User Manual

Revision 1.000
English

S7comm / KNX - Converter

(Order Code: HD67628-A1)

for Website information:
http://www.adfweb.com/?Product=HD67628

for Price information:
http://www.adfweb.com/?Price=HD67628-A1

Benefits and Main Features:

⊕ Triple electrical isolation

⊕ Two Ethernet ports

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

User Manual

For others S7comm devices, see also the following links:

S7comm from/to ...

www.adfweb.com?Product=HD67618	(**Modbus TCP Slave**)
www.adfweb.com?Product=HD67619	(**PROFIBUS Slave**)
www.adfweb.com?Product=HD67620	(**IEC61850 Server**)
www.adfweb.com?Product=HD67621	(**Serial**)
www.adfweb.com?Product=HD67622	(**Modbus Slave**)
www.adfweb.com?Product=HD67623	(**CAN**)
www.adfweb.com?Product=HD67624	(**CANopen**)
www.adfweb.com?Product=HD67625	(**DeviceNet Slave**)
www.adfweb.com?Product=HD67626	(**SNMP Agent**)
www.adfweb.com?Product=HD67627	(**EtherNet/IP Slave**)
www.adfweb.com?Product=HD67629	(**MQTT**)
www.adfweb.com?Product=HD67630	(**BACnet Slave**)
www.adfweb.com?Product=HD67631	(**Ethernet**)
www.adfweb.com?Product=HD67632	(**OPC UA Server**)
www.adfweb.com?Product=HD67633	(**PROFINET Slave**)

Do you have an your customer protocol?

See the following links:
www.adfweb.com?Product=HD67003

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

Ask it to the following link:
www.adfweb.com?Cmd=helpme

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INDEX:

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- 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	13/03/2020	Ff	All	First release version

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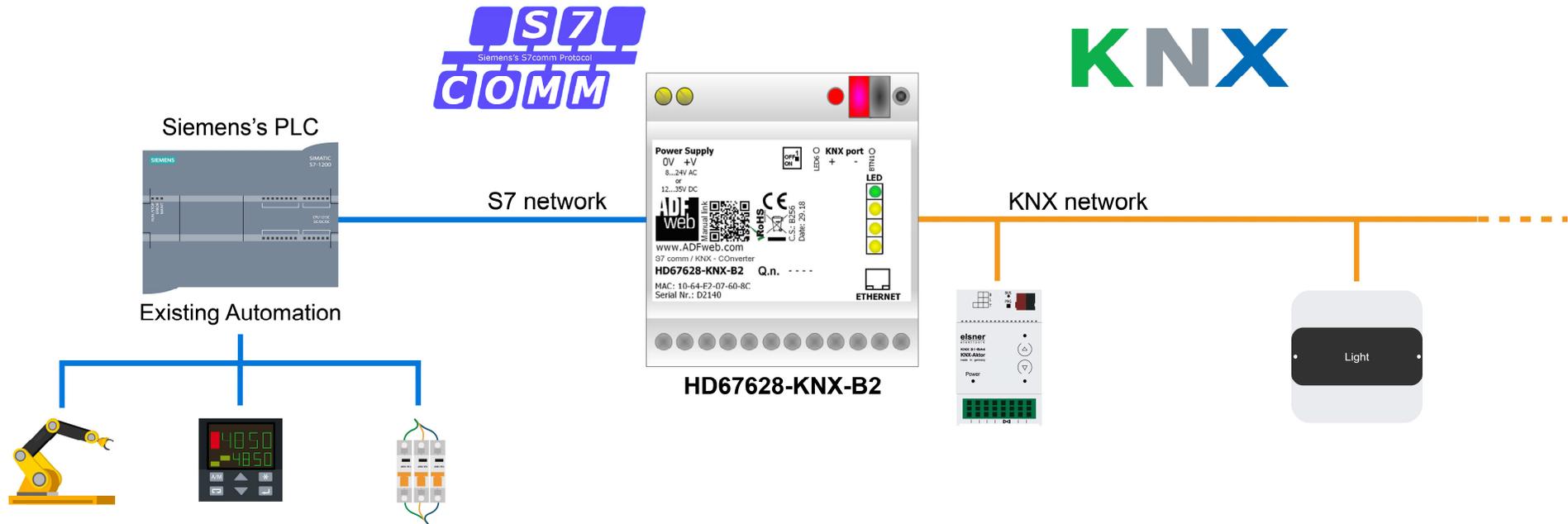
⚠ This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

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:

S7comm / KNX - Converter
HD67628-KNX-B2

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CONNECTION SCHEME:

Connector2:
Ethernet Port
(RJ45 Plug)

Button1:
Activation of KNX
Programmation

Led5:
Red
KNX Prog.

Led1:
Green
Device state

Led2:
Yellow
S7comm comm.

Led3:
Yellow
KNX comm.

