

User Manual

Revision 1.001

English

EtherCAT / MQTT - Converter

(Order Code: HD67E17-A1)

For Website information:

www.adfweb.com?Product=HD67E17

For Price information:

www.adfweb.com?Price=HD67E17-A1

Benefits and Main Features:

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



For other EtherCAT Slave products see also the following link:

Converter EtherCAT Slave to

www.adfweb.com?Product=HD67E00
www.adfweb.com?Product=HD67E01
www.adfweb.com?Product=HD67E02
www.adfweb.com?Product=HD67E03
www.adfweb.com?Product=HD67E04
www.adfweb.com?Product=HD67E05
www.adfweb.com?Product=HD67E06
www.adfweb.com?Product=HD67E07
www.adfweb.com?Product=HD67E08
www.adfweb.com?Product=HD67E09
www.adfweb.com?Product=HD67E10
www.adfweb.com?Product=HD67E11
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www.adfweb.com?Product=HD67E26
www.adfweb.com?Product=HD67E27
www.adfweb.com?Product=HD67E28
www.adfweb.com?Product=HD67879

(Serial)
(Modbus Master)
(Modbus Slave)
(Modbus TCP Master)
(Modbus TCP Slave)
(BACnet Master)
(BACnet Slave)
(CAN)
(CANopen)
(DeviceNet Master)
(DeviceNet Slave)
(DMX)
(Ethernet)
(IEC61850 Master)
(IEC61850 Server)
(J1939)
(NMEA0183)
(NMEA2000)
(OPC UA Client)
(OPC UA Server)
(PROFINET Master)
(PROFINET Slave)
(SNMP Manager)
(SNMP Agent)
(EtherNet/IP Master)
(EtherNet/IP Slave)
(S7comm Client)
(IO-Link Master)



User Manual

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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/ 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
1.000	18/09/2020	Ff	All	First Release
1.001	29/07/2024	Ln	All	Revision

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:

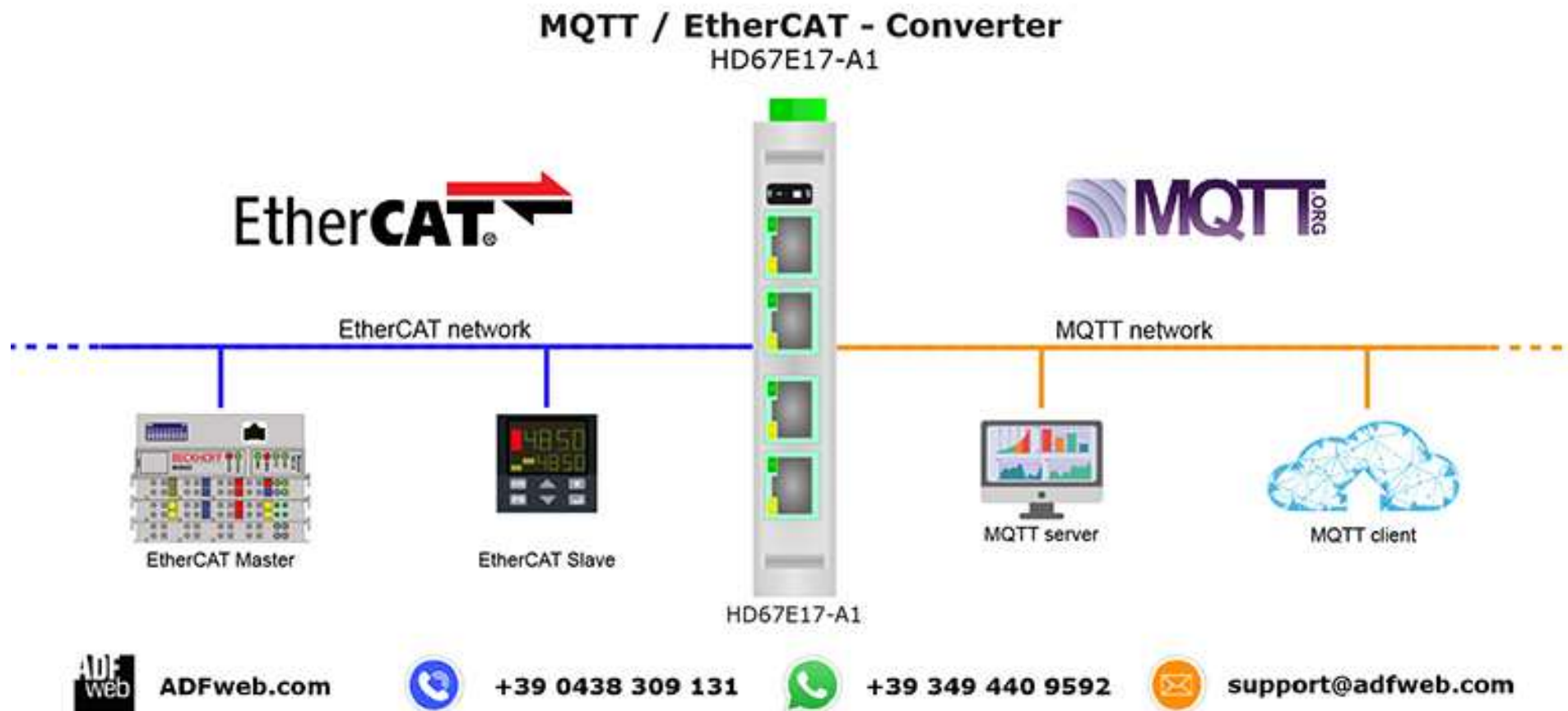


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

CE CONFORMITY

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

EXAMPLE OF CONNECTION:



CONNECTION SCHEME:

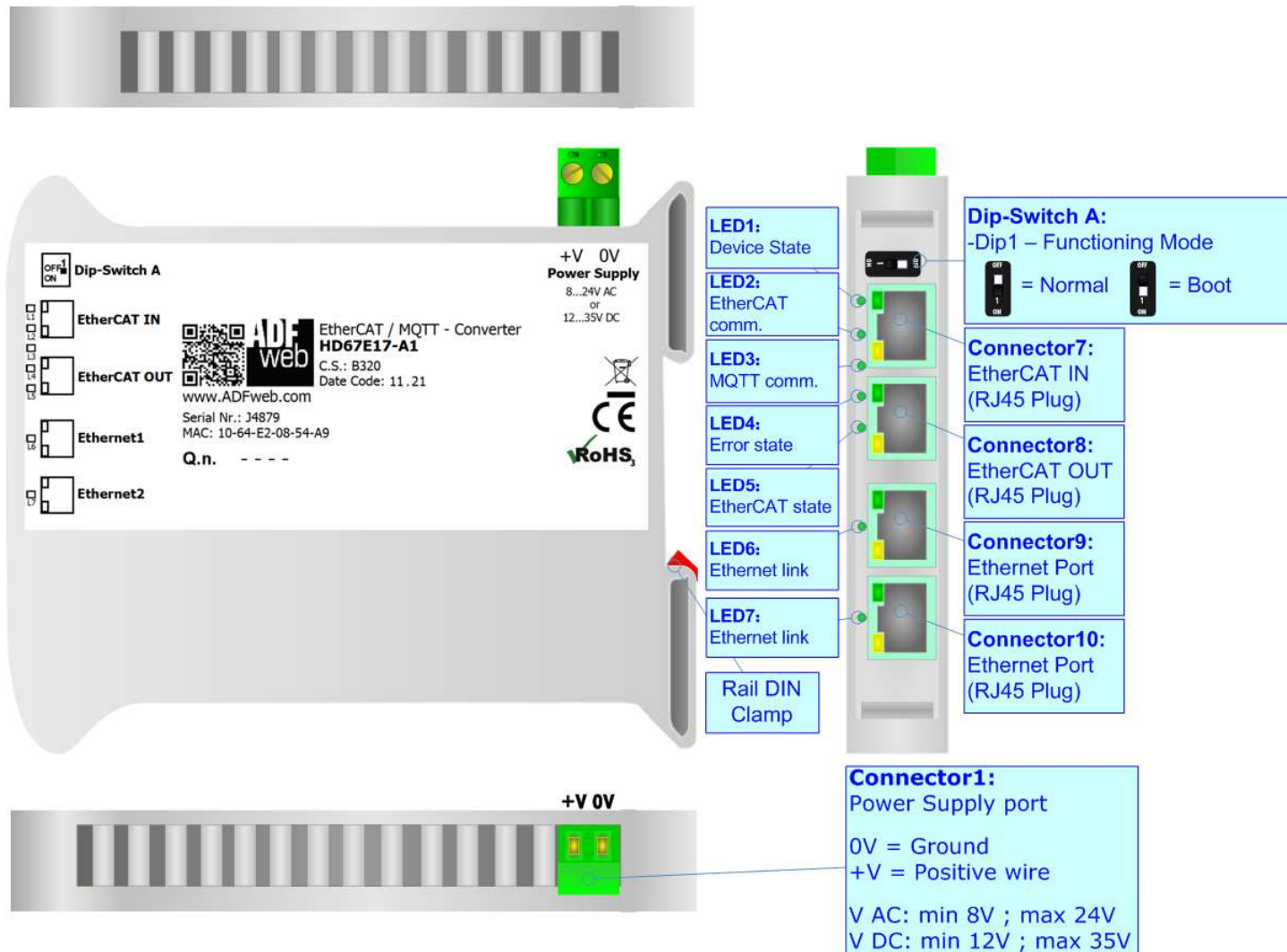


Figure 1: Connection scheme for HD67E17-A1

CHARACTERISTICS:

The HD67E17-A1 are EtherCAT / MQTT - Converters.

It allows for the following characteristics:

- Isolation between EtherCAT – MQTT – Power Supply;
- Two-directional information between EtherCAT bus and MQTT bus;
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 8...24V AC or 12...35V DC;
- Wide temperature range: -40°C / +85°C [-40°F / +185°F].


CONFIGURATION:

You need Compositor SW67E17 software on your PC in order to perform the following:

- Define the parameters of EtherCAT line;
- Define the parameters of MQTT line;
- Define EtherCAT variables to read and write;
- Define the list of MQTT topics to publish/subscribe to the server;
- Export the ESI file for configuration of EtherCAT Master;
- Update the device.

POWER SUPPLY:

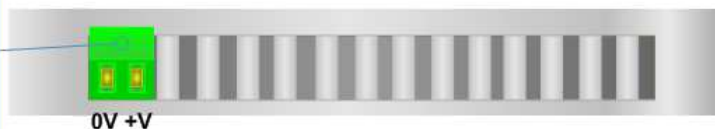
The devices can be powered at 8...24V AC and 12...35V DC. For more details see the two tables below.

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

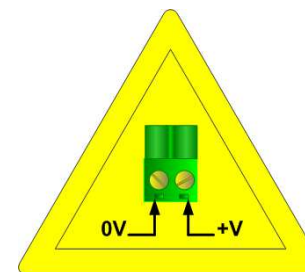
Consumption at 24V DC:

Device	Consumption [W/VA]
HD67E17-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: Do not reverse the polarity power



HD67E17-A1

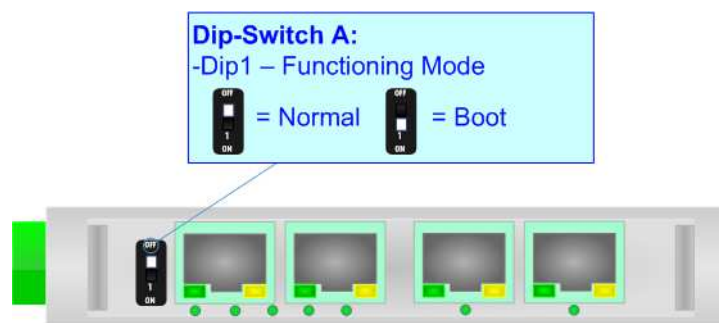
FUNCTION MODES:

The device has got two function modes depending on the position of the 'Dip1 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 uploading the Project and/or Firmware.

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

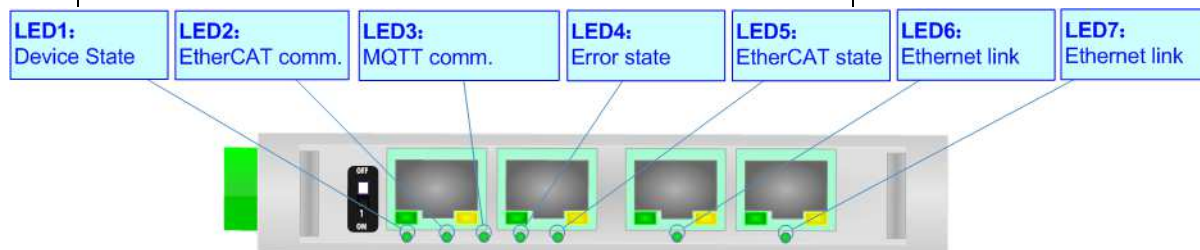
According to the functioning mode, the LEDs will have specific functions, see 'LEDS' section.



