User Manual

Revision 1.010
English

BACnet slave / PROFINET slave - Converter

(Order Code: HD67679-IP-A1,
HD67679-MSTP-A1, HD67679-MSTP-B2,
HD67679-PTP-A1, HD67679-PTP-B2)

For Website information:
www.adfweb.com?Product=HD67679

For Price information:
www.adfweb.com?Price=HD67679-IP-A1
www.adfweb.com?Price=HD67679-MSTP-A1
www.adfweb.com?Price=HD67679-MSTP-B2
www.adfweb.com?Price=HD67679-PTP-A1
www.adfweb.com?Price=HD67679-PTP-B2

Benefits and Main Features:

- Very easy to configure
- Temperature range: -40°C/+85°C (-40°F/+185°F)

For others PROFINET products see also the following link:

Converter BACnet to

www.adfweb.com?Product=HD67056	**(M-Bus Master)**
www.adfweb.com?Product=HD67671	**(Modbus Master)**
www.adfweb.com?Product=HD67672	**(Modbus Slave)**
www.adfweb.com?Product=HD67673	**(Modbus TCP Master)**
www.adfweb.com?Product=HD67674	**(Modbus TCP Slave)**
www.adfweb.com?Product=HD67675	**(PROFIBUS Master)**
www.adfweb.com?Product=HD67676	**(PROFIBUS Slave)**
www.adfweb.com?Product=HD67677	**(CAN)**
www.adfweb.com?Product=HD67678	**(CANopen)**
www.adfweb.com?Product=HD67679	**(PROFINET)**
www.adfweb.com?Product=HD67680	**(DeviceNet Master)**
www.adfweb.com?Product=HD67681	**(DeviceNet Slave)**
www.adfweb.com?Product=HD67682	**(EtherNet/IP)**
www.adfweb.com?Product=HD67683	**(NMEA 2000)**
www.adfweb.com?Product=HD67684	**(Ethernet)**

Do you have an your customer protocol?
www.adfweb.com?Product=HD67003

Do you need to choose a device? do you want help?
www.adfweb.com?Cmd=helpme

User Manual

INDEX:

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	10/06/2013	Fl	All	First Release
1.010	15/06/2015	Fl	All	Software changed (1.100)

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

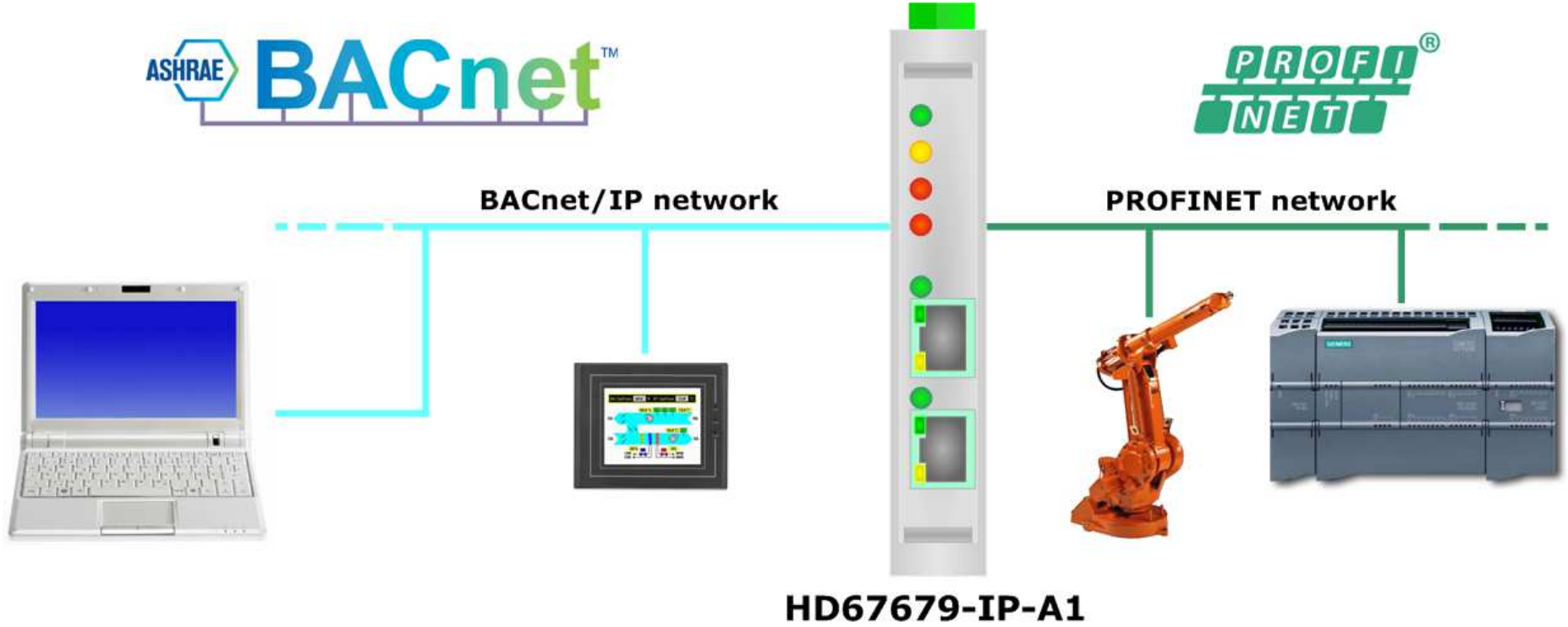
The device is state-of-the-art and is safe. The instruments can represent a potential hazard if they are inappropriately installed and operated by untrained personnel. These instructions refer to residual risks with the following symbol:

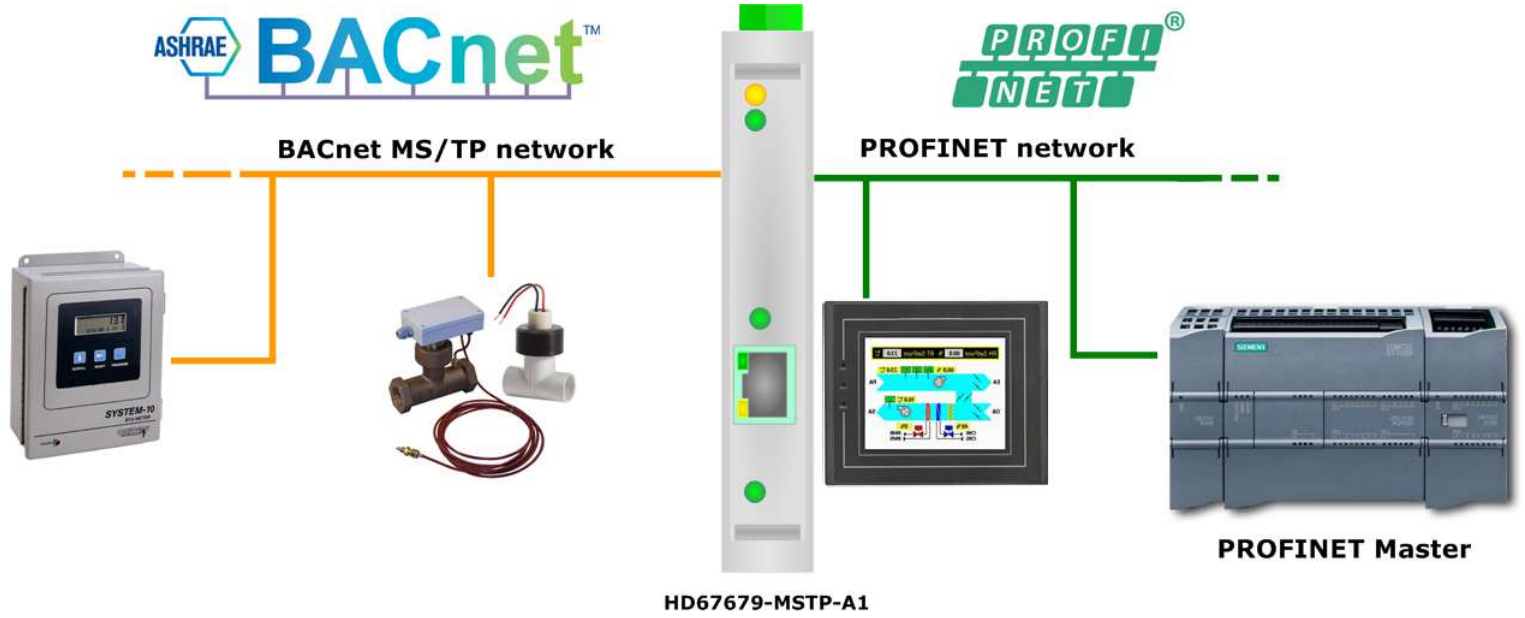
This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