Led4:
Yellow
Error state

Power Supply
0V +V
8...24V AC
or
12...35V DC

www.ADFweb.com
S7comm / KNX - Converter
HD67628-KNX-B2
MAC: 10-64-E2-08-12-8E **Q.n.** - - - -
Serial Nr.: H7956

LED
Device state
S7comm comm.
KNX comm.
Error state

ETHERNET

Connector1:
Power Supply

0V = Ground
+V = Positive wire

V AC: min 8V ; max 24V
V DC: min 12V ; max 35V

Connector8:
KNX

Dip-Switch A:
-Dip1 – Functioning Mode

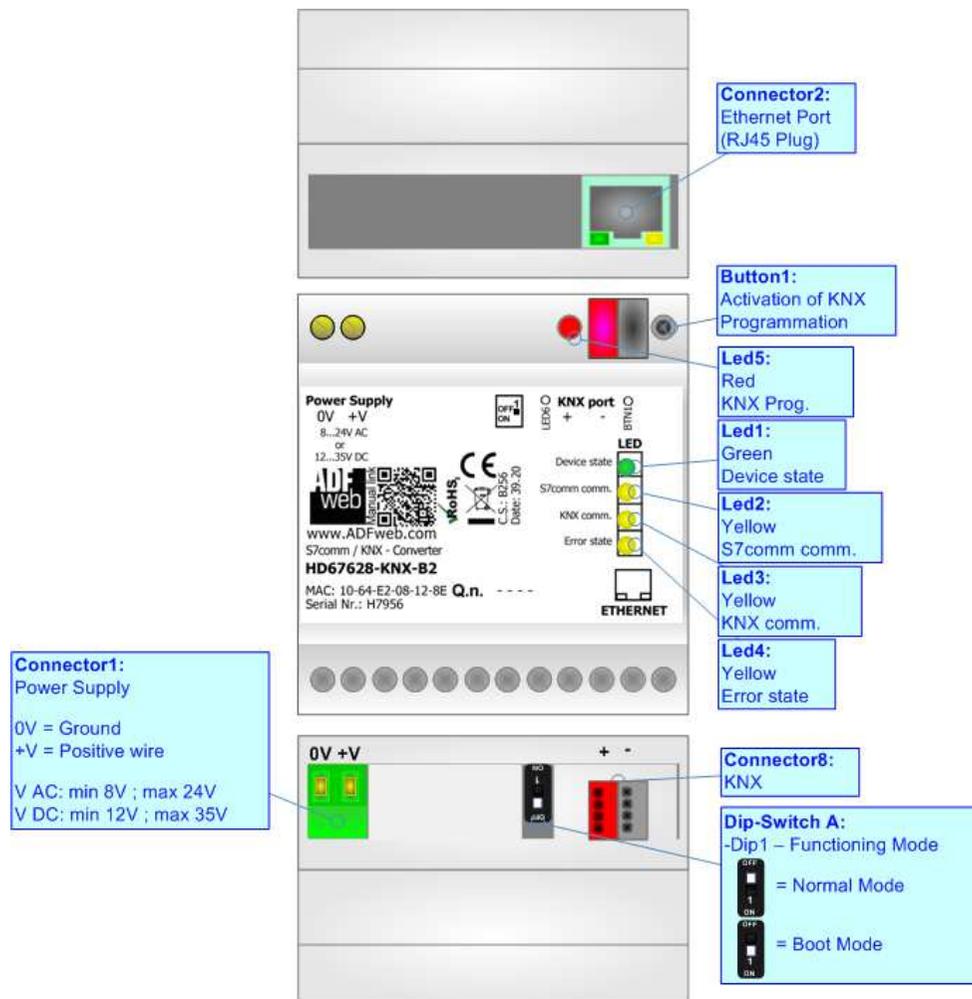= Normal Mode

= Boot Mode

Figure 1: Connection scheme for HD67628-KNX-B2

CHARACTERISTICS:

The HD67628-KNX-B2 is a S7comm / KNX Converter.

It allows the following characteristics:

- Two-directional information between S7comm and KNX;
- 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 SW67628 software on your PC in order to perform the following:

- Define the parameter of the KNX;
- Define the parameter of the S7comm;
- Define the S7comm requests to send to the S7comm servers;
- Define the KNX data points to read and write from/to the bus;
- Update the device.

POWER SUPPLY:

The devices can be powered between a wide range of tensions. For more details see the two tables below.
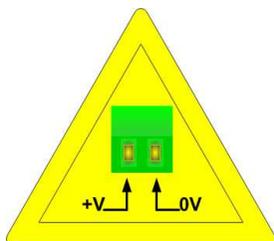
	VAC ⁓		VDC ===	
	Vmin	**Vmax**	**Vmin**	**Vmax**
HD67628-KNX-B2	**8V**	**24V**	**12V**	**35V**

Consumption at 24V DC:

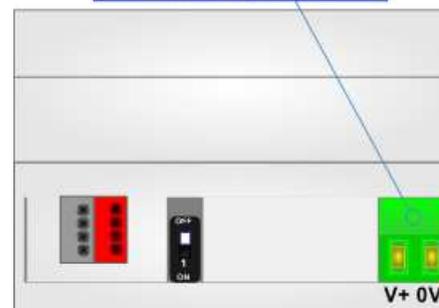| Device	W/VA
HD67628-KNX-B2	4

⚠ **Caution: Not reverse the polarity power**

HD67628-KNX-B2

Connector1:
Power Supply

0V = Ground
+V = Positive wire

V AC: min 8V ; max 24V
V DC: min 12V ; max 35V

FUNCTION MODES:

The device has got two functions mode depending of the position of the Dip1 of 'Dip-Switch A':

- The first, with Dip1 in Off position (factory setting), is used for the normal working of the device.
- The second, with Dip1 in On position, is used for upload the Project/Firmware.

