

User Manual

Revision 1.000
English

Modbus Slave / SNMP Manager – Converter

(Order Code: HD674-A010)

For Website information:

www.adfweb.com?Product=HD674-A010

For Price information:

www.adfweb.com?Price=HD674-A010

Benefits and Main Features:

- ⊕ Very easy to configure
- ⊕ Wide supply input range
- ⊕ Electrical isolation
- ⊕ Industrial temperature range:
- ⊕ -40°C / 105°C (-40°F / 221°F)



For others Gateways / Bridges:

J1939 to Modbus

See also the following links:

www.adfweb.com?Product=HD67212 (Modbus RTU)

CANopen to Modbus

See also the following links:

www.adfweb.com?Product=HD67001 (Modbus RTU Master)

www.adfweb.com?Product=HD67002 (Modbus RTU Slave)

www.adfweb.com?Product=HD67004 (Modbus TCP Master)

www.adfweb.com?Product=HD67005 (Modbus TCP Slave)

For others Gateways / Bridges:

For **CAN bus 2.0A** and/or **CAN bus 2.0B to Modbus**

See also the following links:

www.adfweb.com?Product=HD67011 (Modbus RTU Slave)

www.adfweb.com?Product=HD67012 (Modbus RTU Master)

www.adfweb.com?Product=HD67014 (Modbus TCP Slave)

www.adfweb.com?Product=HD67015 (Modbus TCP Master)

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



User Manual

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UPDATED DOCUMENTATION:

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

- Updated
- Related to the product you own

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

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

REVISION LIST:

Revision	Date	Author	Chapter	Description
1.000	11/01/2017	Ff	All	First released 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:

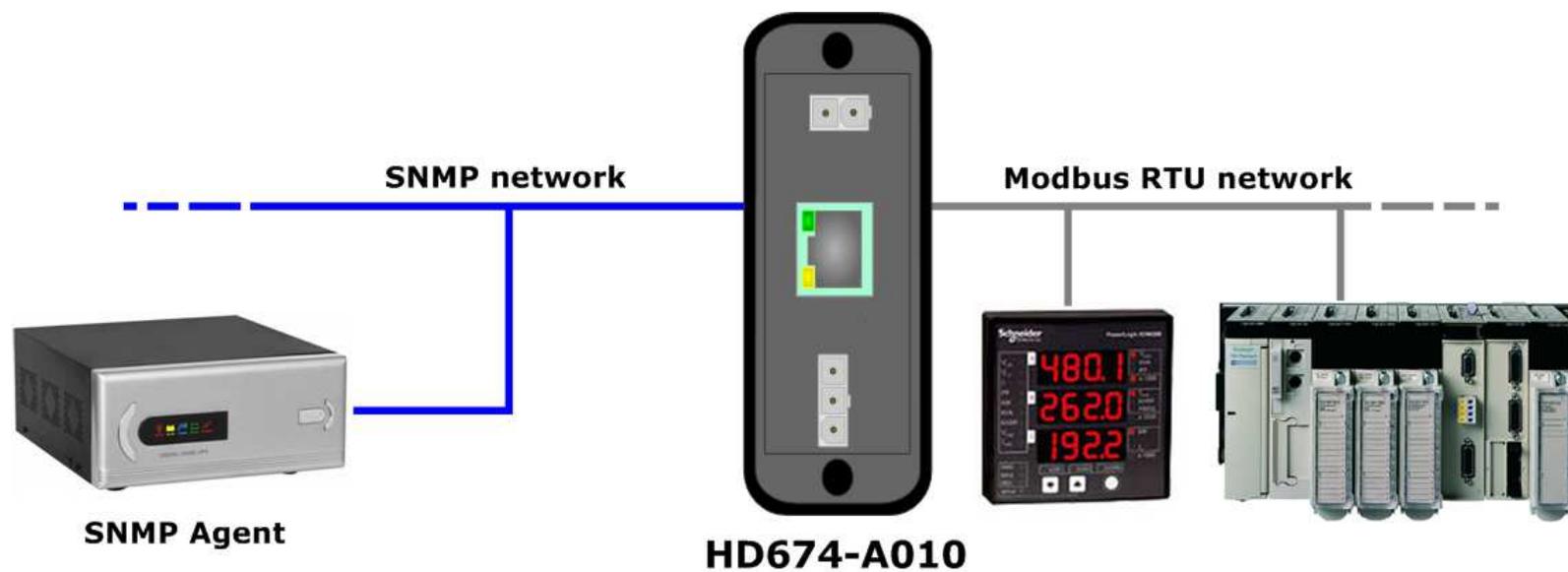


This symbol indicates that non-observance of the safety instructions is a danger for people that could lead to serious injury or death and / or the possibility of damage.

CE CONFORMITY

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

EXAMPLE OF CONNECTION:



CONNECTION SCHEME:



Figure 1a: Connection scheme for HD674-A010-2-E4x-xx

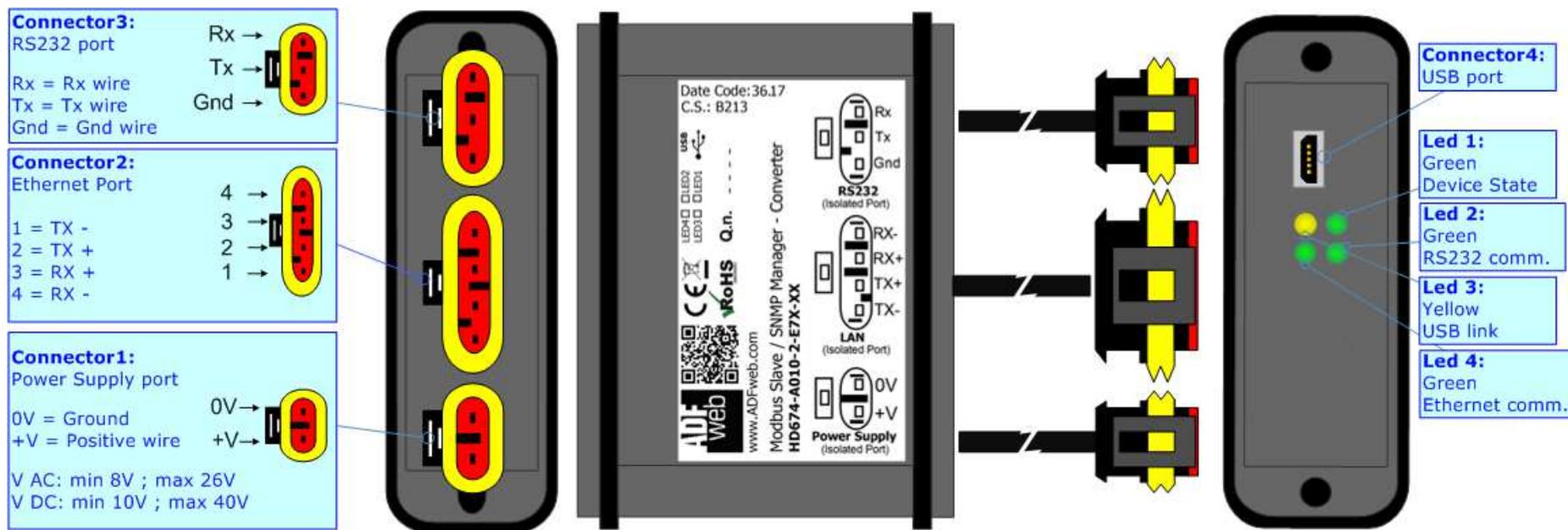


Figure 1b: Connection scheme for HD674-A010-2-E7x-xx



Figure 1c: Connection scheme for HD674-A010-4-E4x-xx

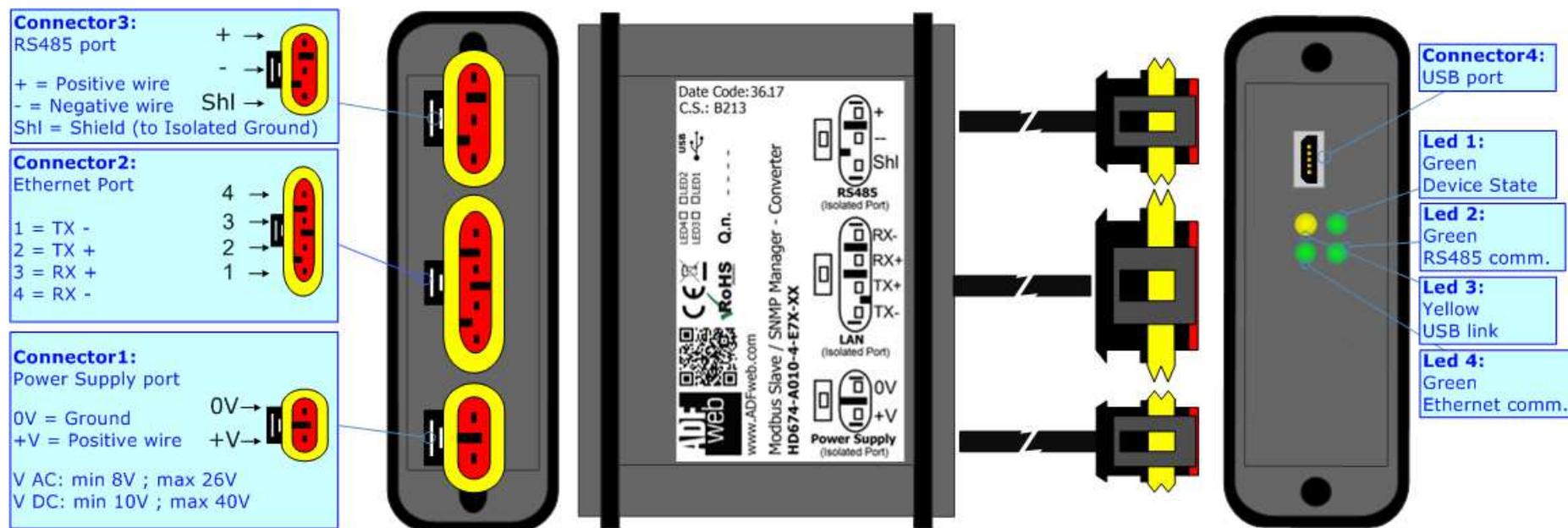


Figure 1d: Connection scheme for HD674-A010-4-E7x-xx

CHARACTERISTICS:

The “**HD674-A010**” series are rugged devices used to interface SNMP devices with a Modbus network.

With its particular enclosure, equipped with four fixing lugs, makes available the mounting of the device in any plane surface (horizontal, vertical, oblique).

It is possible to have the device varnished or totally resined and also in both cases with “Mini-Fit®” connectors or “AMP SuperSeal 1.5” connectors. If is resined, the enclosure, like the “AMP SuperSeal 1.5” connectors, is waterproof.

All the four series have these characteristics:

- Triple 4kV isolation between Power Supply / SNMP / Modbus;
- Varnished / Resined (optionally);
- Wide power supply input range: 8...26V AC | 10...40V DC;
- Mini-Fit® / AMP SuperSeal 1.5 connectors;
- Metal enclosure with fixing lugs;
- Possibility to use Metal hose clamps for fixing it without using lugs;
- Microprocessor for data control;
- Wide temperature range: -40°C / 105°C (-40°F / 221°F).

CONFIGURATION:

You need Compositor SW674-A010 software on your PC in order to perform the following:

- Define the parameter of SNMP line;
- Define the parameter of Modbus line;
- Determinate which SNMP OIDs transfer in Modbus and vice versa;
- Update the device.

POWER SUPPLY:

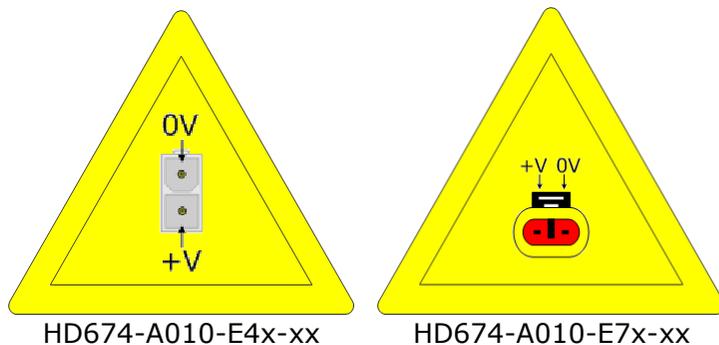
The devices can be powered between a wide range of tensions. For more details see the two tables below.

	VAC		VDC	
	Vmin	Vmax	Vmin	Vmax
HD674-A010-Exx-xx	8V	26V	10V	40V

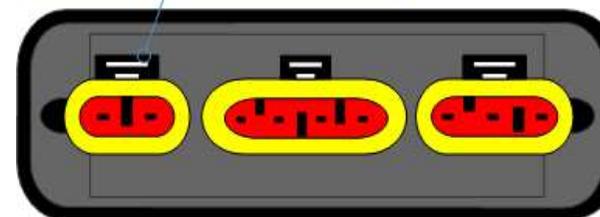
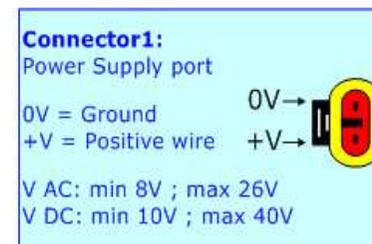
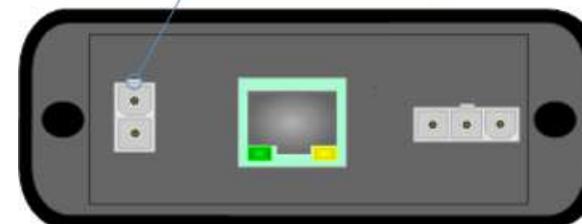
Consumption at 24V DC:

Device	W/VA
HD674-A010-Exx-xx	4

Caution: Not reverse the polarity power



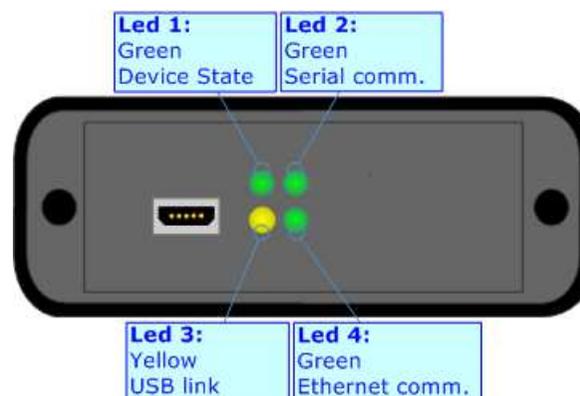
Note: It is possible to use also negative tensions. In this case the polarity must be inverted.



