

# User Manual

Revision 1.000

English

## DALI / MQTT - Converter

(Order Code: HD67941-B2)

For Website information:

[www.adfweb.com?Product=HD67941-B2](http://www.adfweb.com?Product=HD67941-B2)

For Price information:

[www.adfweb.com?Price=HD67941-B2](http://www.adfweb.com?Price=HD67941-B2)

### Benefits and Main Features:

- ✦ Very easy to configure
- ✦ Power Supply 18...35V DC and 8...24 V AC
- ✦ Temperature range: -40°C/+85°C (-40°F/+185°F)



For others MQTT products, see also the following links:

### Converter MQTT to

[www.adfweb.com?Product=HD67930](http://www.adfweb.com?Product=HD67930)  
[www.adfweb.com?Product=HD67931](http://www.adfweb.com?Product=HD67931)  
[www.adfweb.com?Product=HD67932](http://www.adfweb.com?Product=HD67932)  
[www.adfweb.com?Product=HD67933](http://www.adfweb.com?Product=HD67933)  
[www.adfweb.com?Product=HD67934](http://www.adfweb.com?Product=HD67934)  
[www.adfweb.com?Product=HD67935](http://www.adfweb.com?Product=HD67935)  
[www.adfweb.com?Product=HD67936](http://www.adfweb.com?Product=HD67936)  
[www.adfweb.com?Product=HD67937](http://www.adfweb.com?Product=HD67937)  
[www.adfweb.com?Product=HD67938](http://www.adfweb.com?Product=HD67938)  
[www.adfweb.com?Product=HD67939](http://www.adfweb.com?Product=HD67939)  
[www.adfweb.com?Product=HD67940](http://www.adfweb.com?Product=HD67940)  
[www.adfweb.com?Product=HD67942](http://www.adfweb.com?Product=HD67942)  
[www.adfweb.com?Product=HD67943](http://www.adfweb.com?Product=HD67943)  
[www.adfweb.com?Product=HD67944](http://www.adfweb.com?Product=HD67944)  
[www.adfweb.com?Product=HD67945](http://www.adfweb.com?Product=HD67945)  
[www.adfweb.com?Product=HD67946](http://www.adfweb.com?Product=HD67946)  
[www.adfweb.com?Product=HD67947](http://www.adfweb.com?Product=HD67947)  
[www.adfweb.com?Product=HD67948](http://www.adfweb.com?Product=HD67948)  
[www.adfweb.com?Product=HD67949](http://www.adfweb.com?Product=HD67949)  
[www.adfweb.com?Product=HD67950](http://www.adfweb.com?Product=HD67950)  
[www.adfweb.com?Product=HD67951](http://www.adfweb.com?Product=HD67951)  
[www.adfweb.com?Product=HD67952](http://www.adfweb.com?Product=HD67952)  
[www.adfweb.com?Product=HD67953](http://www.adfweb.com?Product=HD67953)  
[www.adfweb.com?Product=HD67954](http://www.adfweb.com?Product=HD67954)

**(Ethernet)**  
**(M-Bus)**  
**(Serial)**  
**(Modbus Master)**  
**(Modbus Slave)**  
**(Modbus TCP Master)**  
**(Modbus TCP Slave)**  
**(BACnet Master)**  
**(BACnet Slave)**  
**(CAN)**  
**(CANopen)**  
**(DeviceNet Master)**  
**(DeviceNet Slave)**  
**(DMX)**  
**(EtherNet/IP)**  
**(J1939)**  
**(KNX)**  
**(NMEA 0183)**  
**(NMEA 2000)**  
**(PROFIBUS Master)**  
**(PROFIBUS Slave)**  
**(PROFINET)**  
**(SNMP Manager)**  
**(SNMP Agent)**



User Manual

Do you have an your customer protocol?

[www.adfweb.com?Product=HD67003](http://www.adfweb.com?Product=HD67003)

Do you need to choose a device? do you want help?

[www.adfweb.com?Cmd=helpme](http://www.adfweb.com?Cmd=helpme)

**INDEX:**

	Page
INDEX	2
UPDATED DOCUMENTATION	2
REVISION LIST	2
WARNING	2
TRADEMARKS	2
SECURITY ALERT	3
EXAMPLE OF CONNECTION	4
CONNECTION SCHEME	5
CHARACTERISTICS	6
CONFIGURATION	6
POWER SUPPLY	7
FUNCTION MODES	8
LEDS	9
DALI	10
ETHERNET	11
USE OF COMPOSITOR SW67941	12
NEW CONFIGURATION / OPEN CONFIGURATION	13
SOFTWARE OPTIONS	14
SET COMMUNICATION	16
MQTT SET TOPIC	22
DALI ACCESS	24
UPDATE DEVICE	25
USE OF DALI CONSOLE SOFTWARE	27
STRUCTURE OF THE SOFTWARE	28
SETUP	29
NETWORK SETTING	30
TEMPLATE STRING: DEFINITION OF MQTT PAYLOAD FOR PUBLISHED TOPICS	35
DALI WRITING	36
MECHANICAL DIMENSIONS	37
ORDERING INFORMATIONS	38
ACCESSORIES	38
DISCLAIMER	39
OTHER REGULATIONS AND STANDARDS	39
WARRANTIES AND TECHNICAL SUPPORT	40
RETURN POLICY	40

**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
1.000	05/12/2017	Ff	All	First release version

**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:

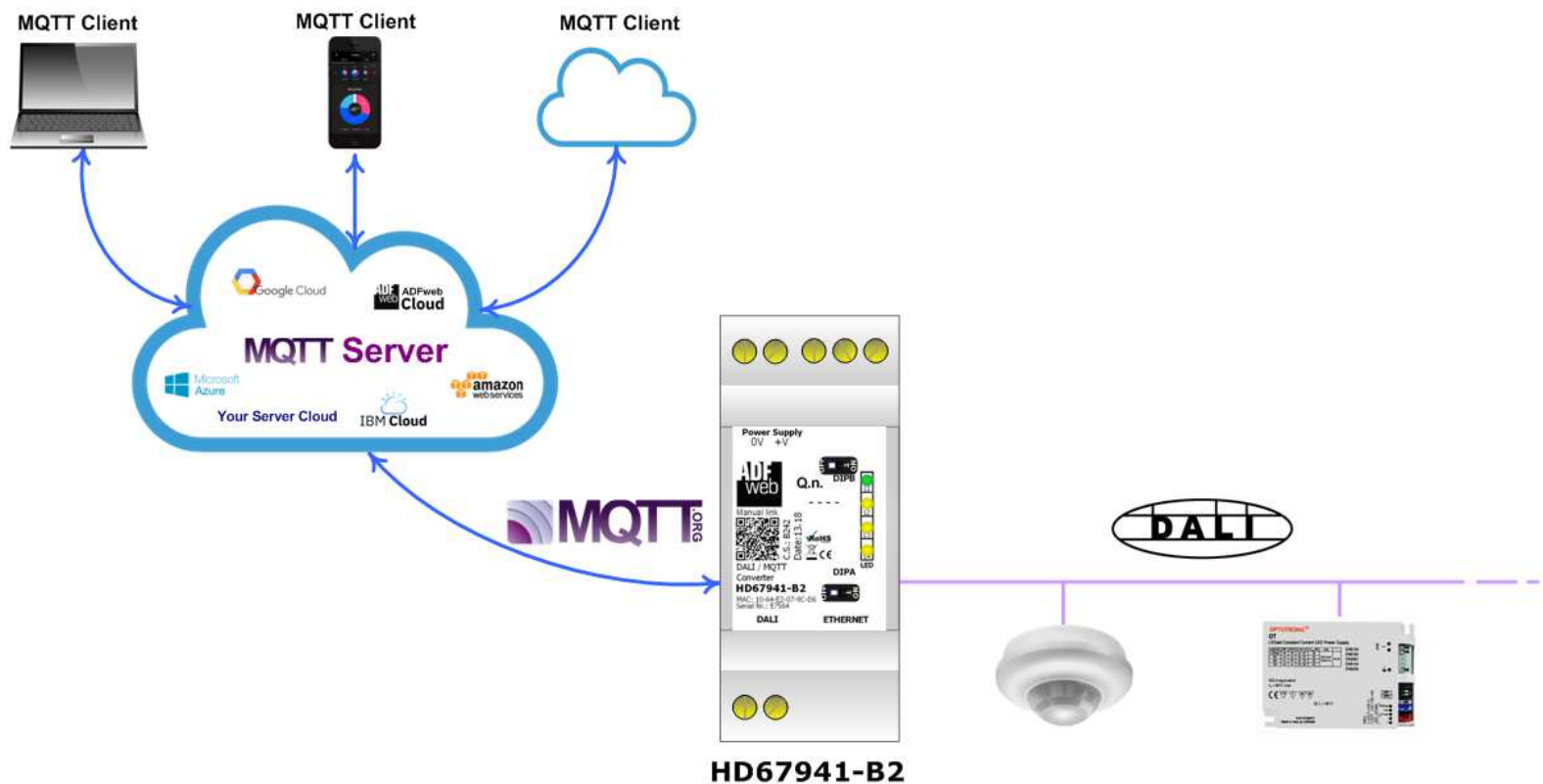


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

**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:



ADFweb.com  
tel. +39 - 0438.30.91.31  
[www.adfweb.com](http://www.adfweb.com)  
[info@adfweb.com](mailto:info@adfweb.com)

## CONNECTION SCHEME:

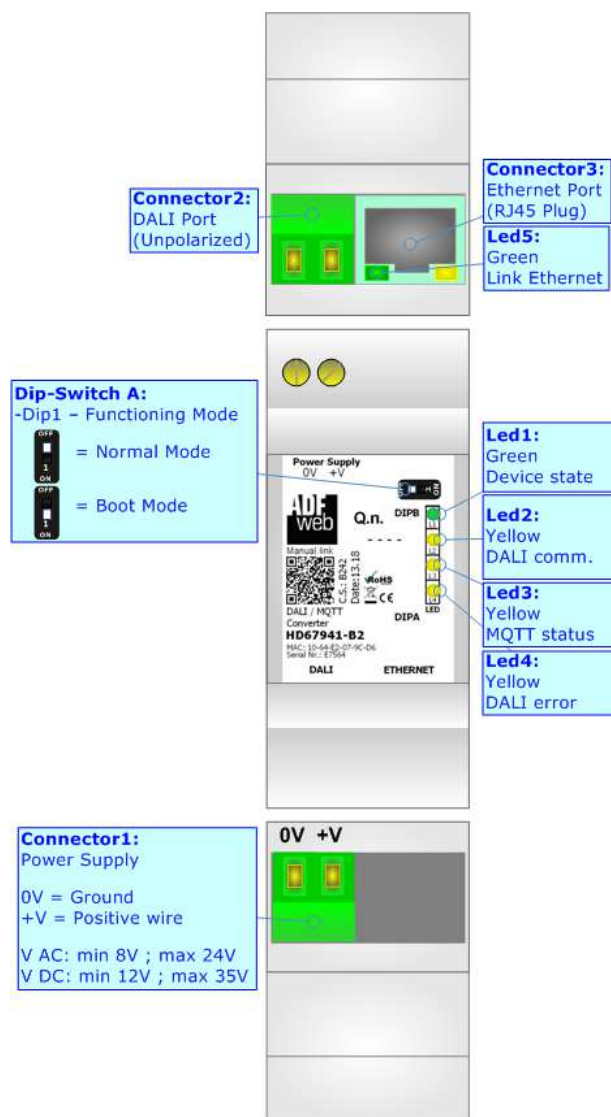


Figure 1: Connection scheme for HD67941-B2

**CHARACTERISTICS:**

The HD67941-B2 is a DALI / MQTT Converter.