For the operations to follow for the updating (see 'UPDATE DEVICE' section).
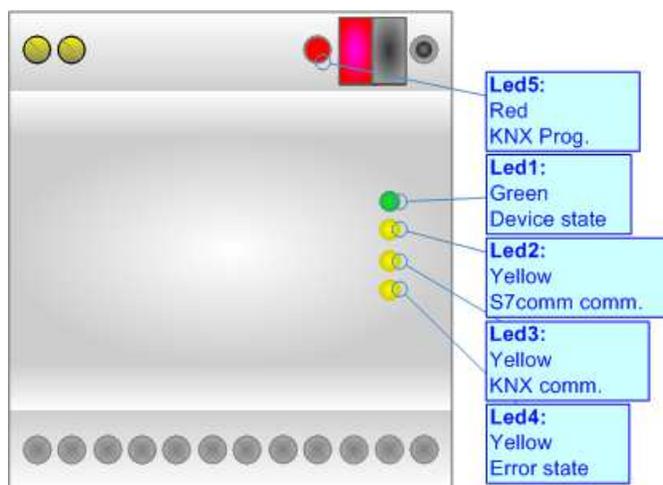
According to the functioning mode, the LEDs will have specifics functions (see 'LEDS' section).

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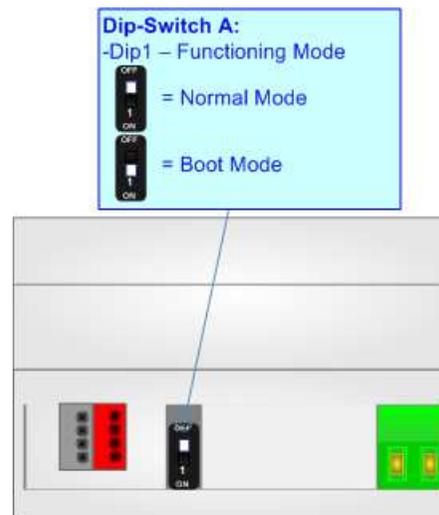
LEDS:

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: Device State (green)	Blinks slowly (~1Hz)	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
2: S7comm communication (yellow)	Blinks when a S7comm response is received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
3: KNX communication (yellow)	Blinks when KNX frame is received	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: Error state (yellow)	**ON:** an error occurs **OFF:** no errors are present	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
5: KNX Programmation (red)	**ON:** KNX Programmation activated **OFF:** KNX Programmation not activated	**OFF**

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KNX:

KNX is the standard that allows the automated and decentralized management of the technologic plans of a big typology of structures: commercial buildings, factories, houses, public locals, schools and so on.
KNX can be used in all the applications and functions for the building automations: from lighting to control dampers, to the security, to the heating monitoring, to the conditioning, to the hydric control and alarms, to energy management and so on.
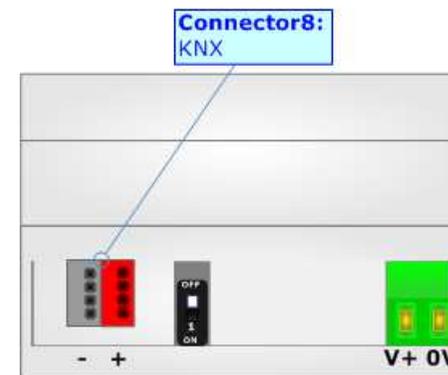

Characteristics	Description TP1-256
Medium	Shielded Twisted Pair
Topology	Linear, Star, Tree or mixed
Baudrate	9600 bps
Device supplying	Normal: bus powered devices Optional: remote powered devices
Device power consumption	3 mA- 12 mA
Power Supply Unit (PSU)	DC 30 V
Number of PSU's per physical Segment	Max. 2
Number of connectable devices per physical Segment	Max. 256
Number of addressable devices per physical Segment	Max. 255
Total cable length per physical Segment	Max. 1000 m
Distance between two devices	Max. 700 m

(*) Taken from KNX specifications

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ETHERNET:

The Ethernet connection must be made using Connector2 of HD67628-KNX-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/PLC/other is recommended the use of a cross cable.

Industrial Electronic Devices
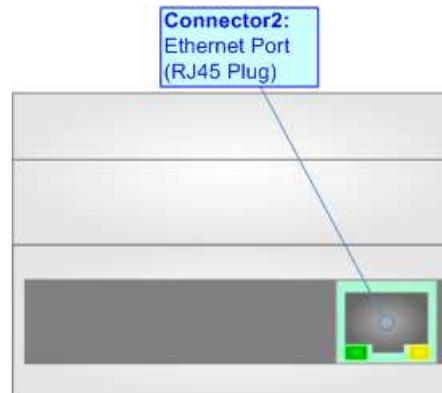
USE OF COMPOSITOR SW67628:

To configure the Converter, use the available software that runs with Windows called SW67628. 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; 32/64bit).