LEDS:

The device has got four 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: Serial Communication (green)	Blinks when Modbus requests are received	Blinks quickly: Boot state Blinks very slowly (~0.5Hz): update in progress
3: USB Link (yellow)	ON: USB cable inserted OFF: USB cable not inserted	ON: USB cable inserted OFF: USB cable not inserted
4: Ethernet communication (green)	Blinks when SNMP responses are received	Blinks quickly: Boot state Blinks very slowly (~0.5Hz): update in progress



RS232:

The connection of the RS232 in the HD674-A010-2-E4x-xx device must be made with a 3way MiniFit Female connector. The pinout of Male MiniFit connector of the board is at right side of the page.

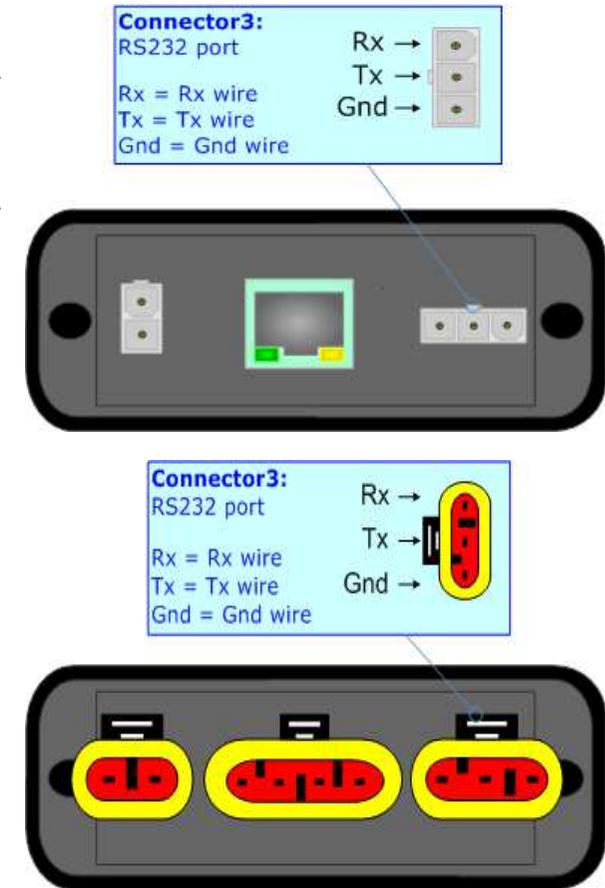
The connection of the RS232 in the HD67-A010-2-E7x-xx device must be made with a AMP SuperSeal 1.5 Male connector. The pinout of Female connector of the board is at right side of the page.

The maximum length of the cable should be 15m.

Link for Mini-Fit® connectors:

http://www.molex.com/molex/products/group?key=minifit_products&channel=products

Link for SuperSeal 1.5 connectors: <http://www.te.com/catalog/cinf/en/c/10876/956>



RS485:

The connection of the RS485 in the HD674-A010-4-E4x-xx device must be made with a 3way MiniFit Female connector. The pinout of Male MiniFit connector of the board is at right side of the page.

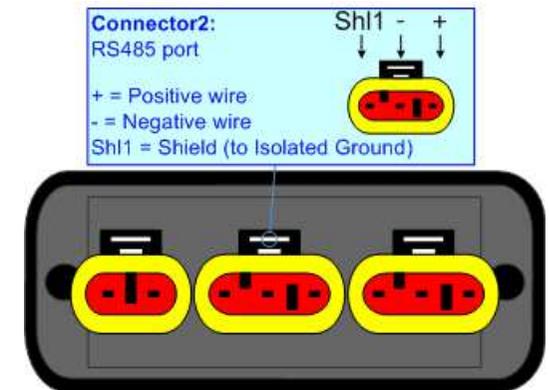
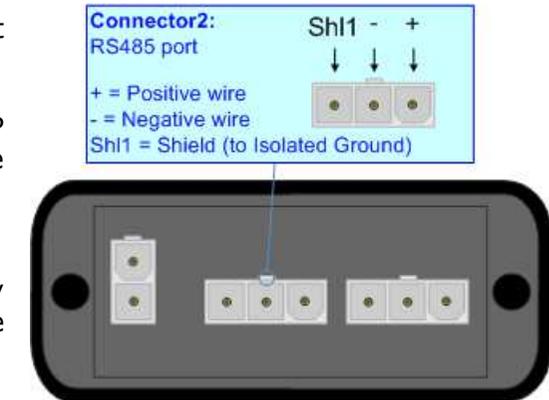
The connection of the RS485 in the HD67-A010-4-E7x-xx device must be made with a AMP SuperSeal 1.5 Male connector. The pinout of Female connector of the board is at right side of the page.

The termination of RS485 line, with a 120Ω resistor, in the HD674-A010-4-Exx-xx is made internally of the device; when the order is performed. If the device have the RS485 terminated the code is the follow: HD674-A010-4-Exx-Yx; otherwise is this other: HD674-A010-4-Exx-Nx.

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.



Link for Mini-Fit® connectors: http://www.molex.com/molex/products/group?key=minifit_products&channel=products

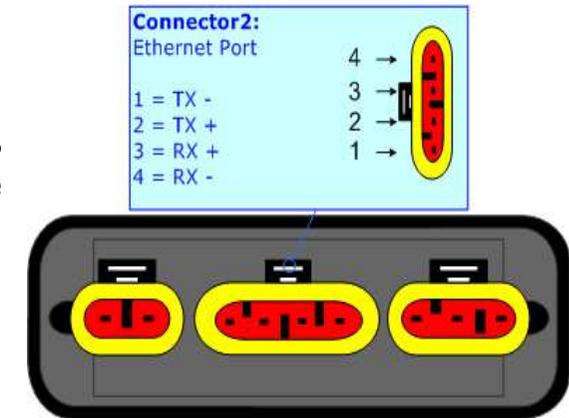
Link for SuperSeal 1.5 connectors: <http://www.te.com/catalog/cinf/en/c/10876/956>

ETHERNET:

The connection of Ethernet in the HD674-A010 device must be made 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.

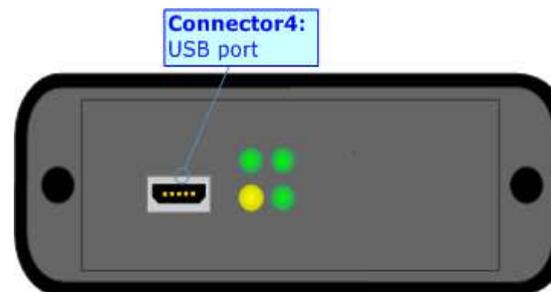
The connection of Ethernet in the HD674-A010-x-E4x-xx device must be made with RJ45 connector.