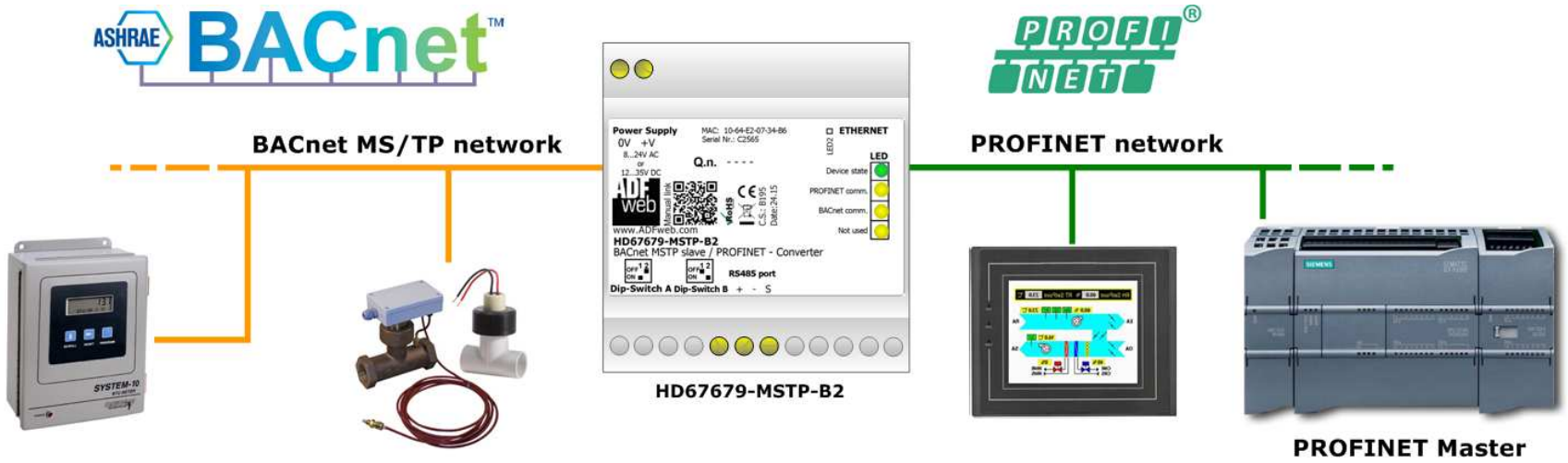
CE CONFORMITY

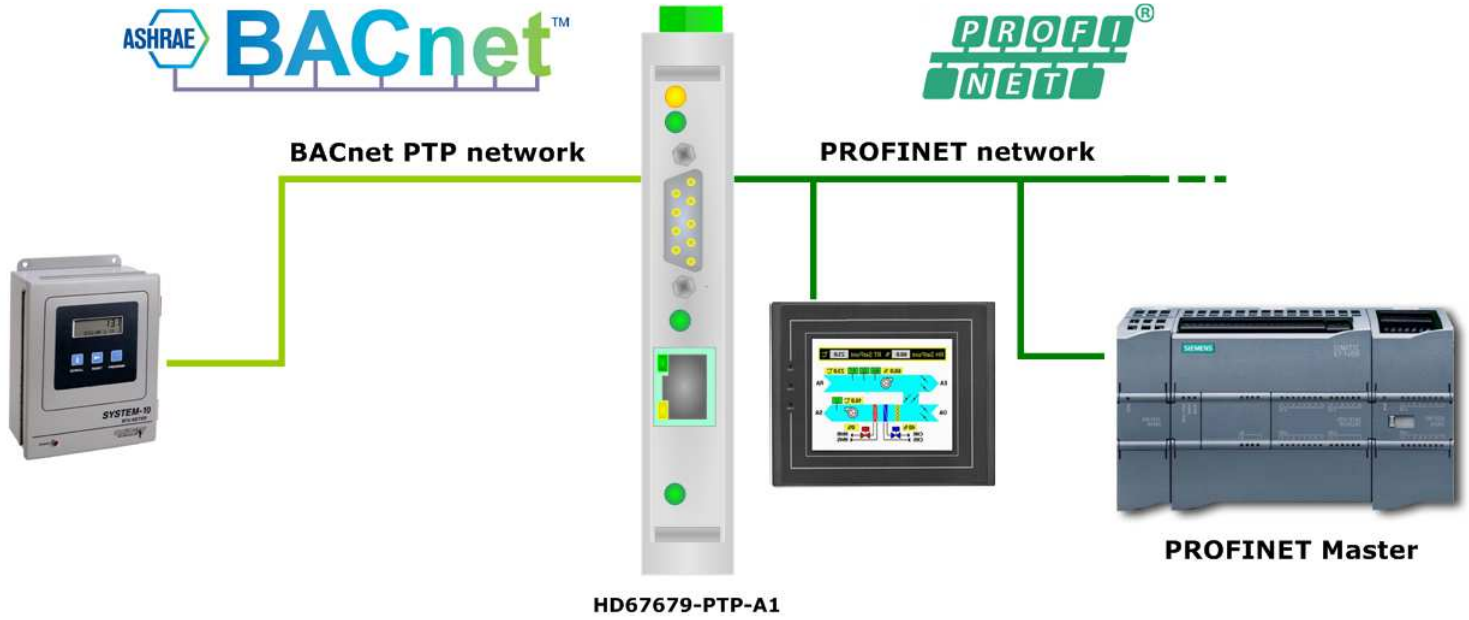
The declaration is made by our company. You can send an email to support@adfweb.com or give us a call if you need it.

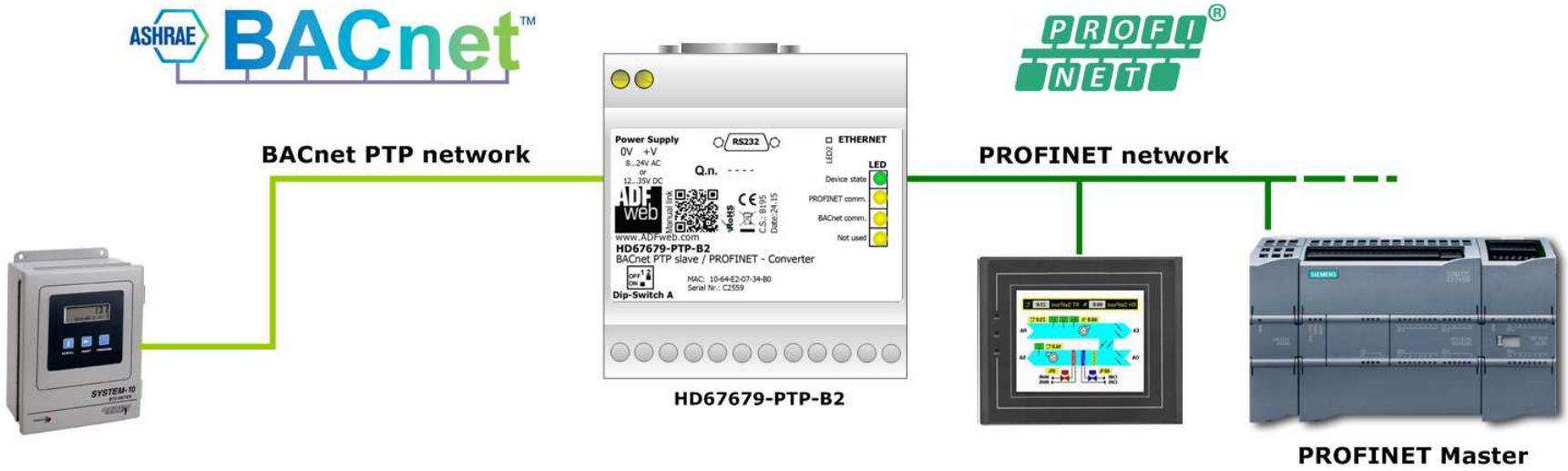
EXAMPLES OF CONNECTION:




BACnet MS/TP network
PROFINET network
PROFINET Master
HD67679-MSTP-A1


BACnet MS/TP network
PROFINET network
PROFINET Master
HD67679-MSTP-B2
Power Supply
ETHERNET
LED
Device state
PROFINET comm.
BACnet comm.
Not used
www.ADFweb.com
HD67679-MSTP-B2
BACnet MSTP slave / PROFINET - Converter
RS485 port
Dip-Switch A
Dip-Switch B


BACnet PTP network
PROFINET network
PROFINET Master
HD67679-PTP-A1


BACnet PTP network
PROFINET network
PROFINET Master
HD67679-PTP-B2
Power Supply
RS232
ETHERNET
HD67679-PTP-B2
BACnet PTP slave / PROFINET - Converter
Dip-Switch A

CONNECTION SCHEME:

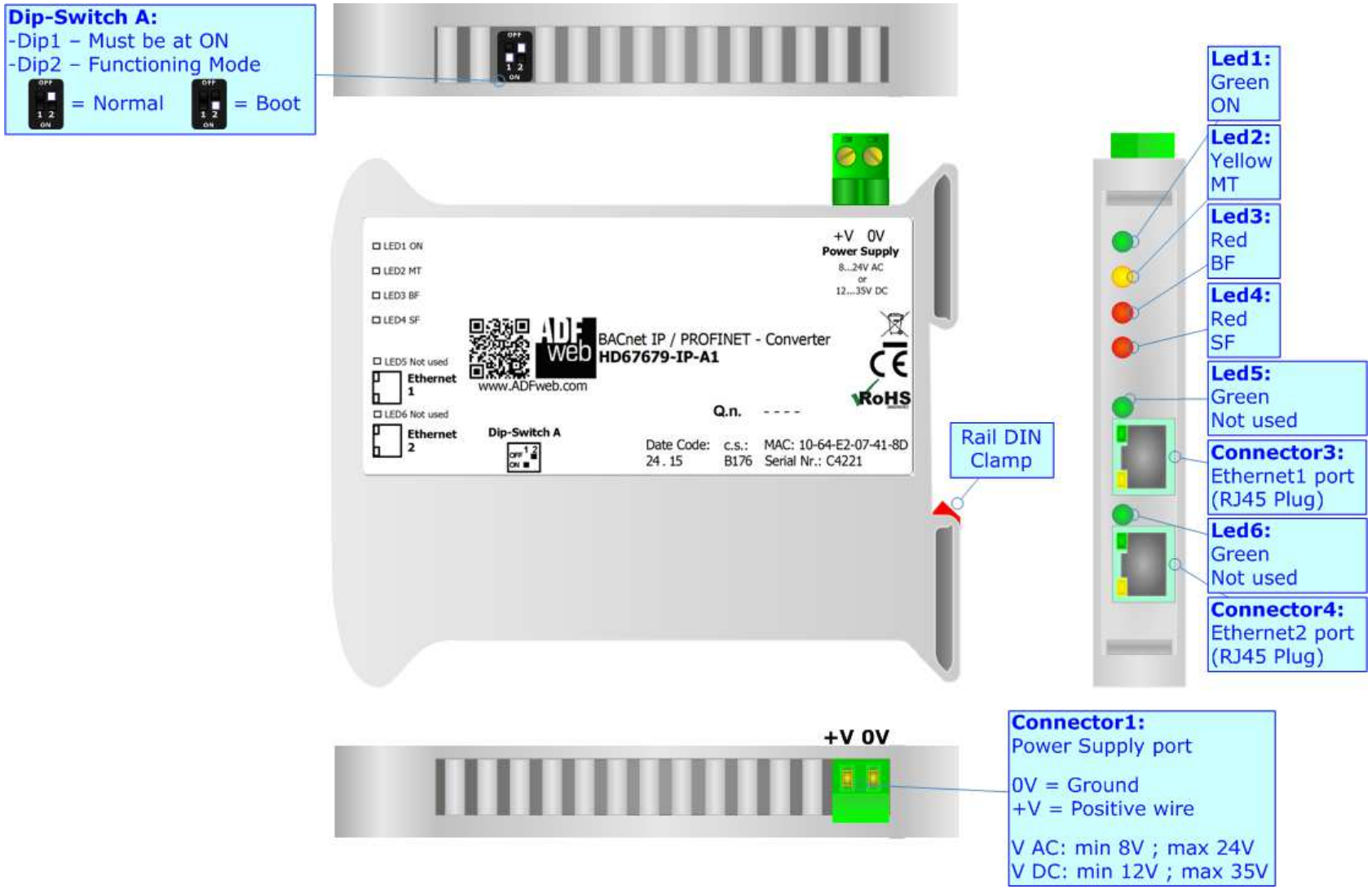


Figure 1a: Connection scheme for HD67679-IP-A1

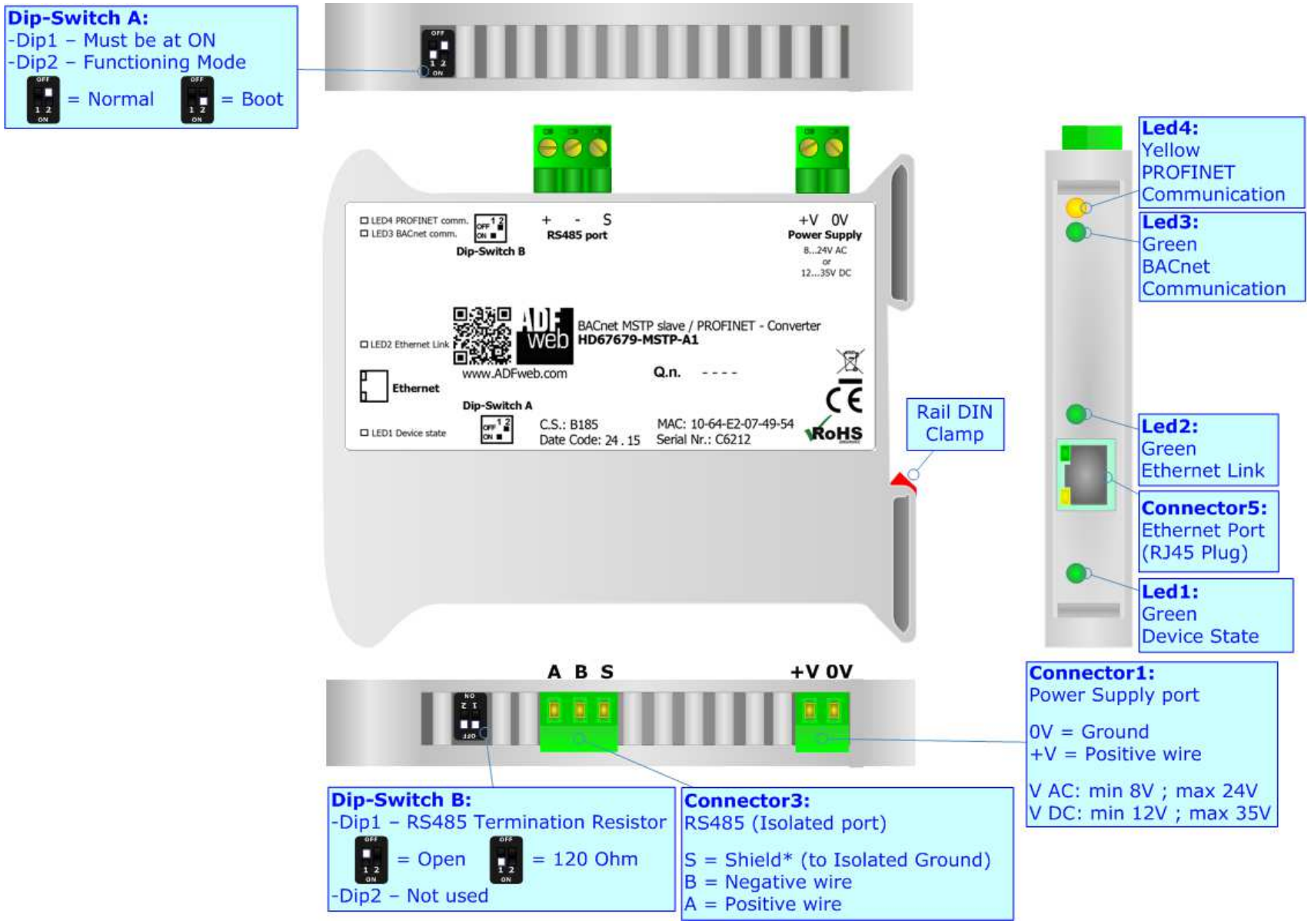


Figure 1b: Connection scheme for HD67679-MSTP-A1

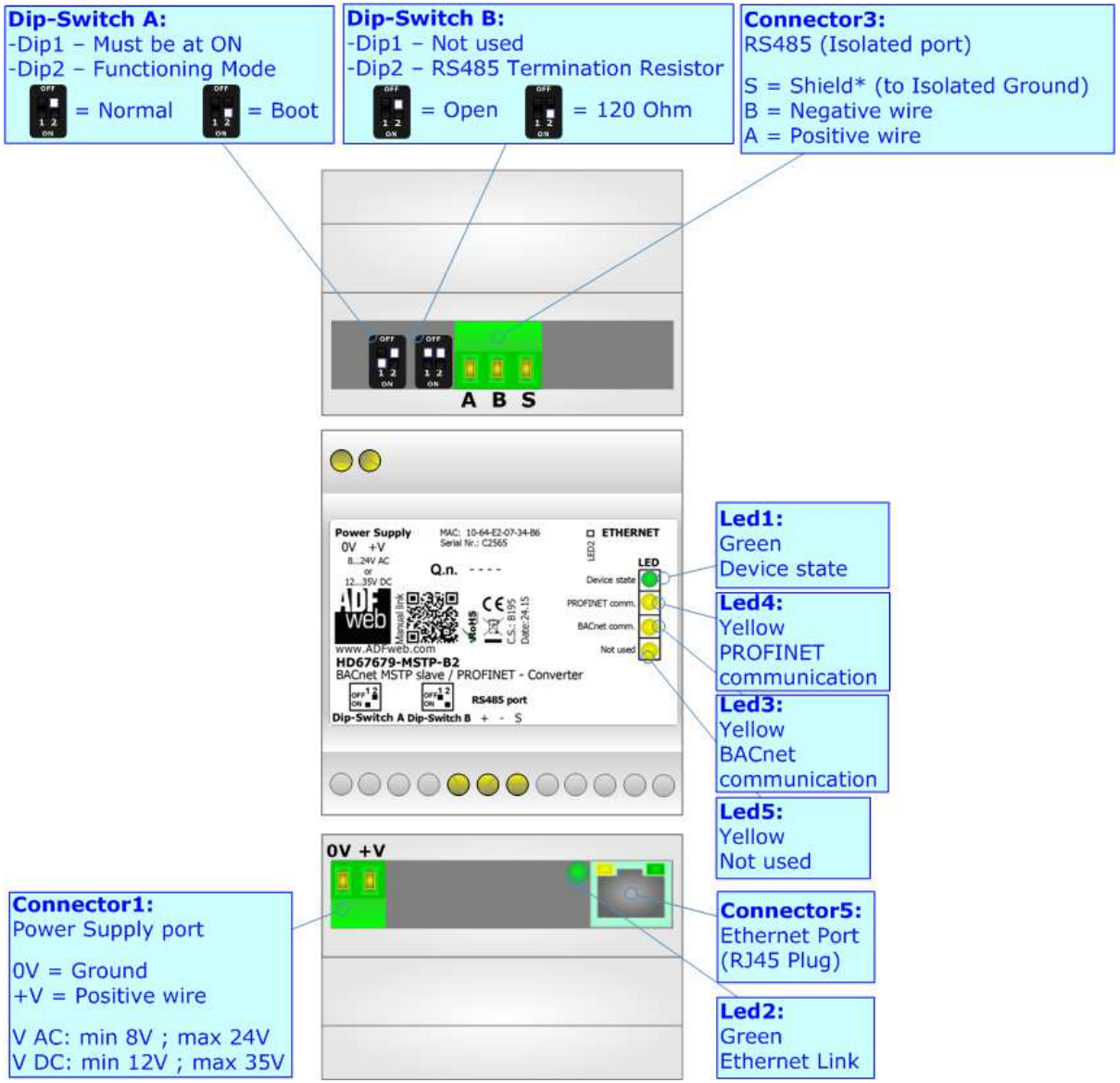


Figure 1c: Connection scheme for HD67679-MSTP-B2

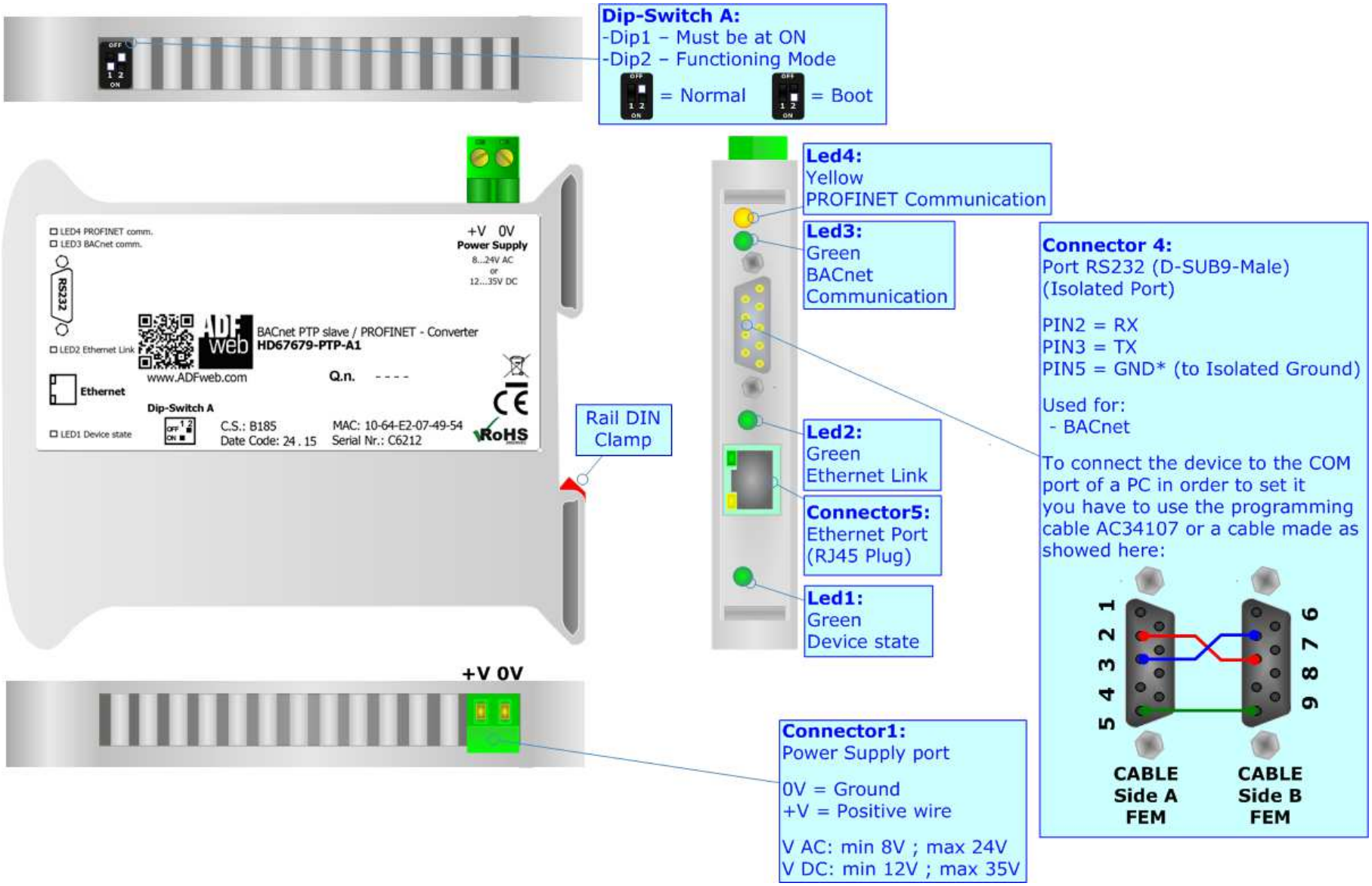


Figure 1d: Connection scheme for HD67679-PTP-A1

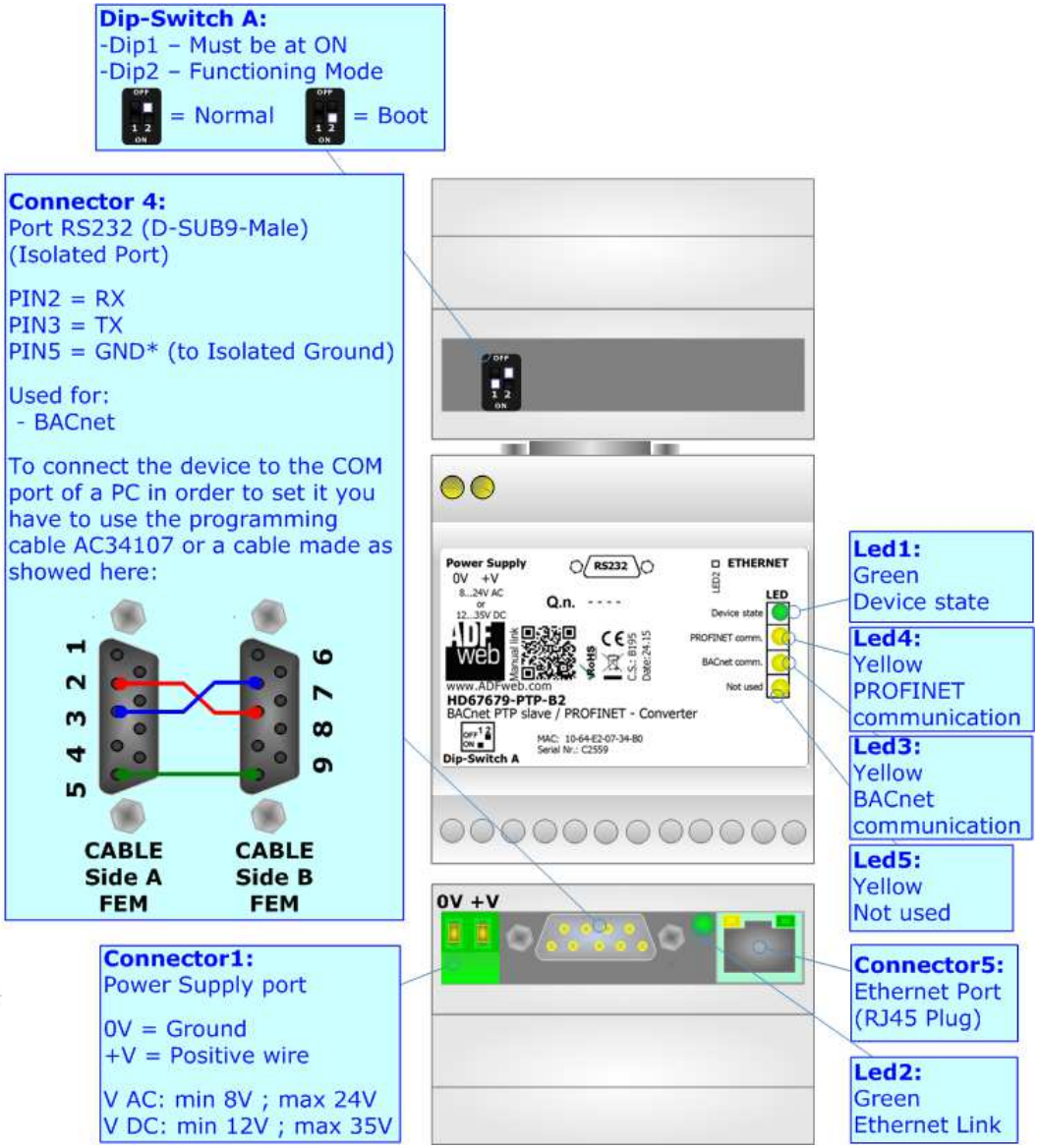


Figure 1e: Connection scheme for HD67679-PTP-B2

CHARACTERISTICS:

The HD67679-xxx-A1 and HD67679-xxx-B2 are BACnet slave / PROFINET slave Converter.

It allows the following characteristics:

- Up to 1024 BACnet objects (Read+Write);
- Two-directional information between BACnet and PROFINET;
- 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 SW67679 software on your PC in order to perform the following:

- Define the parameter of BACnet line;
- Define the parameter of PROFINET line;
- Define BACnet objects that contains the data arrived from a Master PROFINET (Analog Input, Analog Value, Binary Input, Binary Value, Large Analog Value, Positive Integer Value, Integer Value, Multi State Input, Multi State Value, Life Safety Point, Life Safety Zone, Access Door, Accumulator);
- Define BACnet objects that contains the data to send to the Master PROFINET (Analog Output, Analog Value, Binary Output, Binary Value, Large Analog Value, Positive Integer Value, Integer Value, Multi State Output, Multi State Value, Access Door);
- 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:

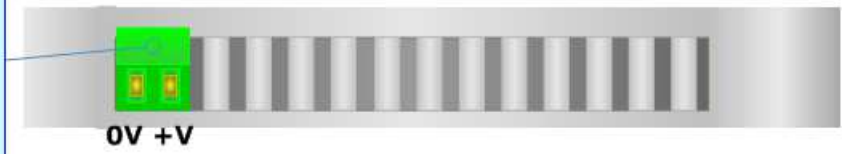
Device	Consumption [W/VA]
HD67679-IP-A1	3.5
HD67679-MSTP-A1/B2	3.5
HD67679-PTP-A1/B2	3.5

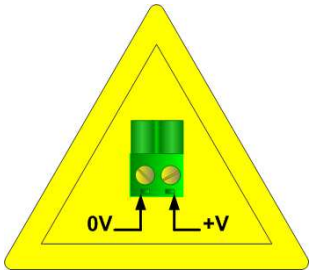
Caution: Not reverse the polarity power

Connector1:
Power Supply port

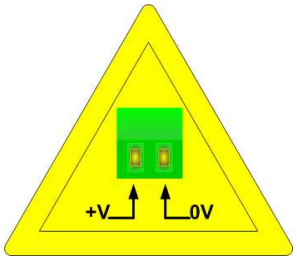
0V = Ground
+V = Positive wire

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





HD67679-IP-A1
HD67679-MSTP-A1
HD67679-PTP-A1



HD67679-MSTP-B2