When launching the SW67628, the window below appears (Fig. 2).
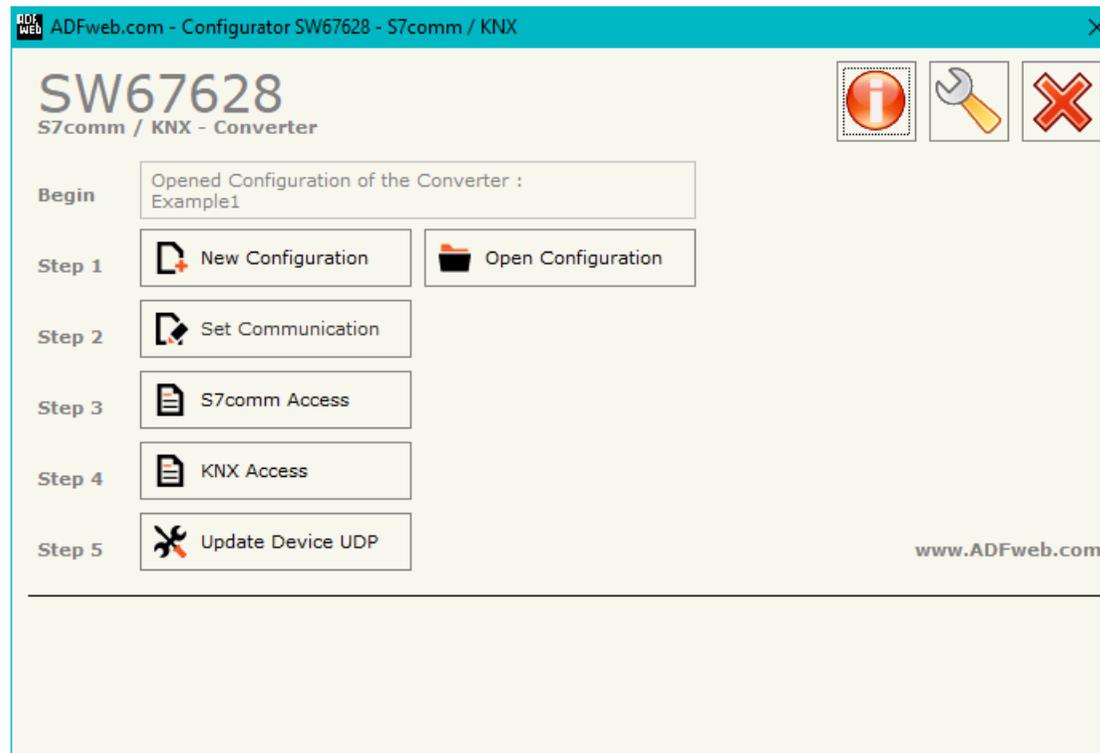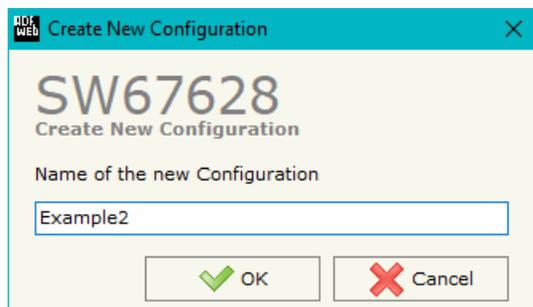
Note:
It is necessary to have installed .Net Framework 4.


Figure 2: Main window for SW67628

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 "S7comm / KNX - 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**".
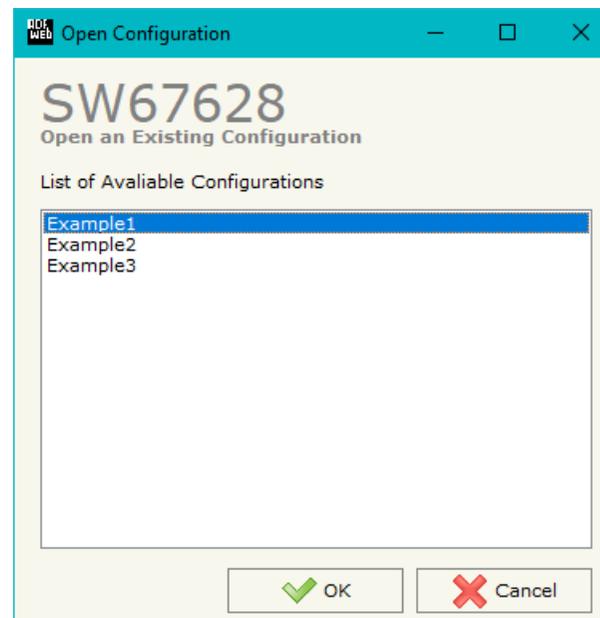
SOFTWARE OPTIONS:

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.
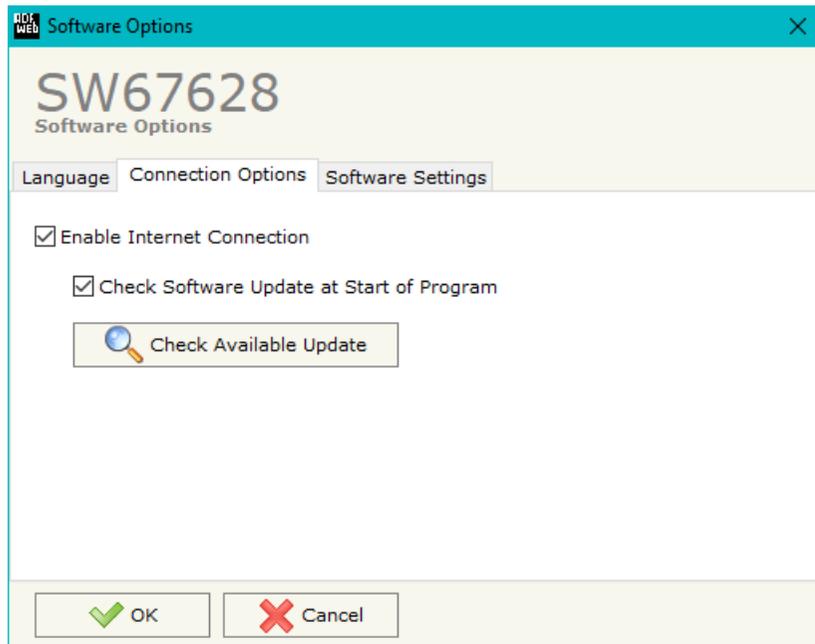
In the section "Connection Options", it is possible to check if there are some updatings of the software compositor in ADFweb.com website.
Checking the option "**Check Software Update at Start of Program**", the SW67628 check automatically if there are updatings when it is launched.