The connection of the Ethernet in the HD674-A010-x-E7x-xx device must be made with a AMP SuperSeal 1.5 Male connector. The pinout of Female connector of the board is at right side of the page.



USB:

The USB port is used to start the converter in Boot Mode. It is necessary to use a Micro USB type B cable.



USE OF COMPOSITOR SW674-A010:

To configure the Converter, use the available software that runs with Windows called SW674-A010. 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 SW674-A010, the window below appears (Fig. 2).



Note:

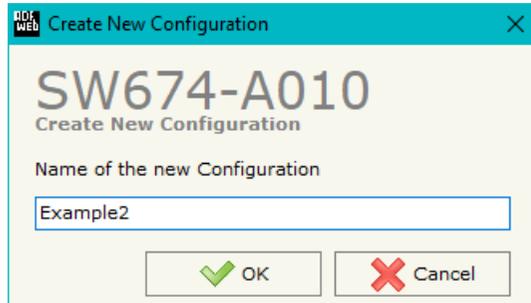
It is necessary to have installed .Net Framework 4.



Figure 2: Main window for SW674-A010

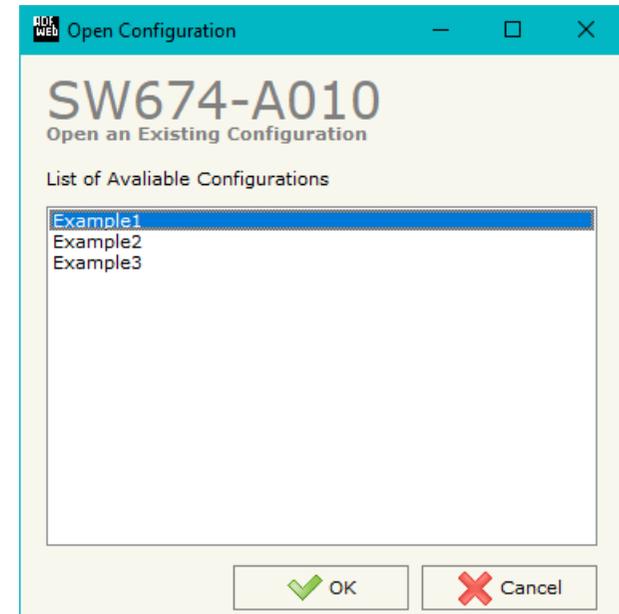
NEW CONFIGURATION / OPEN CONFIGURATION:

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



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

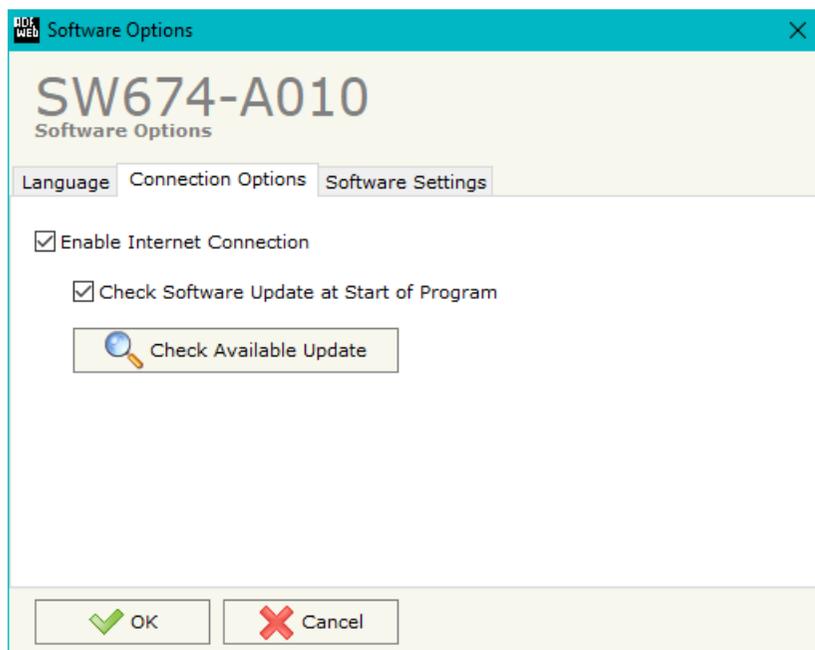
- To clone the configurations of a programmable “Modbus Slave / SNMP Manager - Converter” in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient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



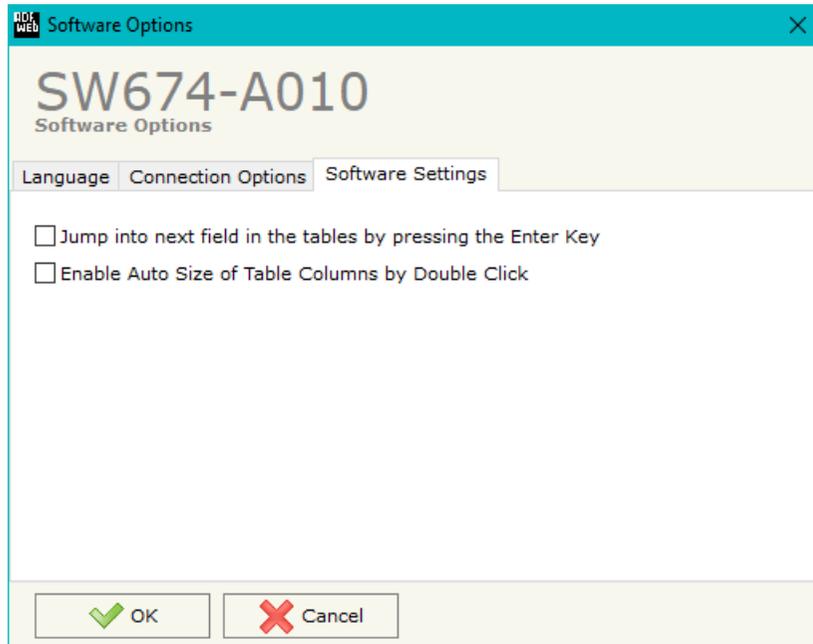
SOFTWARE OPTIONS:

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 SW674-A010 checks automatically if there are updatings when it is launched.



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

SET COMMUNICATION:

This section define the fundamental communication parameters of two buses, Modbus and SNMP.

By Pressing the "**Set Communication**" button from the main window of SW674-A010 (Fig. 2) the window "Set Communication" appears (Fig. 3).

The meaning of the fields of "SNMP Manager" are:

- In the field "**IP ADDRESS**" the IP address of the SNMP side of the converter is defined;
- In the field "**SUBNET Mask**" the SubNet Mask of the SNMP side of the converter is defined;
- In the field "**GATEWAY**" the default gateway of the network is defined. This feature can be enabled or disabled pressing the Check Box field. This feature is used for going out of the net;
- In the field "**SNMP Name of Station**" the name of SNMP side of the converter is defined.