HD67679-PTP-B2

FUNCTION MODES:

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

- The first, with 'Dip2 of Dip-Switch A' at "OFF" position, is used for the normal working of the device.
- The second, with 'Dip2 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.

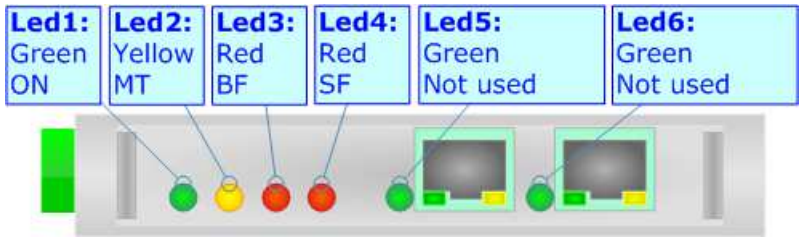
According to the functioning mode, the LEDs will have specifics functions, see 'LEDS' section.

Warning:
Dip1 of 'Dip-Switch A' must be at ON position for working even if the Ethernet cable isn't inserted.

LEDS (for HD67679-IP-A1):

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

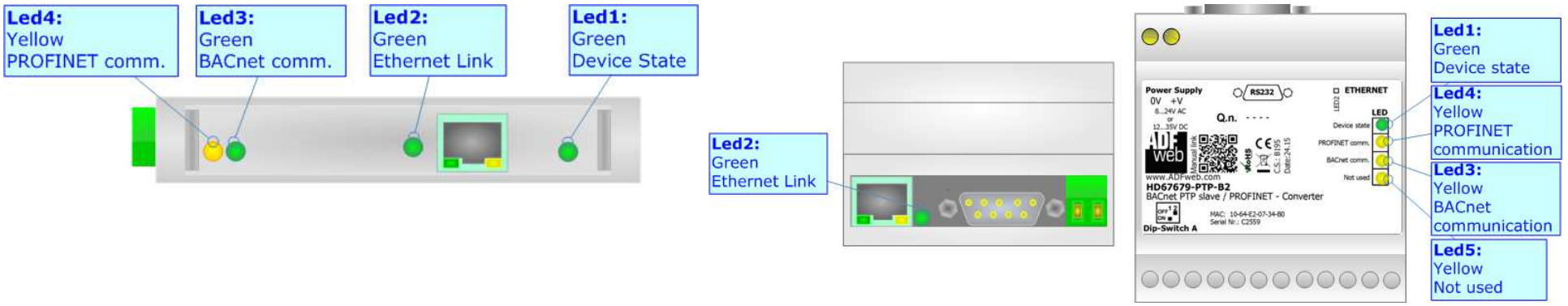
LED	Normal Mode	Boot Mode
1: ON [supply voltage] (green)	**ON:** Device powered **OFF:** Device not powered	**ON:** Device powered **OFF:** Device not powered
2: MT [maintenance display] (yellow)	**ON:** Device not able to communicate **OFF:** No maintenance are present	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
3: BF [bus fault] (red)	**ON:** The Ethernet connection is defective; the IP address exists several times in the network; the own NameOfStation exists several times in the network; no IP address has been set **Flashing:** At least one configured AR is no longer in the data exchange **OFF:** No errors are present	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: SF [group error] (red)	**ON:** At least one AR is not in the data exchange **OFF:** No errors are present	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
5: Not used (green)	/	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
6: Not used (green)	/	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress



LEDS (for HD67679-MSTP-A1/B2 and HD67679-PTP-A1/B2):

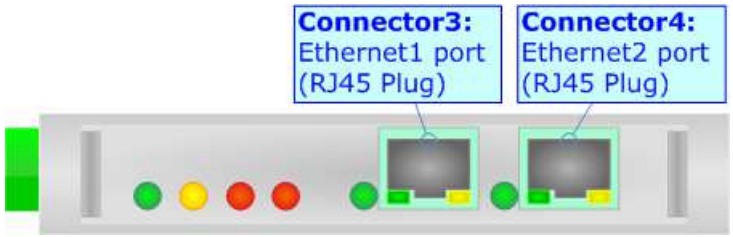
The device has got four LEDs (five the –B2 version) that are used to give information about the functioning status.
The various meanings of the LEDs are described in the table below.

