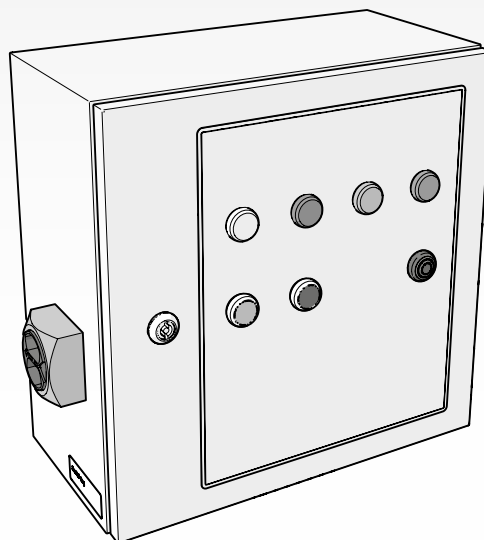


Control panel

CONTROLGO



EN

Installation and user manual

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EN | ORIGINAL INSTRUCTION

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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, use, maintain and repair 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.
	CAUTION Denotes risk of electric shock.

Text indicators

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

Product indications / Abbreviations

Product type:	Equals to:
- ControlGo/Panel	Panel
- Control/SlaveBoard	SlaveBoard
- MDB GO	MDB
- SCS GO	SCS
- MultiDust Bank	MDB

1 INTRODUCTION

1.1 Identification of the product

The identification plates contain, among other things, the following data:

- product name
- serial number
- supply voltage and frequency
- power consumption



1.2 General description

ControlGo of Plymovent is an intelligent control panel, including the required connection cables. This system controls the compressed air valves of the connected filter system MDB or SCS and the connected extraction fan.

1.2.1 ControlGo + MDB

Fig. 1.1

- A Filter system MDB¹
- B SlaveBoard²
- C Panel [control panel]
- D Fan control equipment (refer to paragraph 1.3)
- E Extraction fan (refer to paragraph 1.3)

1. Shown: rear of the filter system
2. Integrated on the rear of each filter module

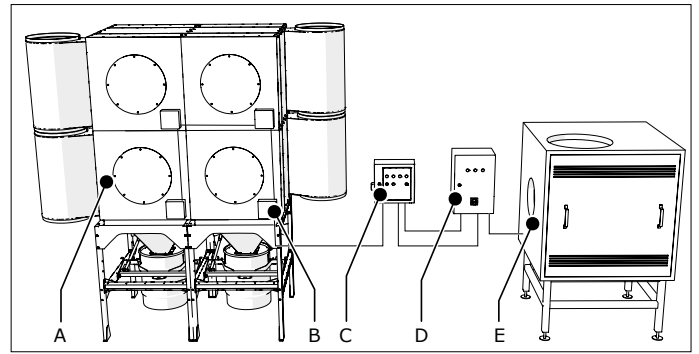


Fig. 1.1 ControlGo + MDB

1.2.2 ControlGo + SCS

Fig. 1.2

- A Filter system SCS
- B Panel [control panel]
- C Fan control equipment (refer to paragraph 1.3)
- D Extraction fan (refer to paragraph 1.3)

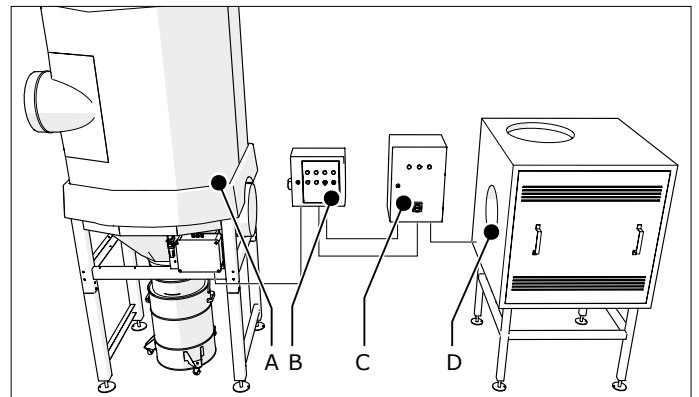


Fig. 1.2 ControlGo + SCS

1.3 Product combinations

1.3.1 Required products

To operate the system, selection of the following products is necessary:

Extraction fan	
- Plymovent SIF (Outdoor)	specific type and motor power depends on the configuration
Mounting frame	
- Plymovent FRAME SIF	specific type depends on the selected extraction fan and configuration
Fan control equipment	
<i>Recommended way:</i>	
- Plymovent VFD/Panel ³ (frequency inverter)	specific type depends on the selected extraction fan
<i>Other options:</i>	
- Other type of frequency inverter (third party)	fan start/stop with optional alarm feedback only
- Star-delta switch	fan start/stop with optional alarm feedback only
- Other type of motor starter	e.g. Direct online (DOL)

3. Including main switch to de-energize the entire filter system, thus complying with CE safety requirements. Additionally needed: pressure transmitter PT-1000 or PT-2500.

1.4 Options and accessories

The following products can be obtained as an option and/or accessory:

- LightTower
- PT-2500 | External pressure sensor⁴

1.5 Technical specifications

1.5.1 ControlGo/Panel

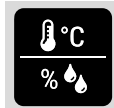
Dimensions	refer to Fig. 1 on page 17	
Weight	11 kg (24 lbs.)	
Material of housing	sheet metal	
Protection class	IP 65	
Input voltage	100-240 VAC, 50-60Hz	
Internal operating voltage	24 VDC	
Power consumption	max. 60 W	
Inputs	5x digital input (10 mA wetting current) 1x analogue input (4-20 mA)	
Outputs	2x relay output (max. 30 VDC, 2,5 A) 2x output "low side switch" (24 VDC, 2,5 A) 1x output "low side switch" (24 VDC, 250 mA) 4x output "low side switch" (24 VDC, 30 mA)	
Internal connectors	1x CAN + power (Control/SlaveBoard) 1x USB 2.0 (host only, USB A receptacle) 1x ethernet (for service purposes) 1x RS-232 (for service purposes)	
Internal pressure sensors	1x integrated pressure sensor Working range: 0-4000 Pa (0-16 in. WG)	
Guidelines & standards	EMC 2014/30 EU EN 61000-6-2 EN 61000-6-4	LVD 2014/35 EU IEC 60204-1 IEC 61131-2 IEC 61439-1
Approvals & certificates	CE cULus (UL 508A)	

1.5.2 Control/SlaveBoard

Operating voltage	24 VDC (+/- 15%)	
Current	max. 2,5 A	
Internal connectors	2x CAN + power (max. 24 VDC, 2,5A)	
Guidelines & standards	EMC 2014/30 EU EN 61000-6-2 EN 61000-6-4	LVD 2014/35 EU IEC 60204-1
Approvals & certificates	CE	

1.6 Ambient conditions

1.6.1 ControlGo/Panel



Ambient temperature:	Pressure sensors:		
	internal	external	
	- min.	0°C (32°F)	-20°C (-4°F)
	- nom.	+20°C (68°F)	+20°C (68°F)
- max.	+50°C (122°F)	+50°C (122°F)	
Max. relative humidity	80%		
Suitable for outdoor use	yes		

1.6.2 Control/SlaveBoard

The ambient conditions of the MDB or SCS filter system apply.