It allows the following characteristics:

- Electrical isolation between Ethernet and DALI;
- Mountable on 35mm Rail DIN;
- Wide power supply input range: 18...35V DC and 8...24V AC;
- Wide temperature range: -40°C / 85°C [-40°F / +185°F].



**CONFIGURATION:**

You need Compositor SW67941 software on your PC in order to perform the following:

- Define the parameter of MQTT;
- Define the parameter of DALI line;
- Define the MQTT topics to be published/subscribed in the MQTT Server;
- Define the list of DALI nodes connected;
- Update the device.

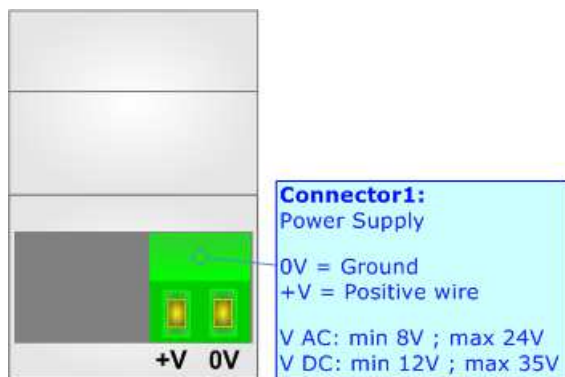
## POWER SUPPLY:

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

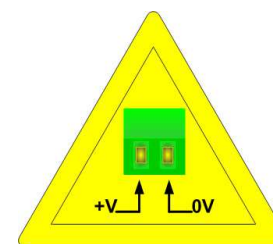
VAC 		VDC 	
Vmin	Vmax	Vmin	Vmax
8V	24V	12V	35V

Consumption at 24V DC:

Device	Consumption [W/VA]
HD67941-B2	3.5



**Caution: Not reverse the polarity power**



HD67941-B2

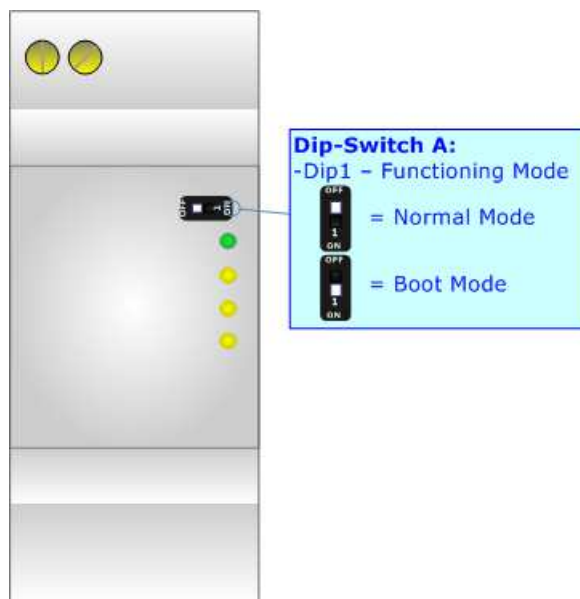
**FUNCTION MODES:**

The device has got two functions mode depending of 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 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.

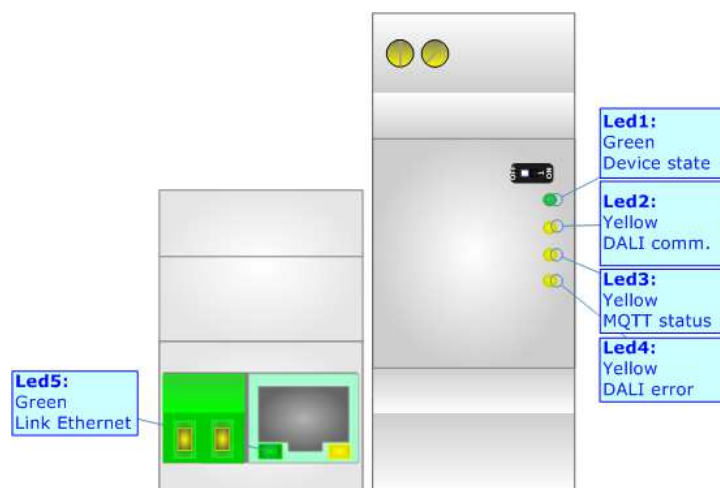




## LEDS:

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

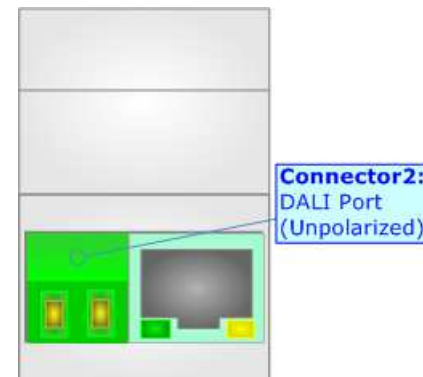
LED	Normal Mode	Boot Mode
1: Device State (green)	Blinks slowly ( $\sim 1\text{Hz}$ )	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (<math>\sim 0.5\text{Hz}</math>):</b> update in progress
2: DALI communication (yellow)	Blinks when DALI communication is running	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (<math>\sim 0.5\text{Hz}</math>):</b> update in progress
3: MQTT status (yellow)	<b>ON:</b> MQTT not connected <b>OFF:</b> MQTT connected <b>Blinking:</b> MQTT communication	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (<math>\sim 0.5\text{Hz}</math>):</b> update in progress
4: DALI error (yellow)	<b>ON:</b> at least one DALI node is not answering <b>OFF:</b> no errors	<b>Blinks quickly:</b> Boot state <b>Blinks very slowly (<math>\sim 0.5\text{Hz}</math>):</b> update in progress
5: Ethernet Link (green)	<b>ON:</b> Ethernet cable connected <b>OFF:</b> Ethernet cable disconnected	<b>ON:</b> Ethernet cable connected <b>OFF:</b> Ethernet cable disconnected



## DALI

DALI stands for “Digital Adressable Lighting Interface” and it is an interface protocol for digital communication between electronic lighting equipment (electronic ballasts, transformers, etc.).

With the right choice of individual DALI components an extremely wide range of requirements can be met, from operating the lighting system from a simple light switch to lighting management systems for entire office complexes with thousands of light sources. Using ADFweb.com’s DALI converters, any light source, including incandescent lamps, fluorescent lamps, high-intensity discharge lamps and even LEDs, can be controlled irrespective of whether they are installed in an office, a restaurant or a street light.

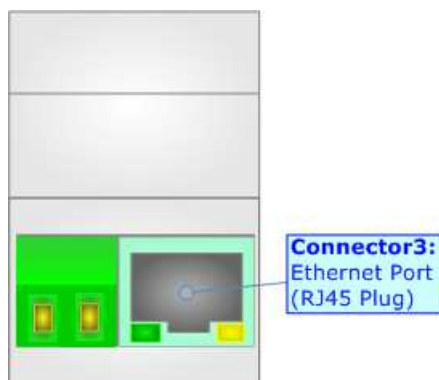


Characteristics	Description
Medium	Shielded Twisted Pair
Topology	Linear, Star or mixed
Device power consumption	Max 250 mA
DALI voltage	9.5 V – 22.5 V (typical 16 V)
Maximum cable length	300 m (1.5 mm <sup>2</sup> wire)
Maximum number of DALI devices	64
Baud rate	1200 bps
Maximum number of DALI groups	16
Maximum number of DALI scenes	16

**ETHERNET:**

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

The Ethernet connection must be made using Connector2 of HD67941-B2 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 is recommended the use of a cross cable.



**USE OF COMPOSITOR SW67941:**

To configure the Converter, use the available software that runs with Windows called SW67941. It is downloadable on the site [www.adfweb.com](http://www.adfweb.com) and its operation is described in this document. The software works with MS Windows (XP, Vista, Seven, 8, 10; 32/64bit).

When launching the SW67941, the window below appears (Fig. 2).

**Note:**

It is necessary to have installed .Net Framework 4.