The means of the fields for the "Modbus Slave" section are:

- In the field "**Serial**" the serial port to use is defined (RS232 or RS485);
- In the field "**Baudrate**" the baudrate for the serial line is defined;
- In the field "**Parity**" the parity of the serial line is defined;
- In the field "**ID Device**" the ID for Modbus side of the converter is defined;
- If the field "**Read with Input Register / Status Function**" is checked, it is possible to read the Input data from SNMP side with Input Registers (Function 04) and write the Output to SNMP side with Holding Registers (Function 06/16). The Output data are readable with Function 03. Otherwise, only Holding Registers will be used and the Output data of SNMP side cannot be read back.

The screenshot shows the 'Set Communication' window for device SW674-A010. It is divided into two main sections: 'SNMP Manager' and 'Modbus Slave'.
The 'SNMP Manager' section contains:
- IP ADDRESS: 192.168.0.10
- SUBNET Mask: 255.255.255.0
- GATEWAY: unchecked checkbox
- GATEWAY IP: 192.168.0.1
- SNMP Name of Station: devicename1
The 'Modbus Slave' section contains:
- Serial: RS485 / RS422 (dropdown menu)
- Baudrate: 115200 (dropdown menu)
- Parity: NONE (dropdown menu)
- ID Device: 10
- Read with Input Register / Status Function: unchecked checkbox
At the bottom of the window are 'OK' and 'Cancel' buttons.

Figure 3: "Set Communication" window

SNMP MANAGER:

N	Enable	IP Address	Version	Community Name	OID	Type	Mode	OnChange	OnCMD	OnTimer	Time	Position	Num Bytes	Conversion	Cancel	Mnemonic
1	<input checked="" type="checkbox"/>	192.168.0.150	2	Public	1.3.6.1.4.1.33118.	Int	Get	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1000	0	2	None	<input type="checkbox"/>	
2	<input checked="" type="checkbox"/>	192.168.0.151	1	Private	1.3.6.1.4.1.33118.	String	Trap	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		2	10	None	<input type="checkbox"/>	
3	<input checked="" type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	
4	<input checked="" type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	
5	<input checked="" type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	

Figure 4: "Set SNMP Manager Access" window

By Pressing the "SNMP Manager" button from the main window for SW674-A010 (Fig. 2) the window "Set SNMP Manager Access" appears (Fig. 4).

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

- If the field "Enable" is checked, the SNMP request is enabled;
- In the field "IP Address" the address of the SNMP Agent device to read/write is defined;
- In the field "Version" the SNMP version used to send the SNMP request (1 or 2 is allowed) is defined;
- In the field "Community Name" the Community Name used for the SNMP request is defined (selectable or editable manually);
- In the field "OID" the OID to read/write from/to the SNMP Agent device is defined;
- In the field "Type" the type of data to read/write ('String' or 'Int') is defined;
- In the field "Mode" the type of SNMP request used ('Get', 'Set' or 'Trap') is defined;
- By checking the field "On Change" the SNMP request (only for 'Set' Mode) is made only if Modbus data written by the Modbus Master are changed;
- By checking the field "On CMD" the SNMP request is sent when a Modbus request is received;
- If the field "On Timer" is checked, the SNMP request is sent cyclically;
- In the field "Time" the delay in ms between two SNMP requests is defined (if "On Timer" is checked);
- In the field "Position" it is possible to select the position where take/save the data from/to the internal array;

- In the field "**Num Bytes**" it is possible to select define the dimension of the SNMP Data;
- In the field "**Conversion**" it is possible to select the conversion to apply to the data read/written from/to the SNMP Agent;
- In the field "**Mnemonic**" a description of the data inserted in the row is defined.

**Note:**

If the field "On change" and "On Timer" is checked and the "Poll Time" is different from 0, the converter sends the SNMP writing request cyclically and also when the data is changed.

**Note:**

If the "Trap" mode is used, the fields "On CMD", "On Change" and "On Timer" must be disabled.

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:

- Connect the USB cable;
- Connect the Ethernet cable;
- Turn ON the converter;
- 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”, the updating is done;
- Remove the USB cable;

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.

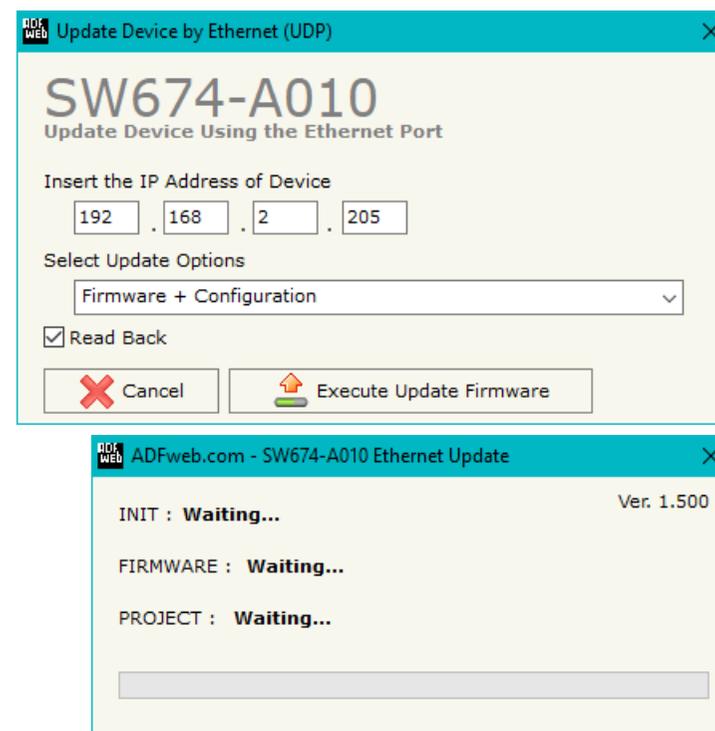


Figure 5: "Update Device" windows



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 HD674-A010 device.



Note:

When you receive the device, for the first time, you also have to update the Firmware in the HD674-A010 device.



Warning:

If Fig. 6 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.

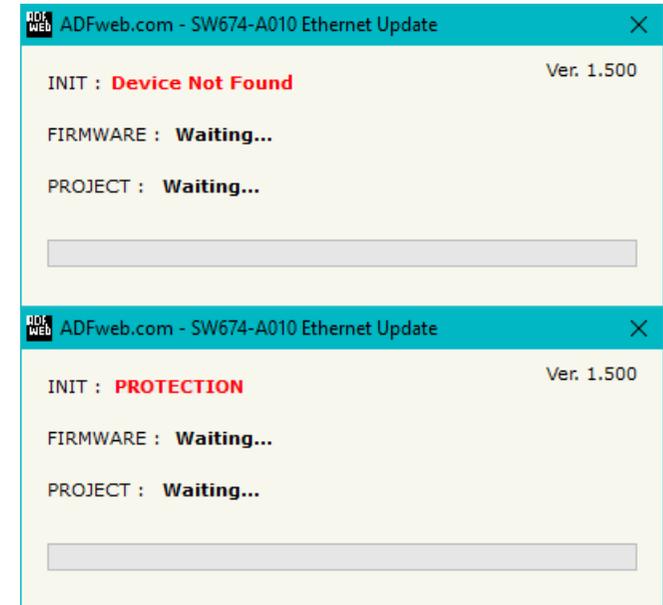


Figure 6: "Protection" window

In the case of HD674-A010 you have to use the software "SW674-A010": www.adfweb.com/download/filefold/SW674-A010.zip.

