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Connection module between ControlPro and cloud portal

i-CONNECT
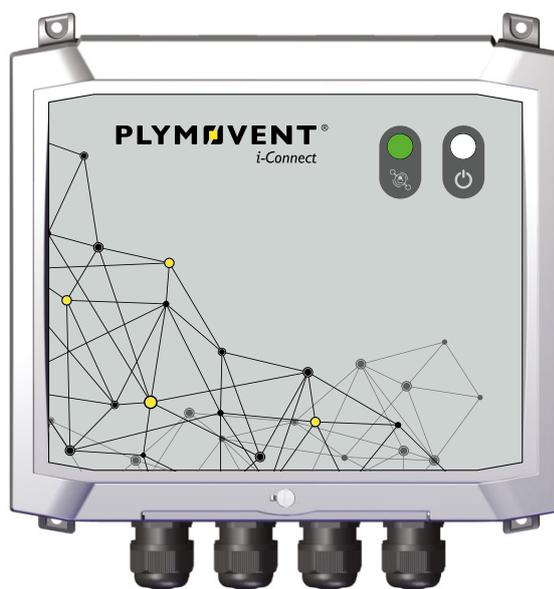
EN **Installation manual**

TABLE OF CONTENTS

To improve comprehension for people whose first language is not English, we have written parts of this manual in Simplified Technical English (STE). STE is a controlled language originally developed for aerospace industry maintenance manuals. It offers a carefully limited and standardized subset of English, along with specific writing rules.

PREFACE

Using this manual

This manual is intended to be used as a work of reference for professional, well trained and authorised users to be able to safely install the product mentioned on the cover of this document.

Pictograms and symbols

The following pictograms and symbols are used in this manual:

👉	**TIP** Suggestions and recommendations to simplify carrying out tasks and actions.
⚠️	**ATTENTION** A remark with additional information for the user. A remark brings possible problems to the user's attention.
⚠️	**CAUTION** Procedures, if not carried out with the necessary caution, could damage the product, the workshop or the environment.
⚠️	**WARNING** Procedures which, if not carried out with the necessary caution, may damage the product or cause serious personal injury.

Text indicators

Listings indicated by "-" (hyphen) concern enumerations. Listings indicated by "•" (bullet point) describe steps to perform.

1   INTRODUCTION

1.1   Identification of the product

The identification plate contains, among other things, the following data:
- product name
- serial number
- supply voltage and frequency
- power consumption

1.2   General description

The i-Connect of Plymovent is a module that creates a secured connection between the ControlPro[1] and the cloud portal service of Plymovent. The i-Connect has 7 ports for connection of max. 7 ControlPro systems.

The optional extension module allows for 6 additional connections.

1.3   Product combinations

The i-Connect is dedicated for use with central filter systems of Plymovent that are supplied with **ControlPro** control equipment.

1.4   Options and accessories

The following product can be obtained as an option:

i-Connect Extension	Extension module that allows for connection of 6 additional ControlPro systems (total 13)

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1. ControlPro of Plymovent is an intelligent platform with separate HMI for control of a central filter system and the connected extraction fan

1.5   Technical specifications

Dimensions	refer to Fig. I on page 7
Weight	1,9 kg (4¼ lbs)
Material of enclosure	ABS
Protection class	IP 54
Input voltage	100-240 VAC, 50-60Hz
Internal operating voltage	24 VDC
Power consumption	max. 35 W
Mains cord	refer to Fig. II on page 7

1.6   Ambient conditions

Operating temperature: - min. - max.	 -20°C (-4°F) +50°C (122°F)
Relative humidity	20 to 90% (non condensing)
Suitable for outdoor use	no

2   PRODUCT DESCRIPTION

2.1   Components

👉	Refer to Fig. III on page 8 how to open the enclosure.

The product consists of the following main components and elements:

Fig. 2.1

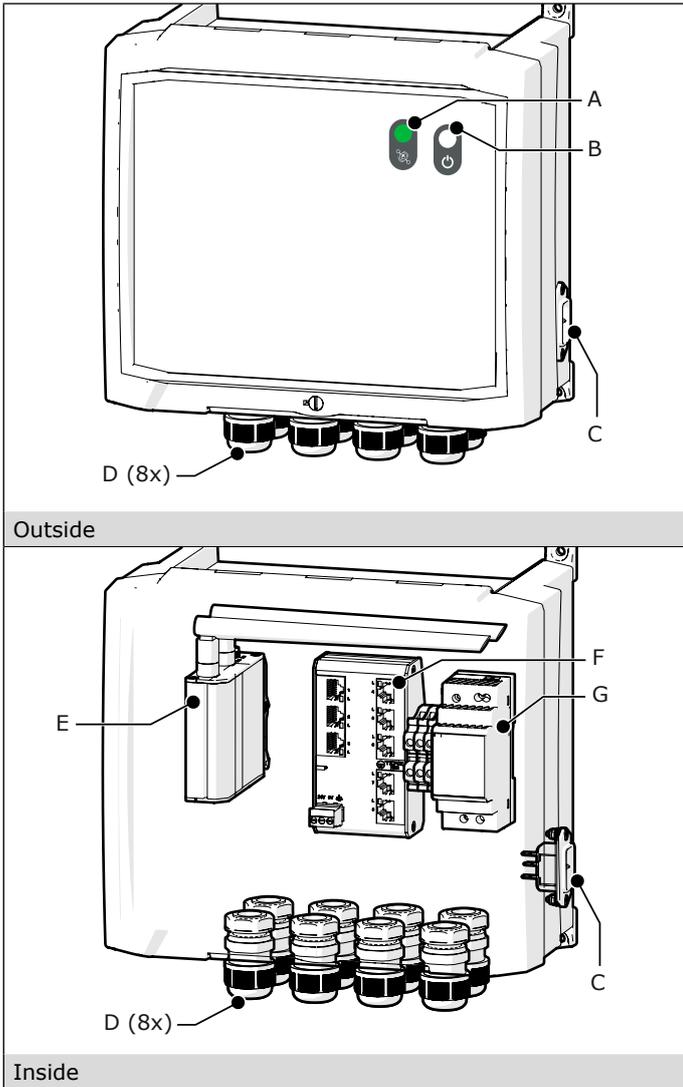|	Component	Remark	More info
A	Green LED: "Connected"	- LED on: system online - LED off: system offline	
B	White LED: "Standby"	- LED on: power supply available - LED off: no power supply	
C	Power connection	IEC 60320-C13	
D	Cable gland (8)	To feed through cables with pre-assembled RJ45 connectors	
E	Router	Industrial router for wired and mobile internet connection	par. 2.1.1
F	Industrial Ethernet switch	To connect max. 7 ControlPro systems	par. 2.1.2
G	Power supply		

Outside

Inside

Fig. 2.1   Main components and elements

2.1.1   Router

The bottom of the router contains the following
connections:

Fig. 2.2
A   Power LED
B   Power socket
C   Mobile network type LEDs
D   Mobile signal strength indication LEDs
E   LAN Ethernet port
F   WAN Ethernet port
G   WAN LED
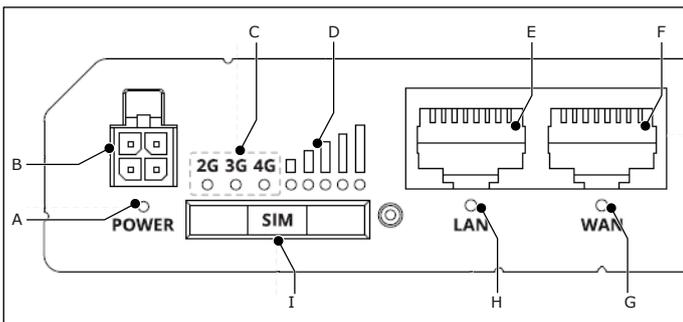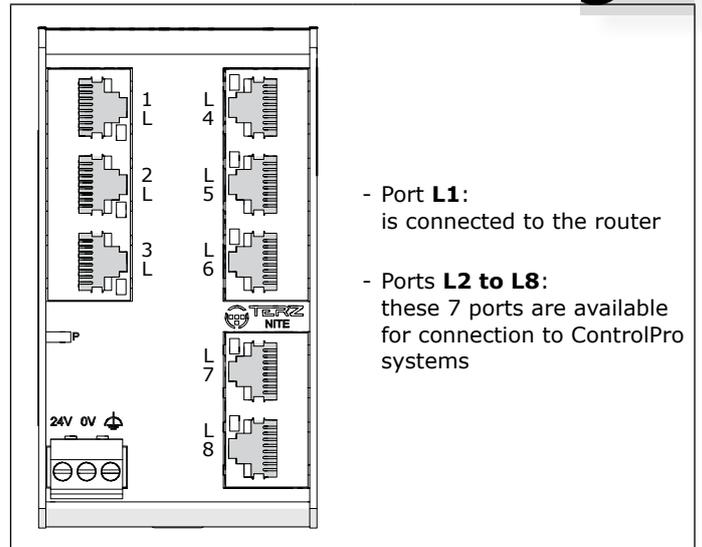H   LAN LED
I   SIM holder

Fig. 2.2   Bottom of the router

2.1.2   Ethernet switch

The Ethernet switch contains 8 ports:

- Port **L1**:
  is connected to the router

- Ports **L2 to L8**:
  these 7 ports are available
  for connection to ControlPro
  systems

Fig. 2.3   Ethernet switch

2.2   Operation

The i-Connect functions as connection module
between ControlPro systems and the cloud portal
service of Plymovent: ControlPro Connect. Via the
cloud portal you can control and supervise all connected filter
systems centrally from every location in the world.

The i-Connect creates a secure tunnel with the server of
Plymovent via a wired or mobile internet connection.