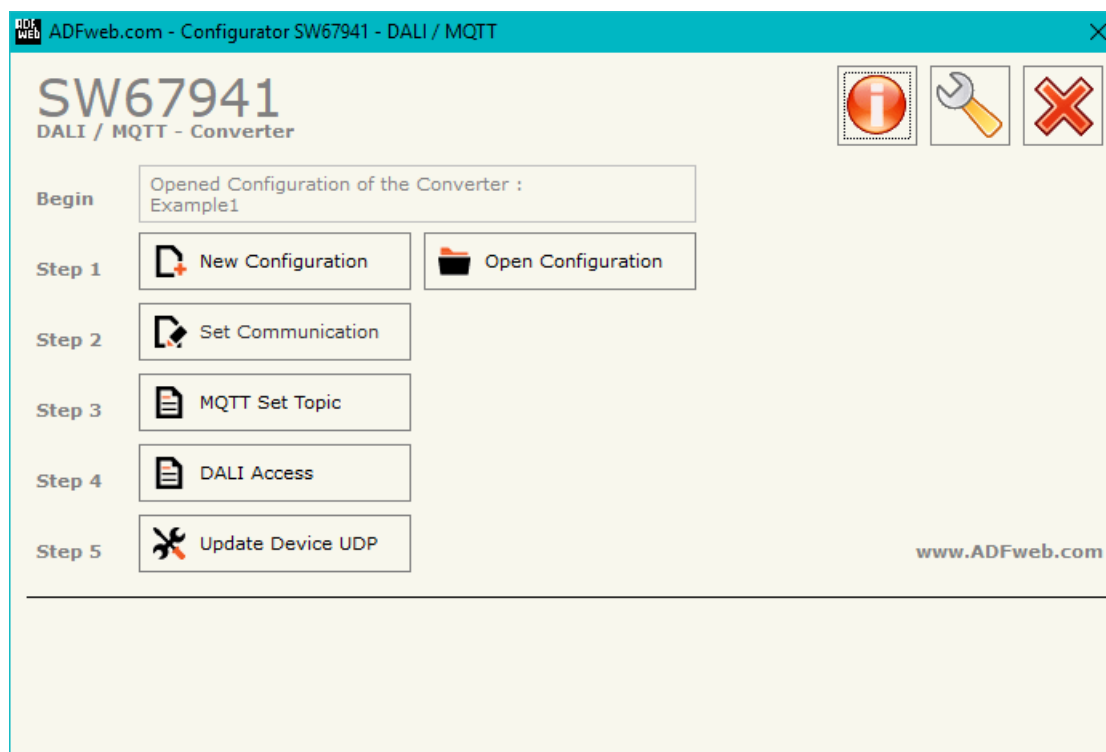
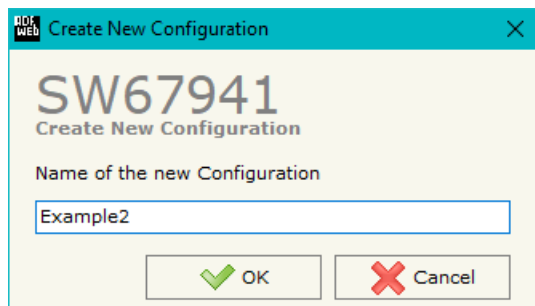


Figure 2: Main window for SW67941

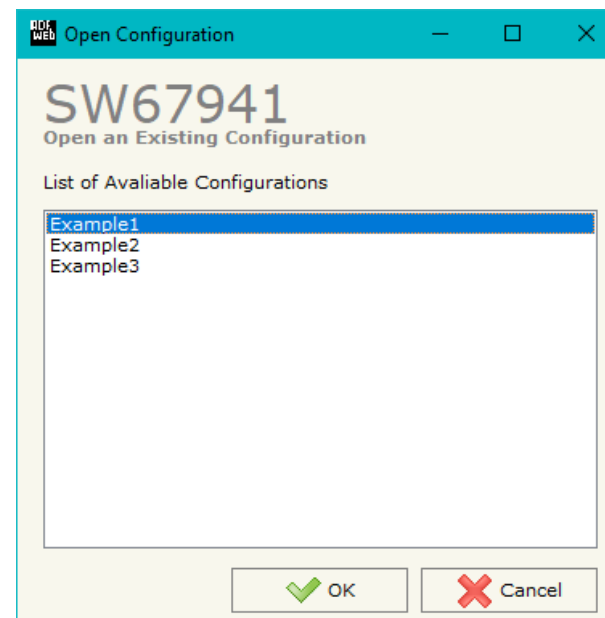
**NEW CONFIGURATION / OPEN CONFIGURATION:**

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




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

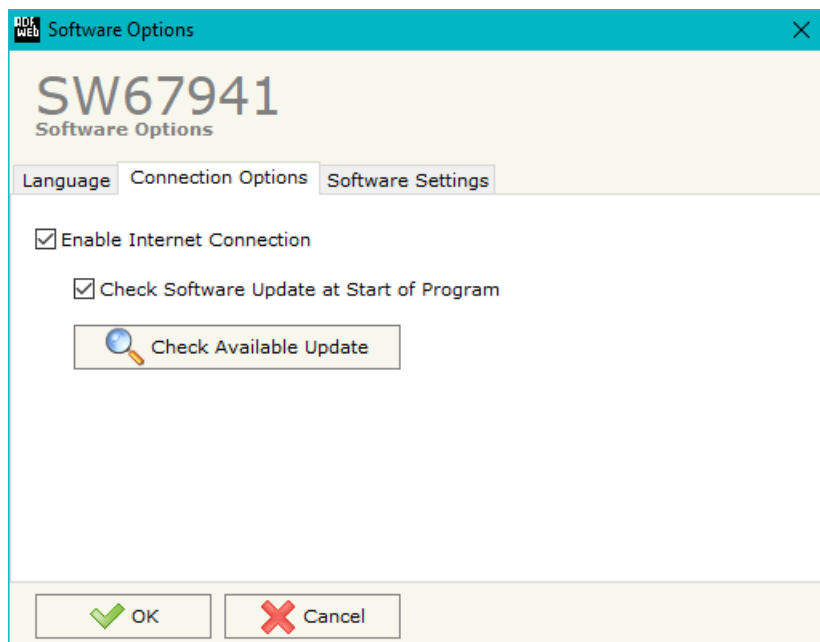
- To clone the configurations of a Programmable “DALI / MQTT - Converter” in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the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



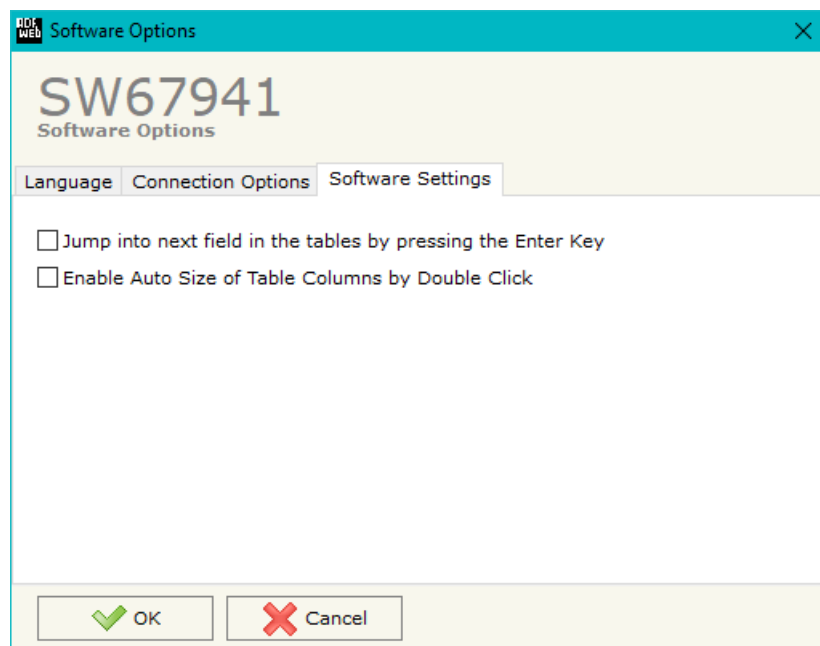
## SOFTWARE OPTIONS:

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 SW67941 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:**

By Pressing the “**Set Communication**” button from the main window for SW67941 (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:

- DALI
- MQTT
- Ethernet
- Wi-Fi
- TLS (Transport Layer Security)
- NTP (Network Time Protocol)

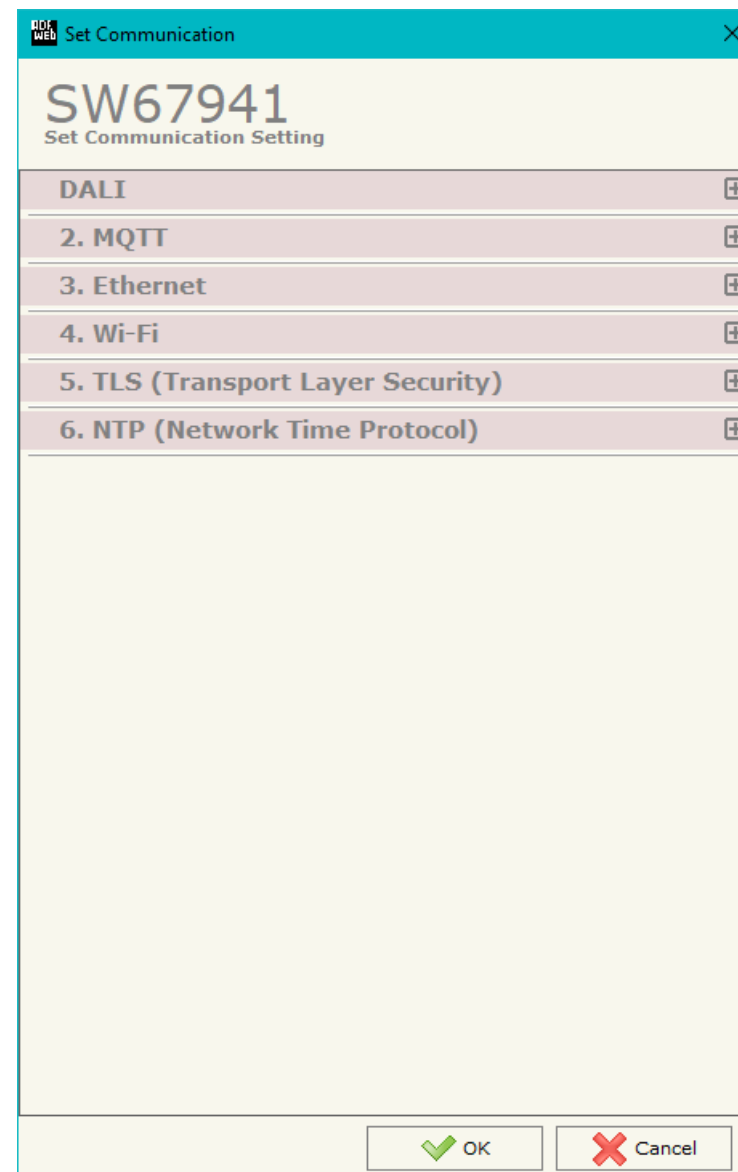


Figure 3a: "Set Communication" window



**DALI:**

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

- In the field "**DALI Console Port**" the Ethernet port used for the communication with "DALI Console" software is defined;

**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;
- In the field "**Username**" the username for the connection to the MQTT server is defined;

