

## User Manual

Revision 1.200

English

### Ethernet/IP / CANopen - Converter

(Order Code: HD67596-A1)

For Website information:

[www.adfweb.com?Product=HD67596](http://www.adfweb.com?Product=HD67596)

For Price information:

[www.adfweb.com?Price=HD67596-A1](http://www.adfweb.com?Price=HD67596-A1)

#### Benefits and Main Features:

- ⊕ Electrical isolation
- ⊕ Temperature range: -40°C/+85°C (-40°F/+185°F)



User Manual

For others EtherNet/IP products see also the following link:

#### Converter Ethernet/IP to

[www.adfweb.com?Product=HD67077](http://www.adfweb.com?Product=HD67077)  
[www.adfweb.com?Product=HD67091](http://www.adfweb.com?Product=HD67091)  
[www.adfweb.com?Product=HD67587](http://www.adfweb.com?Product=HD67587)  
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[www.adfweb.com?Product=HD67D25](http://www.adfweb.com?Product=HD67D25)  
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[www.adfweb.com?Product=HD67E77](http://www.adfweb.com?Product=HD67E77)  
[www.adfweb.com?Product=HD67F25](http://www.adfweb.com?Product=HD67F25)

**(M-Bus)**  
**(M-Bus Wireless)**  
**(NMEA0183)**  
**(DMX)**  
**(NMEA2000)**  
**(Serial)**  
**(Modbus Master)**  
**(Modbus Slave)**  
**(PROFIBUS Master)**  
**(PROFIBUS Slave)**  
**(CAN)**  
**(DeviceNet Master)**  
**(DeviceNet Slave)**  
**(J1939)**  
**(S7comm)**  
**(PROFINET Slave)**  
**(Modbus TCP Slave)**  
**(Modbus TCP Master)**  
**(BACnet IP Slave)**  
**(BACnet IP Master)**  
**(IEC 61850 Server)**  
**(IEC 61850 Client)**  
**(KNX)**  
**(DALI)**  
**(IO-Link Master)**  
**(HART)**  
**(MQTT)**  
**(IO-Link Slave)**  
**(OPC UA Client)**  
**(OPC UA Server)**  
**(PROFINET Master)**  
**(EnOcean)**  
**(LoRaWAN)**  
**(EtherCAT Slave)**  
**(EtherCAT Master)**  
**(LoRaWAN Gateway)**

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## UPDATED DOCUMENTATION:

Dear customer, we thank you for your attention and we remind you that you need to check that the following document is:

- ✚ Updated
- ✚ Related to the product you own

To obtain the most recently updated document, note the “document code” that appears at the top right-hand corner of each page of this document.

With this “Document Code” go to web page [www.adfweb.com/download/](http://www.adfweb.com/download/) and search for the corresponding code on the page. Click on the proper “Document Code” and download the updates.

## REVISION LIST:

Revision	Date	Author	Chapter	Description
1.002	07/01/2014	Ff	All	Added “Sending Asynchronous CAN Messages” chapter
1.100	14/06/2016	Ff	All	New software interface
1.101	28/09/2019	Ff	All	Revision
1.200	11/02/2025	Ln	All	New design

## WARNING:

ADFweb.com reserves the right to change information in this manual about our product without warning.

ADFweb.com is not responsible for any error this manual may contain.

## TRADEMARKS:

All trademarks mentioned in this document belong to their respective owners.

**SECURITY ALERT:****GENERAL INFORMATION**

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device, legal and safety regulation are required for each individual application. The same applies also when using accessories.

**INTENDED USE**

Machines and systems must be designed so the faulty conditions do not lead to a dangerous situation for the operator (i.e. independent limit switches, mechanical interlocks, etc.).

**QUALIFIED PERSONNEL**

The device can be used only by qualified personnel, strictly in accordance with the specifications. Qualified personnel are persons who are familiar with the installation, assembly, commissioning and operation of this equipment and who have appropriate qualifications for their job.

**RESIDUAL RISKS**

The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

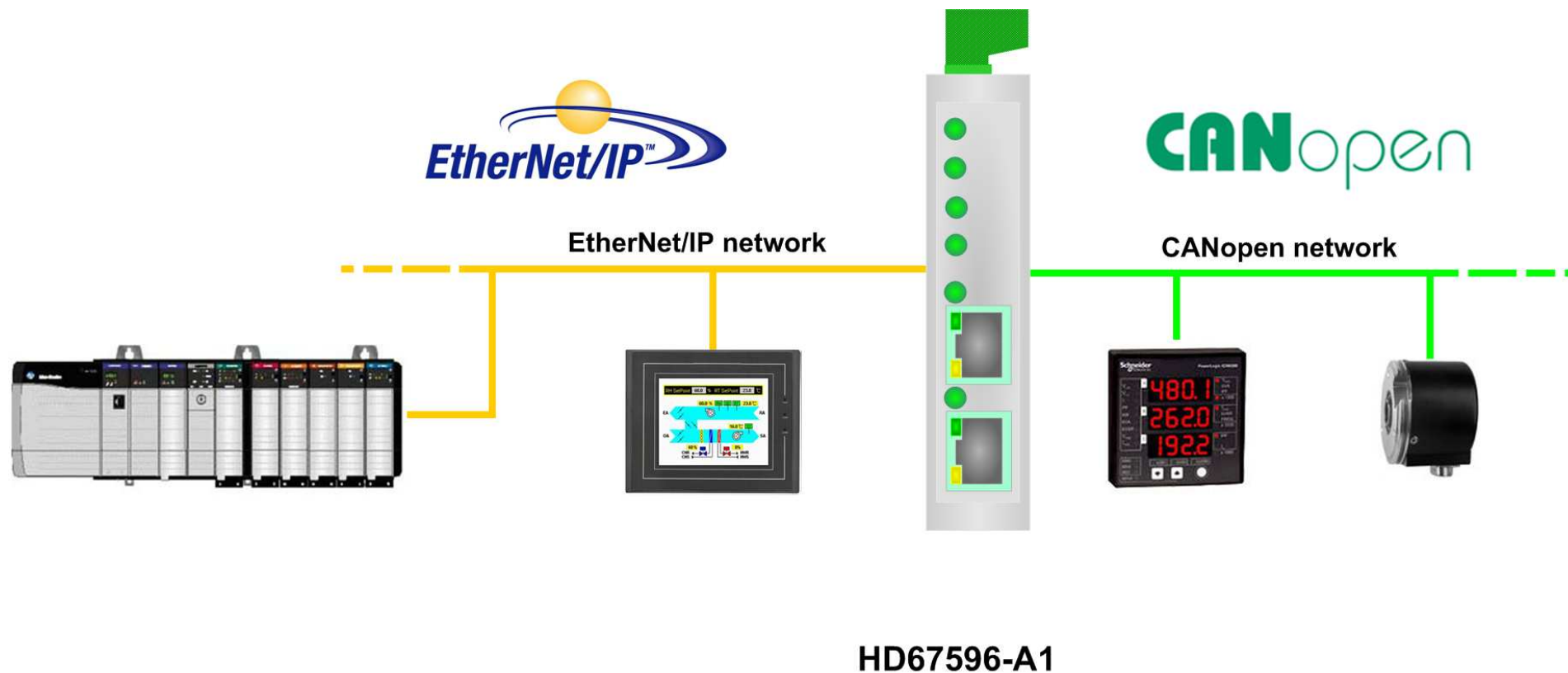


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

**CE CONFORMITY**

The declaration is made by our company. You can send an email to [support@adfweb.com](mailto:support@adfweb.com) or give us a call if you need it.