Software Options

SW67628
Software Options

Language | Connection Options | Software Settings

☐ Jump into next field in the tables by pressing the Enter Key

☐ Enable Auto Size of Table Columns by Double Click

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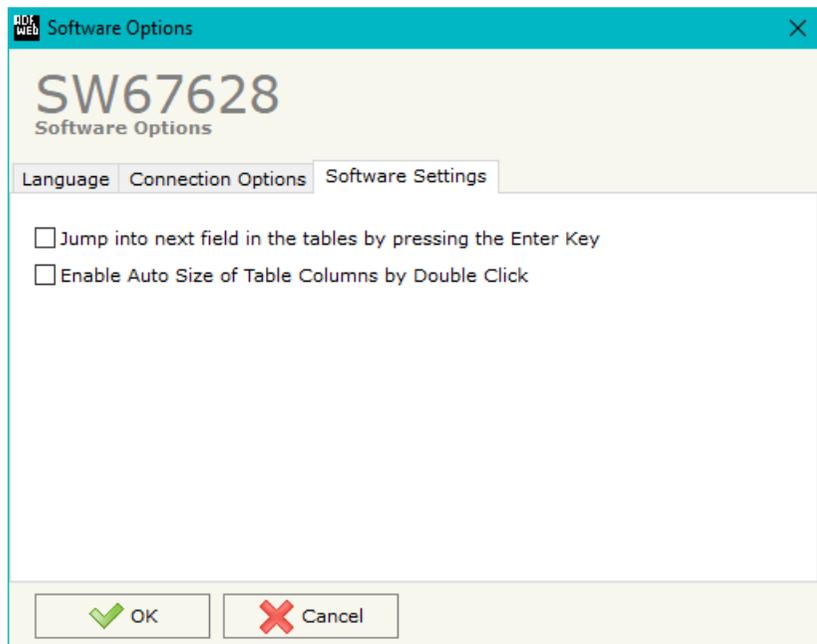
In the section "Software Settings", it is possible to enable/disable some keyboard's commands for an easier navigation inside the tables contained in the different sections of the software.

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SET COMMUNICATION:

This section define the fundamental communication parameters of two buses, KNX and S7comm.

By Pressing the "**Set Communication**" button from the main window for SW67628 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The means of the fields for "S7comm" are:

- In the fields "**IP ADDRESS**" the IP address for S7comm side of the converter is defined;
- In the fields "**SUBNET Mask**" the SubNet Mask for S7comm side of the converter is defined;
- In the fields "**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.

The means of the fields for "KNX" are:

- In the field "**Type**" the type of KNX is defined (fixed to 'KNX TP');
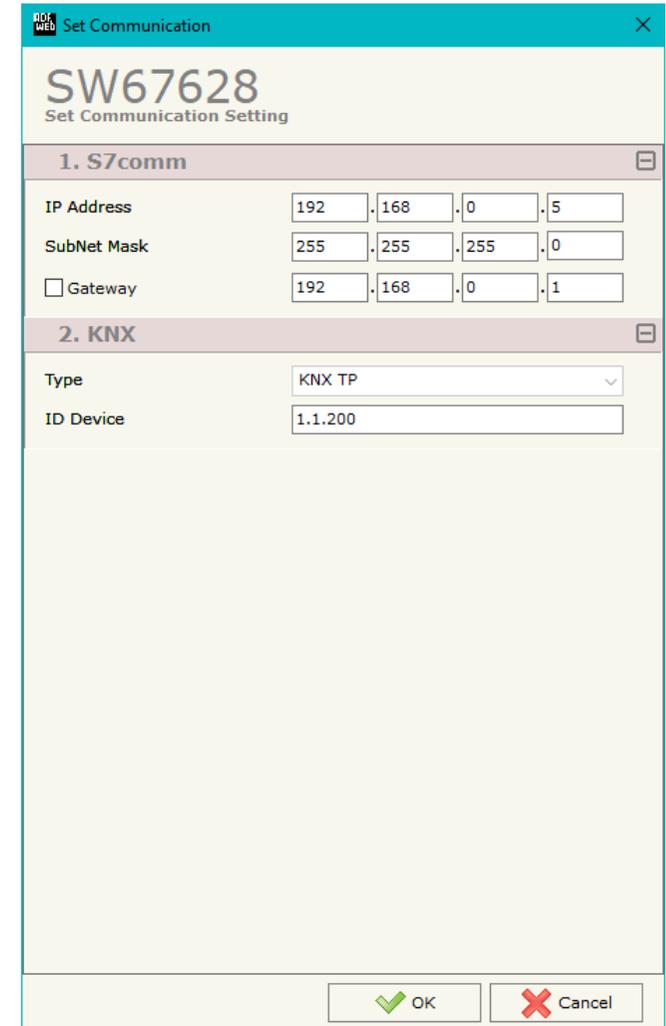- In the field "**ID Device**" the ID of the KNX side of the converter is defined.