LED	Normal Mode	Boot Mode
1: Device State	Blinks slowly (~1Hz)	**ON:** Device powered **OFF:** Device not powered
2: Ethernet Link	**ON:** Ethernet cable connected **OFF:** Ethernet cable disconnected	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
3: BACnet comm.	Blinks quickly when receive BACnet requests	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
4: PROFINET comm.	Blinks quickly when is in communication with a master PROFINET	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress
5: Not Used	OFF	**Blinks quickly:** Boot state **Blinks very slowly (~0.5Hz):** update in progress



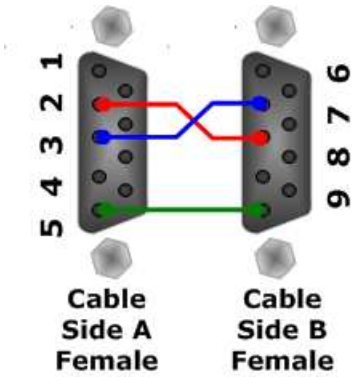
ETHERNET:

The BACnet/IP connection (HD67679-IP-A1), PROFINET connection and the updating of the Converter must be made using Connector3 and/or Connector4 of HD67679-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.



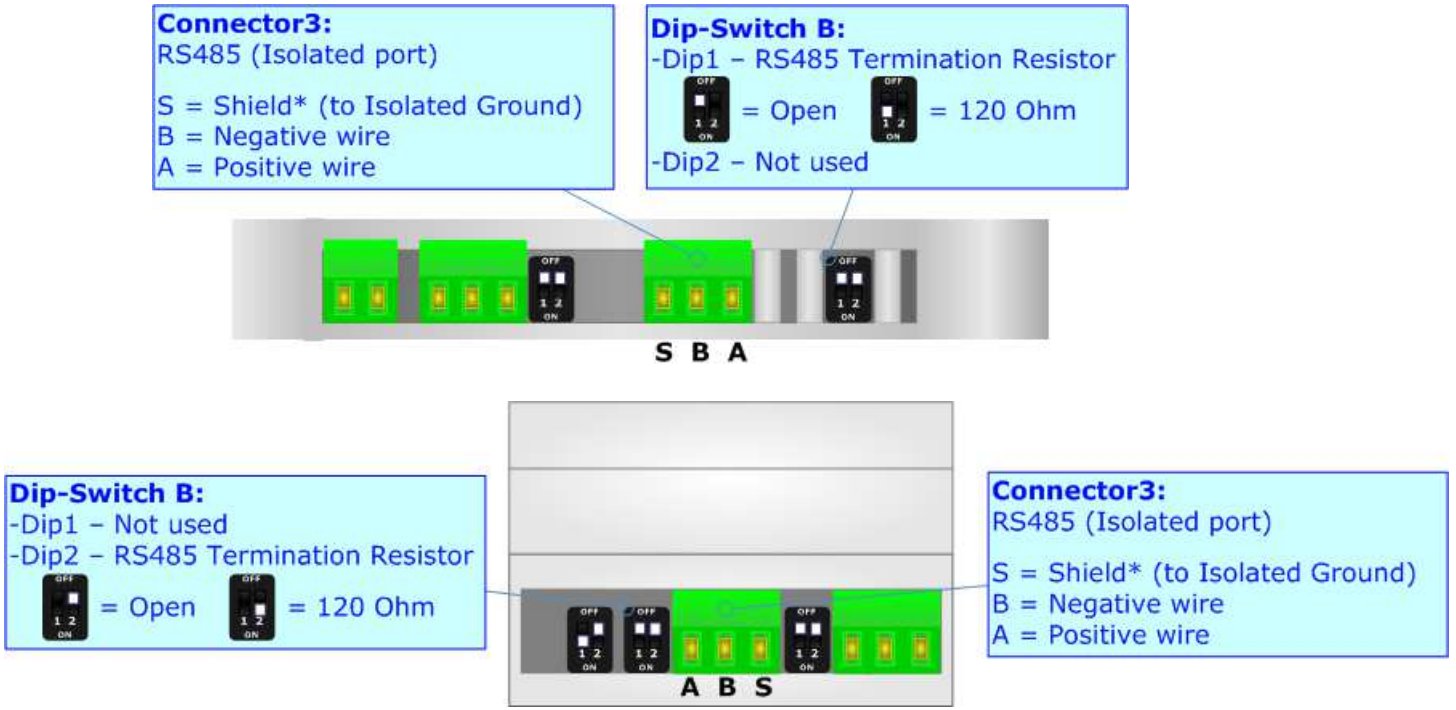
RS232 (HD67679-PTP-A1/B2):

The connection from RS232 socket to a serial port (example one from a personal computer) must be made with a NULL MODEM cable (a serial cable where the pins 2 and 3 are crossed).
It is recommended that the RS232 cable not exceed 15 meters.



RS485 (HD67679-MSTP-A1/B2):

To terminate the RS485 line with a 120Ω resistor it is necessary to put ON dip 1, like in figure.



The maximum length of the cable should be 1200m (4000 feet).

Here some codes of cables:

- Belden: p/n 8132 - 2x 28AWG stranded twisted pairs conductor + foil shield + braid shield;
- Belden p/n 82842 - 2x 24AWG stranded twisted pairs conductor + foil shield + braid shield;
- Tasker: p/n C521 - 1x 24AWG twisted pair conductor + foil shield + braid shield;
- Tasker: p/n C522 - 2x 24AWG twisted pairs conductor + foil shield + braid shield.

USE OF COMPOSITOR SW67679:

To configure the Converter, use the available software that runs with Windows called SW67679. 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; 32/64bit).

When launching the SW67679, the window below appears (Fig. 2).

Note:
It is necessary to have installed .Net Framework 4.

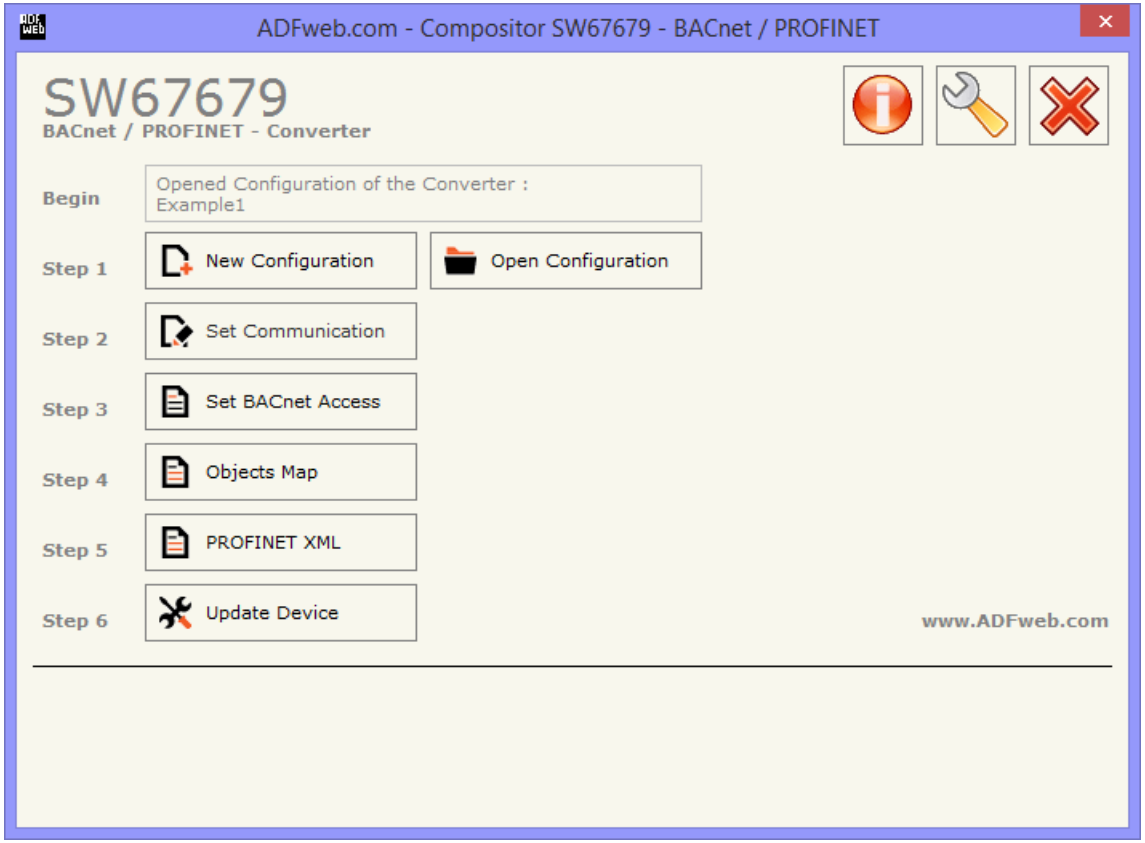
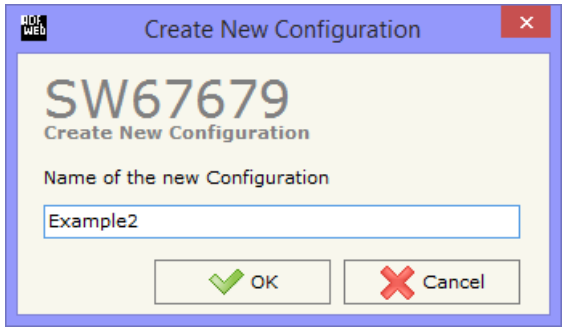


Figure 2: Main window for SW67679

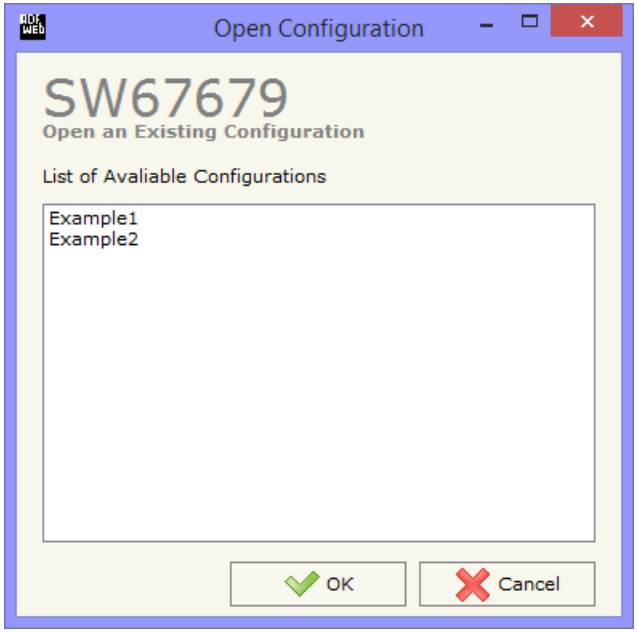
NEW CONFIGURATION / OPEN CONFIGURATION:

The "**New Configuration**" button creates the folder which contains the entire device's configuration.