LEDS:

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

LED	Normal Mode	Boot Mode
1: Device State (green)	Blinks slowly ($\sim 1\text{Hz}$)	Blinks quickly: Boot state Blinks very slowly ($\sim 0.5\text{Hz}$): update in progress
2: EtherCAT comm. (green)	It blinks when EtherCAT communication is running	Blinks quickly: Boot state Blinks very slowly ($\sim 0.5\text{Hz}$): update in progress
3: MQTT comm. (green)	It blinks when MQTT communication is running	Blinks quickly: Boot state Blinks very slowly ($\sim 0.5\text{Hz}$): update in progress
4: Error state (green)	ON: An error in the communication busses occurs OFF: No errors are present	Blinks quickly: Boot state Blinks very slowly ($\sim 0.5\text{Hz}$): update in progress
5: EtherCAT state (green)	OFF: EtherCAT Master not connected Blinking: EtherCAT Master is connecting ON: EtherCAT Master is connected	Blinks quickly: Boot state Blinks very slowly ($\sim 0.5\text{Hz}$): update in progress
6: Ethernet1 link (green)	ON: Ethernet cable connected OFF: Ethernet cable disconnected	ON: Ethernet cable connected OFF: Ethernet cable disconnected
7: Ethernet2 link (green)	ON: Ethernet cable connected OFF: Ethernet cable disconnected	ON: Ethernet cable connected OFF: Ethernet cable disconnected



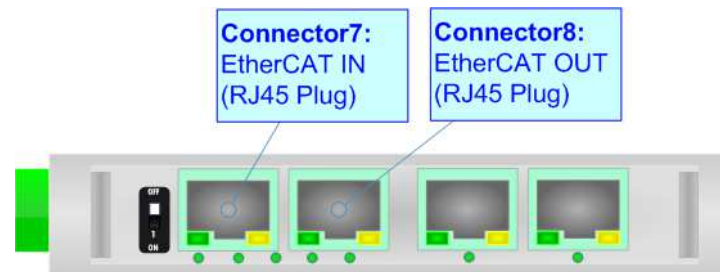
ETHERCAT

EtherCAT (Ethernet for Control Automation Technology) is an Ethernet-based fieldbus system, invented by Beckhoff Automation.

The protocol is standardized in MQTT and is suitable for both hard and soft real-time computing requirements in automation technology.

With EtherCAT, the standard Ethernet packet or frame (according to IEEE 802.3) is no longer received, interpreted, and copied as process data at every node. The EtherCAT slave devices read the data addressed to them while the telegram passes through the device, processing data "on the fly". In other words, real-time data and messages are prioritized over more general, less time-sensitive or heavy load data.

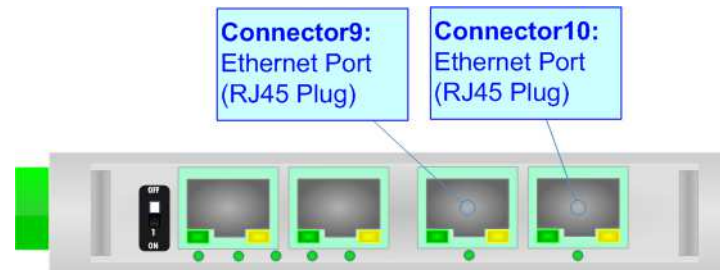
The converter has two EtherCAT ports, one is used as Input port (Connector7) and it will receive the incoming messages from the Master, the other is used as Output port (Connector8) and it will forward the messages to the others nodes of the network.



ETHERNET:

The Ethernet port is used for programming the device and for MQTT communication.

Ethernet connection and the updating of the converter must be made using Connector9 and/or Connector10 of the HD67E17-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.



USE OF COMPOSITOR SW67E17:

To configure the Converter, use the available software that runs with Windows called SW67E17. It is downloadable on the site 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 SW67E17, the window below appears (Fig. 2).



Note:

It is necessary to have installed .Net Framework 4.

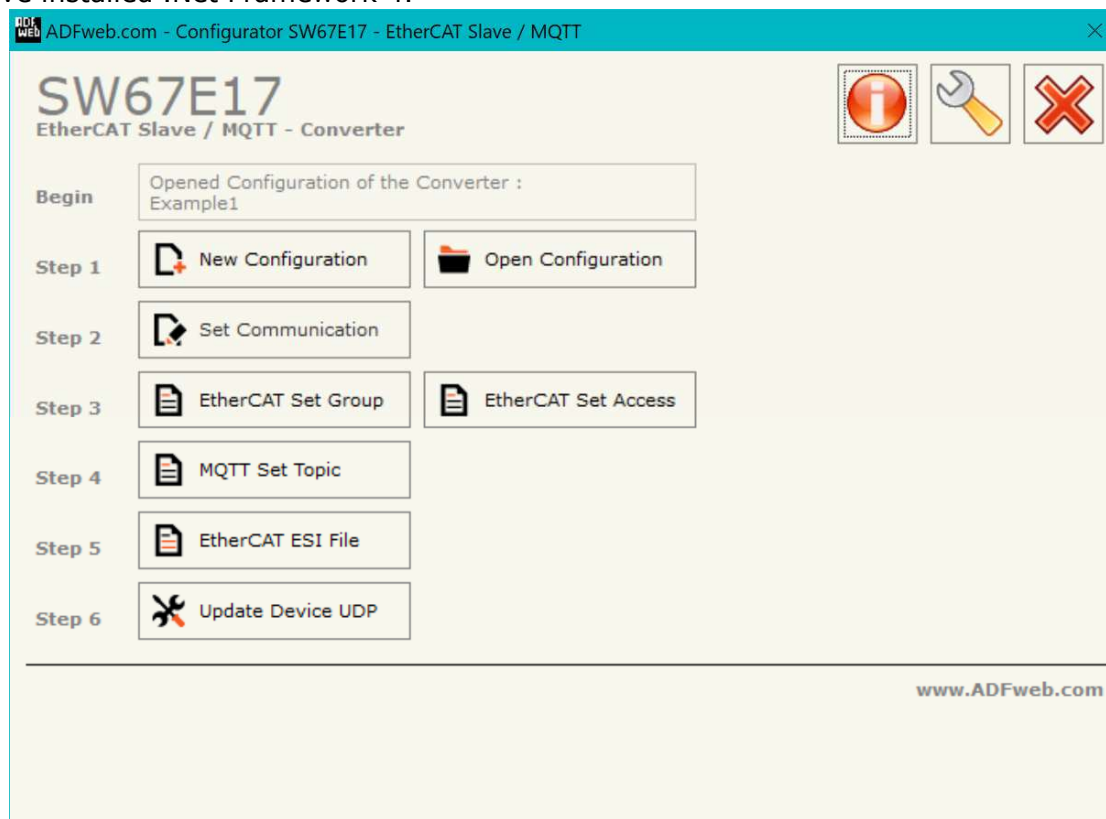


Figure 2: Main window for SW67E17

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 “EtherCAT / MQTT - 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**”.