2.2.1   Continuity

The i-Connect has an Auto Reconnect and Reboot function to
resolve (internet) connection issues.

3   SAFETY INSTRUCTIONS

General

The i-Connect is an option to central filter systems
with ControlPro control equipment. The safety
instructions written in the related manuals apply to
the i-Connect as well.

Intended use[2]

The product has been designed exclusively as connection
module between the ControlPro and the cloud portal service of
Plymovent (ControlPro Connect). Using the product for other
purposes is considered contrary to its intended use. The
manufacturer accepts no liability for any damage or injury
resulting from such use. The product has been built in
accordance with state-of-the-art standards and recognised
safety regulations. Only use this product when in technically
perfect condition in accordance with its intended use and the
instructions explained in the user manual.

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2.   "Intended use" as explained in EN-ISO 12100-1 is the use for which the
       technical product is suited as specified by the manufacturer, inclusive of his
       directions in the sales brochure. In case of doubt it is the use which can be
       deduced from the construction, the model and the function of the technical
       product which is considered normal use. Operating the machine within the
       limits of its intended use also involves observing the instructions in the user
       manual.

4   INSTALLATION

4.1   Tools and requirements

You need the following tools to install the products:
- basic tools

4.1.1   To be sourced locally

- Mounting material[3] to install the i-Connect module
- Ethernet cables; requirements[4]:
  - type CAT5e or better
  - max. cable length: 100 m (330 ft)

Depending on your country:
- Mains cable with plug that fits in local sockets[5]

4.2   Unpacking

Make sure that the product is complete. The package contains:

- i-Connect module
- mains cord with plug type E/F (CEE 7/7)
- mains cord with plug type B (NEMA 5-15)

4.3   Mounting

> ⚠️ **ATTENTION**
> Do not expose the i-Connect module to vibrations or heat radiation.

You must install the i-Connect module at an accessible position. The enclosure contains four holes for mounting purposes.

- Install the i-Connect module at an appropriate position. Keep in mind that the cover opens upwards (refer to Fig. III on page 8).

> ☞ Refer to Fig. I on page 7 for the position of the drill holes (A+C).

4.4   Internet connection

You must connect the i-Connect module to the internet. You can do this in two different ways:

	Connection	Description
1	Ethernet connection	Wire to local network
2	Mobile connection	Cellular network

- Determine the way you want to connect the i-Connect module to the internet.

> ⚠️ **ATTENTION**
> The **Ethernet connection** (1) is the preferred way, because this is the most reliable and stable connection.

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3.   The type of mounting material depends on the wall type
4.   According to Ethernet standard IEEE 802.3
5.   The i-Connect module is supplied with two mains cables with different plugs. Other types than specified in Fig. II on 7 are to be sourced locally.

For Ethernet connection:
- proceed with paragraph 4.1.1

For mobile connection:
- proceed with paragraph 4.4.2

4.4.1   Ethernet connection

Requirement:
- a wired connection to the local network with internet access

Fig. 4.10
- Connect the Ethernet cable[6] to the WAN connector on the router.

> ☞ For easier access to the connections: disassemble the router from the i-Connect module.
>
> To do so:
> - Pull the router to the front with a twisting downward movement.
>
> When you are finished:
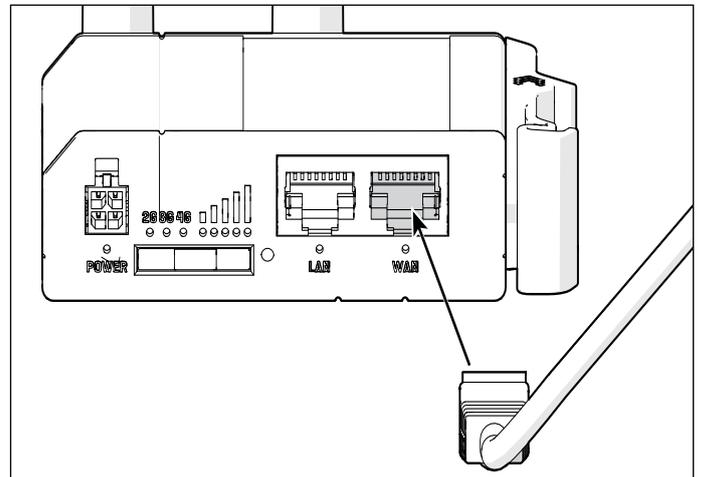> - Put the router back in reverse motion.

Fig. 4.10 Ethernet connection to the router

4.4.2   Mobile connection

Intended region of operation: global

> ☞ Refer to Table I on page 7 for a list of supported frequency bands.