**EXAMPLE OF CONNECTION:**



## CONNECTION SCHEME:

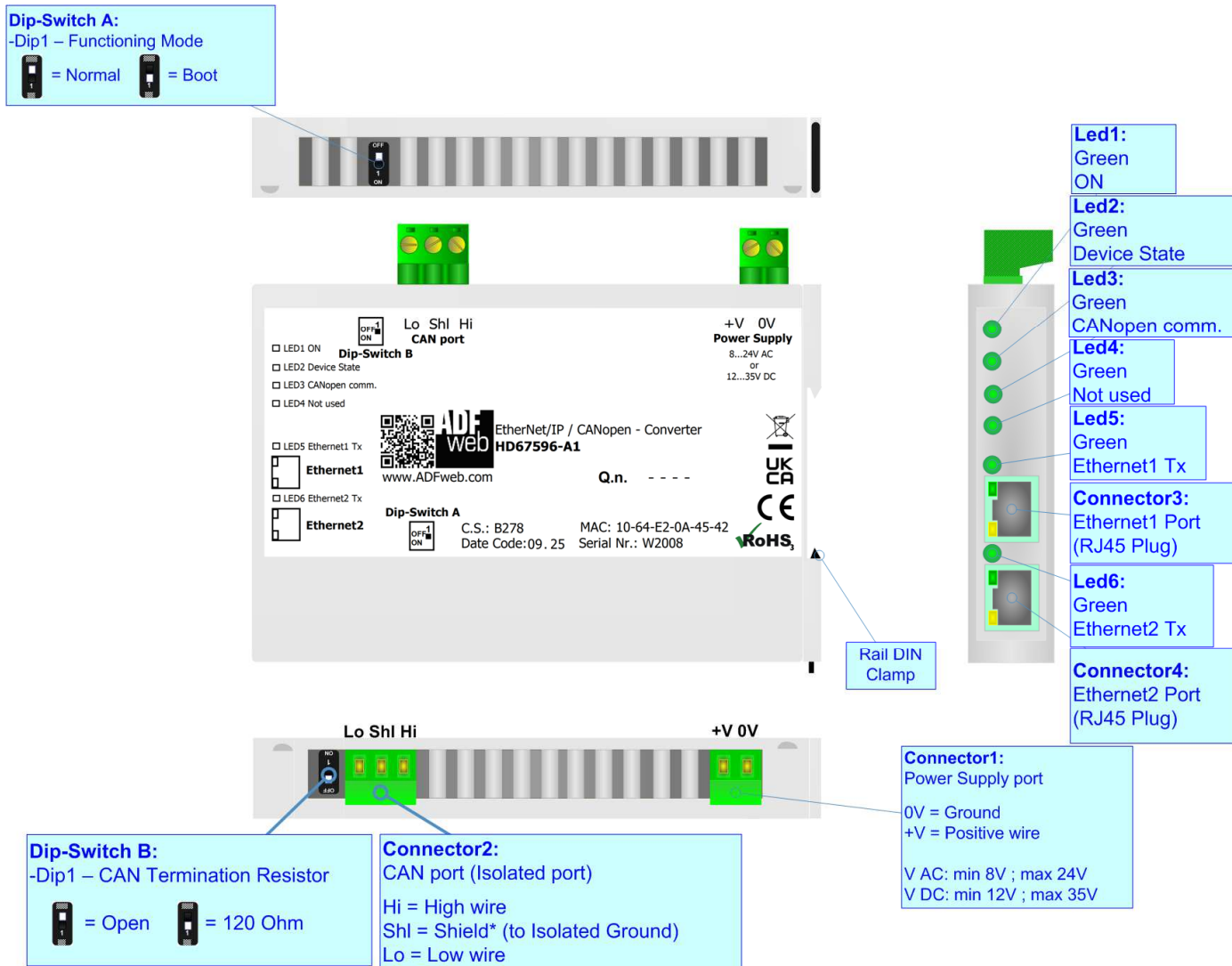


Figure 1: Connection scheme for HD67596-A1

**CHARACTERISTICS:**

The HD67596-A1 is a EtherNet/IP / CANopen Converter.

It allows the following characteristics:

- Up to 496 bytes in reading and 496 bytes in writing;
- Bi-directional information between CANopen bus and EtherNet/IP bus;
- Mountable on 35mm Rail DIN;
- Power Supply 8...24V AC or 12...35V DC;
- Temperature range -40°C to +85°C.



**CONFIGURATION:**

You need Compositor SW67596 software on your PC in order to perform the following:

- Define the parameter of EtherNet/IP line;
- Define the parameter of CANopen line;
- Define which EtherNet/IP bytes transferring in CANopen and vice versa;
- Define SDO Server informations;
- Define SDO Client informations;
- Define PDO informations (RPDO/TPDO);
- Define Node Guarding;
- Update the device.

## POWER SUPPLY:

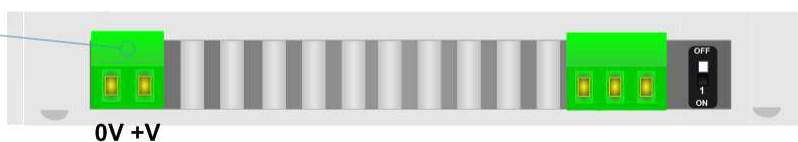
The devices can be powered at 8...24V AC and 12...35V DC. For more details see the two tables below.

VAC 		VDC 	
Vmin	Vmax	Vmin	Vmax
8V	24V	12V	35V

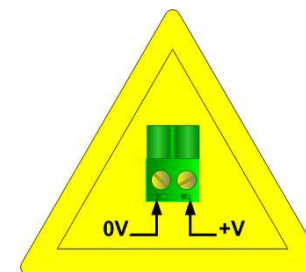
Consumption at 24V DC:

Device	Consumption [W/VA]
HD67596-A1	3.5

**Connector1:**  
Power Supply port  
  
0V = Ground  
+V = Positive wire  
  
V AC: min 8V ; max 24V  
V DC: min 12V ; max 35V



**Caution: Not reverse the polarity power**



HD67596-A1

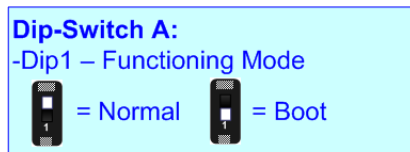
**FUNCTION MODES:**

The device has got two functions mode depending of the position of the 'Dip2 of Dip-Switch A':

- The first, with 'Dip1 of Dip-Switch A' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip1 of Dip-Switch A' at "ON" position, is used for upload the Project and/or Firmware.

For the operations to follow for the updating, see 'UPDATE DEVICE' section.

According to the functioning mode, the LEDs will have specifics functions, see 'LEDS' section.

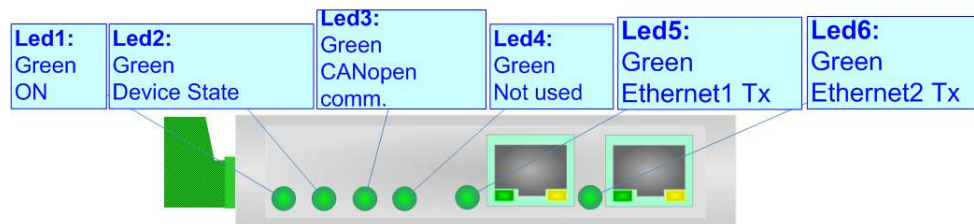




## LEDS:

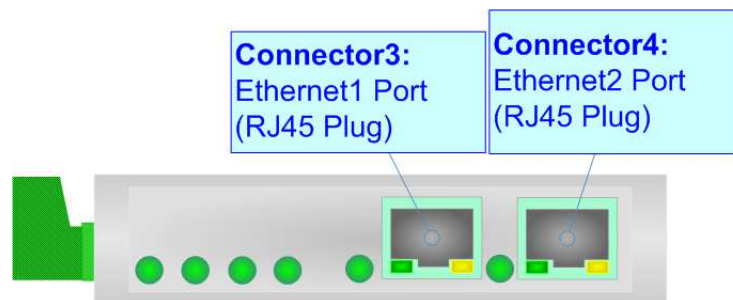
The device has got six LEDs that are used to give information of the functioning status.  
The various meanings of the LEDs are described in the table below.

LED	Normal Mode	Boot Mode
1: ON [supply voltage ] (green)	<b>ON:</b> Device powered <b>OFF:</b> Device not powered	<b>ON:</b> Device powered <b>OFF:</b> Device not powered
2: Device State (green)	Blinks slowly (~1Hz)	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (~0.5Hz):</b> update in progress
3: CANopen comm. (green)	Blinks when a CANopen frame/request is received	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (~0.5Hz):</b> update in progress
4: Not used (green)	OFF	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (~0.5Hz):</b> update in progress
5: Ethernet1 Tx (green)	Blinks when is transmitting Ethernet frames	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (~0.5Hz):</b> update in progress
6: Ethernet2 Tx (green)	Blinks when is transmitting Ethernet frames	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (~0.5Hz):</b> update in progress



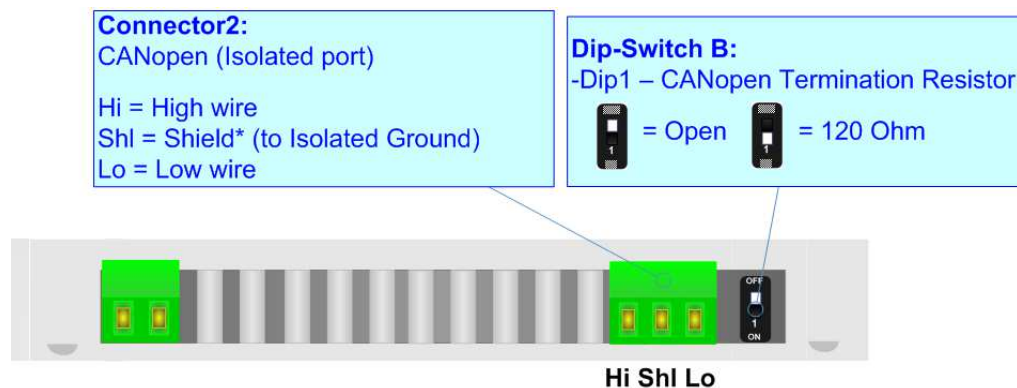
**ETHERNET:**

The Ethernet connection must be made using Connector3 and/or Connector4 of HD67596-A1 with at least a Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform to the T568 norms relative to connections in cat.5 up to 100 Mbps. To connect the device to an Hub/Switch is recommended the use of a straight cable, to connect the device to a PC/PLC/other is recommended the use of a cross cable.



## CANOPEN:

To terminate the CANopen line with a 120Ω resistor it is necessary that the Dip1 of 'Dip-Switch B' is at ON position.



Cable characteristics:

<b>DC parameter:</b>		Impedance	70 Ohm/m
<b>AC parameters:</b>		Impedance	120 Ohm/m
		Delay	5 ns/m
<b>Length</b>		<b>Baud Rate [bps]</b>	<b>Length MAX [m]</b>
		10 K	5000
		20 K	2500
		50 K	1000
		100 K	650
		125 K	500
		250 K	250
		500 K	100
		800 K	50
		1000 K	25

## USE OF COMPOSITOR SW67596:

To configure the Converter, use the available software that runs with Windows called SW67596. It is downloadable on the site [www.adfweb.com](http://www.adfweb.com) and its operation is described in this document. (*This manual is referenced to the last version of the software present on our web site*). The software works with MSWindows (XP, Vista, Seven, 8, 10 or 11; 32/64bit).

When launching the SW67596, the window below appears (Fig. 2).



### Note:

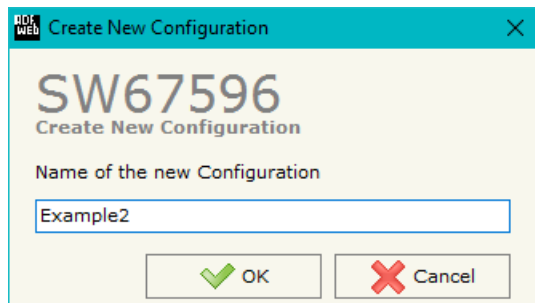
It is necessary to have installed .Net Framework 4.