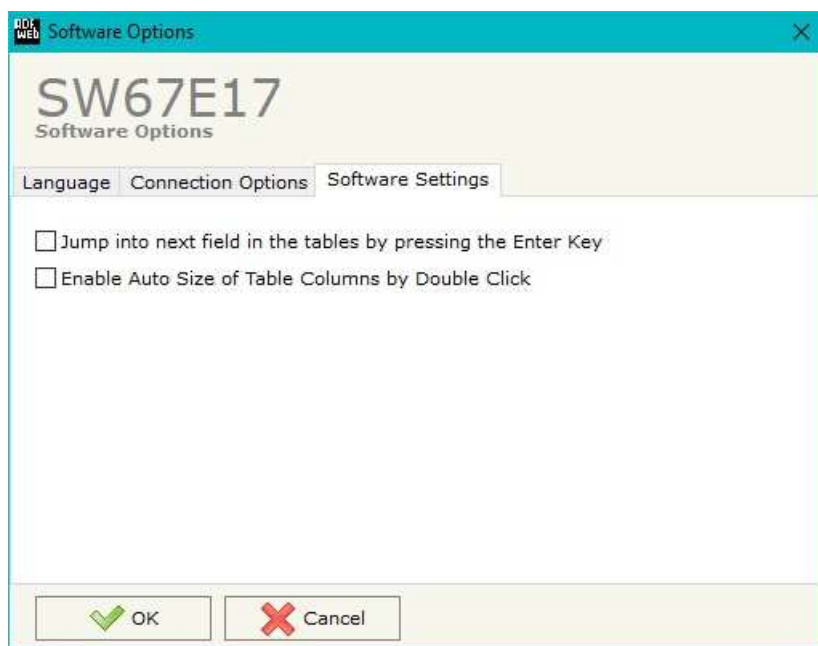
SOFTWARE OPTIONS:

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 SW67E17 checks 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, EtherCAT and MQTT.

By Pressing the "**Set Communication**" button from the main window for SW67E17 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The window is divided in different sections in order to define the different parameters of the converter:

- Ethernet Connection
- EtherCAT Slave
- Select Device
- MQTT
- Ethernet
- TLS (Transport Layer Security)
- NTP (Network Time Protocol)
- Wi-Fi
- GSM / GPRS / LTE

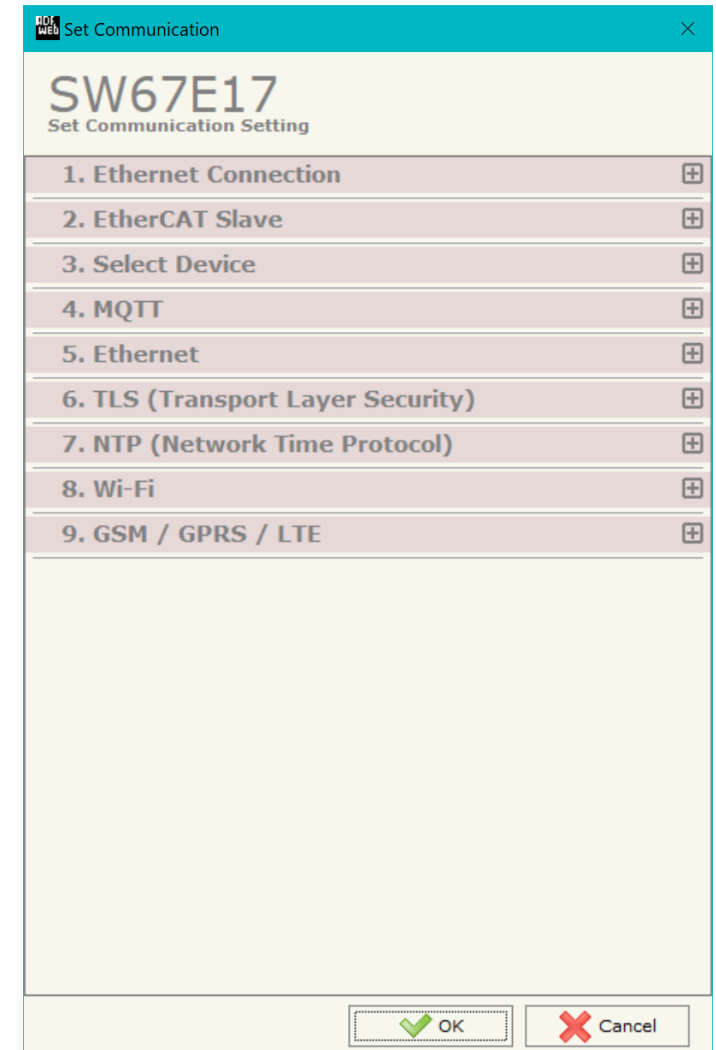


Figure 3a: "Set Communication" window

ETHERNET CONNECTION:

This section is used to define the general parameters of Ethernet communication.

The means of the fields are:

- In the field "**Device Name (Hostname)**" the Hostname to assign to the converter is defined;
- If the field "**Obtain an IP Address Automatically (DHCP for Cable Connection)**" is checked, DHCP for LAN connection is enabled;
- If the field "**Obtain an IP Address Automatically (DHCP for Wi-Fi Connection)**" is checked, DHCP for Wi-Fi connection is enabled;
- If the field "**Enable DNS**" is checked, DNS protocol is enabled;
- In the field "**Primary DNS**" the IP Address of the primary DNS server is defined;
- In the field "**Secondary DNS**" the IP Address of the secondary DNS server is defined.

ETHERCAT SLAVE:

This section is used to define the general parameters of EtherCAT. The means of the fields are:

- In the field "**Revision Number**" the revision number of the converter is defined;
- In the field "**Slave Name**" the name of the converter is defined;
- In the field "**Node Address**" the ID of the converter is defined;
- If the field "**Clear Data on EtherCAT fault**" is checked, the data on MQTT are set to '0' if the EtherCAT communication is in error.