Requirements:
- a SIM card with active data subscription
- PIN of SIM card must be **0000**

To insert the SIM card in the SIM holder of the router, do the following:

Fig. 4.11
- (1) Push the SIM holder button with the SIM needle.
- (2) Pull out the SIM holder.
- (3) Insert the SIM card into the SIM holder.
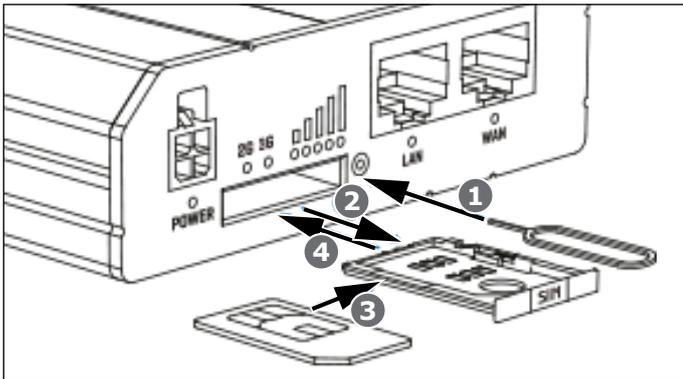- (4) Slide the SIM holder back into the router.

Fig. 4.11 SIM card

4.5 Connection with ControlPro systems

You can connect up to 7 ControlPro systems to one i-Connect module.

Requirements of the ControlPro systems:
- they have the latest firmware version (also refer to paragraph 4.5.3)

You must make a direct Ethernet cable connection between each ControlPro/HMI and the i-Connect module. The i-Connect creates its own (private) local network with all ControlPro systems.

| ⚠ | **ATTENTION** You must make the Ethernet cable connection with the ControlPro/**HMI**. A connection with the ControlPro/ Panel will not work. | ControlPro/HMI |

4.5.1 ControlPro/HMI

The ControlPro/HMI is supplied with an Ethernet field connector (IP 67).

Fig. 4.12
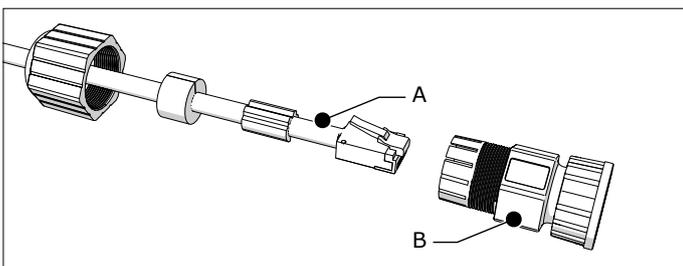• Connect the Ethernet field connector (B) to the Ethernet cable (A).

Fig. 4.12 Ethernet field connector

Fig. 4.13
• Remove the dust cap (A) and put the Ethernet cable in the LAN port of the ControlPro/HMI.
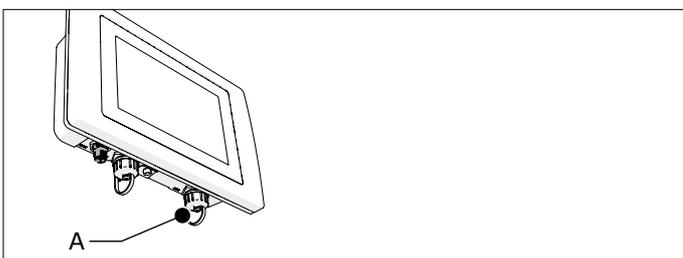

Fig. 4.13 Dust cap

4.5.2 i-Connect

Use the cable glands at the bottom of the i-Connect to feed the Ethernet cables through. The cable glands allow to feed an already assembled RJ45 connector.

| ☞ | For installation instructions of an Ethernet cable with pre-assembled RJ45 connector, refer to Fig. IV on page 8. |

Standard way[7] to connect ControlPro systems:
• Pull dedicated Ethernet cables between each ControlPro/ HMI and the i-Connect module, without intervention of routers and switches.

4.5.3 Firmware update

To enable the cloud functionality you must update the firmware of the ControlPro system (Panel as well as HMI).

Device	Firmware version
ControlPro/HMI	4.0.14 or later
ControlPro/Panel	4.0.14 or later

Firmware update instructions:
- Refer to https://www.plymovent.com/fw/cp

• Update the ControlPro/HMI and the ControlPro/Panel with the latest firmware version.
• Restart the ControlPro/Panel:
  - Turn off the main switch of the ControlPro/Panel.
  - Wait at least 30 seconds.
  - Turn the main switch back on.

| ⚠ | **ATTENTION** If you do not restart the ControlPro/Panel, the cloud connection will not function. |

4.5.4 i-Connect Extension (option)

• Install the i-Connect Extension module at an appropriate position.

| ⚠ | **ATTENTION** Make sure that the cable length between the i-Connect Extension and the i-Connect base module does not exceed 100 m (330 ft.). Required cable type: CAT5e or better. |