Figure 2: Main window for SW67596

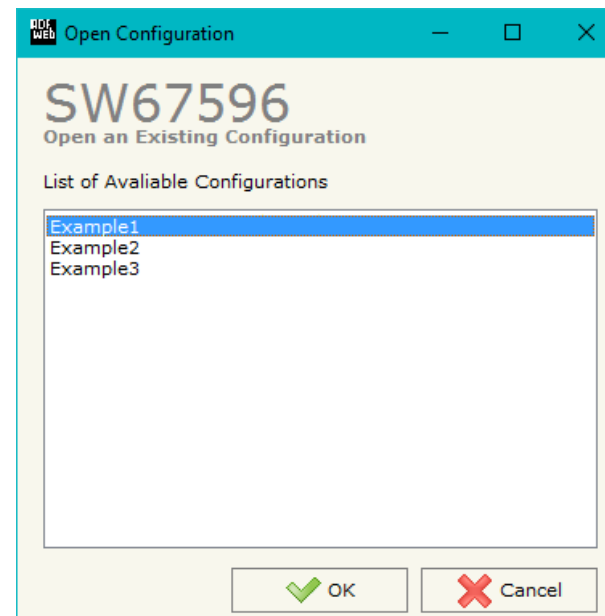
## NEW CONFIGURATION / OPEN CONFIGURATION:

The “**New Configuration**” button creates the folder which contains the entire device’s configuration.




A device’s configuration can also be imported or exported:

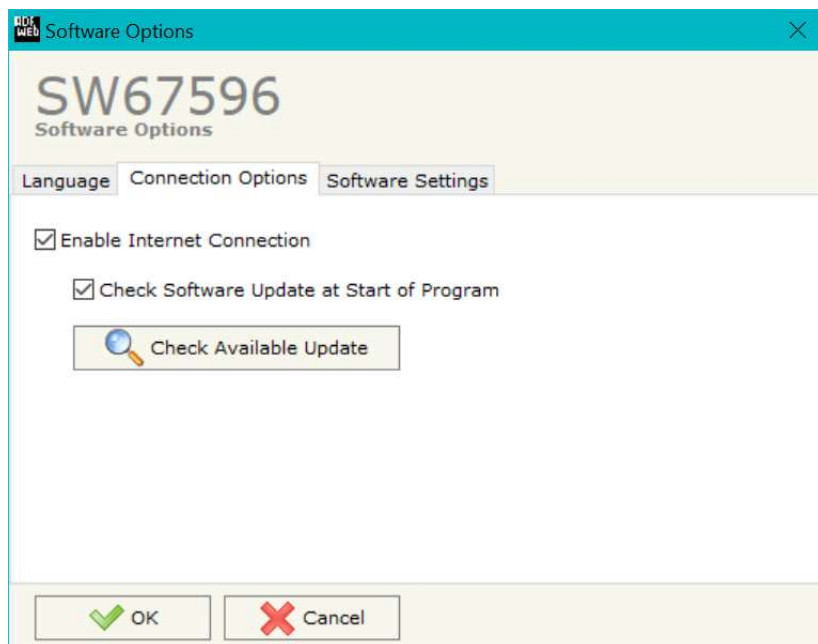
- To clone the configurations of a Programmable “EtherNet/IP / CANopen - Converter” in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button “**Open Configuration**”.



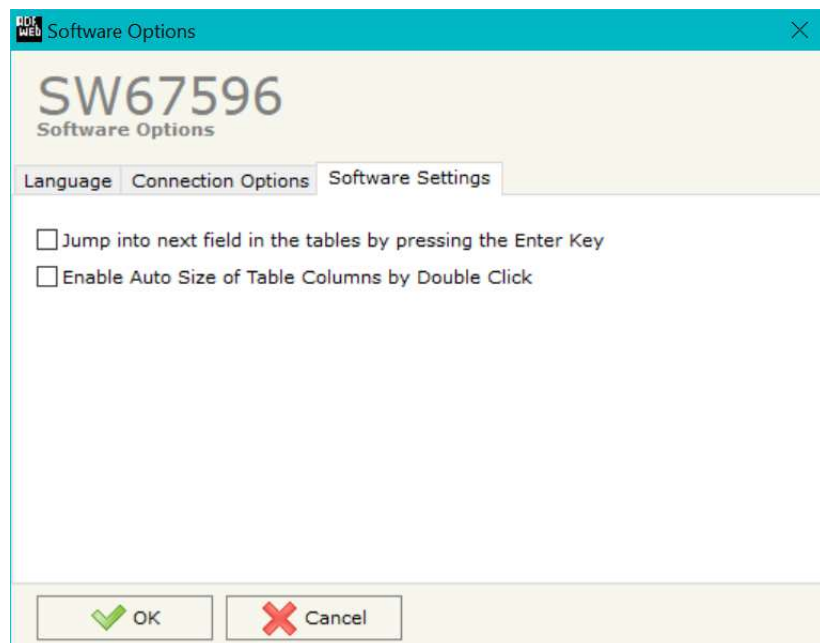
## SOFTWARE OPTIONS:

By pressing the “**Settings**” () button there is the possibility to change the language of the software and check the updatings for the compositor.

In the section “Language” it is possible to change the language of the software.



In the section “Connection Options”, it is possible to check if there are some updatings of the software compositor in ADFweb.com website. Checking the option “**Check Software Update at Start of Program**”, the SW67596 check automatically if there are updatings when it is launched.



In the section "Software Settings", it is possible to enable/disable some keyboard's commands for an easier navigation inside the tables contained in the different sections of the software.

## SET COMMUNICATION:

This section define the fundamental communication parameters of two buses, EtherNet/IP and CANopen.

By Pressing the **"Set Communication"** button from the main window for SW67596 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The window is divided in two sections, one for the EtherNet/IP and the other for the CANopen.

The means of the fields for "EtherNet/IP" are:

- In the field **"IP ADDRESS"** the IP address of the converter is defined;
- In the field **"SUBNET Mask"** the SubNet Mask of the converter is defined;
- In the field **"GATEWAY"** the default gateway of the network is defined. This feature can be enabled or disabled pressing the check box. This feature is used for going out of the net;
- In the field **"Port"** the port for the EtherNet/IP communication is defined (fixed to '44818');
- In the field **"Number Byte Input"** the number of input bytes of EtherNet/IP is defined (up to 496 byte);
- In the field **"Number Byte Output"** the number of output bytes of EtherNet/IP is defined (up to 496 byte);
- If the field **"Diagnostic"** is checked, the diagnostic function is enabled. In the field on the right, the starting EtherNet/IP byte where saving the diagnostic is defined (see page 29 for more details);
- If the field **"CANopen CMD Ind"** is checked, It is possible to send asynchronous CAN messages from EtherNet/IP (see page 26 for more details).

The means of the fields for the "CANopen" section are:

- In the field **"Device ID"** the ID for the CANopen side is defined;
- In the field **"Baudrate"** the baudrate for the CANopen is defined;
- In the field **"Set Operational State at Start-up"** the state of the CANopen is defined. I.e. if it is checked the board starts in Operational State, else it starts in Pre-Operational;
- In the field **"Network Start at Start-up"** the state of the network CANopen is defined. I.e. if it is checked the board sends a command to set the Operational State for all the devices present in the network;
- In the field **"Delay"** the delay before sending the network start command for the CANopen is defined;
- If the field **"SDO Client TimeOut (1/10 ms)"** the timeout for the SDO requests is defined. It is the maximum time that the device attends for the answer from the Slave interrogated;

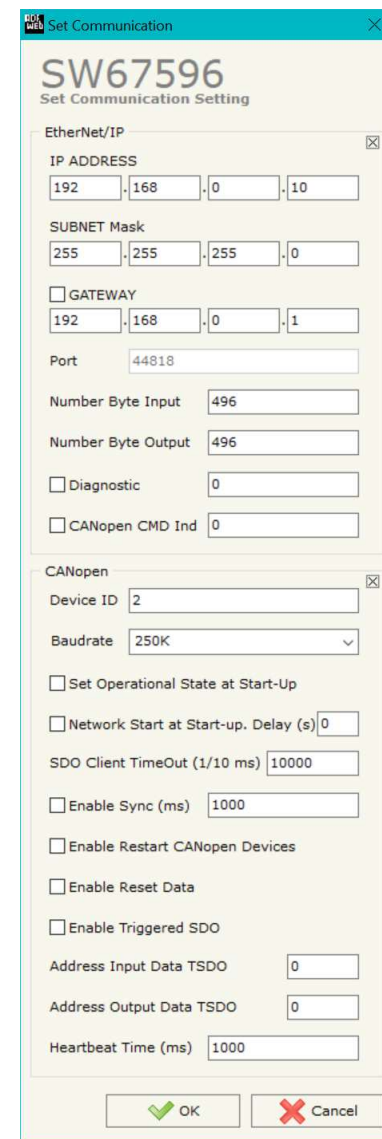


Figure 3: "Set Communication" window



- If the field "**Enable Sync (ms)**" is checked, the converter will produce cyclically the Sync message. The delay between the Sync messages is defined in the field on the right;
- If the field "**Enable Restart CANopen Devices**" is checked, the converter restarts the CANopen devices listed in the section "ReStart Devices" that are not answering to the NodeGuarding;
- If the field "**Enable Reset Data**" is checked, the converter resets data on EtherNet/IP side for the CANopen devices that are not answering to NodeGuarding;
- If the field "**Enable Triggered SDO**" is checked, the it is possible to send asynchronous SDO requests directly from EtherNet/IP side. The starting input byte of the converter to write for sending the SDO requests is defined in the field "**Address Input Data TSDO**" and the response is saved starting from output byte defined in the field "**Address Output Data TDSO**". See page 29 for more info;
- In the field "**Heartbeat Time (ms)**" the delay between Heartbeat messages is defined.

## SET SDO SERVER:

By pressing the **"Set SDO Server"** button from the main window for SW67596 (Fig. 2) the window "Set SDO Server Access" appears (Fig. 4).