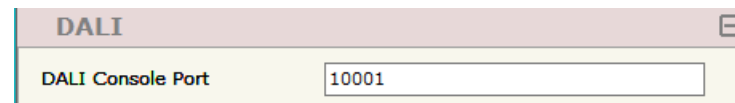


Figure 3b: "Set Communication → DALI" window

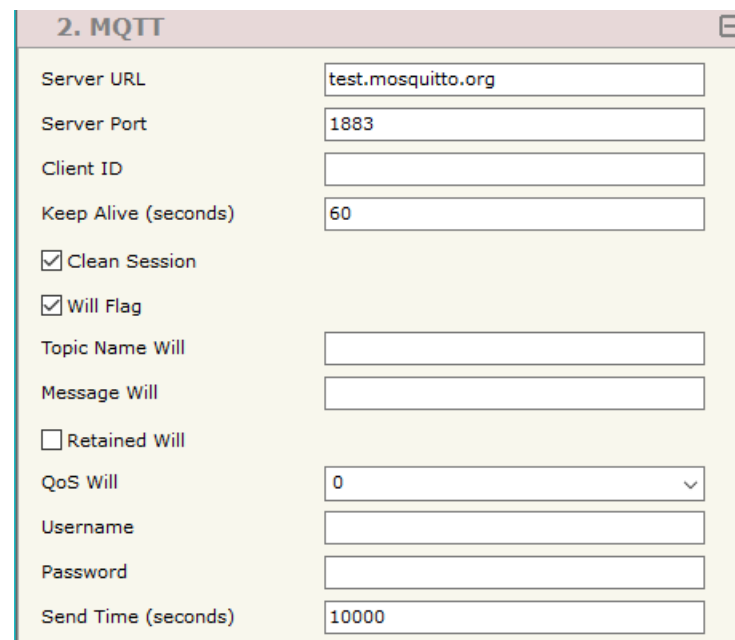


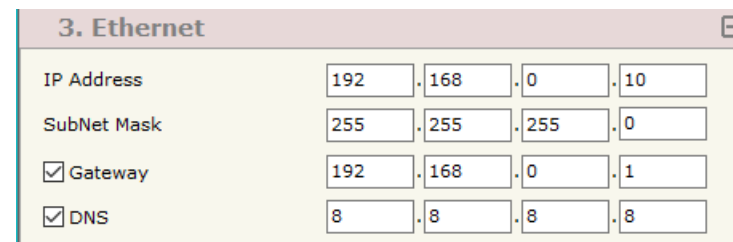
Figure 3c: "Set Communication → MQTT" window

- In the field "**Password**" the password for the connection to the MQTT server is defined;
- In the field "**Send Time (seconds)**" the delay with which the MQTT messages are published is defined.

### **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;
- In the field "**DNS**" the DNS address is defined. This field is required if the server address is define by URL and not IP Address.



The screenshot shows a web interface window titled "3. Ethernet". It contains four rows of input fields:

Field	Value 1	Value 2	Value 3	Value 4
IP Address	192	168	0	10
SubNet Mask	255	255	255	0
<input checked="" type="checkbox"/> Gateway	192	168	0	1
<input checked="" type="checkbox"/> DNS	8	8	8	8

Figure 3d: "Set Communication → Ethernet" window

**Wi-Fi:**

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

- Access Point;
- Client.

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 "**DNS**" the DNS address is defined. This field is required if the server address is defined by URL and not IP Address.
- In the field "**Port**" the port used for MQTT communication is defined;
- 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 "**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.

4. Wi-Fi	
Type	Access Point
IP Address	192 . 168 . 0 . 11
SubNet Mask	255 . 255 . 255 . 0
<input type="checkbox"/> Gateway	192 . 168 . 0 . 1
<input type="checkbox"/> DNS	8 . 8 . 8 . 8
Port	502
SSID	
Secure Type	Unsecured
<input checked="" type="checkbox"/> Enable DHCP	
DHCP First IP Address	192 . 168 . 0 . 200
DHCP SubNet Mask	255 . 255 . 255 . 0
Lease Time (seconds)	86400
Max Client	1
Channel	1

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

The means of the fields for Client configuration are:

- If the field "**Obtain an IP Address automatically**" is checked, the converter gets the IP Address using DHCP. Otherwise, the IP Address is defined as static;
- 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 "**DNS**" the DNS address is defined. This field is required if the server address is define by URL and not IP Address.
- In the field "**Port**" the port used for MQTT communication is defined;
- 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.

4. Wi-Fi

Type: Client Mode

☐ Obtain an IP Address automatically

IP Address: 192 . 168 . 0 . 11

SubNet Mask: 255 . 255 . 255 . 0

☐ Gateway: 192 . 168 . 0 . 1

☐ DNS: 8 . 8 . 8 . 8

Port: 502

SSID:

Password:

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

**TLS (TRANSPORT LAYER SECURITY):**

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.

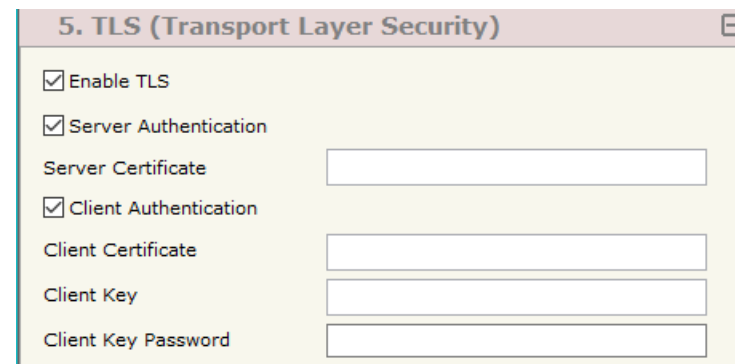


Figure 3g: "Set Communication → TLS" window

**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.

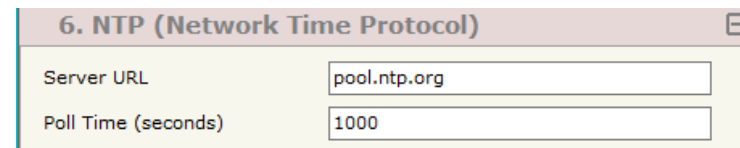
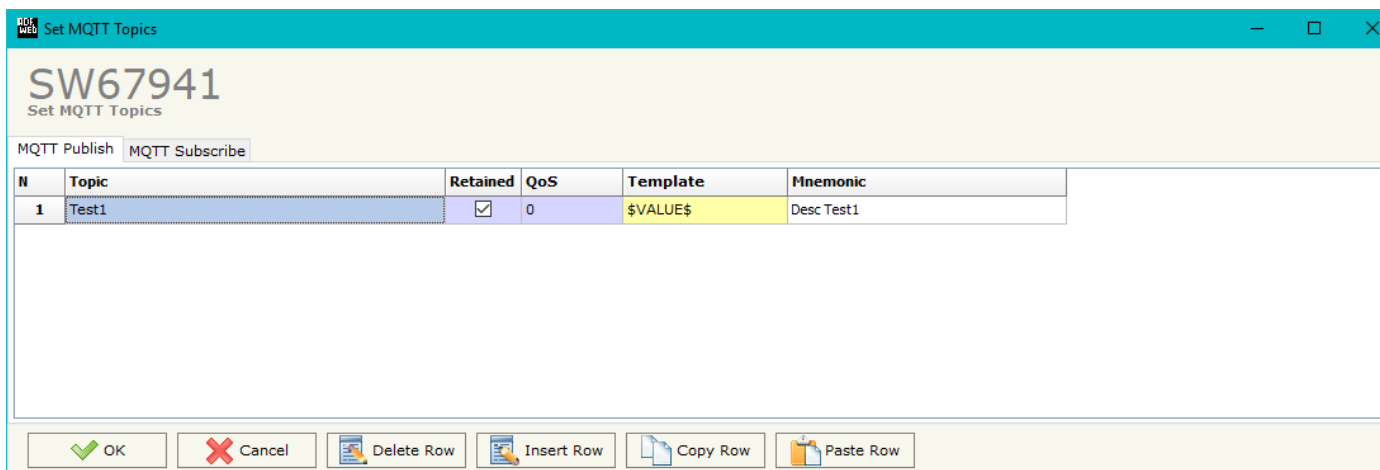


Figure 3h: "Set Communication → NTP" window

## MQTT SET TOPIC:

By Pressing the **"MQTT Set Topic"** button from the main window for SW67941 (Fig. 2) the window "Set MQTT Topics" appears (Fig. 4). This section is used to define the MQTT topics where the converter will publish the data from DALI and the topic that the converter will subscribes for writing the data to DALI.

## MQTT PUBLISH



SW67941  
Set MQTT Topics

MQTT Publish MQTT Subscribe

N	Topic	Retained	QoS	Template	Mnemonic
1	Test1	<input checked="" type="checkbox"/>	0	\$VALUE\$	Desc Test1

OK Cancel Delete Row Insert Row Copy Row Paste Row

Figure 4a: "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 **"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. The payload of the message is defined using key words, see page 35 for more info;
- In the field **"Mnemonic"** a description of the topic is defined.