• Use an Ethernet cable to interconnect the i-Connect and the i-Connect Extension.
• Pull dedicated Ethernet cables between each ControlPro system and the i-Connect Extension module, without intervention of routers and switches.
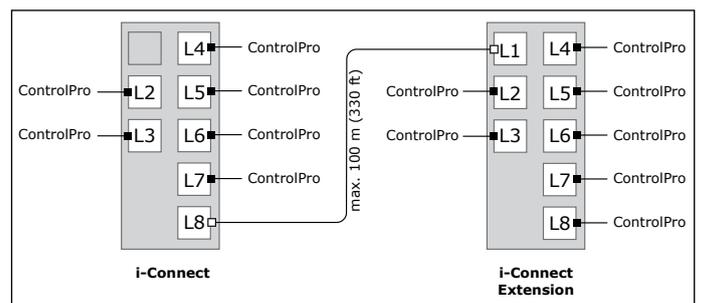

Fig. 4.14 i-Connect + i-Connect Extension

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7. For other options to interconnect the i-Connect and the ControlPro systems: consult your own IT department

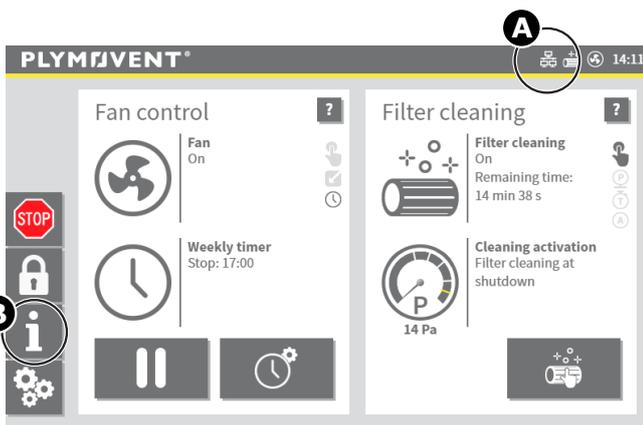> You can connect the i-Connect Extension to any of the 7 available ethernet ports of the i-Connect module.

4.6 Electric connection

- Put the angled connector in the i-Connect module (refer to Fig. 2.1C).
- Connect the cord to the mains.

5 COMMISSIONING

#	Check	OK
i-Connect		
1.	Make sure that all connections are correct.	
2.	Turn on the power (the white LED "Standby" is on). *The i-Connect module starts up. This procedure takes 2 to 3 minutes. The system is ready when the green led "Connected" is on.*	
ControlPro		
3.	Make sure that you have the latest firmware version; refer to https://www.plymovent.com/fw/cp	
4.	Make sure that the ethernet connection is active. In this case, the Homescreen of the HMI shows this icon (**A** on image below):	
5.	The IP address must be within the range: **192.168.123.###**. Select the "i" icon (**B** on image below) on the menu bar of the HMI. The operational info screen shows the actual IP address.	

|		
ControlPro Connect (cloud portal)		
6.	Make sure that you can add machines in your ControlPro Connect cloud portal account.	

6 TROUBLESHOOTING

If the system does not function (correctly), consult the checklist in Table II on page 9 to see if you can remedy the error yourself. Should this not be possible, contact your supplier.

7 ELECTRICAL DIAGRAM

Refer to the separately supplied electrical diagram.
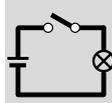
8 DISPOSAL

After life of the product, dispose it of in accordance with federal, state or local regulations.

CE DECLARATION

CE Declaration of Conformity for machinery

We, Plymovent Manufacturing B.V., Koraalstraat 9, 1812 RK Alkmaar, the Netherlands, herewith declare, on our own responsibility, that the product:
- i-Connect

which this declaration refers to, is in accordance with the conditions of the following:

Directives:
- EMC 2014/30 EU | EMC Directive
- LVD 2014/35 EU | Low Voltage Directive

Harmonised Standards:
- EN-IEC 60204-1:2006 | Safety of machinery - Electrical equipment of machines - Part 1: General requirements

Alkmaar, Netherlands, 15th November 2021

Jeroen Crezee
Manager R&D

*An **installation** is defined as a combination of several finished products or components that are assembled by an installer at a given place. The various parts of the installation are intended to operate together in a particular environment and to perform a specific task. The entire installation must comply with the relevant directives and standards. The assembly instructions given by the manufacturer, as well as the whole method of installation, must be in accordance with good engineering practices within the context of installations, as well as installation rules. Considering the above, the installer will be responsible for completing the installation and issuing the final CE Declaration of Conformity.*

Table I   Supported frequency bands

4G (LTE-FDD)
B1 (2100 MHz), B2 (1900 MHz), B3 (1800 MHz), B4 (1700 MHz), B5 (850 MHz), B7 (2600 MHz), B8 (900 MHz), B12 (700 MHz), B13 (1800 MHz), B18 (850 MHz), B19 (800 MHz), B20 (800 MHz), B25 (1900 MHz), B26 (850 MHz), B28 (700 MHz), 4G (LTE-TDD): B38 (2600 MHz), B39 (1900 MHz), B40 (2300 MHz), B41 (2500 MHz)
3G
B1 (2100 MHz), B2 (1900 MHz), B4 (1700 MHz), B5 (850 MHz), B6 (800 MHz), B8 (900 MHz), B19 (800 MHz)
2G
B2 (1900 MHz), B3 (1800 MHz), B5 (850 MHz), B8 (900 MHz)