This window is made to create the SDO in read or write in the CANopen side, and to indicate which byte are associated to these SDOs.

It is divided in two parts, the "SDO in Read" and the "SDO in Write".

The first part is used to read, using the SDO, the data arrived from the EtherNet/IP side. The second is used to write, using SDO, the data that will be sent to the EtherNet/IP side.

The data of the columns have the following meanings:

- In the field **"Index"** the address of the SDO Object is defined;
- In the field **"SubIndex"** the second address of the SDO Object is defined;
- If the field **"N Byte"** the dimension of the SDO is defined (it can be 1, 2 or 4);
- In the field **"Address Byte1"** insert the address of the EtherNet/IP arrays where reading/writing the 1<sup>st</sup> byte of the SDO;
- In the field **"Address Byte2"** insert the address of the EtherNet/IP arrays where reading/writing the 2<sup>nd</sup> byte of the SDO (only if N Byte is 2 or 4);
- In the field **"Address Byte3"** insert the address of the EtherNet/IP arrays where reading/writing the 3<sup>rd</sup> byte of the SDO (only if N Byte is 4);
- In the field **"Address Byte4"** insert the address of the EtherNet/IP arrays where reading/writing the 4<sup>th</sup> byte of the SDO (only if N Byte is 4);
- In the field **"Mnemonic"** the description for the SDO is defined.

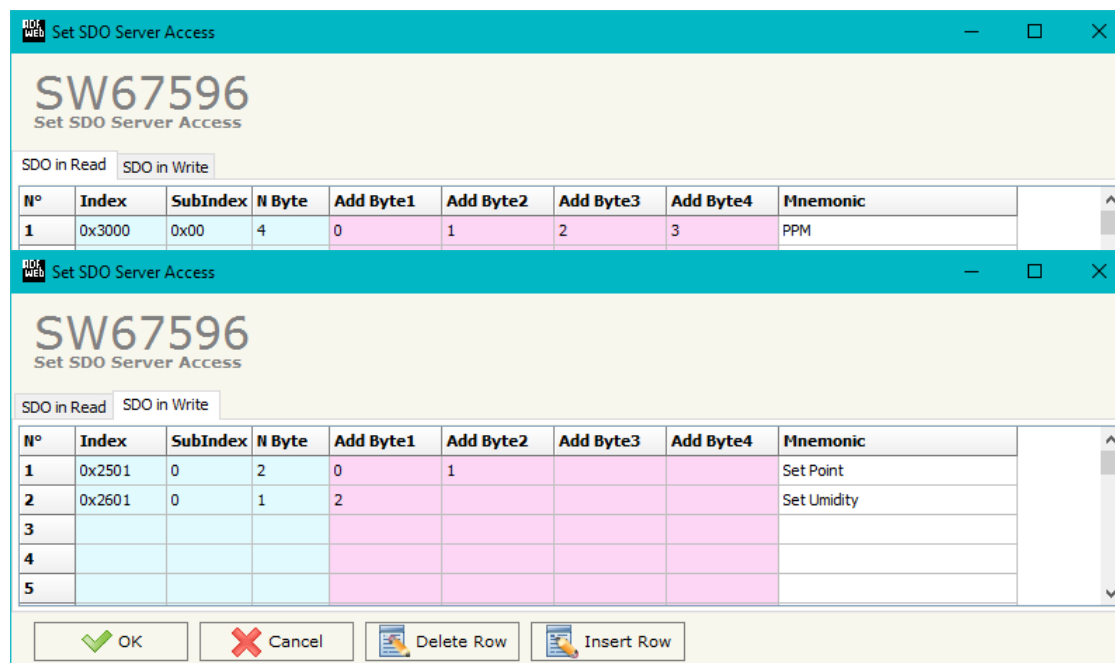


Figure 4: "Set SDO Server Access" window

## SET SDO CLIENT:

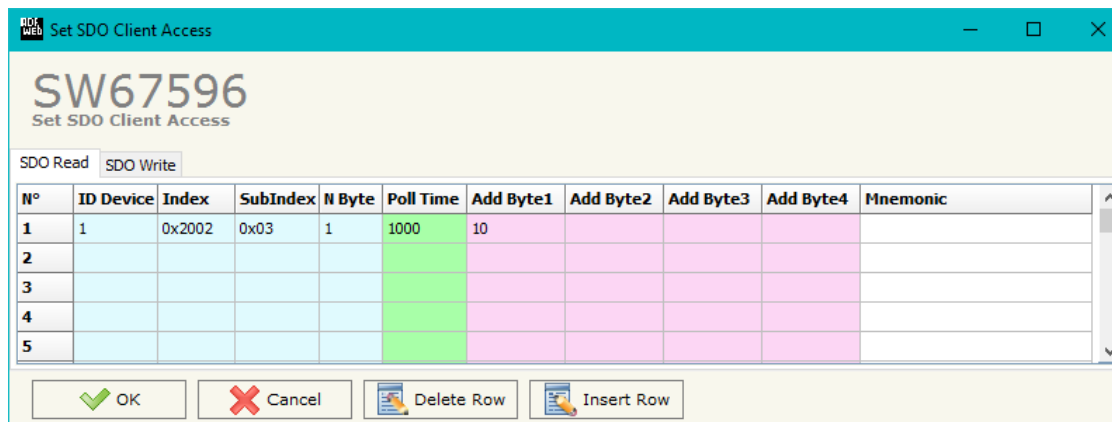
By pressing the **"Set SDO Client"** button from the main window for SW67596 (Fig. 2) the window "Set SDO Client Access" appears (Fig. 5a and 5b).

With the SDO Client the HD67596 can read and/or write the data from/to others devices connected in the CANopen network.

It is divided in two parts, the "SDO Read" and the "SDO Write". The first part is used to read, using the SDO, the data in another device and then put this data in the EtherNet/IP array. The second part is used to write, using the SDO, the data present in the EtherNet/IP array to others CANopen devices.

The meaning of the columns in the "SDO Read" are:

- In the field **"Device ID"** the ID of the device to read is defined;
- In the field **"Index"** the address of the SDO to read is defined;
- In the field **"SubIndex"** the second address of the SDO to read is defined;
- In the field **"N Byte"** the dimension of the SDO to read is defined (it can be 1, 2, or 4);
- In the field **"Poll Time"** the cyclic time of the request is defined;
- In the field **"Address Byte1"** the address of the EtherNet/IP array where coping the 1<sup>st</sup> byte of the SDO read is defined;
- In the field **"Address Byte2"** the address of the EtherNet/IP array where coping the 2<sup>nd</sup> byte of the SDO read is defined (only if N Byte is 2 or 4);
- In the field **"Address Byte3"** the address of the EtherNet/IP array where coping the 3<sup>rd</sup> byte of the SDO read is defined (only if N Byte is 4);
- In the field **"Address Byte4"** the address of the EtherNet/IP array where coping the 4<sup>th</sup> byte of the SDO read is defined (only if N Byte is 4);
- In the field **"Mnemonic"** the description for the SDO is defined.

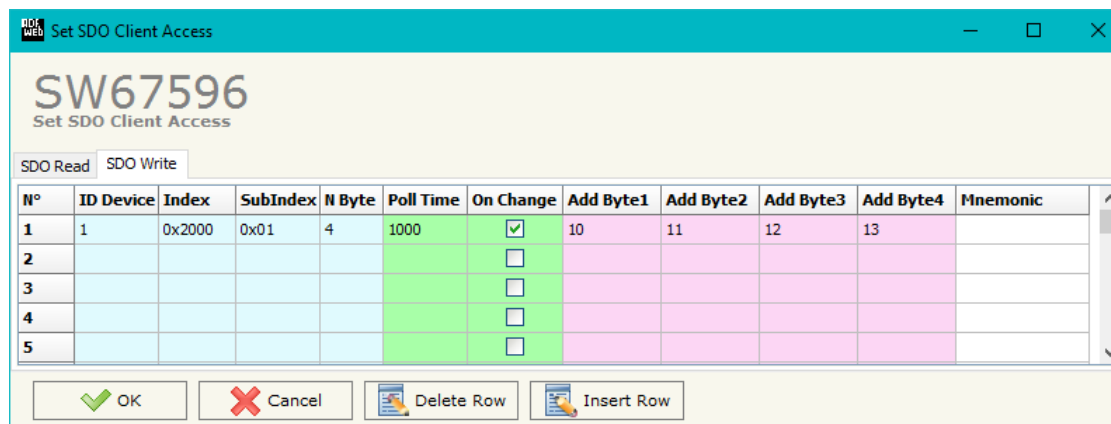


N°	ID Device	Index	SubIndex	N Byte	Poll Time	Add Byte1	Add Byte2	Add Byte3	Add Byte4	Mnemonic
1	1	0x2002	0x03	1	1000	10				
2										
3										
4										
5										

Figure 5a: "Set SDO Client Access – SDO Read" window

The meaning of the columns in the "SDO Write" are:

- In the field "**Device ID**" the ID of the device to write is defined;
- In the field "**Index**" the address for the SDO to write is defined;
- In the field "**SubIndex**" the second address for the SDO to write is defined;
- In the field "**N Byte**" the dimension of the SDO to write is defined (it can be 1, 2, or 4);
- In the field "**Poll Time**" the time to make the request is defined;
- If the field "**On Change**" is checked, the converter sends the writing request when the data from EtherNet/IP changes;
- In the field "**Address Byte1**" the address of the EtherNet/IP array where taking the 1<sup>st</sup> byte of the SDO write is defined;
- In the field "**Address Byte2**" the address of the EtherNet/IP array where taking the 2<sup>nd</sup> byte of the SDO write is defined (only if N Byte is 2 or 4);
- In the field "**Address Byte3**" the address of the EtherNet/IP array where taking the 3<sup>rd</sup> byte of the SDO write is defined (only if N Byte is 4);
- In the field "**Address Byte4**" the address of the EtherNet/IP array where taking the 4<sup>th</sup> byte of the SDO write is defined (only if N Byte is 4);
- In the field "**Mnemonic**" the description for the SDO is defined.