**MQTT SUBSCRIBE**

N	Topic	QoS	Mnemonic
1	Test_Sub	0	Desc Subscribe

Figure 4b: "Set MQTT Topics → MQTT Subscribe" window

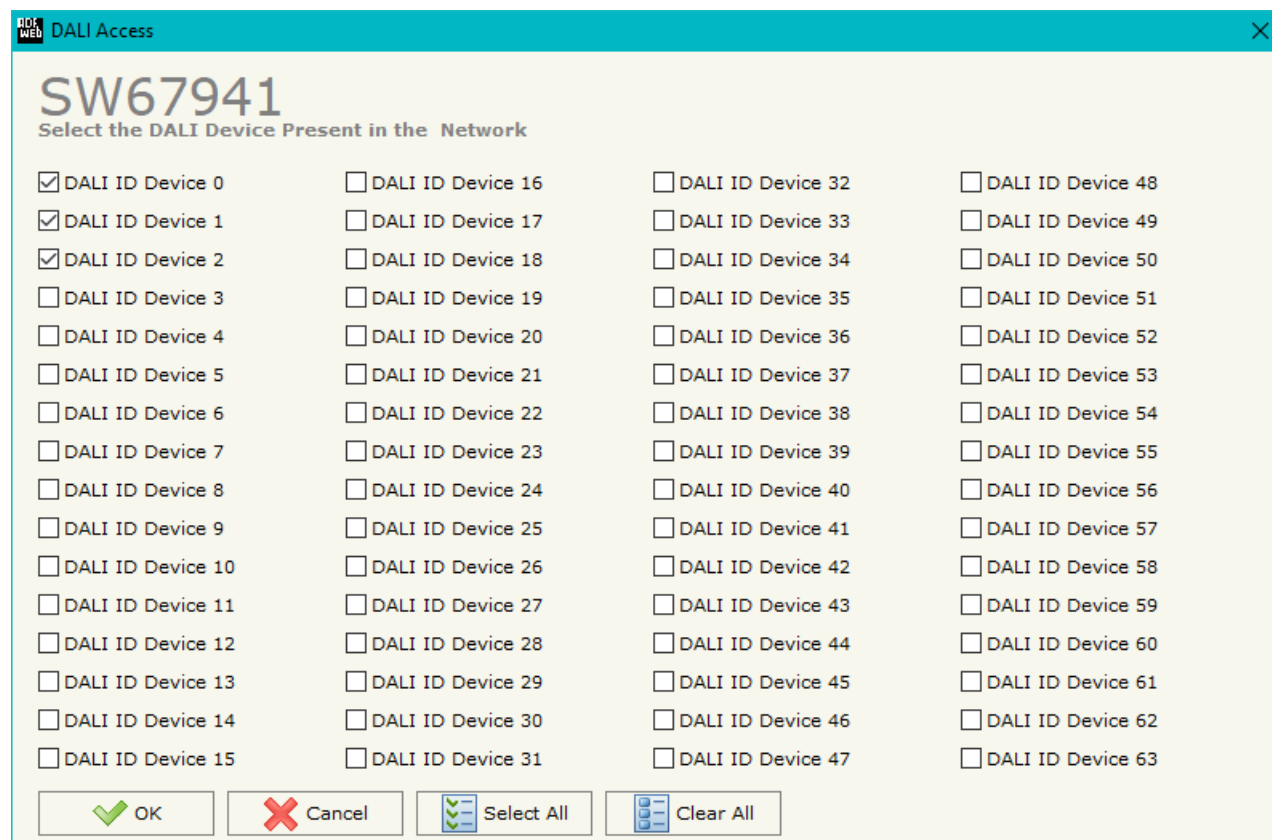
The means of the fields are:

- In the field "**Topic**" the MQTT topic is defined;
- In the field "**QoS**" the QoS level is defined;
- In the field "**Mnemonic**" a description of the topic is defined.

**DALI ACCESS:**

By pressing the “**DALI Access**” button from the main window for SW67941 (Fig. 2) the window “Select the DALI Device Present in the Network” appears (Fig. 4).

This section is used to define the DALI devices connected to the converter. It is enough to check/uncheck the connected/unconnected DALI devices.



DALI Access

SW67941

Select the DALI Device Present in the Network

<input checked="" type="checkbox"/> DALI ID Device 0	<input type="checkbox"/> DALI ID Device 16	<input type="checkbox"/> DALI ID Device 32	<input type="checkbox"/> DALI ID Device 48
<input checked="" type="checkbox"/> DALI ID Device 1	<input type="checkbox"/> DALI ID Device 17	<input type="checkbox"/> DALI ID Device 33	<input type="checkbox"/> DALI ID Device 49
<input checked="" type="checkbox"/> DALI ID Device 2	<input type="checkbox"/> DALI ID Device 18	<input type="checkbox"/> DALI ID Device 34	<input type="checkbox"/> DALI ID Device 50
<input type="checkbox"/> DALI ID Device 3	<input type="checkbox"/> DALI ID Device 19	<input type="checkbox"/> DALI ID Device 35	<input type="checkbox"/> DALI ID Device 51
<input type="checkbox"/> DALI ID Device 4	<input type="checkbox"/> DALI ID Device 20	<input type="checkbox"/> DALI ID Device 36	<input type="checkbox"/> DALI ID Device 52
<input type="checkbox"/> DALI ID Device 5	<input type="checkbox"/> DALI ID Device 21	<input type="checkbox"/> DALI ID Device 37	<input type="checkbox"/> DALI ID Device 53
<input type="checkbox"/> DALI ID Device 6	<input type="checkbox"/> DALI ID Device 22	<input type="checkbox"/> DALI ID Device 38	<input type="checkbox"/> DALI ID Device 54
<input type="checkbox"/> DALI ID Device 7	<input type="checkbox"/> DALI ID Device 23	<input type="checkbox"/> DALI ID Device 39	<input type="checkbox"/> DALI ID Device 55
<input type="checkbox"/> DALI ID Device 8	<input type="checkbox"/> DALI ID Device 24	<input type="checkbox"/> DALI ID Device 40	<input type="checkbox"/> DALI ID Device 56
<input type="checkbox"/> DALI ID Device 9	<input type="checkbox"/> DALI ID Device 25	<input type="checkbox"/> DALI ID Device 41	<input type="checkbox"/> DALI ID Device 57
<input type="checkbox"/> DALI ID Device 10	<input type="checkbox"/> DALI ID Device 26	<input type="checkbox"/> DALI ID Device 42	<input type="checkbox"/> DALI ID Device 58
<input type="checkbox"/> DALI ID Device 11	<input type="checkbox"/> DALI ID Device 27	<input type="checkbox"/> DALI ID Device 43	<input type="checkbox"/> DALI ID Device 59
<input type="checkbox"/> DALI ID Device 12	<input type="checkbox"/> DALI ID Device 28	<input type="checkbox"/> DALI ID Device 44	<input type="checkbox"/> DALI ID Device 60
<input type="checkbox"/> DALI ID Device 13	<input type="checkbox"/> DALI ID Device 29	<input type="checkbox"/> DALI ID Device 45	<input type="checkbox"/> DALI ID Device 61
<input type="checkbox"/> DALI ID Device 14	<input type="checkbox"/> DALI ID Device 30	<input type="checkbox"/> DALI ID Device 46	<input type="checkbox"/> DALI ID Device 62
<input type="checkbox"/> DALI ID Device 15	<input type="checkbox"/> DALI ID Device 31	<input type="checkbox"/> DALI ID Device 47	<input type="checkbox"/> DALI ID Device 63

OK Cancel Select All Clear All

Figure 5: “DALI Access” window

**Note:**

By clicking on “DALI Maps” button, you can create a .csv file with the map created on PROFINET side and the meaning of each byte of the array in OUT.



## 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.

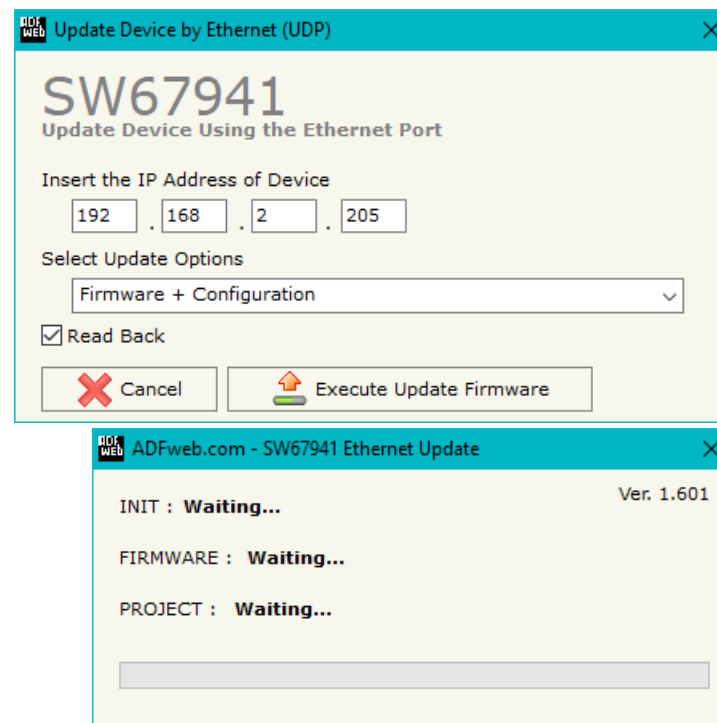


Figure 6: “Update device” windows

**Note:**

When you receive the device, for the first time, you also have to update the Firmware in the HD67941 device.

**Warning:**

If Fig. 7 appears when you try to do the Update try these points before seeking assistance:

- Check if the serial COM port selected is the correct one;
- Check if the serial cable is connected between the PC and the device;
- 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 or 10 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 you have to launch the "Command Prompt" with Administrator Rights;
- Pay attention at Firewall lock.

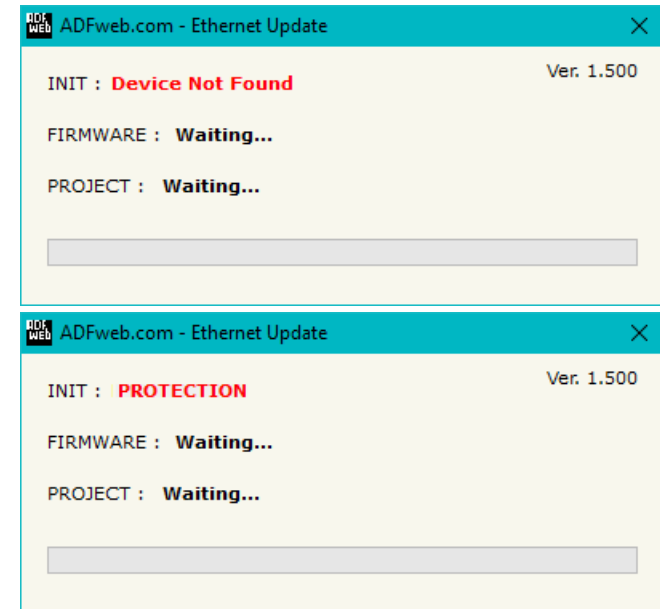


Figure 7: "Error" window

**Warning:**

In the case of HD67941 you have to use the software "SW67941": [www.adfweb.com/download/filefold/SW67941.zip](http://www.adfweb.com/download/filefold/SW67941.zip).

## USE OF DALI CONSOLE SOFTWARE:

To configure DALI network and test the communication, it is possible to use the available software that runs with Windows called "DALI Console". 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; 32/64bit).

When launching the DALI Console, the window below appears (Fig. 8).