Fig. I   Dimensions

	mm	inch
A	221,5	8¾
B	264	10⅜
C	236	9¼
D	274	10¾
E	149	5⅞
F	141	5½

Fig. II   Mains cables

Mains plug (A)	type E/F (CEE 7/7)	type B (NEMA 5-15)
Connector (B)	IEC 60320-C13 | right angled (90°)	
Cable length	1,8 m (6 ft)	
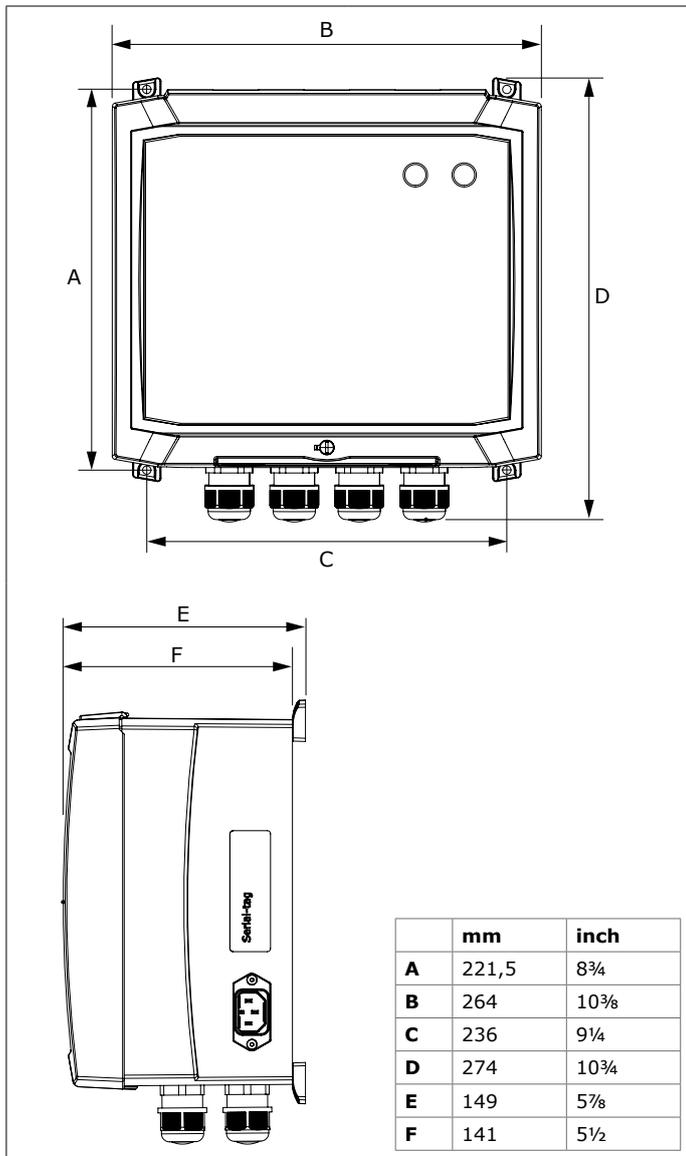
Fig. III   How to open the enclosure

• Push the notches simultaneously to unlock the cover.