N°	ID Device	Index	SubIndex	N Byte	Poll Time	On Change	Add Byte1	Add Byte2	Add Byte3	Add Byte4	Mnemonic
1	1	0x2000	0x01	4	1000	<input checked="" type="checkbox"/>	10	11	12	13	
2						<input type="checkbox"/>					
3						<input type="checkbox"/>					
4						<input type="checkbox"/>					
5						<input type="checkbox"/>					

Figure 5b: "Set SDO Client Access – SDO Write" window

## SET PDO ACCESS:

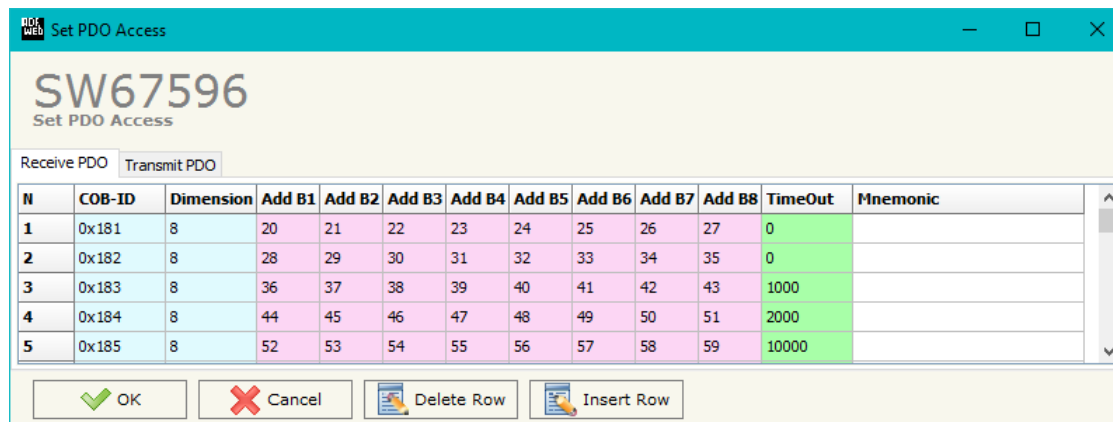
By pressing the "**Set PDO Access**" button from the main window for SW67596 (Fig. 2) the window "Set PDO Access" appears (Fig. 6a and 6b).

This window is used to create the Receive and the Transmit PDOs in the CANopen side and to indicate which bytes of EtherNet/IP side are associated to these PDOs.

It is divided in two parts, the "Receive PDO" and the "Transmit PDO". The first part is used to receive PDO from the CANopen network and copy the data in the EtherNet/IP array. The second part is used to transmit PDO in the CANopen network with the data of EtherNet/IP array.

The meaning of the columns in the "Receive PDO" are:

- In the field "**Cob-ID**" the COB-ID for the PDO is defined;
- In the field "**Dimension**" the dimension of the PDO is defined (it can be between 1 and 8 bytes);
- In the field "**Add B1**" the address of the EtherNet/IP array where coping the 1<sup>st</sup> byte of the RPDO is defined;
- In the field "**Add B2**" the address of the EtherNet/IP array where coping the 2<sup>nd</sup> byte of the RPDO is defined;
- In the field "**Add B3**" the address of the EtherNet/IP array where coping the 3<sup>rd</sup> byte of the RPDO is defined;
- In the field "**Add B4**" the address of the EtherNet/IP array where coping the 4<sup>th</sup> byte of the RPDO is defined;
- In the field "**Add B5**" the address of the EtherNet/IP array where coping the 5<sup>th</sup> byte of the RPDO is defined;
- In the field "**Add B6**" the address of the EtherNet/IP array where coping the 6<sup>th</sup> byte of the RPDO is defined;
- In the field "**Add B7**" the address of the EtherNet/IP array where coping the 7<sup>th</sup> byte of the RPDO is defined;
- In the field "**Add B8**" the address of the EtherNet/IP array where coping the 8<sup>th</sup> byte of the RPDO is defined;
- In the field "**TimeOut**" the timeout is defined. It is used to put to 0 the data into EtherNet/IP if the PDO doesn't arrive in the defined time. If the value in this field is '0', the function is not used;
- In the field "**Mnemonic**" the description for the PDO is defined.

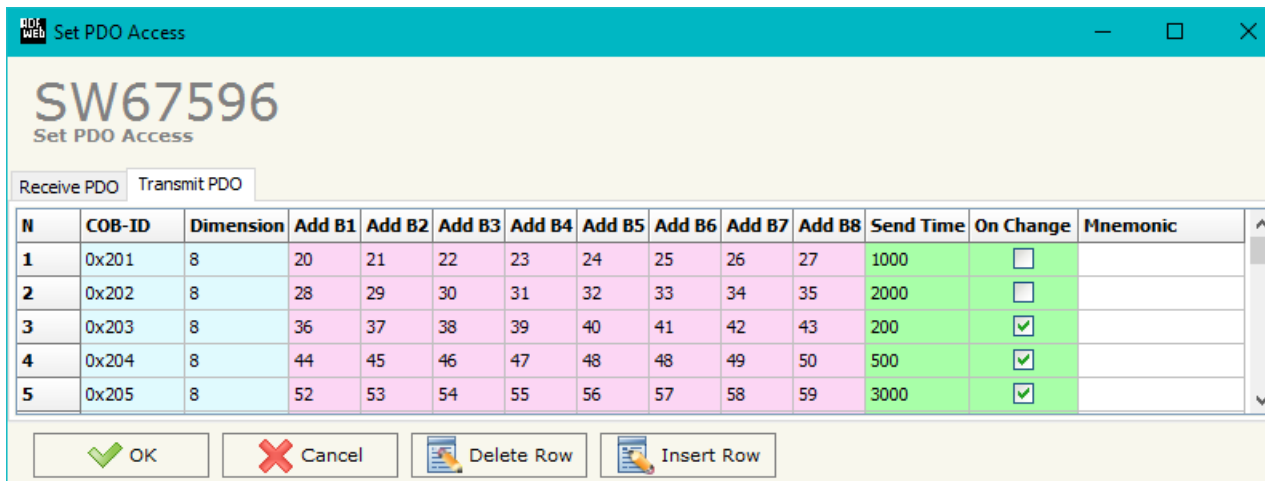


N	COB-ID	Dimension	Add B1	Add B2	Add B3	Add B4	Add B5	Add B6	Add B7	Add B8	TimeOut	Mnemonic
1	0x181	8	20	21	22	23	24	25	26	27	0	
2	0x182	8	28	29	30	31	32	33	34	35	0	
3	0x183	8	36	37	38	39	40	41	42	43	1000	
4	0x184	8	44	45	46	47	48	49	50	51	2000	
5	0x185	8	52	53	54	55	56	57	58	59	10000	

Figure 6a: "Set PDO Access – Receive PDO" window

The meaning of the columns in the "Transmit PDO" are:

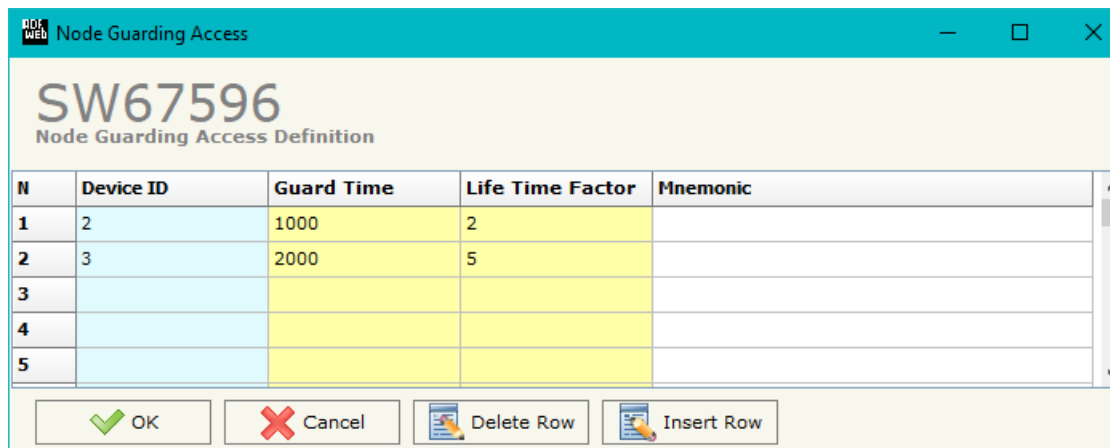
- In the field "**Cob-ID**" the COB-ID for the PDO is defined;
- In the Field "**Dimension**" the dimension of the PDO is defined (it can be between 1 and 8 bytes);
- In the field "**Add B1**" the address of the EtherNet/IP array where taking the 1<sup>st</sup> byte of the RPDO is defined;
- In the field "**Add B2**" the address of the EtherNet/IP array where taking the 2<sup>nd</sup> byte of the RPDO is defined;
- In the field "**Add B3**" the address of the EtherNet/IP array where taking the 3<sup>rd</sup> byte of the RPDO is defined;
- In the field "**Add B4**" the address of the EtherNet/IP array where taking the 4<sup>th</sup> byte of the RPDO is defined;
- In the field "**Add B5**" the address of the EtherNet/IP array where taking the 5<sup>th</sup> byte of the RPDO is defined;
- In the field "**Add B6**" the address of the EtherNet/IP array where taking the 6<sup>th</sup> byte of the RPDO is defined;
- In the field "**Add B7**" the address of the EtherNet/IP array where taking the 7<sup>th</sup> byte of the RPDO is defined;
- In the field "**Add B8**" the address of the EtherNet/IP array where taking the 8<sup>th</sup> byte of the RPDO is defined;
- In the field "**Send Time**" the interval used to send the PDO is defined. The time is in milliseconds;
- If the field "**On Change**" is checked, the gateway sends the Transmit PDO when the data from EtherNet/IP change the value;
- In the field "**Mnemonic**" the description for the PDO is defined.