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

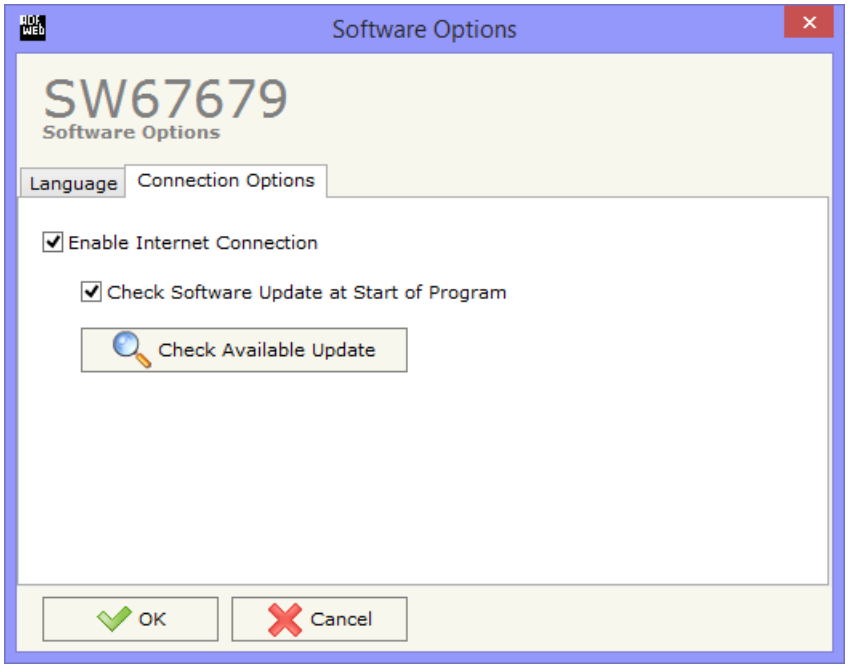
- To clone the configurations of a programmable "BACnet slave / PROFINET slave - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient 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 SW67679 check automatically if there are updatings when it is launched.

SET COMMUNICATION:

This section define the fundamental communication parameters of two buses, BACnet and PROFINET.

By Pressing the "**Set Communication**" button from the main window for SW67679 (Fig. 2) the window "Set Communication" appears (Fig. 3).

In the section "BACnet Type" is possible to select the type of BACnet to use from:

- BACnet/IP (use ethernet);
- BACnet MS/TP (use RS485);
- BACnet PTP (use RS232).

If selected "BACnet/IP" the means of the fields for "BACnet" are:

- In the fields "**IP ADDRESS**" insert the IP address that you want to give to the Converter;
- In the fields "**SUBNET Mask**" insert the SubNet Mask;
- In the fields "**GATEWAY**" insert the default gateway that you want to use. 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 "**Port**" the port number used for BACnet communication is defined. The default port used for BACnet communication is 47808, but is possible to insert any value (except 10000 and 10001);
- In the field "**BACnet Device Name**" is possible to assign a name to the BACnet node;
- In the field "**Device Identifier**" is possible to assign a number to the BACnet node (Used for the Device Identifier).

The means of the fields for the "PROFINET" section are the same for all types of BACnet:

- In the field "**Port**" the port used for PROFINET communication is defined. The port has a fixed value of 34964;
- In the field "**Number Byte Input**" is possible to define how many bytes the master PROFINET exchange with the converter (writeable by master PROFINET);
- In the field "**Number Byte Output**" is possible to define how many bytes the converter exchange with the master PROFINET(readable by master PROFINET).

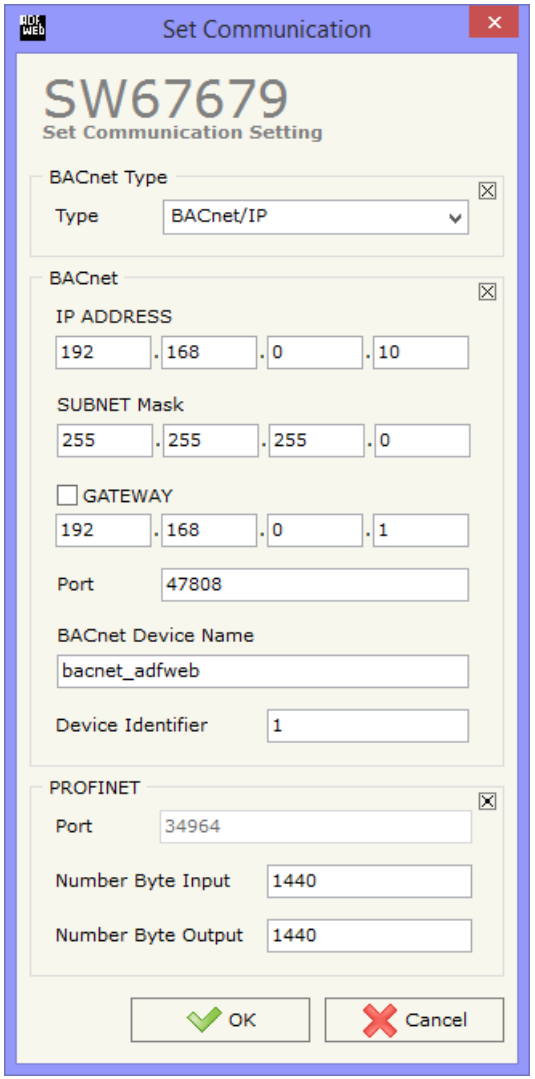


Figure 3: "Set Communication" window

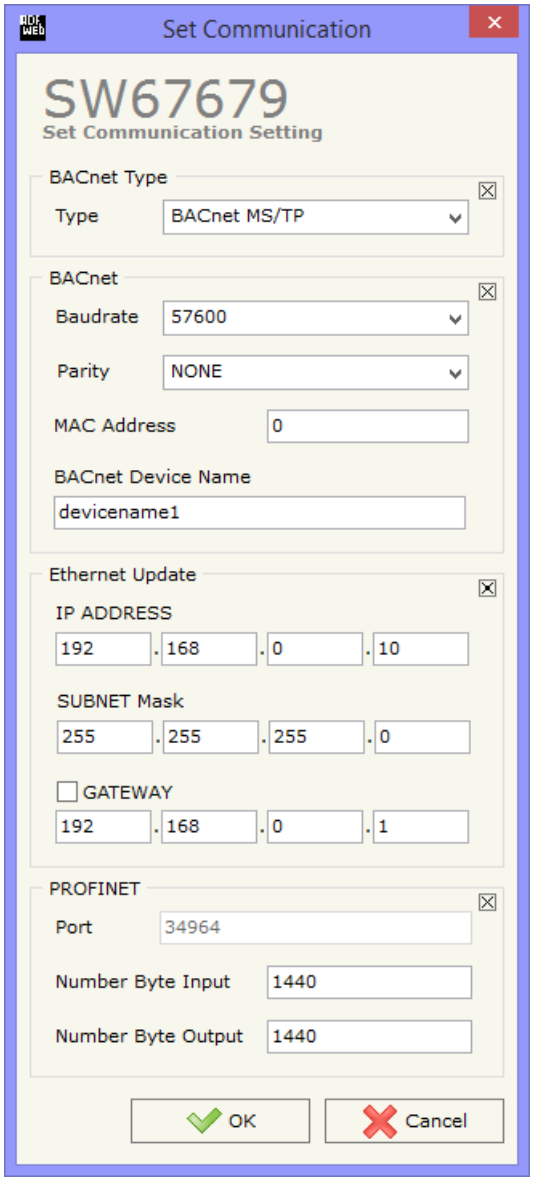
If selected "BACnet MS/TP" or "BACnet PTP" the means of the fields for "BACnet" are:

- In the field "**Baudrate**" it is possible to select the baudrate of the BACnet line (1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200);
- In the field "**Parity**" it is possible to select the parity of the line (None, Odd, Even);
- In the field "**BACnet Device Name**" is possible to insert the name to give to the BACnet node (maximum 17 characters);
- In the field "**MAC Address**" is possible to define the MAC of BACnet node (from 0 to 254);

The means of the fields for the "Ethernet Update" section are:

- In the fields "**IP ADDRESS**" insert the IP address that you want to give to the Converter;
- In the fields "**SUBNET Mask**" insert the SubNet Mask;
- In the fields "**GATEWAY**" insert the default gateway that you want to use. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net.

  These information are used for programming the Converter.



SET BACNET ACCESS:

By Pressing the "**Set BACnet Access**" button from the main window for SW67679 (Fig. 2) the window "BACnet Set Access" appears (Fig. 4).

The window is divided in two parts, the "BACnet in Read" that contains the BACnet objects readable by a BACnet Master (the PROFINET data associated to these objects are written by a PROFINET Master); and "BACnet in Write" that contains the BACnet objects writeable by a BACnet Master (the PROFINET data associated to these objects are readed by a PROFINET Master).