Fig. IV   Installation instructions of an Ethernet cable with pre-assembled RJ45 connector through a cable gland
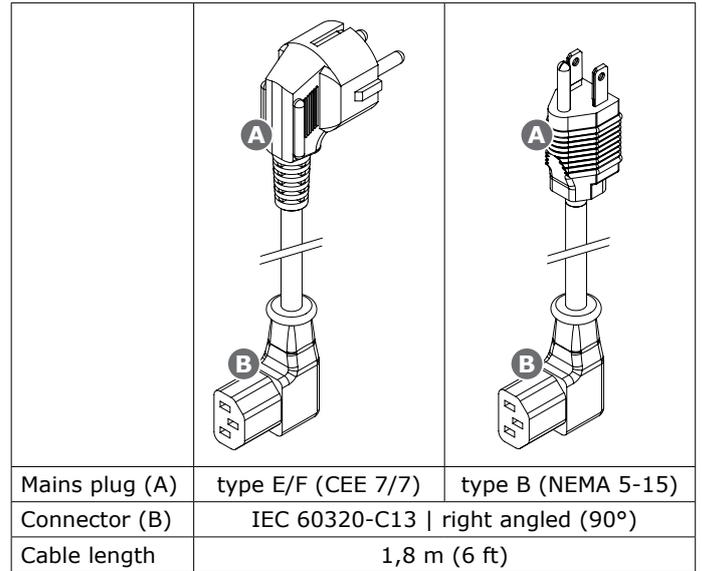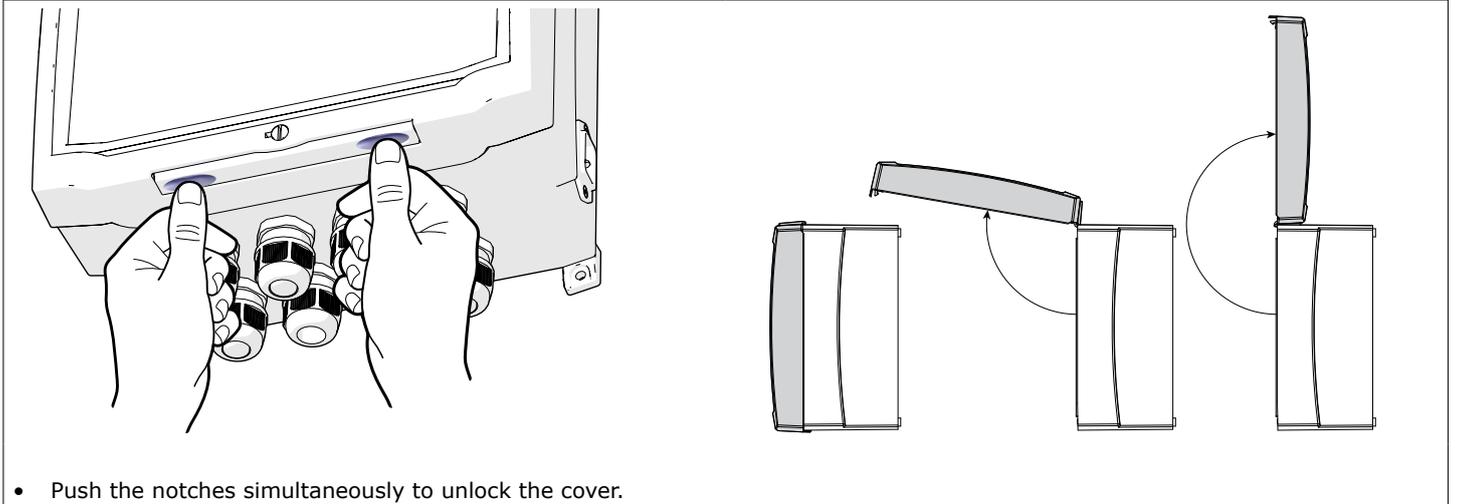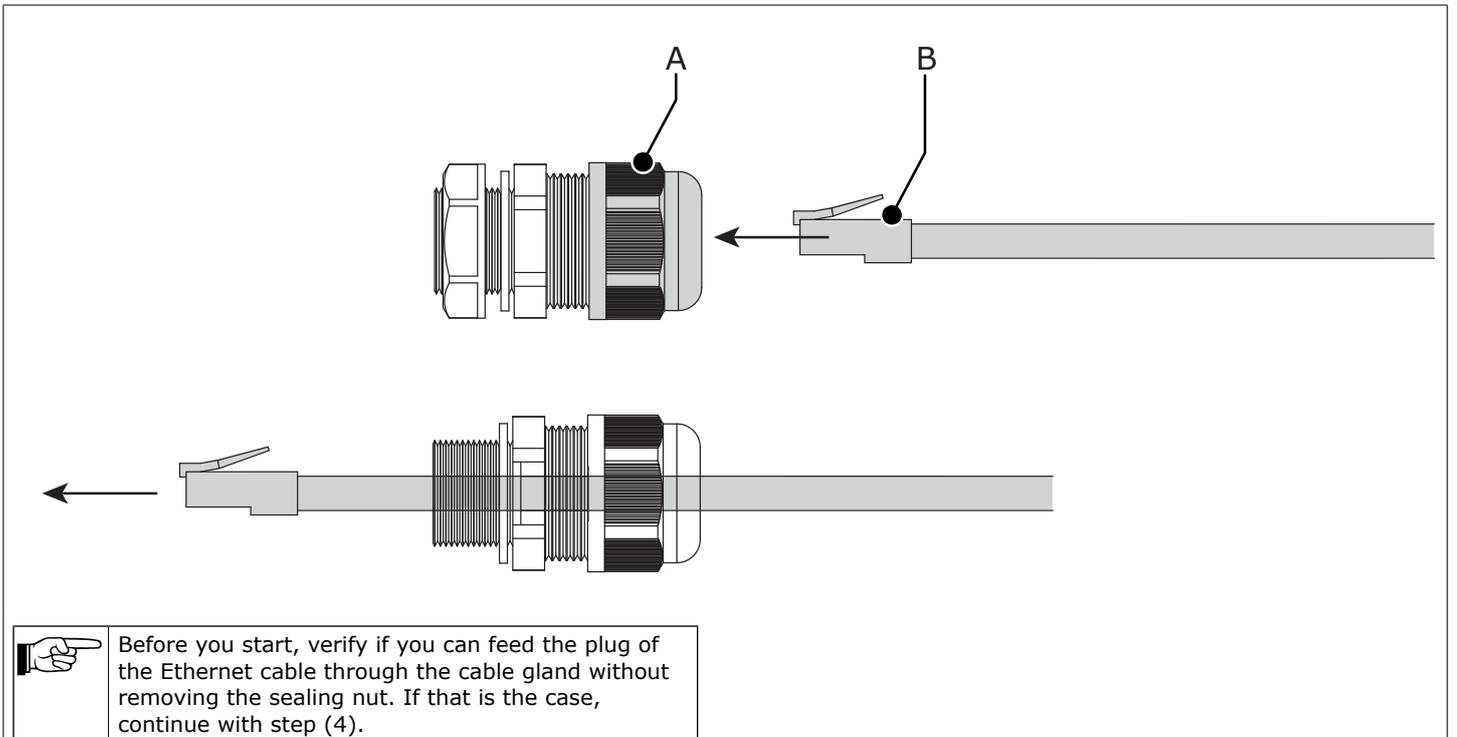