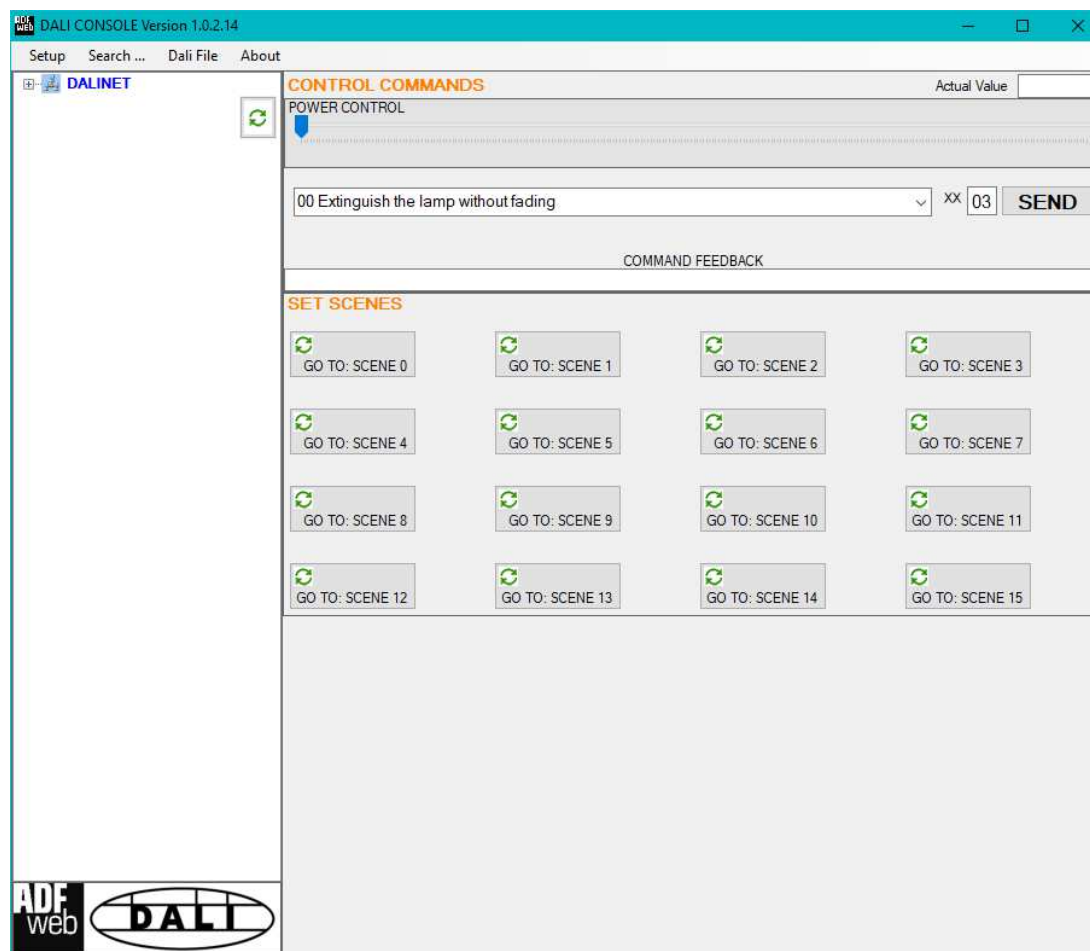
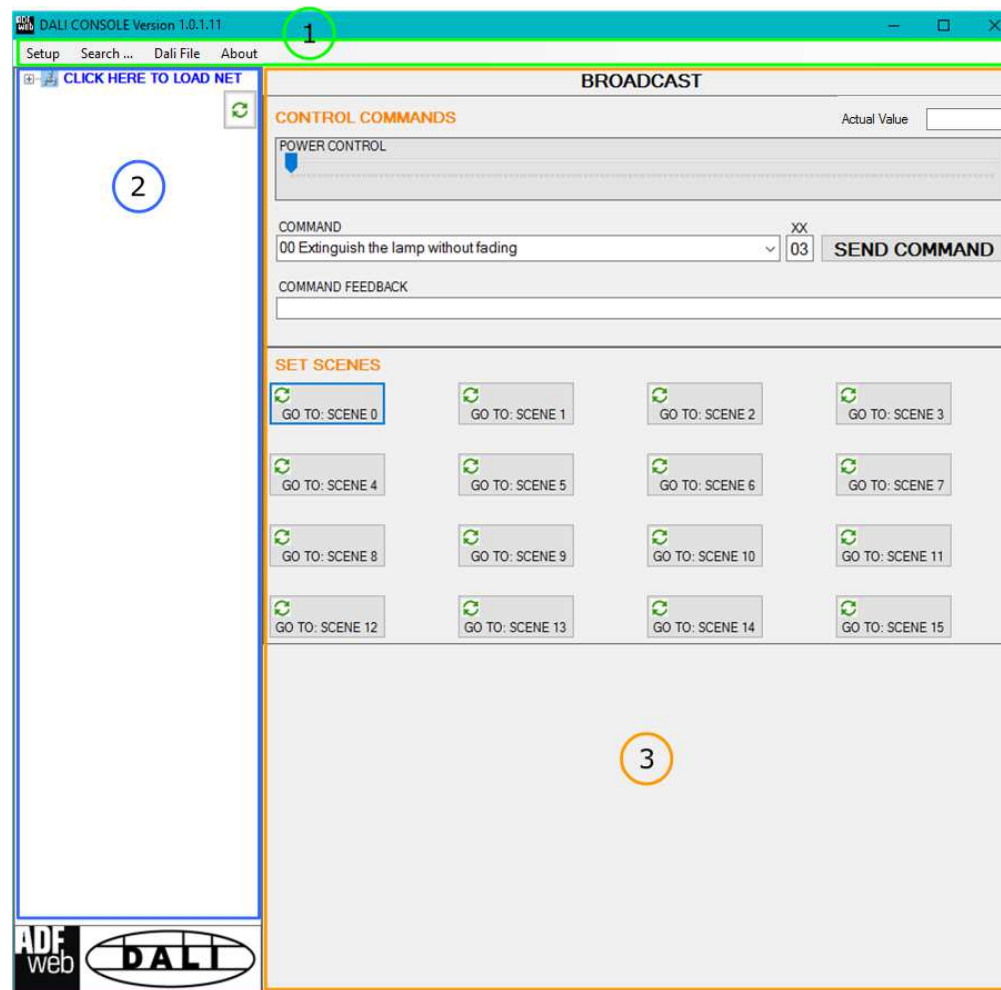


Figure 8: Main window for DALI Console

## STRUCTURE OF THE SOFTWARE:

The software layout is very simple and it is structured in this way:

- **"Menu bar"** (Fig. 9, Point 1): it is possible to open the setup window ("Setup" menu), scan the DALI network and program automatically the IDs ("Search..." menu), export/import the results of the communication ("Dali File" menu) and see the informations about the DALI Console software ("About" menu).
- **"Network view"** (Fig. 9, Point 2): it is possible to see all the DALI devices connected to the HD67941 converter, the groups and the scenes set;
- **"Settings / commands view"** (Fig. 9, Point 3): it is possible to set and manage the parameters to the single DALI device, to the groups or for the full network.



(1) Menu bar

(2) Network view

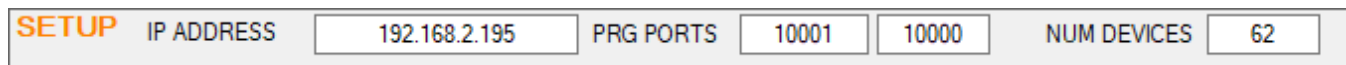
(3) Settings / commands view

Figure 9: Structure of DALI Console software

**SETUP:**

This section defines the connection's parameters to the Ethernet side of the HD67941 converter.

By Pressing the **"Setup"** button from the menu bar of the DALI Console software, the "SETUP" window appears (Fig. 9).




<b>SETUP</b>	IP ADDRESS	192.168.2.195	PRG PORTS	10001	10000	NUM DEVICES	62
--------------	------------	---------------	-----------	-------	-------	-------------	----

Figure 10: "Setup" window

The means of the fields for the "SETUP" window are:

- In the field **"DEVICE IP ADDRESS"** the IP address set inside the converter is defined;
- In the field **"PRG PORT"** the communication ports used for the Ethernet communication with the converter is defined: the one on the left must be equal to the DALI Port programmed with SW67941, the one on the right must be fixed to '10000';
- In the field **"NUM DEVICES"** the number of connected DALI devices is defined.

## NETWORK SETTING:

By pressing the  button in the Network view, it is possible to scan the full DALI network and find all the DALI devices, the groups set and the scenes configured.

By selecting the single DALI devices found, the single groups, the single scene or the entire DALI network, it is possible to manage and test the functioning of the network.

## DEVICES:

The means of the fields for "DEVICE INFO" are:

- In the field "**Device Type**" the type of DALI device is printed;
- In the field "**Software version**" the software version of the DALI device is printed;
- In the fields "**Power Range**" Min value, Actual value, Max value, System Fail value, Power On value, Fade Time and Fade Rate of the DALI device is defined. It is possible to read the actual value and set a new value;
- In the fields "**DEVICE STATUS**" the actual status of the DALI device is printed;
- By clicking on "**SET**" buttons, it is possible to set the new parameters of the corresponding fields. By clicking "**LOAD VALUES**" it is possible to read the actual values set;
- In the field "**SET NEW ADDRESS**" it is possible to program a new ID to the DALI node;
- In the field "**REMOVE ADDRESS**" it is possible to delete the ID from the DALI node.