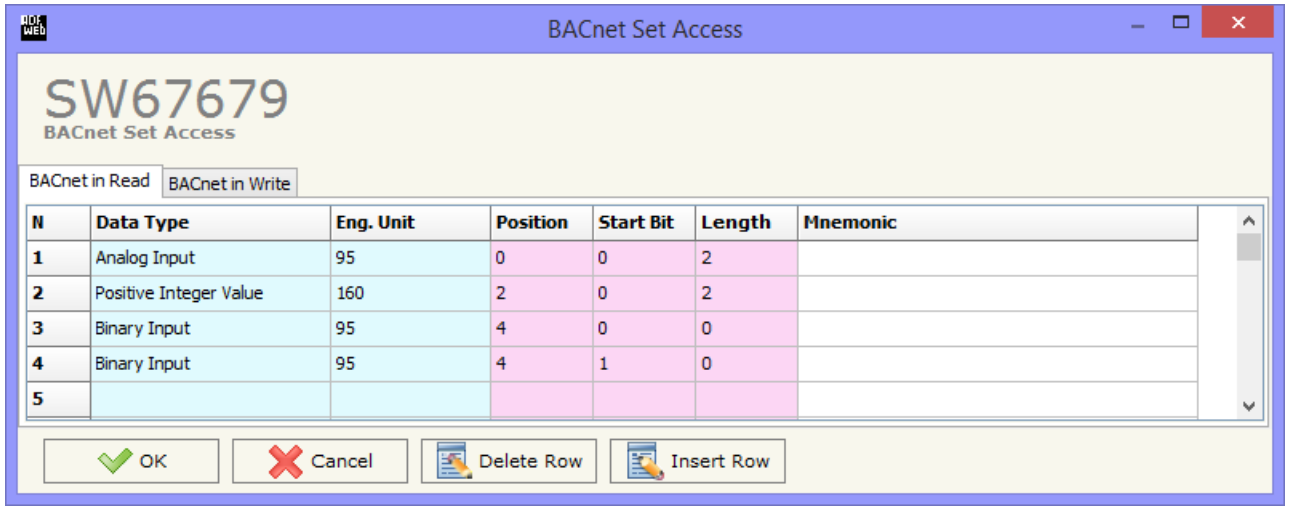


Figure 4: "BACnet Set Access" window

The meaning of the fields in the window are the follows:

- In the field "**Data Type**" is possible to select the BACnet object data type;
- In the field "**Eng. Unit**", with double click the window "*Select the BACnet Engineering Unit*" appears (Fig. 5);
- In the field "**Position**" is possible to select the position where take/save the data from a 1440 bytes array;
- The field "**Start Bit**" is used for the "Binary In" and "Binary Out" BACnet objects;
- The field "**Length**" is used for all the others BACnet objects (on "BACnet in Write" this field isn't editable).

Notes:

On "BACnet in Write" the dimensions (Length) of the variable is fixed. 'Analog Output' occupies 4 bytes, 'Positive Integer Value' occupies 4 bytes, 'Large Analog Value' occupies 8 bytes and 'Binary Out' occupies 1 byte.

The "BACnet in Write" object are also readable.

For writing the data, using 'Present_Value' property, is necessary to use the Type 'Real' for the 'Analog Output', Type 'Double' for the 'Large Analog Value', Type 'Unsigned' for the 'Positive Integer Value' and Type 'Enumerated' for the 'Binary Output'.

The "Mnemonic" field is readable like 'Object_Name' and 'Description' property of BACnet variable.

Is possible to insert directly the Unit (using its unique number) by compiling the "**Selected BACnet Engineering Unit**" field; or by selecting with the fields "**Select the Type**" and "**Select unit**" the Type/Unit desired. If the second way is used, is necessary to press the "**Select Engineering Unit**" button for confirm the choice.

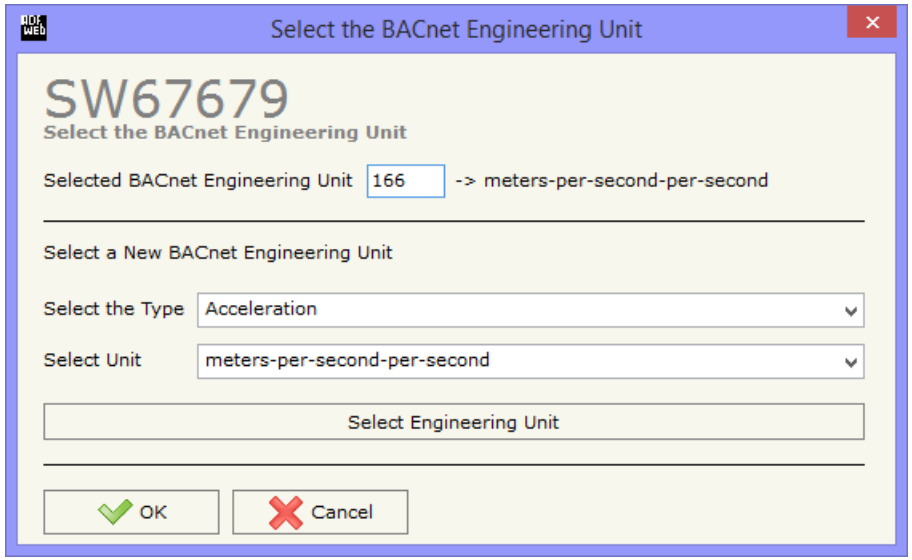


Figure 5: "Select the BACnet Engineering Unit" window

OBJECTS MAP:

By Pressing the "**Objects Map**" button from the main window for SW67679 (Fig. 2) is possible to create a .csv document with the map of BACnet Objects.

PROFINET XML:

By pressing the "**PROFINET XML**" button it is possible to save the xml file for the PROFINET side.
With this feature you can save the configuration of the converter of the PROFINET side.

Note:
When you import the .xml file on your PROFINET you have to add the main module and all the submodules present in it.

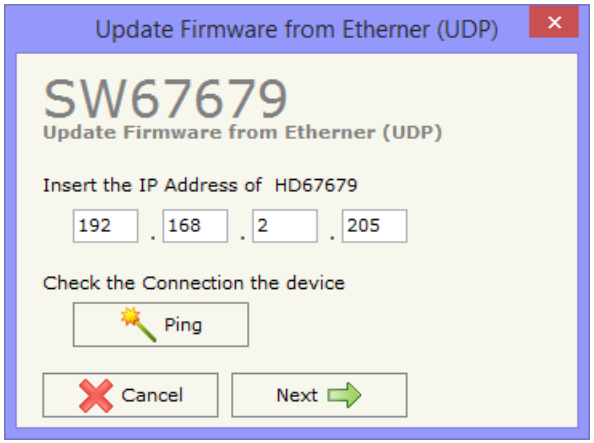
UPDATE DEVICE:

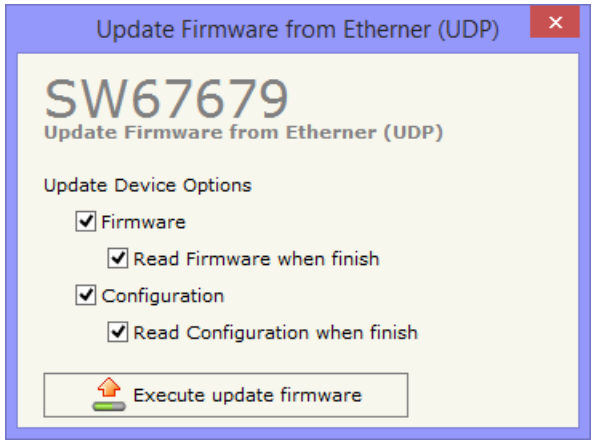
By pressing the "**Update Device**" button, it is possible to load the created Configuration into the device; and also the Firmware, if necessary.

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

- Turn off the Device;
- Put Dip2 of 'Dip-Switch A' in ON position;
- Turn on the device
- Connect the Ethernet cable;
- Insert the IP "**192.168.2.205**";
- Press the "**Ping**" button, "Device Found! must appear";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" turn off the Device;
- Put Dip2 of 'Dip-Switch A' in OFF position;
- Turn on the device.

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





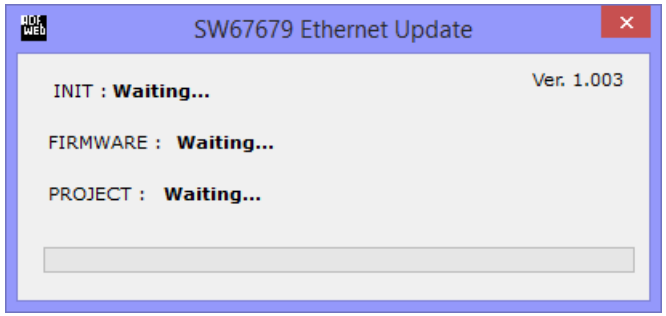


Figure 6: "Update device" windows

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

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

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

Note:
When you install a new version of the software, if it is the first time it is better you do the update of the Firmware in the HD67679 device.

Note:
When you receive the device, for the first time, you also have to update the Firmware in the HD67679 device.

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

- Try to repeat the operations for the update;
- Try with another PC;
- Try to restart the PC;
- If you are using the program inside a Virtual Machine, try to use it in the main Operating System;
- If you are using Windows Seven or Vista or 8, make sure that you have the administrator privileges;
- Pay attention to the Firewall lock;
- Check the LAN settings.

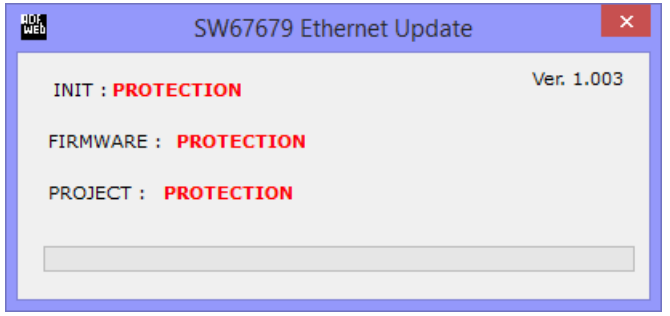


Figure 7: "Protection" window

In the case of HD67679 you have to use the software "SW67679": www.adfweb.com\download\filefold\SW67679.zip.