☞ Before you start, verify if you can feed the plug of the Ethernet cable through the cable gland without removing the sealing nut. If that is the case, continue with step (4).

• (1) Loosen and remove the sealing nut (A), including the claw (inner part), of the cable gland.
• (2) Feed the connector (B) through the sealing nut and claw.
• (3) Feed the connector into the enclosure through the body of the cable gland.
• (4) Attach the connector to the Ethernet port of your choice.
• (5) Fasten the sealing nut. Make sure that the cable is free of tension.

Table II   Troubleshooting

Symptom	Type of connection	Possible cause	Solution	
Problem: the **i-Connect** does not function (properly)				
			internet i-Connect ControlPro/HMI	
The white LED is off	Mains	No power supply to the i-Connect	Connect the power supply	
The green LED is off	Internet (both Ethernet and mobile)	The system is offline due to an internet failure	Generally: In this case system will try to restore the connection. If this does not work, the i-Connect will restart itself after 10 minutes and try to restore again.	
			In case of a sudden failure (the green LED goes off while the system has functioned properly so far), we suggest to wait max. 15 minutes to see if the system restores the connection itself.	
		Unknown	Reset the i-Connect module: • Remove the plug of the i-Connect from the socket. • Wait at least 30 seconds. • Put the plug into the socket. *The reset procedure takes 2 to 3 minutes. The system is ready when the green led "Connected" is on (secure tunnel online).*	
	Ethernet to internet	Problem with the Ethernet connection	Check the Ethernet cable and connections. If necessary, check this with your local IT department as well.	
		The Ethernet cable is not connected properly	Connect the Ethernet cable to the WAN port of the router; refer to Fig. 4.10 on page 4.	
			If the small green LED under the WAN port is on or blinking, the connection is correct.	
		No internet access on the network connection	Arrange internet access on the network connection with your local IT department.	
	Mobile to internet	No mobile connection	Verify that you have internet reception. The green LEDs on the router show the actual status.	
			If you have no or poor reception: • connect an external (outdoor) antenna • make a connection via an Ethernat cable; refer to Fig. 4.10 on page 4.	
			Make sure that the PIN of the SIM card is **0000**. You can verify this by putting the SIM in another device, such as your mobile phone.	
			Make sure that the SIM card has an activated data bundle. You can verify this by putting the SIM in another device, such as your mobile phone.	

Symptom	Type of connection	Possible cause	Solution
Problem: the **ControlPro/HMI** is not connected (properly)			
internet		i-Connect	ControlPro/HMI
No active Ethernet connection on the ControlPro	Ethernet cable	The Ethernet cable is not connected properly	Make sure that the Ethernet cable is connected to the Ethernet port of the ControlPro/**HMI**. *A connection to the Ethernet port of the ControlPro/Panel will not work.*
			Check the Ethernet cable and connections. You must have a direct connection between the ControlPro/HMI and the i-Connect module. *Intervention of routers and switches is not allowed.*
		Ethernet connection with wrong IP address	Make sure that the IP address is within the range: **192.168.123.###**. *If not, the ControlPro/HMI is possibly connected to another (local) network instead of the i-Connect.*
It is not possible to connect the ControlPro with the cloud portal service of Plymovent	Ethernet cable	Wrong serial number and/or MAC address	Make sure that you have entered the correct serial number and MAC address of the ControlPro/HMI in the cloud portal. You can find these: - on the identification plate of the ControlPro/HMI housing; and - in the operational info screen of the ControlPro/HMI
		The firmware is outdated	Update the ControlPro/HMI and the ControlPro/Panel with the latest firmware version. Refer to paragraph 4.5.3.
		You have not restarted the ControlPro/Panel after the firmware update	Restart the ControlPro/Panel; refer to paragraph 4.5.3.

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