SELECT DEVICE:

This section is used to select the type of converter in use:

- Only Ethernet Cable: hardware with LAN only;
- Ethernet cable + Wi-Fi: hardware with LAN and Wi-Fi;
- Ethernet Cable + Mobile connection: hardware with LAN and mobile module;

1. Ethernet Connection

Device Name (Hostname)

☐ Obtain an IP Address Automatically (DHCP for Cable Connection)

☐ Obtain an IP Address Automatically (DHCP for Wi-Fi Connection)

☐ Enable DNS

Primary DNS

Secondary DNS

Figure 3b: "Set Communication → Ethernet Connection" window

2. EtherCAT Slave

Revision Number

Slave Name

Node Address

☐ Clear Data on EtherCAT fault

Figure 3c: "Set Communication → EtherCAT Slave" window

3. Select Device

Type

Figure 3d: "Set Communication → Select Device" window

MQTT:

This section is used to define the main parameters of MQTT line. The means of the fields are:

- In the field "**Server URL**" the URL or the IP Address of the MQTT Server is defined;
- In the field "**Server Port**" the port used for MQTT communication is defined;
- In the field "**Client ID**" the Client ID of the converter is defined (if ned);
- In the field "**Keep Alive (seconds)**" the delay with which the Keep Alive message is sent on MQTT is defined;
- If the field "**Clean Session**" is checked, the last MQTT messages are deleted by the Server and the Client in case of missing ACK. If unchecked, the Server and the Client hold the last MQTT messages and, in case of incorrect disconnection or missing ACK, they try to send again them since all the ACK messages are exchanged correctly (valid only for QoS 1 and QoS 2);
- If the field "**Will Flag**" is checked, the converter will publish the Will topic at the connection to the Server. With this feature, in case of incorrect disconnection, the Server will publish this topic to all the MQTT Clients that subscribed it;
- In the field "**Topic Name Will**" the topic used for Will message is defined;
- In the field "**Message Will**" the payload of the Will message is defined;
- In the field "**Retained Will**" the converter will send the Will message with Retain flag enabled. In this way, the Server will hold the last Will message;
- In the field "**QoS Will**" the QoS type for Will message is defined;
- If the field "**Publish Topic on Connection**" is checked, the converter will publish a topic at the connection to the Server;
- In the field "**Topic Name Connection**" the topic used for the connection message is defined;
- In the field "**Message Connection**" the payload of the connection topic is defined;
- In the field "**Retained Connection**" the converter will send the connection topic with Retain flag enabled. In this way, the Server will hold the last Connection message received;
- In the field "**Username**" the username for the connection to the MQTT server is defined;
- In the field "**Password**" the password for the connection to the MQTT server is defined.

The screenshot shows a configuration window titled "4. MQTT". It contains the following fields and settings:

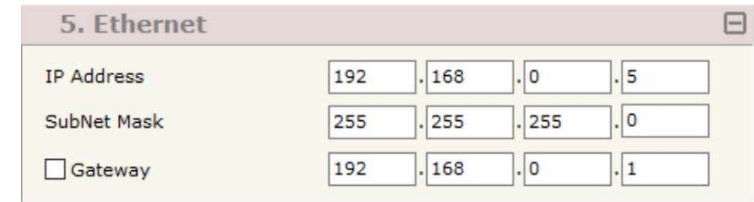
- Server URL: 192.168.0.126
- Server Port: 1883
- Client ID: (empty)
- Keep Alive (seconds): (empty)
- Clean Session: ☐
- Will Flag: ☒
- Topic Name Will: (empty)
- Message Will: (empty)
- Retained Will: ☐
- QoS Will: 0 (dropdown menu)
- Publish Topic on Connection: ☒
- Topic Name Connection: (empty)
- Message Connection: (empty)
- Retained Connection: ☐
- Username: (empty)
- Password: (empty)

Figure 3e: "Set Communication → MQTT" window

ETHERNET:

This section is used to define the general parameters of Ethernet. The means of the fields 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 net is defined. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net.



5. Ethernet				
IP Address	192	168	0	5
SubNet Mask	255	255	255	0
<input type="checkbox"/> Gateway	192	168	0	1

Figure 3f: "Set Communication → Ethernet" window

TLS:

This section is used to define the parameters of TLS protocol. The means of the fields are:

- If the field "**Enable TLS**" is checked, the TLS protocol for secure connection is enabled;
- If the field "**Server Authentication**" is checked, the authentication of the Server using TLS is enabled. If enabled, in the field "**Server Certificate**" the certificate from the Server is defined;
- If the field "**Client Authentication**" is checked, the authentication of the Client using TLS is enabled. If enabled:
 - in the field "**Client Certificate**" the certificate from the Client is defined;
 - in the field "**Client Key**" the private key of the Client is defined;
 - in the field "**Client Key Password**" the password for the private key of the Client is defined.



6. TLS (Transport Layer Security)	
<input checked="" type="checkbox"/> Enable TLS	
<input checked="" type="checkbox"/> Server Authentication	
Server Certificate	
<input checked="" type="checkbox"/> Client Authentication	
Client Certificate	
Client Key	
Client Key Password	

Figure 3g: "Set Communication → TLS" window

NTP (NETWORK TIME PROTOCOL):

This section is used to define the parameters of NTP protocol. The means of the fields are:

- In the field "**Server URL**" the URL or the IP Address of the NTP Server is defined;
- In the field "**Poll Time (seconds)**" the polling time for the time synchronization is defined.

Wi-Fi:

This section is used to define the general parameters of Wi-Fi. It is possible to defined the type of Wi-Fi communication:

- Access Point;
- Station.

The means of the fields for Access Point configuration 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 net is defined. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net;
- In the field "**SSID**" the name of the Wi-Fi network to create is defined;
- In the field "**Password**" the password used for Wi-Fi connection is defined;
- In the field "**Secure Type**" the type of security protocol used by the Wi-Fi network is defined;
- If the field "**Enable DHCP**" is checked, the converter acts as DHCP Server for the Clients connected. If the option is enabled, in the fields "**DHCP First IP Address**" and "**DHCP SUBNET Mask**" the IP Addresses range used for DHCP is defined. In the field "**Lease Time (seconds)**" the required time for the renewing of the IP Address assigned to the Client is defined;
- In the field "**Max Client**" the maximum number of Wi-Fi Clients accepted is defined;
- In the field "**Channel**" the channel for Wi-Fi communication is defined.