N	COB-ID	Dimension	Add B1	Add B2	Add B3	Add B4	Add B5	Add B6	Add B7	Add B8	Send Time	On Change	Mnemonic
1	0x201	8	20	21	22	23	24	25	26	27	1000	<input type="checkbox"/>	
2	0x202	8	28	29	30	31	32	33	34	35	2000	<input type="checkbox"/>	
3	0x203	8	36	37	38	39	40	41	42	43	200	<input checked="" type="checkbox"/>	
4	0x204	8	44	45	46	47	48	48	49	50	500	<input checked="" type="checkbox"/>	
5	0x205	8	52	53	54	55	56	57	58	59	3000	<input checked="" type="checkbox"/>	

Figure 6b: "Set PDO Access – Transmit PDO" window

## SET NODE GUARDING



N	Device ID	Guard Time	Life Time Factor	Mnemonic
1	2	1000	2	
2	3	2000	5	
3				
4				
5				

Buttons: OK, Cancel, Delete Row, Insert Row

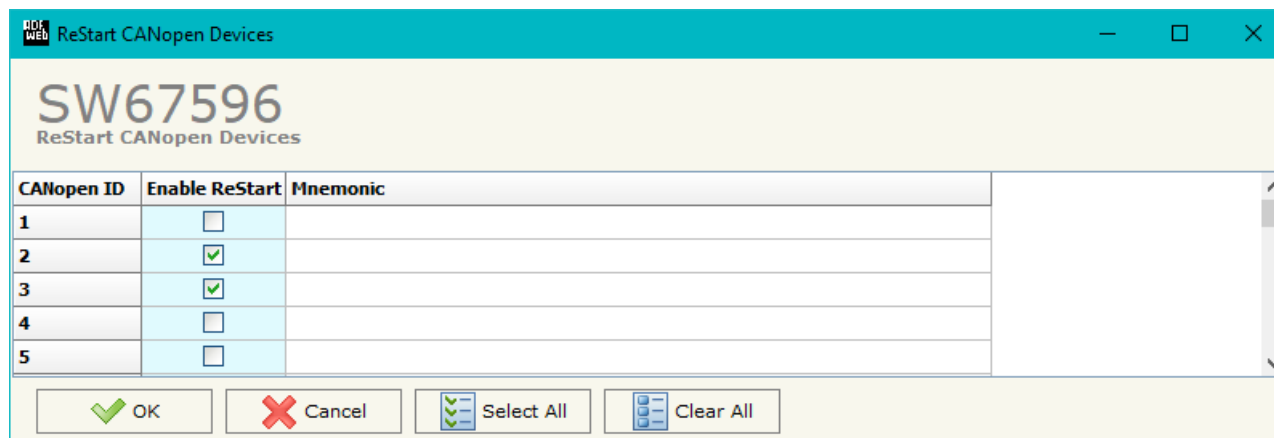
Figure 7: "Node Guarding Access Definition" window

By pressing the **"Set Node Guarding"** button from the Main Window of SW67596 (Fig. 2) the "Node Guarding Access Definition" window appears (Fig. 7).

The data of the columns have the following meanings:

- In the field **"Device ID"** the address of the device that you want to control is defined;
- In the field **"Guard Time"** the Guard Time is defined. This value indicates the delay between two interrogations;
- In the field **"Life Time Factor"** the Lifetime of the CANopen slave is defined;
- In the field **"Mnemonic"** a description is defined.

## RESTART DEVICES



CANopen ID	Enable ReStart	Mnemonic
1	<input type="checkbox"/>	
2	<input checked="" type="checkbox"/>	
3	<input checked="" type="checkbox"/>	
4	<input type="checkbox"/>	
5	<input type="checkbox"/>	

Figure 8: "ReStart CANopen Devices" window

By pressing the **"ReStart Devices"** button from the Main Window of SW67596 (Fig. 2) the "ReStart CANopen Devices" window appears (Fig. 8). This section is used to define which CANopen devices the converter will try to restart if they are not responding to Node Guard.

The data of the columns have the following meanings:

- In the field **"Enable ReStart"** it is possible to select which CANopen devices the converter will restart;
- In the field **"Mnemonic"** a description is defined.

## EDS FILE:

By Pressing the **"EDS File"** button from the main window for SW67596 (Fig. 2) it is possible to generate the EDS file to be imported into the CANopen Client.



**UPDATE DEVICE:**

By pressing the **"Update Device"** button it is possible to load the created Configuration into the device; and also the Firmware, if is necessary.

If you don't know the actual IP address of the device you have to use this procedure:

- Turn OFF the Device;
- Put Dip1 of 'Dip-Switch A' at ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP **"192.168.2.205"**;
- Press the **"Ping"** button, must appear **"Device Found!"**;
- Press the **"Next"** button;
- Select which operations you want to do;
- Press the **"Execute update firmware"** button to start the upload;
- When all the operations are **"OK"** turn off the Device;
- Put Dip1 of 'Dip-Switch A' at OFF position;
- Turn on the device.

If you know the actual IP address of the device you have to use this procedure:

- Turn on the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Press the **"Ping"** button, must appear **"Device Found!"**;
- Press the **"Next"** button;
- Select which operations you want to do;
- Press the **"Execute update firmware"** button to start the upload;
- When all the operations are **"OK"** the device automatically goes at Normal Mode.

At this point the configuration/firmware on the device is correctly update.

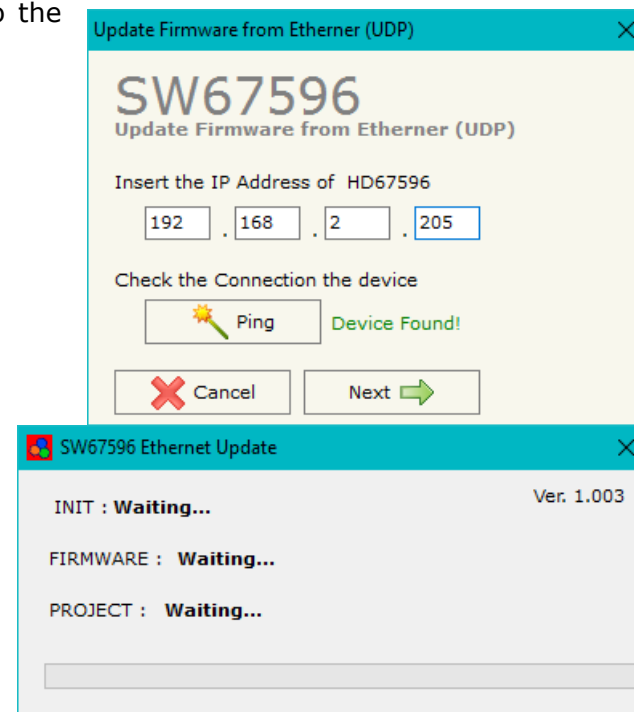


Figure 9: "Update device" windows



**Note:**

When you install a new version of the software it is better if the first time you do the update of the Firmware in the HD67596-A1 device.



**Note:**

When you receive the device, for the first time, you have to update also the Firmware in the HD67596-A1 device.



**Warning:**

If the Fig. 10 appears when you try to do the Update before require assistance try these points:

- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- Check the LAN settings;
- Check the Wi-Fi settings;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven, Vista, 8, 10 or 11 make sure that you have the administrator privileges;
- In case you have to program more than one device, using the "UDP Update", you have to cancel the ARP table every time you connect a new device on Ethernet. For do this you have to launch the "Command Prompt" and write the command "arp -d". Pay attention that with Windows Vista, Seven, 8, 10 or 11 you have to launch the "Command Prompt" with Administrator Rights;
- Pay attention at Firewall lock.

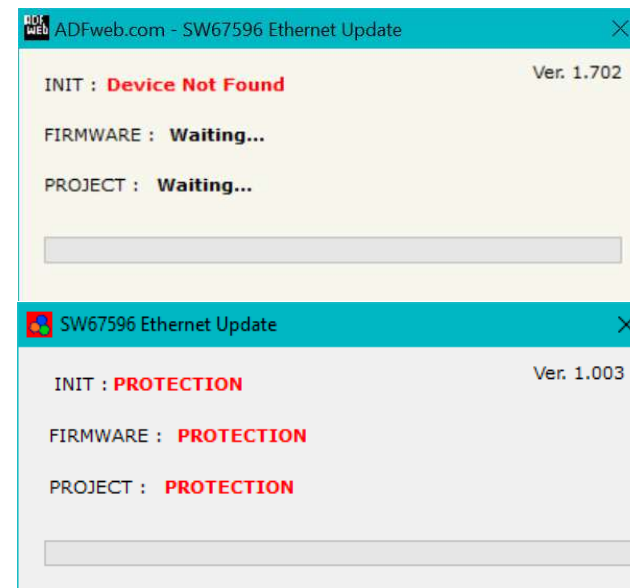


Figure 10: "Protection"



In the case of HD67596-A1 you have to use the software "SW67596": [www.adfweb.com/download/filefold/SW67596.zip](http://www.adfweb.com/download/filefold/SW67596.zip).

## SENDING ASYNCHRONOUS CAN MESSAGES

The converter allows to send asynchronous CANopen messages (for example a NMT message) directly from EtherNet to CANopen. To send the EtherNet frame to the converter, there are two different ways:

- Using the EtherNet/IP;
- Using the tunneling port of the converter.

### MODE 1: PROFINET

In this case, to send a CANopen message from EtherNet to CANopen, it is necessary to enable the option "CANopen CMD Ind" in the section "Set Communication". It is necessary to write the bytes of EtherNet/IP side starting from the first one defined in this way:

Byte Number	Description
1	Counter (increased to send the new CAN message)
2	Number of bytes to send
3÷6	COB-ID of CAN message
7÷14	Data

To choose the type of CAN (2.0A or 2.0B) of the frame that the converter will send, it is necessary to put the most significant bit of the byte 1 to:

- 0: CAN 2.0A;
- 1: CAN 2.0B.