Figure 3: "Set Communication" window

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S7COMM ACCESS:

By Pressing the "**S7comm Access** " button from the main window of SW67628 (Fig. 2), the window "Set S7comm Access" appears (Fig. 4). The window is divided in two parts, the "**S7comm Read**" that contains the data that the converter reads from the S7comm servers and "**S7comm Write**" that contains the data that the converter writes into the S7comm servers.
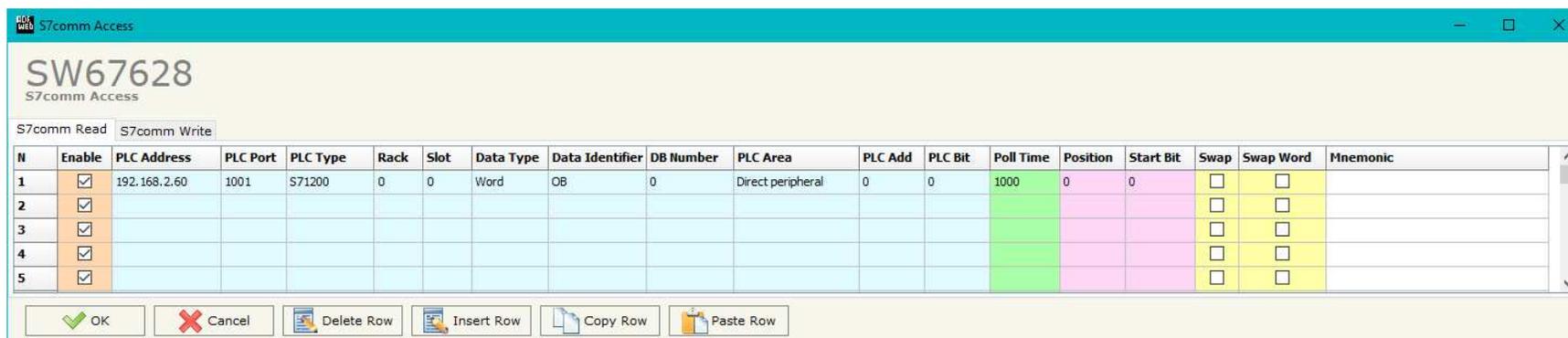

Figure 4a: "S7comm Access → S7comm Read" window

The means of the fields in the window "S7comm Read" are the following:

+ In the field "**PLC Address**" the IP address of the PLC that contains the data to be read is defined;
+ In the field "**PLC Port**" the port used for S7comm communication is defined;
+ In the field "**PLC Type**" the family of the PLC is defined;
+ In the field "**Rack**" the Rack's ID of the PLC is defined;
+ In the field "**Slot**" the Slot's ID is defined;
+ In the field "**Data Type**" the data format of the variable to read is defined;
+ In the field "**Data Identifier**" the identifier of the variable to read is defined;
+ In the field "**PLC Area**" the memory area where the data is located inside the PLC is defined;
+ In the field "**PLC Add**" the starting memory address where the data is located is defined;
+ In the field "**PLC Bit**" the starting bit of the selected PLC Address is defined;
+ In the field "**Poll Time**" the frequency of the request is defined (in ms);
+ In the field "**Position**" the starting byte of the internal memory array from which mapping the data read is defined;

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- In the field "**Start Bit**" is used for the "Bit" data. It is possible to select the bit of the selected Position where mapping the data;
- If the field "**Swap**" is checked, the bytes' order is reversed;
- If the field "**Swap Word**" is checked, the words' order is reversed;
- In the field "**Mnemonic**" a description of the data inserted in the row is defined.
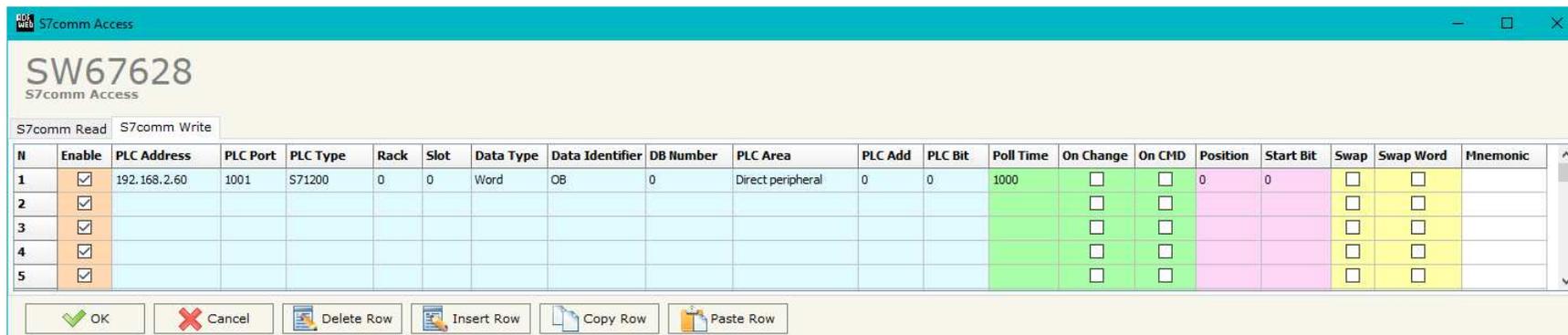
Figure 4b: "S7comm Access → S7comm Write" window

The means of the fields in the window "S7comm Read" are the following:

- In the field "**PLC Address**" the IP address of the PLC that contains the data to be read is defined;
- In the field "**PLC Port**" the port used for S7comm communication is defined;
- In the field "**PLC Type**" the family of the PLC is defined;
- In the field "**Rack**" the Rack's ID of the PLC is defined;
- In the field "**Slot**" the Slot's ID is defined;
- In the field "**Data Type**" the data format of the variable to read is defined;
- In the field "**Data Identifier**" the identifier of the variable to read is defined;
- In the field "**PLC Area**" the memory area where the data is located inside the PLC is defined;
- In the field "**PLC Add**" the starting memory address where the data is located is defined;
- In the field "**PLC Bit**" the starting bit of the selected PLC Address is defined;
- In the field "**Poll Time**" the frequency of the request is defined (in ms);
- By checking the field "**On Change**" the S7comm write request is sent only if KNX data are changed;
- By checking the field "**On CMD**" the S7comm write request is sent when a KNX writing for the selected variable is received;
- In the field "**Position**" the starting byte of the internal memory array from which taking the data to write is defined;
- The field "**Start Bit**" is used for the "Bit" data. It is possible to select the bit of the selected Position from which taking the data;
- If the field "**Swap**" is checked, the bytes' order is reversed;
- If the field "**Swap W**" is checked, the words' order is reversed;
- In the field "**Mnemonic**" a description of the data inserted in the row is defined.

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KNX ACCESS:

By pressing the "**KNX Access**" button from the main window for SW67628 (Fig. 2) the "KNX Set Access" window appears (Fig. 5).

The means of the fields are:

+ If the field "**Enable**" is checked, the KNX message is enabled;

+ In the field "**Source Address**" the Source Address to assign to the KNX message is defined;

N	Enable	Source Add	Dest/Group	APCI	Priority	Format	Extended	ReTest	OnCMD	OnChange	OnTimer	Poll Time	Position	Bit Mode	Length	Mnemonic
1	☑	2.4.8	31/7/255	4	Normal	None	☐	☐	☐	☐	☑	1000	0	No	2	
2	☑						☐	☐	☐	☐	☐					
3	☑						☐	☐	☐	☐	☐					
4	☑						☐	☐	☐	☐	☐					
5	☑						☐	☐	☐	☐	☐					

Figure 5: "KNX Set Access" window

+ In the field "**Dest/Group** the Group address (2 level structure, 3 level structure or free address structure) or the device address is defined. In case of Group address, the levels must be separated by '/', in case of Device address, the parts of the address must be separated by '.';

+ In the field "**APCI**" the APCI of the KNX message is defined. You can choose between the following:
    o Read: it is used to send a reading request to a KNX device;
    o Write: it is used to send a writing request to a KNX device;
    o Specific value (edited manually).

+ In the field "**Priority**" the Priority of the KNX message is defined. You can choose between the following:
    o System (Highest);
    o Urgent;
    o Normal;
    o Low (Lowest).

+ In the field "**Format**" the data format of the KNX message is defined;

+ If the field "**Extended**" is checked, the extended format of the KNX message is used;

+ If the field "**ReTest**" is checked, the KNX message is re-sent in case of not correct response;

+ If the field "**OnCMD**" is checked, the KNX request is sent when a S7comm   message is received;

+ If the field "**On Change**" is checked, the gateway sends the KNX command when the data on S7comm change the value;

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- If the field "**On Timer**" is checked, the gateway sends the KNX command cyclically;
- In the field "**Poll Time**" the delay in ms between two KNX commands is defined (if "On Timer" is checked);
- In the field "**Position**" insert the address of the internal array where placing the information;
- In the field "**Bit Mode**" insert the start bit of the first byte of the field "Position" where start to insert the data read;
- In the field "**Lenght**" the dimension of the KNX message is defined;
- In the field "**Mnemonic**" the description for the request is defined.

Note:
    If the field "On change" is checked and the "Poll Time" is different from 0, the converter sends the KNX command cyclically and also when the data is changed.

Note:
    If the field "OnCMD", "OnChange" and "OnTimer" are not checked, the converter only sniffs the bus in order to monitor the status of the KNX message.

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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.

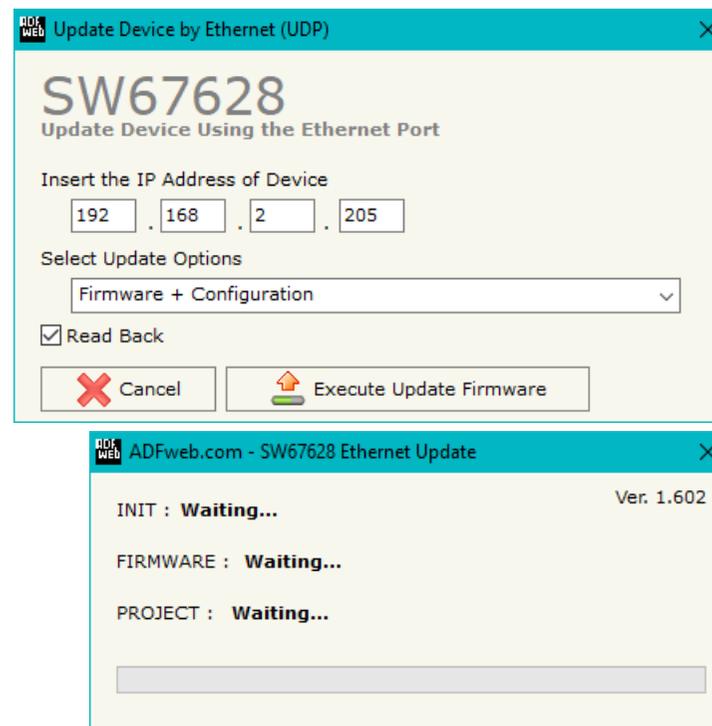At this point the configuration/firmware on the device is correctly updated.