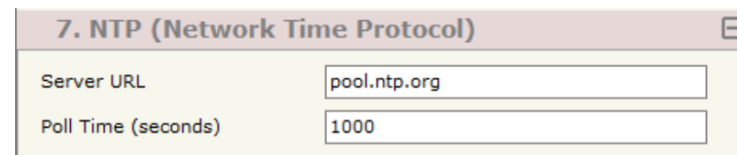


Figure 3h: "Set Communication → NTP" window

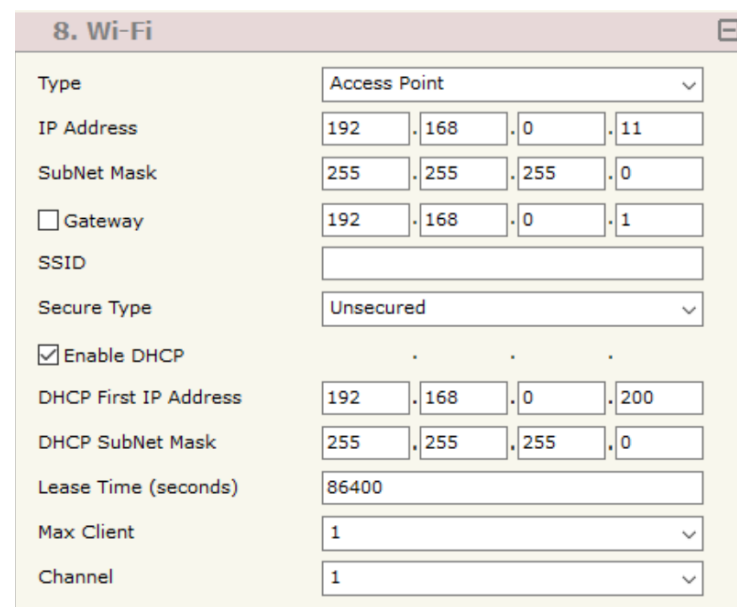


Figure 3i: "Set Communication → Wi-Fi" window

The means of the fields for Station configuration 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 net is defined. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net;
- In the field "**SSID**" the name of the Wi-Fi network to connect is defined;
- In the field "**Password**" the password used to connect to the Wi-Fi network is defined.

GSM / GPRS / LTE:

This section is used to define the parameters of GPRS connection. The means of the fields are:

- In the field "**PIN**" the PIN for the SIM card (if ned) is defined;
- In the field "**APN**" the APN for the mobile operator used is defined;
- In the field "**Authentication Type**" the type of the authentication to the mobile network is defined;
- In the field "**Username**" the username for the authentication is defined;
- In the field "**Password**" the password for the authentication is defined;

The screenshot shows a window titled "8. Wi-Fi". It has a "Type" dropdown menu set to "Station". Below it are four input fields for IP Address (192, 168, 0, 11) and SubNet Mask (255, 255, 255, 0). There is a checkbox for "Gateway" which is unchecked, followed by another set of four input fields (192, 168, 0, 1). Below these are two empty text input fields for "SSID" and "Password".

Figure 3j: "Set Communication → Wi-Fi" window

The screenshot shows a window titled "9. GSM / GPRS / LTE". It contains five input fields: "PIN", "APN", "Authentication Type" (a dropdown menu set to "None"), "Username", and "Password".

Figure 3k: "Set Communication → GSM / GPRS / LTE" window

ETHERCAT SET GROUP:

By Pressing the “**EtherCAT Set Group**” button from the main window for SW67E17 (Fig. 2) the window “EtherCAT Slave Set Group” appears (Fig. 4).

This section is used to define the EtherCAT group in which saving the variables configured into the EEPROM of the converter.

N	Group Name	Num Variables	Mnemonic
1	Test1	1	
2	Test2	1	
3			
4			
5			
6			
7			
8			

Figure 4: “EtherCAT Slave Set Group” window

The means of the fields are:

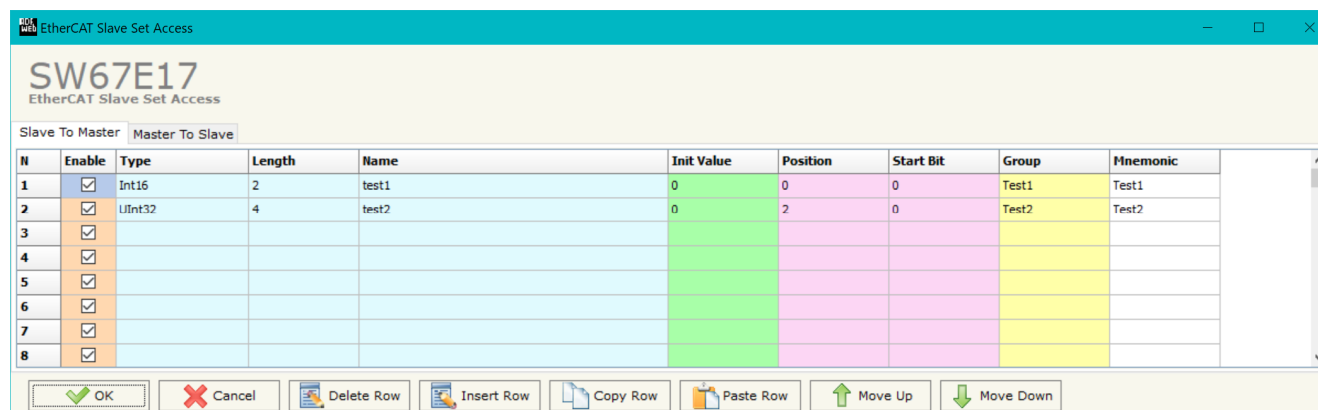
- In the field “**Group Name**” the name for each group is defined;
- In the field “**Num Variables**” the number of variables to map into the group is defined;
- In the field “**Mnemonic**” a description of the group is defined.

ETHERCAT SET ACCESS:

By Pressing the **"EtherCAT Set Access"** button from the main window for SW67E17 (Fig. 2) the window "EtherCAT Slave Set Access" appears (Fig. 5).

This section is used to define the EtherCAT variables readable by the EtherCAT Master (Slave To Master) and the EtherCAT variables writeable by the EtherCAT Master (Master To Slave).