## MODE 2: TUNNELING PORT

In this case, to send a CANopen message from EtherNet to CANopen, it is necessary to send an UDP message to the Tunneling port of the converter.

The Ethernet message to send to the converter must have this structure:

Byte Number	Description
1÷4	COB-ID of the CAN message to send
5÷(4+n)	Data of the CAN message

n=Number of Byte to Write

To choose the type of CAN (2.0A or 2.0B) of the frame that the converter will send, it is necessary to put the most significant bit of the byte 1 to:

- 0: CAN 2.0A;
- 1: CAN 2.0B.

Example:

We want to send the NMT message "Start" to the CANopen device 5. The EtherNet frame will have these characteristics:

CAN Type=2.0A; Frame: Cob\_ID=0x0000; Data=0x0105.

So the string of hexadecimal numbers to be send to the converter is: [00][00][00][00][01][05].

## ASYNCR SDO REQUESTS:

The converter allows to send asynchronous SDO requests directly from EtherNet/IP to CANopen. This function can be enabled by checking the option "Enable Triggered SDO" in the section "Set Communication".

It is necessary to write the bytes of EtherNet/IP side starting from the first byte defined in the field "Address Output Data TDSO" in this way:

Byte Number	Description
1	Counter (increased to send the new CAN message)
2	ID of the CANopen node to interrogate
3÷4	Index of SDO
5	SubIndex of SDO
6÷9	Data to write (set to '0' in case of reading request)
10	Most Significant bit → 0: W; 1: R Bit 6, 5, 4, 3, 2, 1, 0 → Number of bytes to write

The feedback of the SDO request is saved from the first byte defined in the field "Address Input Data TDSO" in this way:

Byte Number	Description
1÷4	Data read (in case of reading)
5	Status of request (1 → OK; 2 → Not OK)

**CANOPEN DIAGNOSTIC OVER ETHERNET/IP:**

It is possible to save the CANopen Diagnostic on EtherNet/IP array using the field "Diagnostic" of the section "Set Communication".  
The status of each CANopen node defined in the section "Set Node Guarding" is saved starting from the byte of the EtherNet/IP array defined in the section "Set Communication". There will be 127 bytes reserved.

The status of the CANopen nodes can be different in relation to their state:

- 0x04: Node in Stop state;
- 0x7F: Node in Pre-Operational state;
- 0x05: Node in Operational state.

## MECHANICAL DIMENSIONS:

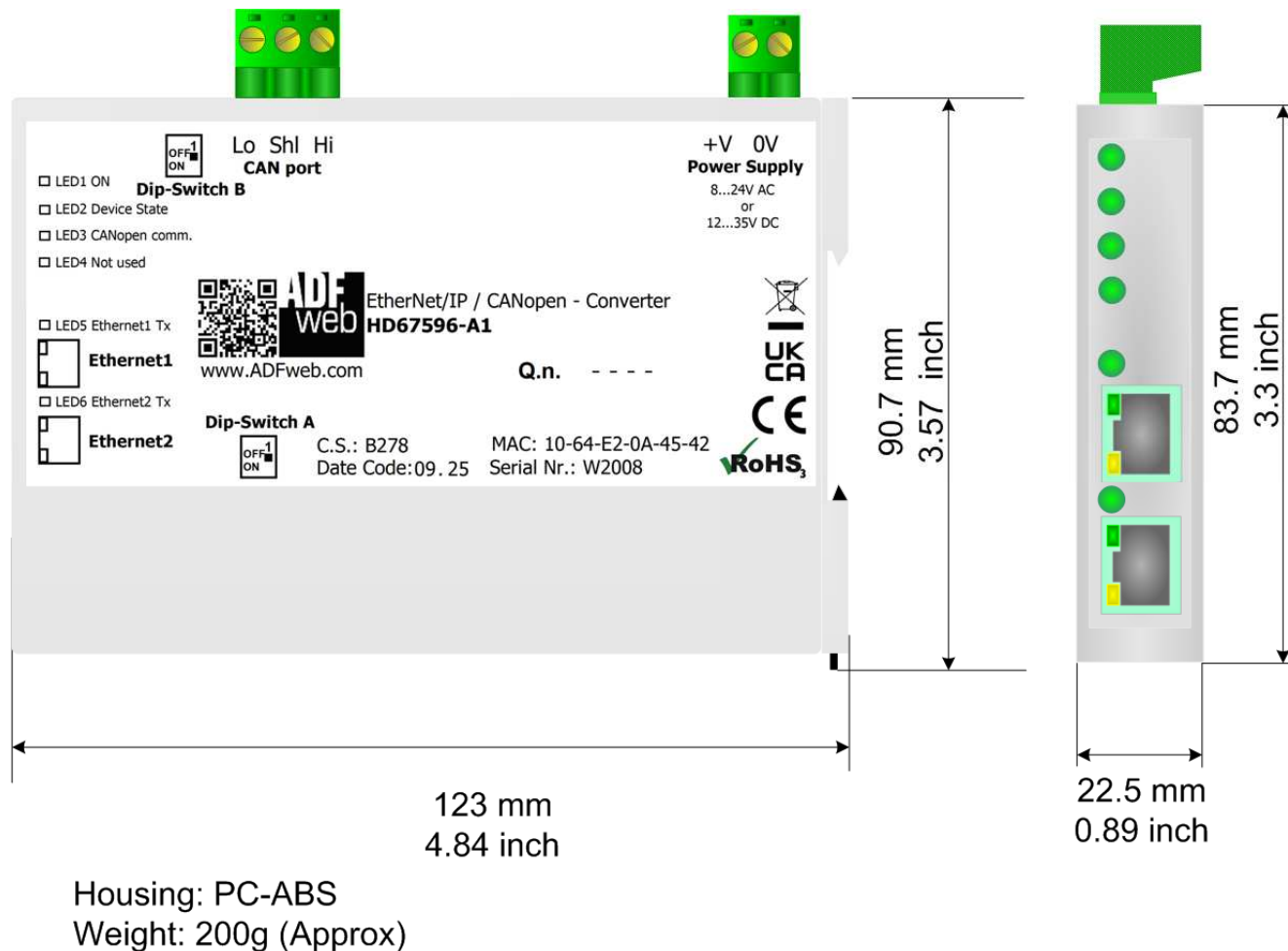
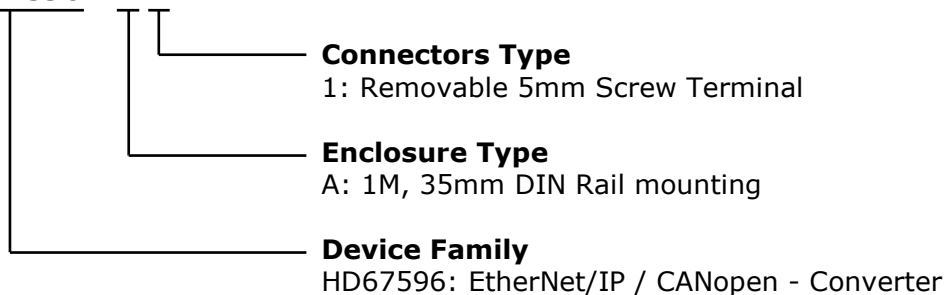


Figure 11: Mechanical dimensions scheme for HD67596-A1

**ORDERING INFORMATION:**

The ordering part number is formed by a valid combination of the following:

**HD67596 – A 1**

Order Code: **HD67596-A1** - Converter EtherNet/IP / CANopen Converter

**ACCESSORIES:**

Order Code: **AC34011** - 35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V DC

Order Code: **AC34012** - 35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 24 V DC