MECHANICAL DIMENSIONS:

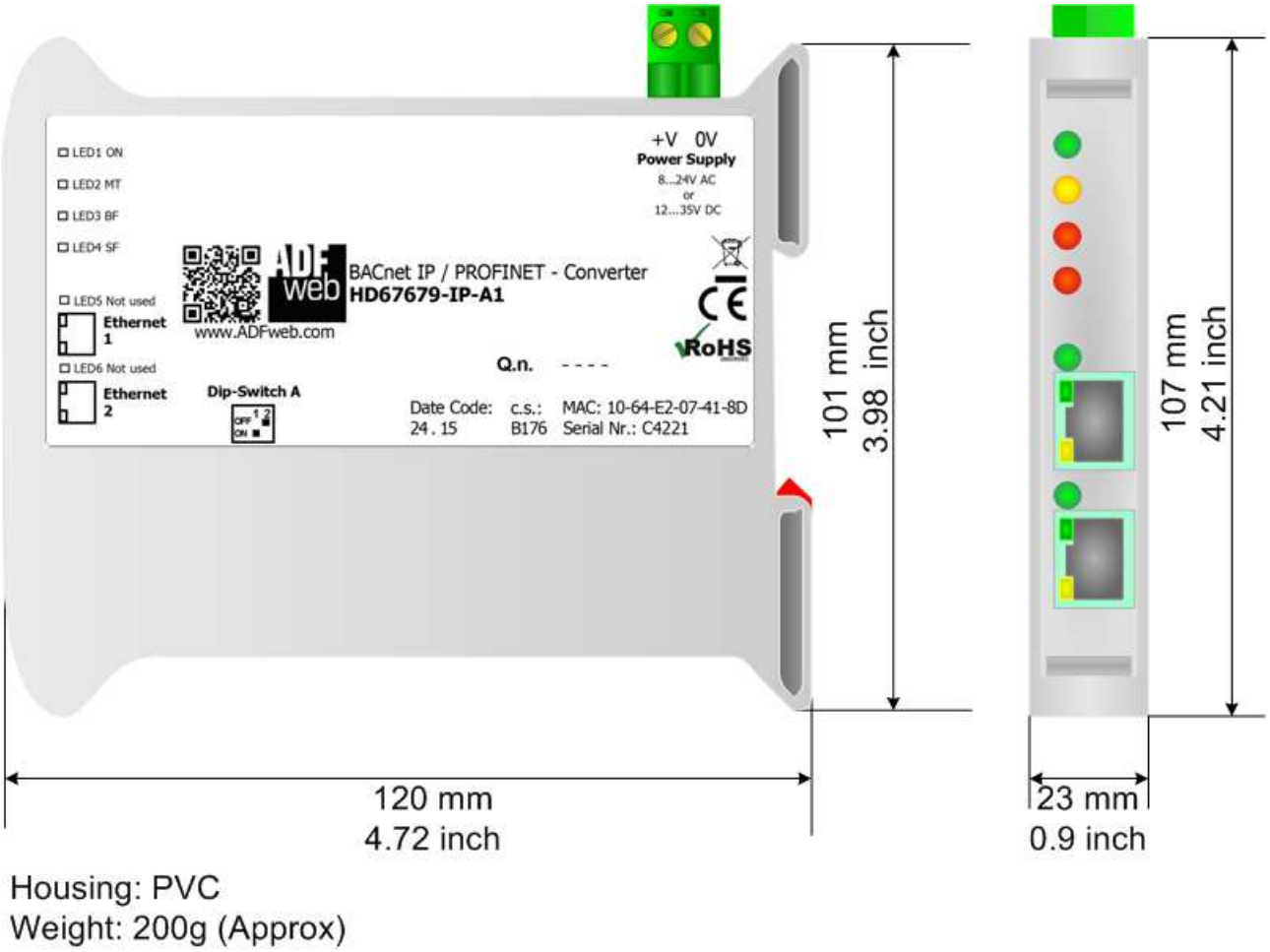
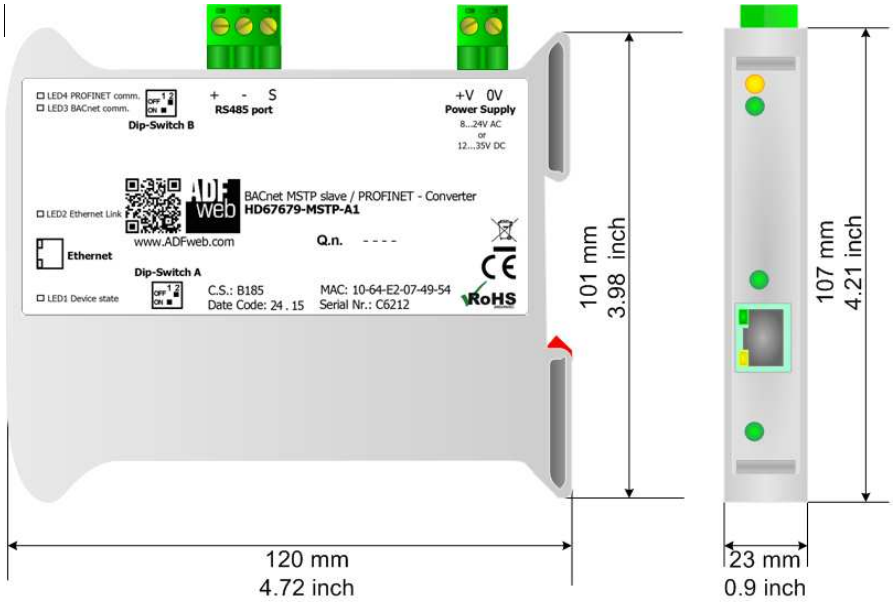
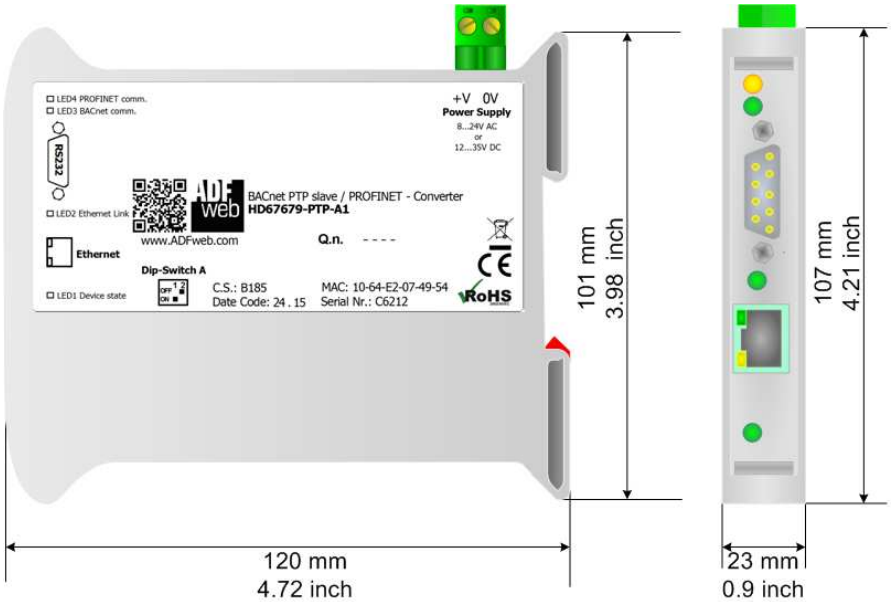


Figure 8a: Mechanical dimensions scheme for HD67679-IP-A1



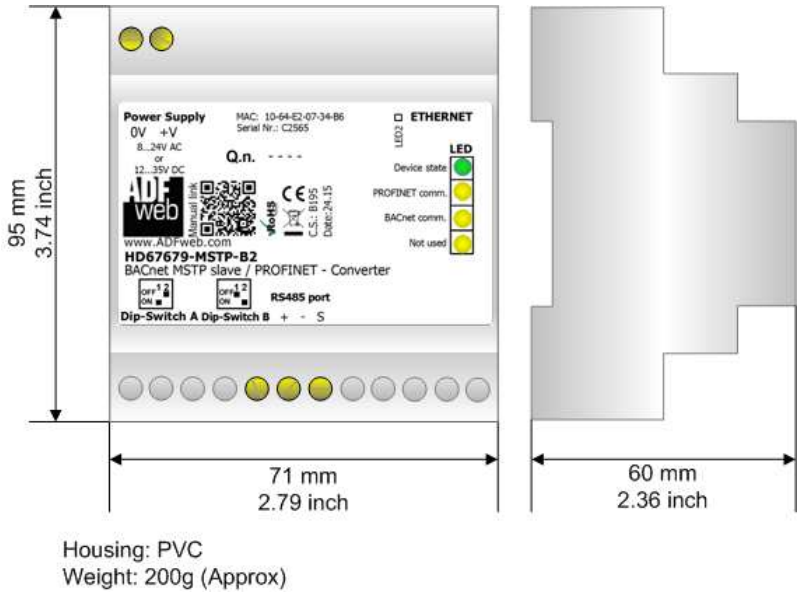
Housing: PVC
Weight: 200g (Approx)

Figure 8b: Mechanical dimensions scheme for HD67679-MSTP-A1



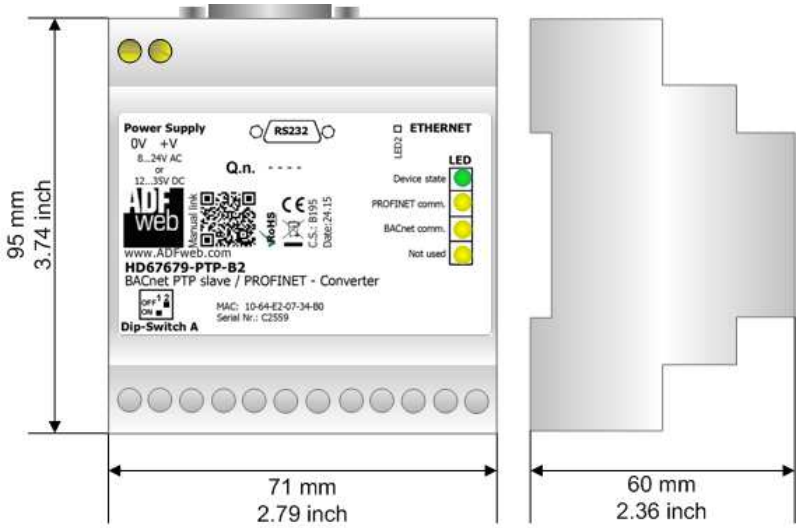
Housing: PVC
Weight: 200g (Approx)

Figure 8c: Mechanical dimensions scheme for HD67679-PTP-A1



Housing: PVC
Weight: 200g (Approx)

Figure 8d: Mechanical dimensions scheme for HD67679-MSTP-B2



Housing: PVC
Weight: 200g (Approx)

Figure 8e: Mechanical dimensions scheme for HD67679-PTP-B2

ORDERING INFORMATIONS:

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

HD67679 – xxx – xx

Connectors Type
1: Removable 5mm Screw Terminal
2: Fixed 5mm Screw Terminal

Enclosure Type
A: 1M, 35mm DIN Rail mounting
B: 4M, 35mm DIN Rail mounting

BACnet type
IP: BACnet/IP
MSTP: BACnet MS/TP
PTP: BACnet PTP

Device Family
HD67679: BACnet slave / PROFINET slave - Converter

Order Code:	**HD67679-IP-A1**	**-**	BACnet/IP slave / PROFINET slave – Converter
Order Code:	**HD67679-MSTP-A1**	**-**	BACnet MS/TP slave / PROFINET slave – Converter
Order Code:	**HD67679-MSTP-B2**	**-**	BACnet MS/TP slave / PROFINET slave - Converter
Order Code:	**HD67679-PTP-A1**	**-**	BACnet PTP slave / PROFINET slave - Converter
Order Code:	**HD67679-PTP-B2**	**-**	BACnet PTP slave / PROFINET slave - Converter

ACCESSORIES:

Order Code:	**AC34001**	**-**	35mm Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V AC
Order Code:	**AC34002**	**-**	35mm Rail DIN - Power Supply 110V AC 50/60Hz – 12 V AC

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.
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.

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