SLAVE TO MASTER



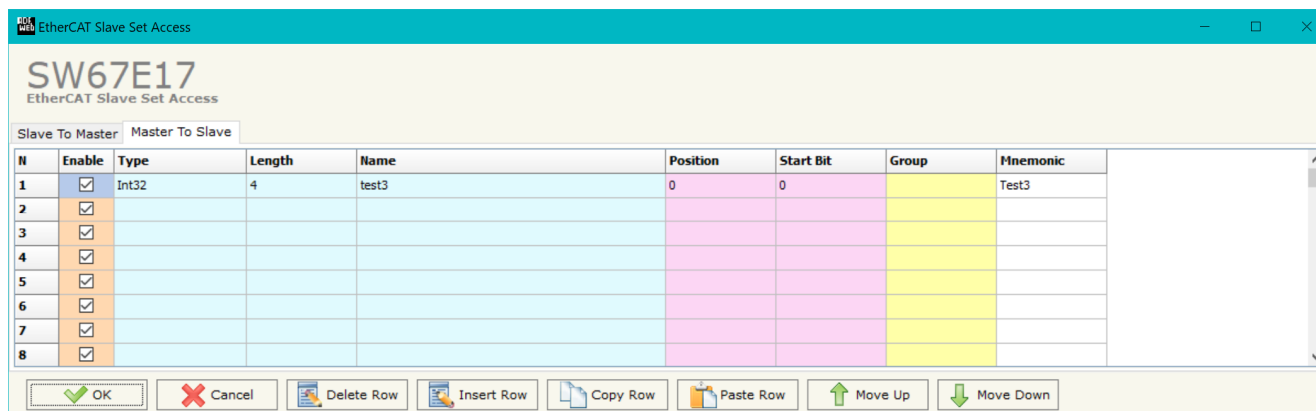
N	Enable	Type	Length	Name	Init Value	Position	Start Bit	Group	Mnemonic
1	<input checked="" type="checkbox"/>	Int16	2	test1	0	0	0	Test1	Test1
2	<input checked="" type="checkbox"/>	UInt32	4	test2	0	2	0	Test2	Test2
3	<input checked="" type="checkbox"/>								
4	<input checked="" type="checkbox"/>								
5	<input checked="" type="checkbox"/>								
6	<input checked="" type="checkbox"/>								
7	<input checked="" type="checkbox"/>								
8	<input checked="" type="checkbox"/>								

Figure 5a: "EtherCAT Slave Set Access → Slave To Master" window

The means of the fields are:

- If the field **"Enable"** is checked, the EtherCAT variable is enabled;
- In the field **"Type"** the data format of the EtherCAT variable is defined;
- In the field **"Length"** the dimension of the EtherCAT variable is defined;
- In the field **"Name"** the name of the EtherCAT variable is defined;
- In the field **"Init Value"** the default value of the EtherCAT variable is defined;
- In the field **"Position"** the starting address of the EtherCAT array where the variable is mapped is defined;
- In the field **"Start Bit"** the starting bit of the selected Position where the variable is mapped is defined;
- In the field **"Group"** the membership to the groups is defined;
- In the field **"Mnemonic"** a description of the variable is defined.

MASTER TO SLAVE



N	Enable	Type	Length	Name	Position	Start Bit	Group	Mnemonic
1	<input checked="" type="checkbox"/>	Int32	4	test3	0	0		Test3
2	<input checked="" type="checkbox"/>							
3	<input checked="" type="checkbox"/>							
4	<input checked="" type="checkbox"/>							
5	<input checked="" type="checkbox"/>							
6	<input checked="" type="checkbox"/>							
7	<input checked="" type="checkbox"/>							
8	<input checked="" type="checkbox"/>							

Figure 5b: "EtherCAT Slave Set Access → Master To Slave" window

The means of the fields are:

- If the field "**Enable**" is checked, the EtherCAT variable is enabled;
- In the field "**Type**" the data format of the EtherCAT variable is defined;
- In the field "**Length**" the dimension of the EtherCAT variable is defined;
- In the field "**Name**" the name of the EtherCAT variable is defined;
- In the field "**Position**" the starting address of the EtherCAT array where the variable is mapped is defined;
- In the field "**Start Bit**" the starting bit of the selected Position where the variable is mapped is defined;
- In the field "**Group**" the membership to the groups is defined;
- In the field "**Mnemonic**" a description of the variable is defined.

MQTT SET TOPIC:

By Pressing the **"MQTT Set Topic"** button from the main window for SW67E17 (Fig. 2) the window "Set MQTT Topics" appears (Fig. 6). This section is used to define the MQTT topics where the converter will publish the data from Modbus and the topic that the converter will subscribes for writing the data to Modbus.

MQTT PUBLISH

N	Topic	Retained	QoS	Data Type	Dimension	Position	Template	OnChange	OnTimer	Time(ms)	Mnemonic
1	Test1	<input checked="" type="checkbox"/>	0	Int	4	0	\$VALUE\$	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1000	Desc Test1
2	Test2	<input type="checkbox"/>	0	Int	4	4	\$VALUE\$	<input type="checkbox"/>	<input checked="" type="checkbox"/>	5000	Desc Test2
3		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>		
4		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>		
5		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>		
6		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>		
7		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>		
8		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>		

Figure 6a: "Set MQTT Topics → MQTT Publish" window

The means of the fields are:

- In the field **"Topic"** the MQTT topic is defined;
- If the field **"Retained"** is defined, the retained flag is enabled. The MQTT server will hold the last topic published;
- In the field **"QoS"** the QoS level is defined;
- In the field **"Data Type"** the type of data to use is defined;
- In the field **"Dimension"** the dimension in byte of the data is defined;
- In the field **"Position"** the starting byte of the internal memory array where taking the data is defined;
- In the field **"Template"** the structure of the MQTT payload is defined. With a double click on it, it is possible to open a window for editing it;
- If the field **"On Change"** is checked, the converter publishes the topic when the data from EtherCAT are changed;

- If the field **"On Timer"** is checked, the converter publishes the topic cyclically with the delay defined in the field **"Time (ms)"**;
- In the field **"Mnemonic"** a description of the topic is defined.

MQTT SUBSCRIBE

N	Topic	QoS	Data Type	Dimension	Position	Template	Mnemonic
1	Test_Sub	0	Int	4	0	\$VALUE\$	Desc Subscribe
2							
3							
4							
5							

Figure 6b: "Set MQTT Topics → MQTT Subscribe" window

The means of the fields are:

- In the field **"Topic"** the MQTT topic is defined;
- In the field **"QoS"** the QoS level is defined;
- In the field **"Data Type"** the type of data to use is defined;
- In the field **"Dimension"** the dimension in byte of the data is defined;
- In the field **"Position"** the starting byte of the internal memory array where placing the data is defined;
- In the field **"Template"** the structure of the MQTT payload is defined. With a double click on it, it is possible to open a window for editing it;
- In the field **"Mnemonic"** a description of the topic is defined.

ETHERCAT ESI FILE:

By pressing the **"EtherCAT ESI File"** button it is possible to save the ESI file for the EtherCAT side of the converter. The ESI file is used to configure the EtherCAT Master.

UPDATE DEVICE:

By pressing the “**Update Device**” button, it is possible to load the created Configuration into the device; and also the Firmware, if necessary. This by using the Ethernet port.

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' in ON position;
- Turn ON the device
- Connect the Ethernet cable;
- Insert the IP “**192.168.2.205**”;
- 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' in 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;
- 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 updated.



Figure 7: "Update device" windows



Note:

When you receive the device, for the first time, you also have to update the Firmware in the HD67E17 device.