Figure 6: "Update device" windows

Note:

When you receive the device, for the first time, you also have to update the Firmware in the HD67628 device.

Warning:

If Fig. 7 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 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;
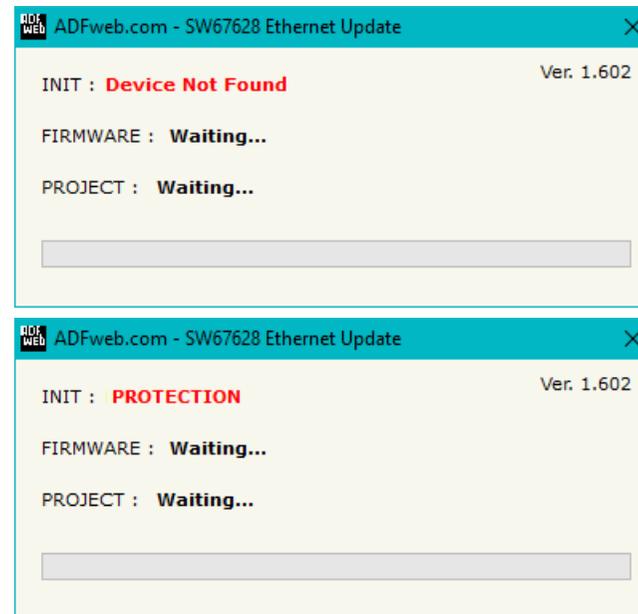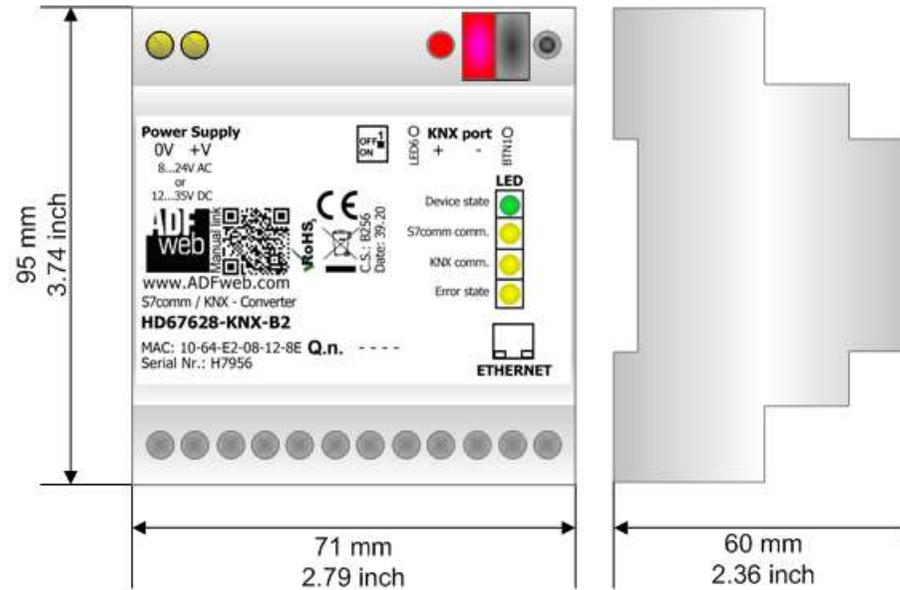- Pay attention at Firewall lock.

Figure 7: "Error" window

Warning:

In the case of HD67628 you have to use the software "SW67628": www.adfweb.com\download\filefold\SW67628.zip.

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MECHANICAL DIMENSIONS:

Figure 8: Mechanical dimensions scheme for HD67628-KNX-B2

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ORDERING INFORMATIONS:

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

HD67628-KNX – B 2

Connectors Type
2: 5mm Screw Terminal

Enclosure Type
B: 4M, 35mm DIN Rail mounting

Device Family
HD67628-KNX: S7comm / KNX - Converter
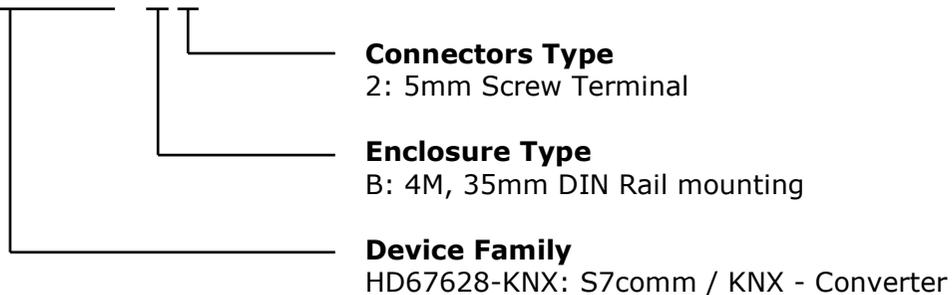
Order Code: **HD67628-KNX-B2**   **-**   S7comm / KNX - Converter

ACCESSORIES:

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

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

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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.

ADFweb.com Srl – IT31010 – Mareno – Treviso   *INFO:* www.adfweb.com   *Phone +39.0438.30.91.31*

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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