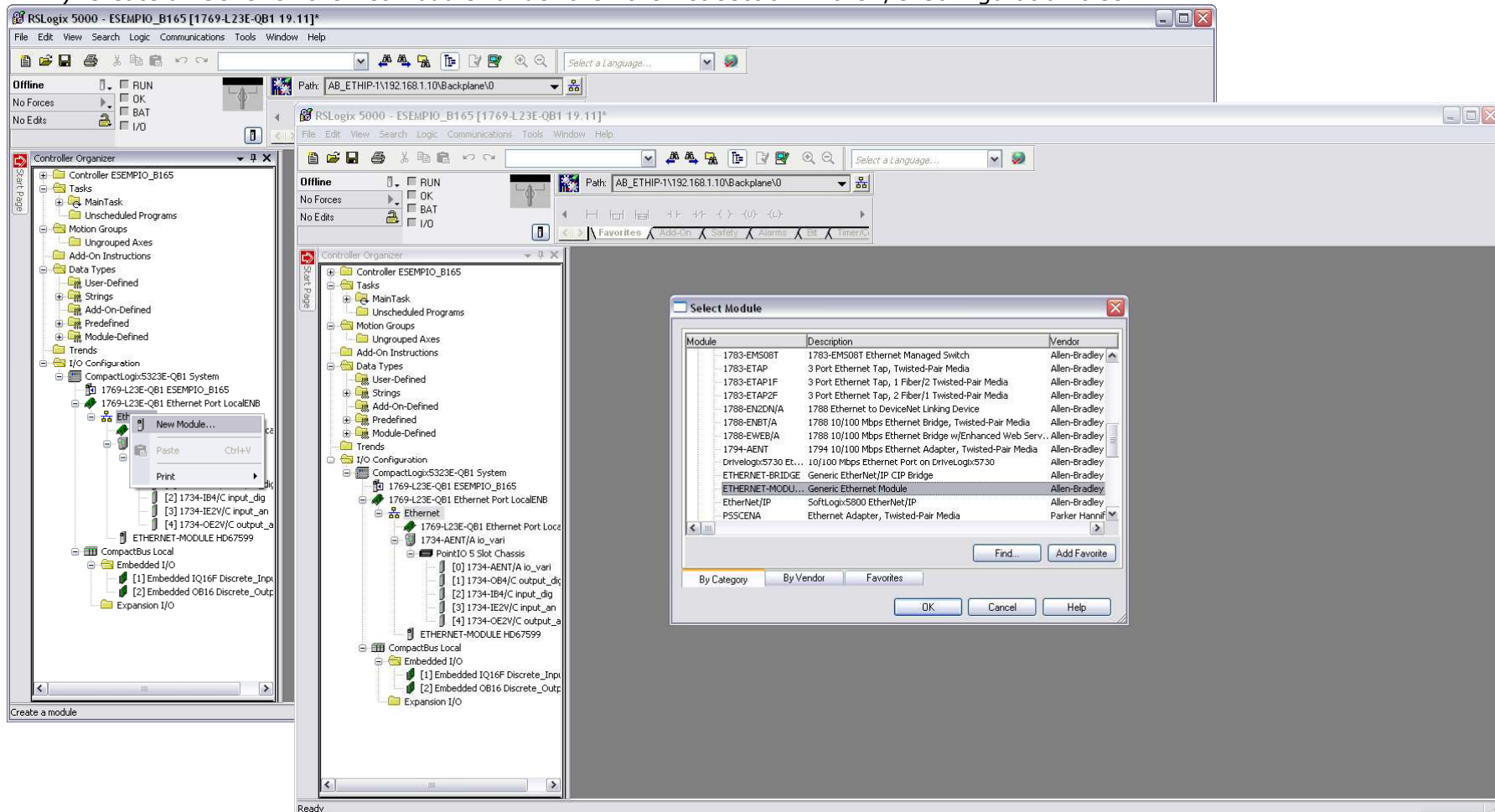


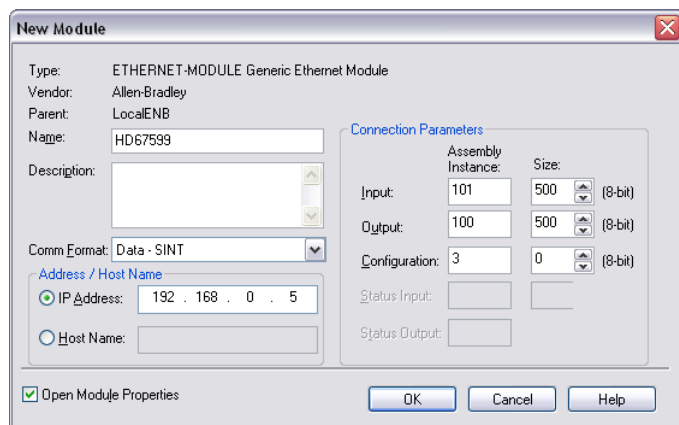
## PLC CONFIGURATION:

The configuration and commissioning of the EtherNet/IP Converter as described on the following pages was accomplished with the help of the "RSLogix 5000" software of Rockwell Automation. In case of using a control system from another supplier please attend to the associated documentation.

These are the steps to follow:

- 1) Create a "Generic Ethernet Module" under the Ethernet section in the I/O Configuration tree.





The 'New Module' dialog box is shown. It contains the following fields and options:

- Type: ETHERNET-MODULE Generic Ethernet Module
- Vendor: Allen-Bradley
- Parent: LocalENB
- Name: HD67599
- Description: (empty text box)
- Comm Format: Data - SINT
- Address / Host Name:
  - ☒ IP Address: 192 . 168 . 0 . 5
  - ☐ Host Name: (empty text box)
- Open Module Properties: ☒
- Buttons: OK, Cancel, Help

**Connection Parameters:**

Input	Assembly Instance	Size
101	500	(8-bit)
Output: 100	500	(8-bit)
Configuration: 3	0	(8-bit)
Status Input:		
Status Output:		

2) Edit the settings of the new Generic Ethernet Module. As shown in the screen shot below, the module was named "HD67596" and the IP-address assigned is 192.168.0.5.

For the Comm Format "Data - SINT" shall be selected as the data type.

The HD67596-A1 can uses up to 496 bytes for input assembly instance 101 and 496 bytes for output assembly instance 100.

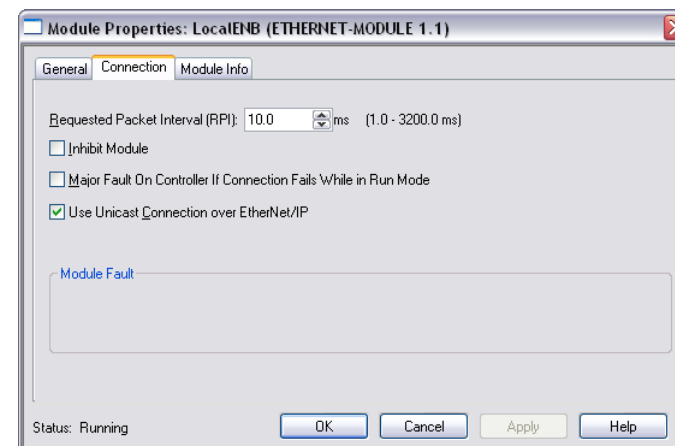
RSLogix 5000 requires a configuration assembly instance. Both modules do not provide a configuration assembly instance. Therefore it is allowed to select an instance of 3 and to set the value to zero.

3) The setting of 10msec for the "Requested Packet Interval (RPI)" is adequate but it is possible to change this value as required. A lower value of 2ms shall not be selected.



**Warning:**

The field "Use Unicast Connection over EtherNet/IP" must be checked.

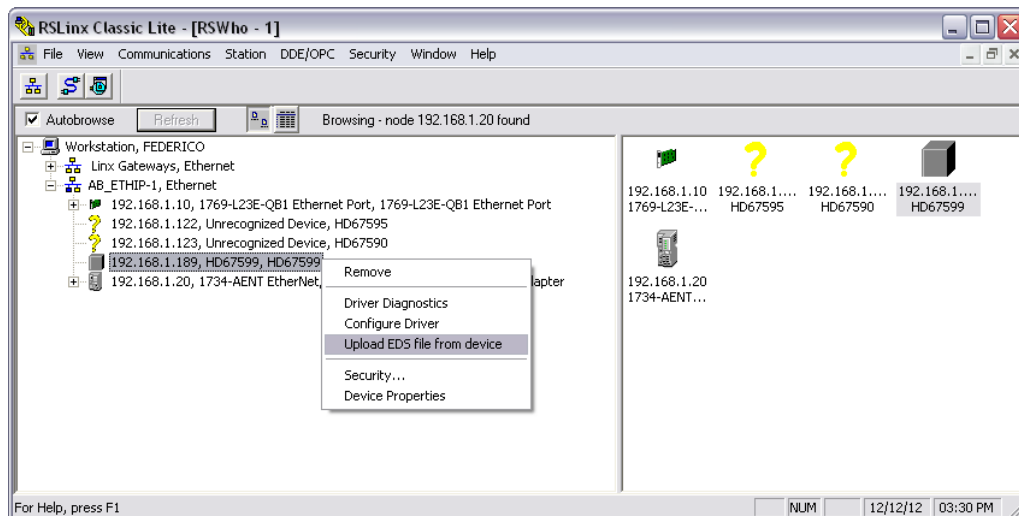


The 'Module Properties: LocalENB (ETHERNET-MODULE 1.1)' dialog box is shown. It contains the following fields and options:

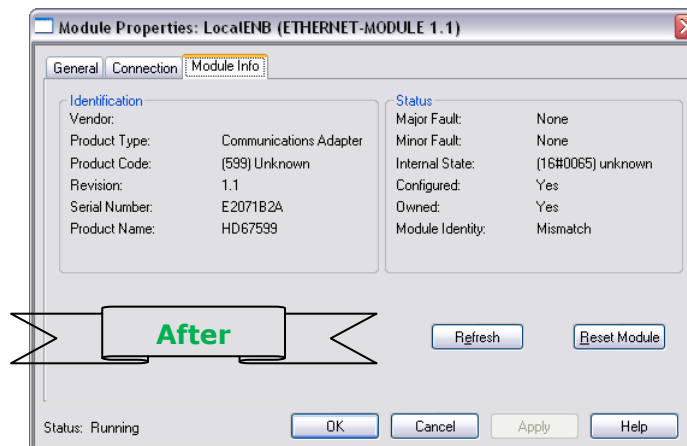
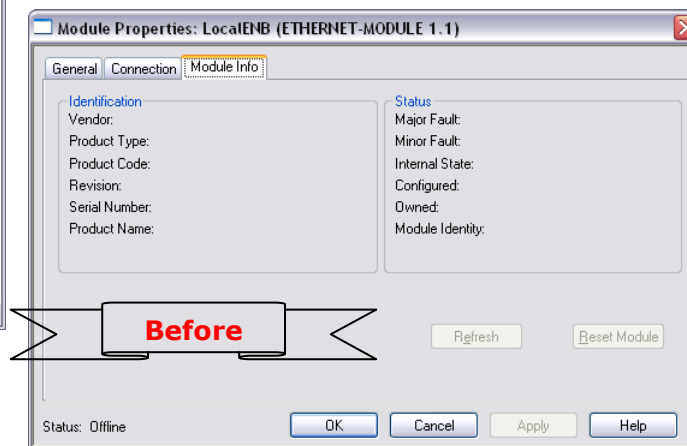
- General tab selected
- Requested Packet Interval (RPI): 10.0 ms (1.0 - 3200.0 ms)
- ☐ Inhibit Module
- ☐ Major Fault On Controller If Connection Fails While in Run Mode
- ☒ Use Unicast Connection over EtherNet/IP
- Module Fault: (empty text box)
- Status: Running
- Buttons: OK, Cancel, Apply, Help

4) After the configuration is completed, the controller tags are created.

[illegible]



5) With "RSLinks Classic Lite", after have done a network scan (RSWho), and finding the EtherNet/IP device, it is possible to load the EDS file for the device in order to have the "Module Info" compiled.



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- Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

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