Warning:

If Fig. 8 appears when you try to do the Update try these points before seeking assistance:

- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- Check the LAN 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.



Warning:

In the case of HD67E17 you have to use the software "HD67E17": www.adfweb.com/download/filefold/SW67E17.zip.



Figure 8: "Error" window

TEMPLATE STRING: DEFINITION OF MQTT PAYLOAD

In the section "Set Communication" of the SW67E17, it is possible to define a Template string for the MQTT messages. The template is necessary in order to define the structure of the payload of the MQTT message and the info contained. It is possible to have a simple text format or a JSON format.

The definition of the template can be done using Key words, used to link a specific information from/to EtherCAT. The key words used and their meanings are:

- VALUE: value of the EtherCAT data
- TIME: date and time of the MQTT message
- DESC: description of the message

**Warning:**

The key words must be defined between "\$" chars in order to be recognized (Ex.: \$VALUE\$).

MECHANICAL DIMENSIONS:

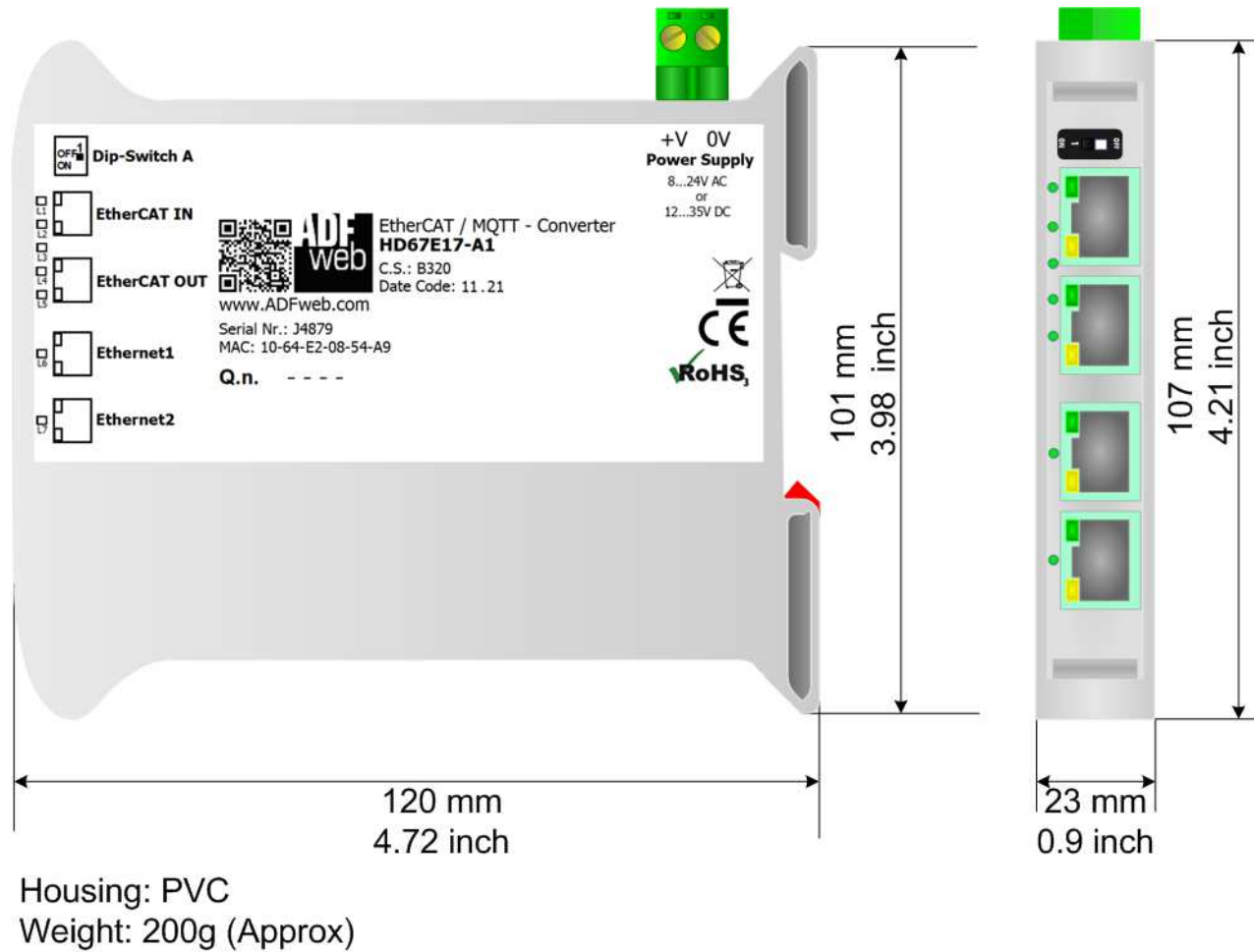
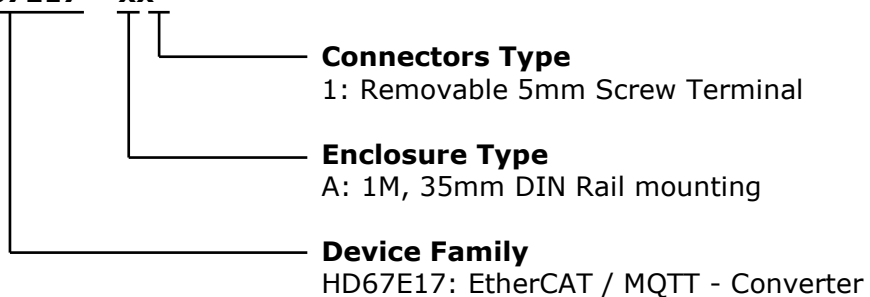


Figure 9: Mechanical dimensions scheme for HD67E17-A1

ORDERING INFORMATION:

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

HD67E17 - xx



Order Code: **HD67E17-A1** - EtherCAT / MQTT - 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

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All technical content within this document can be modified without notice. The content of the document is a under continual renewal. For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com S.r.l. shall not be liable for consequences of improper use.

OTHER REGULATIONS AND STANDARDS:**WEEE INFORMATION**

Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).

— This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and impact of human health, which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE

The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

CE MARKING

The product conforms with the essential requirements of the applicable EC directives.

WARRANTIES AND TECHNICAL SUPPORT:

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at www.adfweb.com. Otherwise contact us at the address support@adfweb.com

RETURN POLICY:

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

- Obtain a Product Return Number (PRN) from our internet support at www.adfweb.com. Together with the request, you need to provide detailed information about the problem.
- Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks. If the product is no longer under warranty, you will receive a repair estimate.



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