MODBUS MAP:

On Modbus side, the map is created automatically. In relation to the configuration defined, it is possible to have two different maps.

Read with Input Register / Status Function not enabled

Data in reading:

Type	Address	Function	Description
Holding Register	0	03	"Position" 0-1 (data read from SNMP)
Holding Register	1	03	"Position" 2-3 (data read from SNMP)
Holding Register	2	03	"Position" 4-5 (data read from SNMP)
.			
Holding Register	999	03	"Position" 1998-1999 (data read from SNMP)

Data in writing:

Type	Address	Function	Description
Holding Register	0	06/16	"Position" 0-1 (data written to SNMP)
Holding Register	1	06/16	"Position" 2-3 (data written to SNMP)
Holding Register	2	06/16	"Position" 4-5 (data written to SNMP)
.			
Holding Register	999	06/16	"Position" 1998-1999 (data written to SNMP)



Note:

The data can be read/written as single bits too using Coil Status (Function 01 and Functions 05/15).

Read with Input Register / Status Function enabled

Data in reading:

Type	Address	Function	Description
Input Register	0	04	"Position" 0-1 (data read from SNMP)
Input Register	1	04	"Position" 2-3 (data read from SNMP)
Input Register	2	04	"Position" 4-5 (data read from SNMP)
.			
Input Register	999	04	"Position" 1998-1999 (data read from SNMP)

Data in writing:

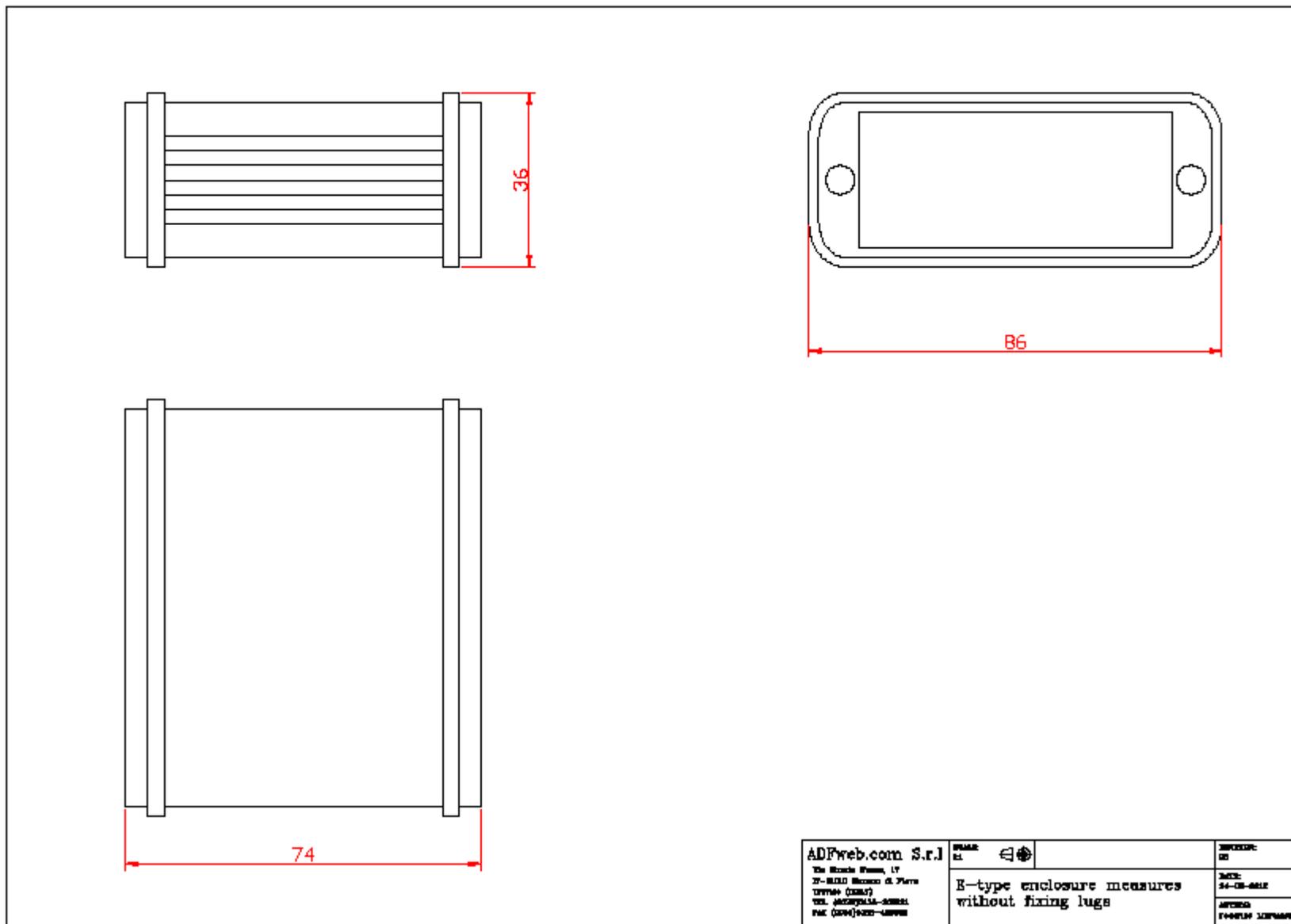
Type	Address	Function	Description
Holding Register	0	R: 03 W: 06/16	"Position" 0-1 (data written to SNMP)
Holding Register	1	R: 03 W: 06/16	"Position" 2-3 (data written to SNMP)
Holding Register	2	R: 03 W: 06/16	"Position" 4-5 (data written to SNMP)
.			
Holding Register	999	R: 03 W: 06/16	"Position" 1998-1999 (data written to SNMP)

