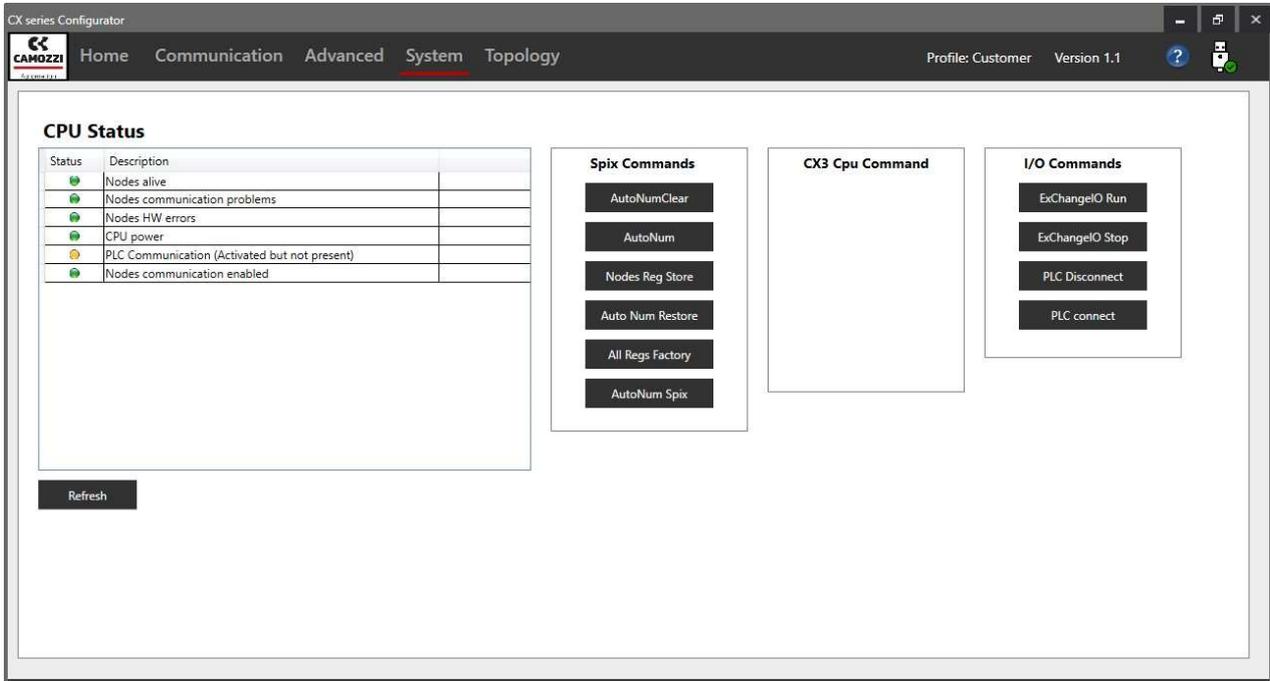


Figure 18: Menu System.

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.

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.

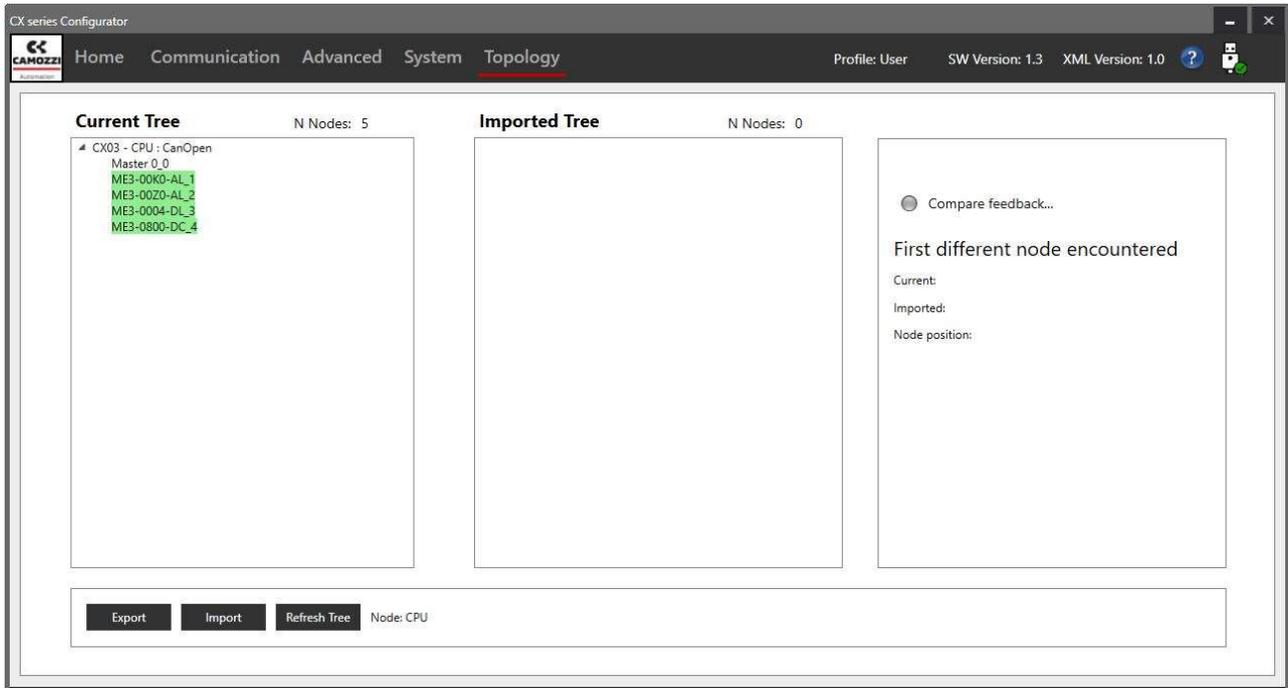


Figure 19: Menu Topology.

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.

Imported Tree

N Nodes: 5

```

    ▲ CX03 - CPU : CanOpen
      Master_0_0
      ME3-00K0-AL_1
      ME3-00Z0-AL_2
      ME3-0004-DL_3
      ME3-0800-DC_4
  
```

 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

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

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
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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

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

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
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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
SP1x version	H0009	SP1x version

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

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