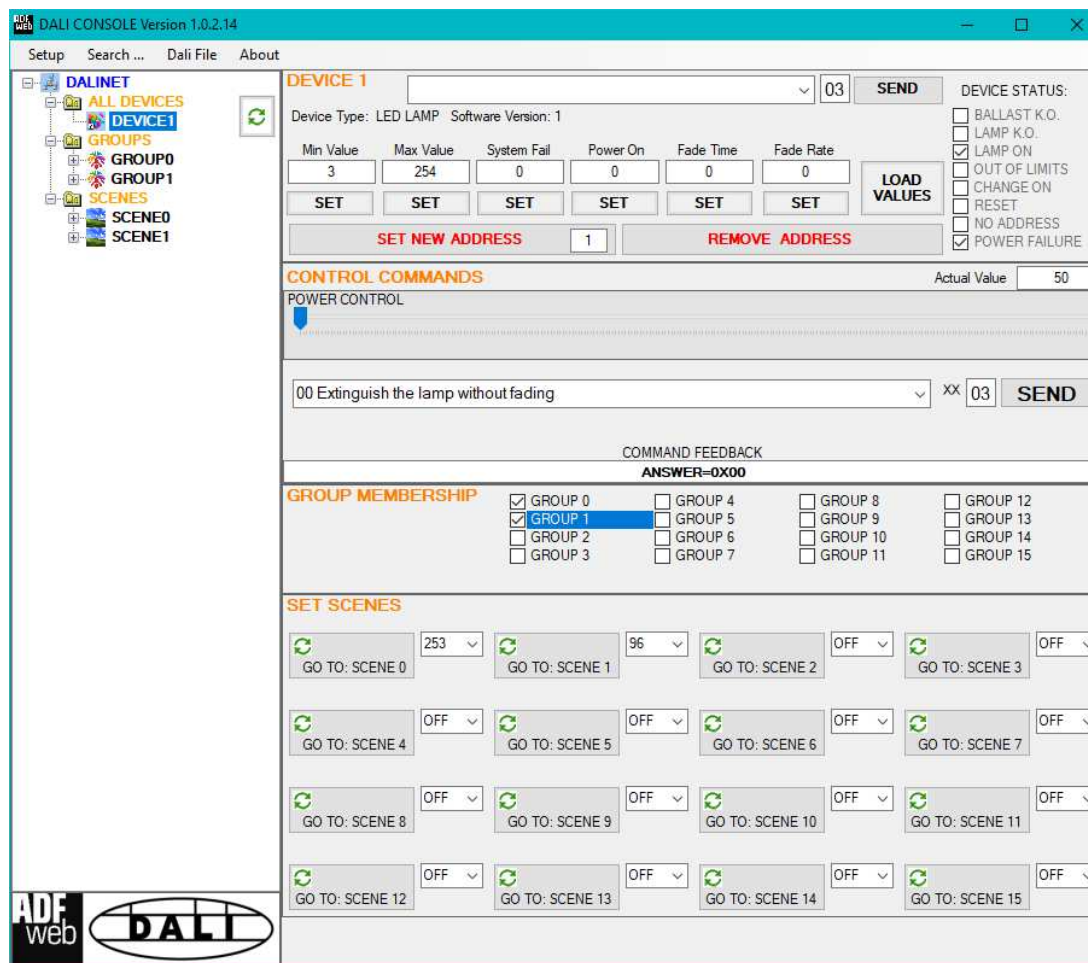


Figure 11: "Device settings" window

The means of the fields for the "CONTROL COMMANDS" section are:

- In the "**POWER CONTROL**" bar it is possible to change the actual ADV of the selected DALI device;
- In the field "**COMMAND**" it is possible to select a DALI command to send to the selected DALI device. For set commands, it is possible to insert the value to set in the field "**xx**". As soon as the command to send is selected, the command is sent: in order to send the same command more times, it is possible to press the "**SEND COMMAND**" button;
- In the field "**COMMAND FEEDBACK**" the response from the DALI device is printed.



**Note:**

This section is used to test the functioning of the DALI device in the.

In the "GROUP MEMBERSHIP" section it is possible to see the Groups which the selected DALI device is in. The checked checkboxes mean that the device is in the correspondent groups, the unchecked checkboxes mean that the device is not included in the correspondent groups. It is possible to change the group settings for the selected DALI device by checking/unchecking the correspondent checkboxes.

In the "SET SCENES" section it is possible to see the programmed scenes of the selected DALI device, program new ones and activate them:

- By pressing the buttons "**GO TO: SCENE X**" it is possible to activate the correspondent scene inside the selected DALI device; the programmed ADV for the selected scene is defined in the drop-down list on the right;
- By selecting a value into the drop-down lists next to the "GO TO: SCENE x" buttons, it is possible to set the ADV associated to the correspondent scene. It is possible to select:
  - Value between 0 and 255: the scene will have the defined value of ADV;
  - ACT: the scene will take the programmed ADV value into the "POWER CONTROL" bar;
  - OFF: the scene is disabled.

## GROUPS:

The means of the fields for the “CONTROL COMMANDS” section are:

- In the “**POWER CONTROL**” bar it is possible to change the actual ADV of the selected DALI group;
- In the field “**COMMAND**” it is possible to select a DALI command to send to the selected DALI group. For set commands, it is possible to insert the value to set in the field “**xx**”. As soon as the command to send is selected, the command is sent: in order to send the same command more times, it is possible to press the “**SEND COMMAND**” button;
- In the field “**COMMAND FEEDBACK**” the response from the DALI group is printed.



### Note:

This section is used to test the functioning of the DALI groups in the network.

In the “SET SCENES” section it is possible to activate the programmed scenes to the selected group:

- By pressing the buttons “**GO TO: SCENE X**” it is possible to activate the correspondent scene inside the selected DALI group.

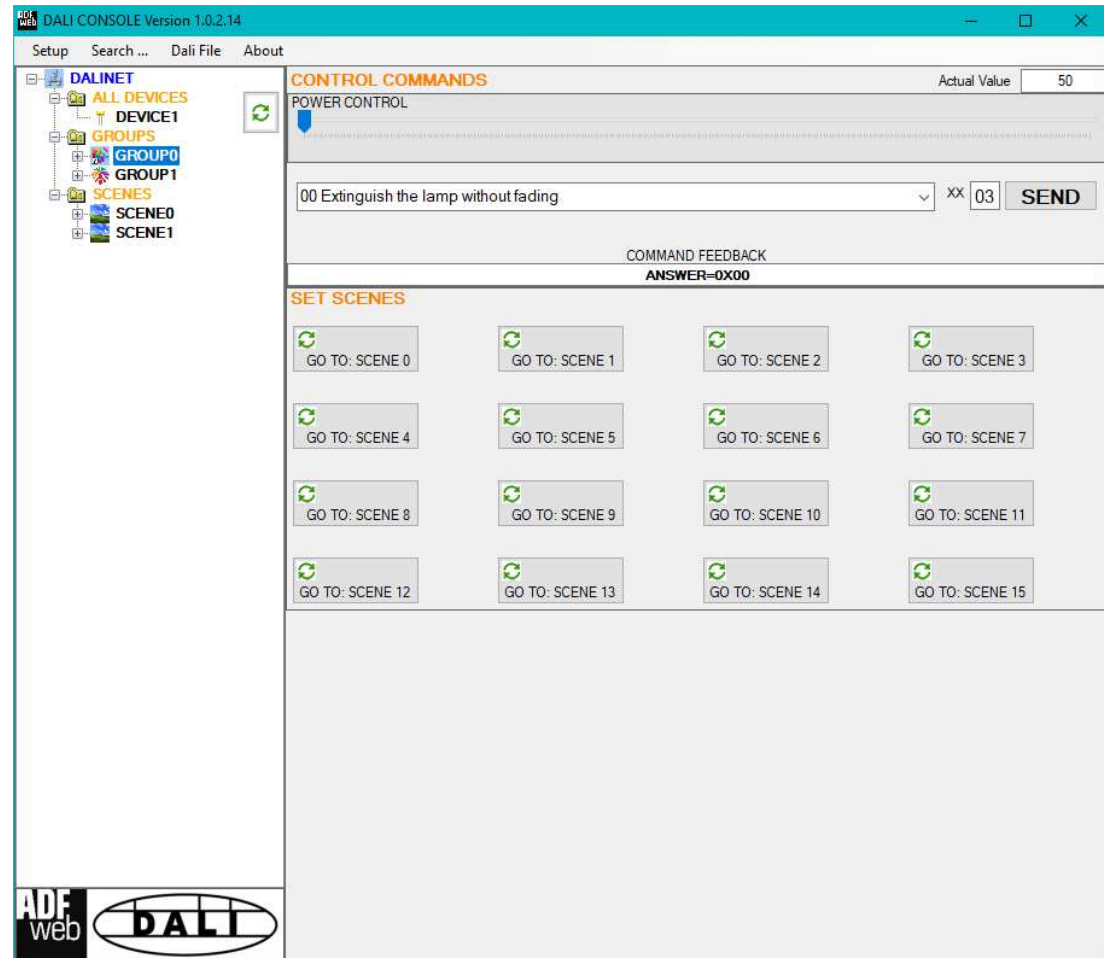


Figure 12: “Groups settings” window



### SCENES:

By selecting a DALI scene from the Network view, it is possible to see the devices that have programmed the selected scene.

It is also possible to activate it by pressing the **"ACTIVATE SCENE X"** button.

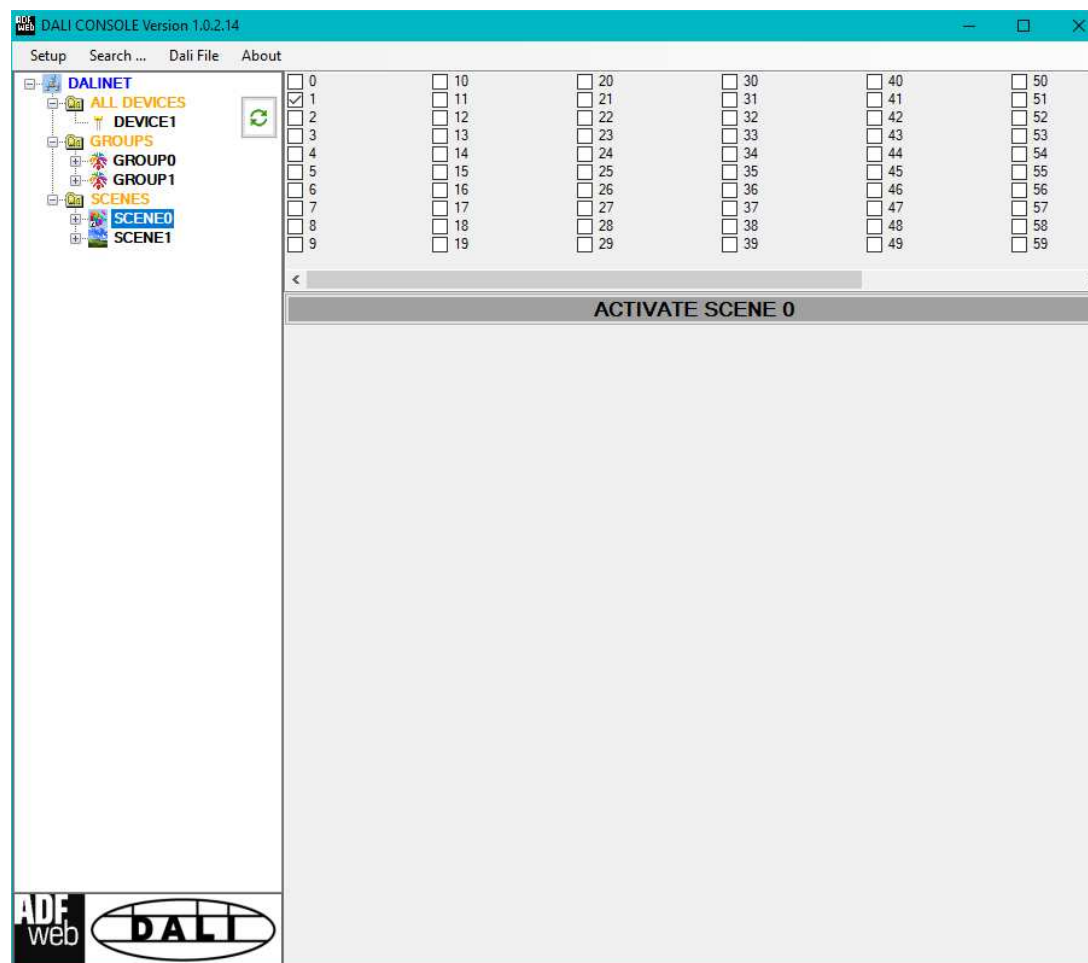


Figure 13: "Scenes settings" window

### **ALL DEVICES (BROADCAST):**

The means of the fields for the "CONTROL COMMANDS" section are:

- In the "**POWER CONTROL**" bar it is possible to change the actual ADV of the entire DALI network;
- In the field "**COMMAND**" it is possible to select a DALI command to send to the entire DALI network. For set commands, it is possible to insert the value to set in the field "**xx**". As soon as the command to send is selected, the command is sent: in order to send the same command more times, it is possible to press the "**SEND COMMAND**" button;
- In the field "**COMMAND FEEDBACK**" the response from the DALI network is printed.



#### **Note:**

This section is used to test the functioning of the DALI network.

In the "SET SCENES" section it is possible to activate the programmed scenes into all the DALI devices that have them:

- By pressing the buttons "**GO TO: SCENE X**" it is possible to activate the correspondent scene in the DALI network. Only the devices that have it will accept the command.

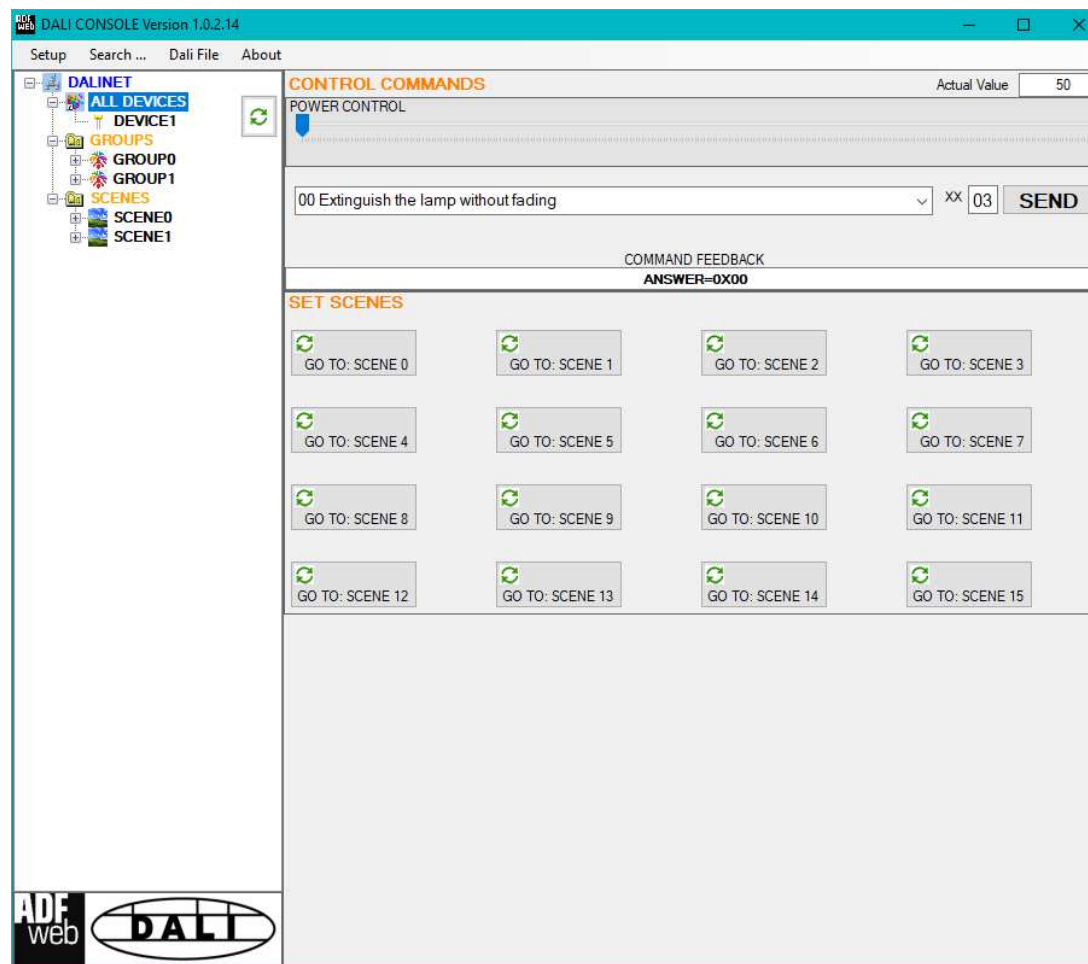


Figure 14: "Broadcast settings" window

## TEMPLATE STRING: DEFINITION OF MQTT PAYLOAD FOR PUBLISHED TOPICS

In the "Set MQTT Access" section, 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 DALI. The key words used and their meanings are different:

- CHANNEL: ID of the DALI node
- STATUS: Status of the DALI node
- ADV: level of brightness
- ANSWER: last answer from the DALI node to a DALI command
- TYPE: type of DALI lamp
- VERSION: version of DALI node
- MIN: minimum value settable in the DALI lamp
- GRP1: groups' setting 1/1
- GRP2: groups' setting 2/2
- TIME: date and time



### Warning:

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

## DALI WRITING

In order to send the DALI commands it is necessary to use a specific MQTT payload.

In this way, the converter can get all the info ned and compose the Modbus request. It is necessary to use a JSON format, described below:

```
{  
  "channel": $CHANNEL$,  
  "value": "$VALUE$"  
}
```

Where:

- CHANNEL: ID of the DALI node (\*)
- VALUE: value of the ADV (hex format)

(\*)

The DALI ID can have different value in relation to the ADV to manage:

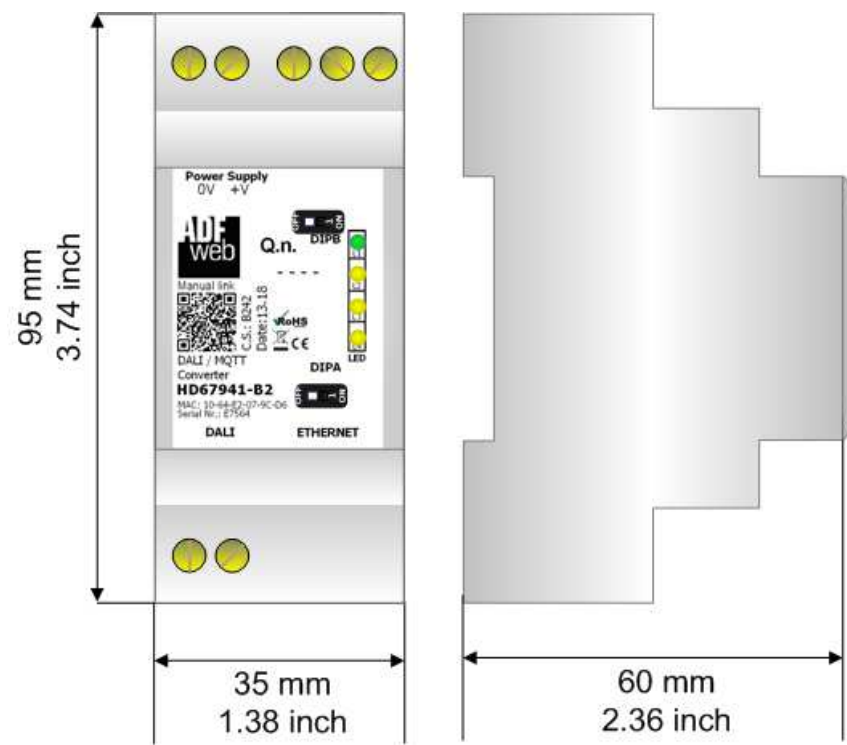
- 0 to 63 (0x00 to 0x3F) to manage a single DALI node;
- 64 to 79 (0x40 to 0x4F) to manage the Groups;
- 80 (0x50) for broadcast.



**Note:**

If a field is missing or wrong JSON is sent, the Modbus writing request is not sent by the converter.

## MECHANICAL DIMENSIONS:



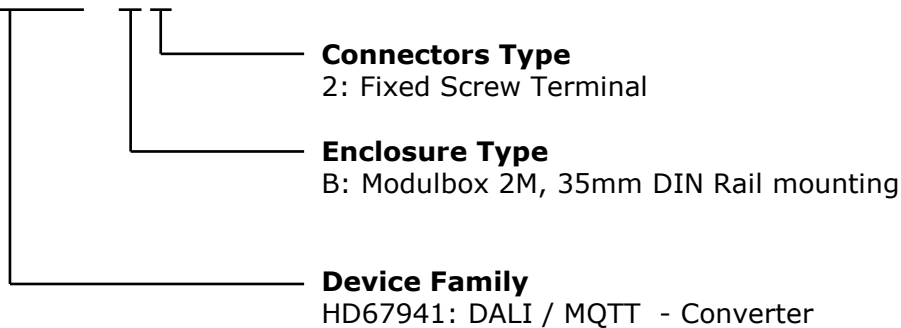
Housing: PVC  
Weight: 200g  
(Approx)

Figure 15: Mechanical dimensions scheme for HD67941-B2

## ORDERING INFORMATION:

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

### **HD67941 – B 2**



Order Code: **HD67941-B2** - DALI / 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

**DISCLAIMER:**

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](http://www.adfweb.com). Otherwise contact us at the address [support@adfweb.com](mailto: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](http://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.



**ADFweb.com S.r.l.**  
Via Strada Nuova, 17  
IT-31010 Mareno di Piave  
TREVISO (Italy)  
Phone +39.0438.30.91.31  
Fax +39.0438.49.20.99  
[www.adfweb.com](http://www.adfweb.com)