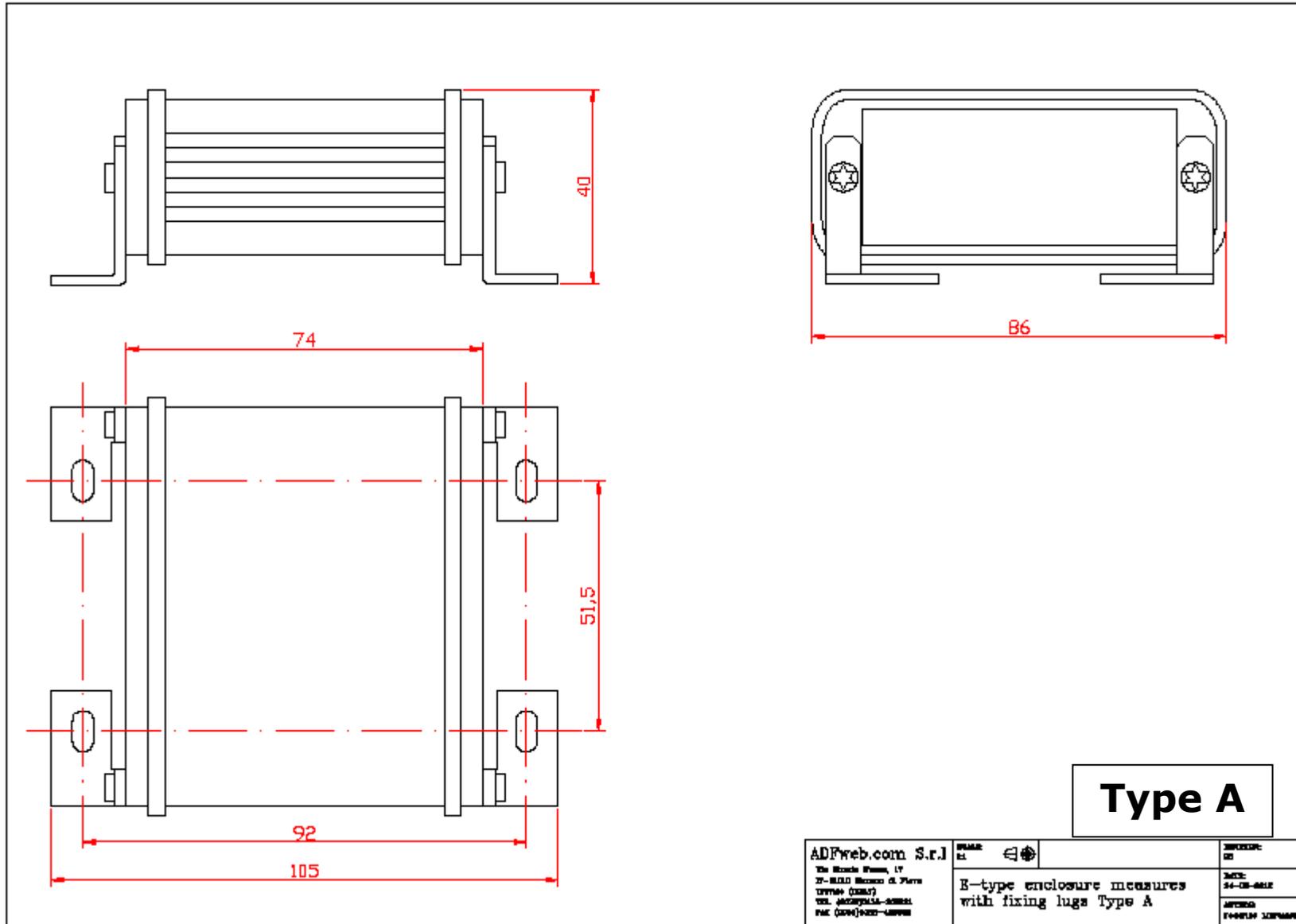


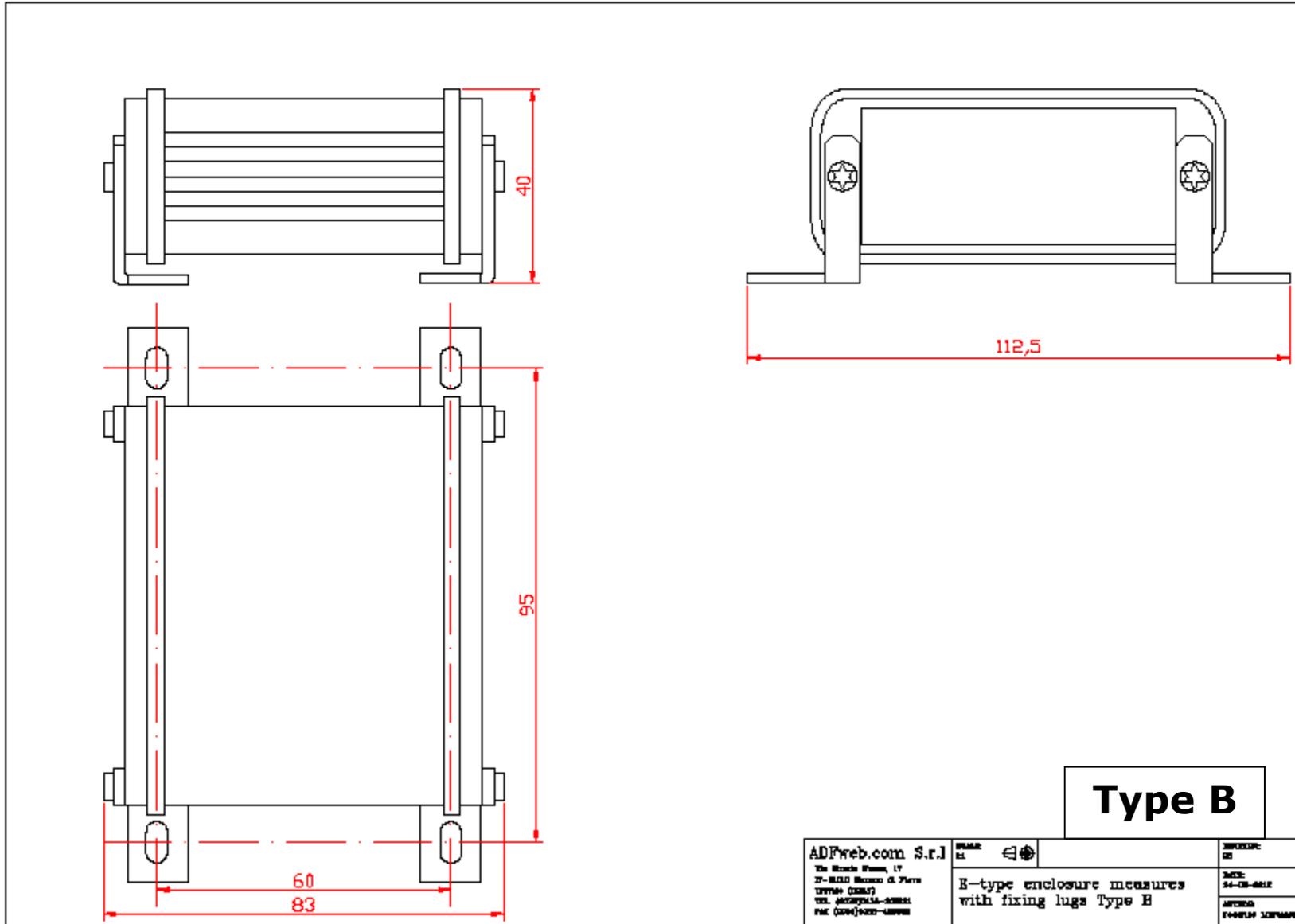
Note:

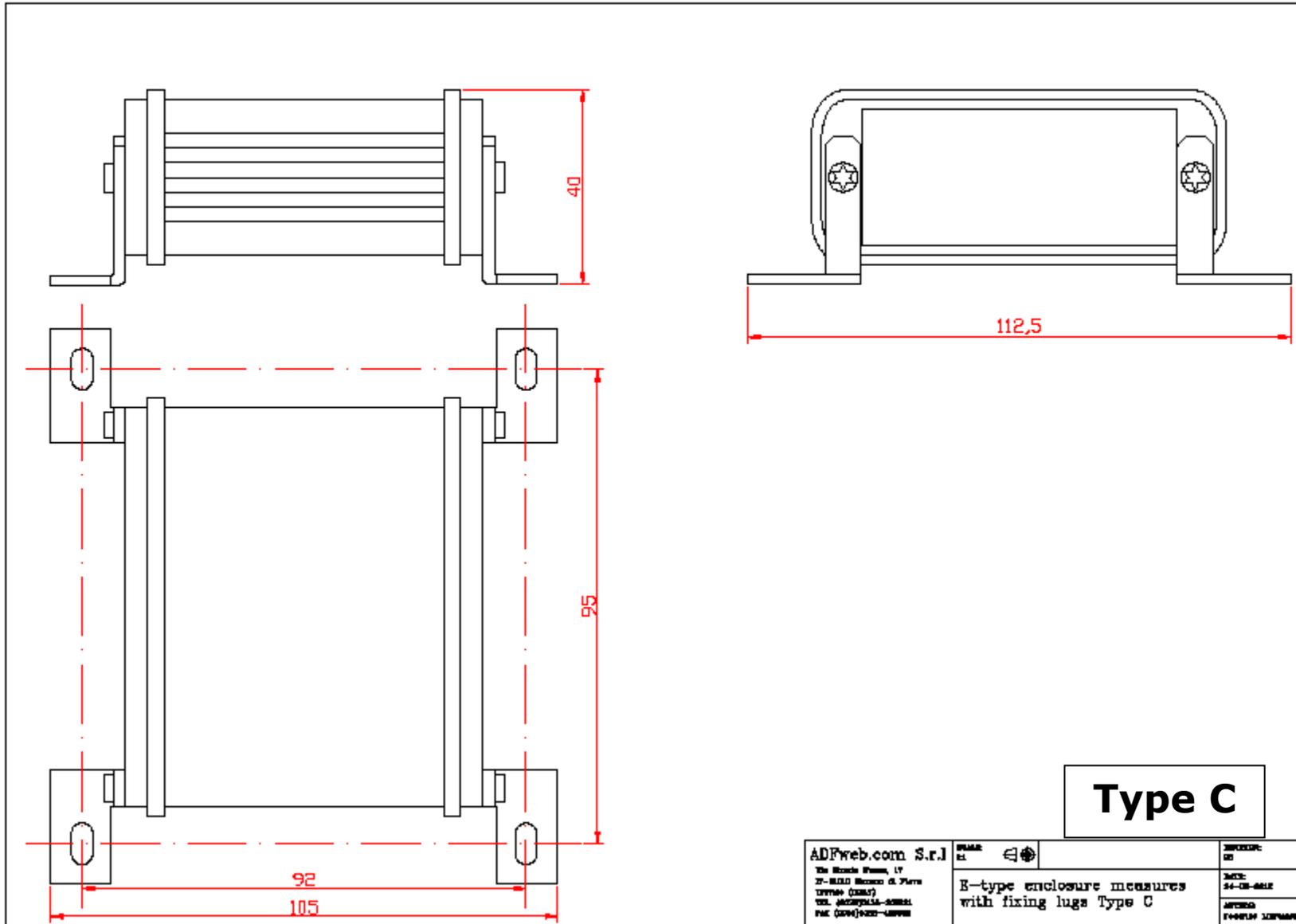
The data can be read/written as single bits too using Input/Coil Status (Function 02 and Functions 01/05/15).

MECHANICAL DIMENSIONS:





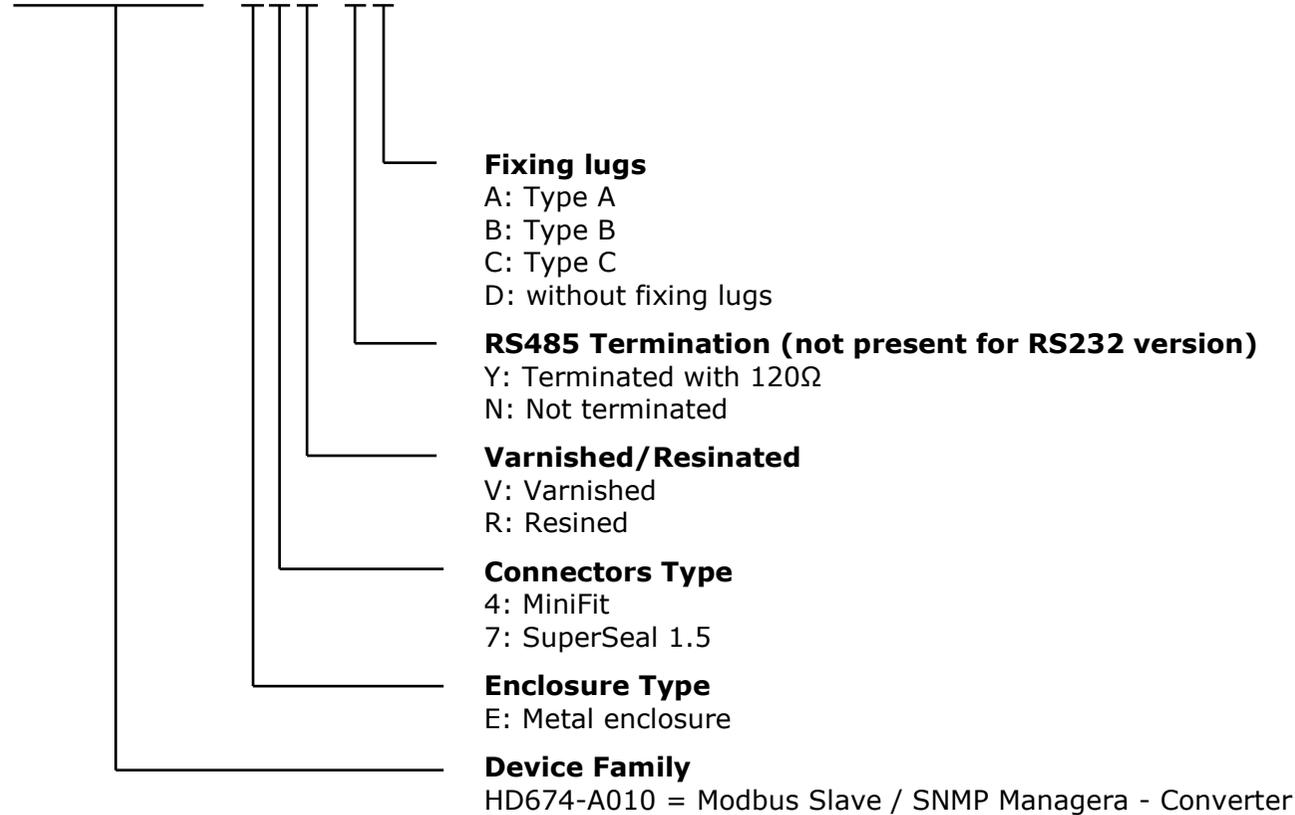




ORDERING INFORMATIONS:

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

HD674-A010 - E y z - s f



ACCESSORIES:

- Order Code: **AC34001** - Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V AC
- Order Code: **AC34002** - Rail DIN - Power Supply 110V AC 50/60Hz – 12 V AC
- Order Code: **AC67410** - Accessory Automotive Devices - Support for rail DIN

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.



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