4. For the filter pressure

2 PRODUCT DESCRIPTION

2.1 Components

The product consists of the following main components and elements:

2.1.1 ControlGo/Panel

Fig. 2.1

- A Housing
- B Control panel
- C PC board (master board)
- D Tumbler switch 0-1 | Service Mode
- E Main switch
- F Power supply
- G Bottom plate with cable glands

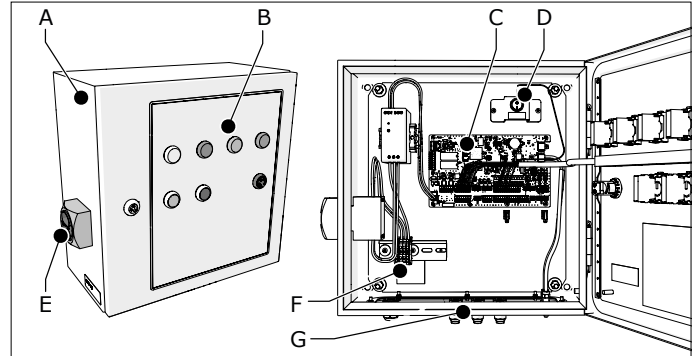


Fig. 2.1 Main components Panel

2.1.2 Control/SlaveBoard

Fig. 2.2

- A Box
- B PC board (slave board)

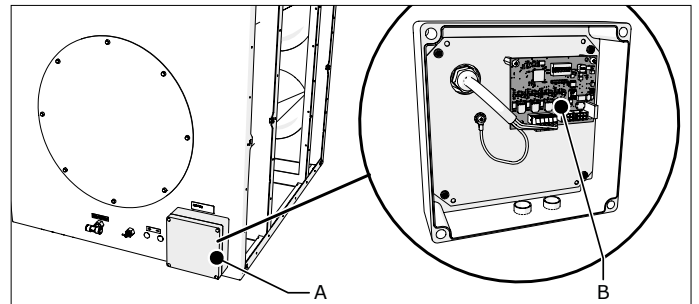


Fig. 2.2 Main components SlaveBoard

2.1.3 Connection cables

Cables to connect the Panel to the SlaveBoard(s).

2.2 Operation

ControlGo is an intelligent platform that controls a filter system MDB or SCS and the connected extraction fan. It monitors the availability of compressed air and arranges the filter cleaning system.

You can operate the system in two ways:

- manually by the push buttons on the control panel
- automatically by signals from an external device

Fig. 1.1 and Fig. 1.2 show the connection of the components of ControlGo with the filter system and extraction fan.

2.2.1 Automatic progressive filter cleaning

The filter cartridges of the connected filter system are cleaned from the inside out by compressed air pulses. To optimize the

filter lifespan while minimizing the required amount of compressed air, ControlGo applies progressive filter cleaning. This means that the filter cleaning intensity is adapted to the actual pressure over the filter cartridges, according to certain preset threshold values.

Threshold values MDB:

Threshold value	Pressure	Offline cycles	Delay	Online cycles
1	800 Pa	2	4 h	4
2	1000 Pa	4	2 h	8
3	1200 Pa	6	1 h	12
4	1400 Pa	continuous filter cleaning		
	1300 Pa	pressure fallback		
	1600 Pa	filters clogged		

During one cleaning cycle each filter cartridge gets one compressed air pulse.

Threshold values SCS:

Threshold value	Pressure	Offline cycles	Delay	Online cycles
1	1000 Pa	1	4 h	2
2	1200 Pa	2	2 h	4
3	1400 Pa	3	1 h	6
4	1600 Pa	continuous filter cleaning		
	1500 Pa	pressure fallback		
	2000 Pa	filters clogged		

During one cleaning cycle the filter cartridges are cleaned sectionwise by compressed air pulses⁵. Two additional offline cleaning cycles take place after shutdown of the fan.

2.2.2 Forced filter cleaning

MDB

If the pressure drop has remained below 800 Pa (3.2 in. WG) during 30 running hours of the system, one offline filter cleaning cycle takes place.

SCS

If the pressure drop has remained below 1000 Pa (4 in. WG) during 30 running hours of the system, three offline filter cleaning cycles take place.

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.

4 INSTALLATION

4.1 Tools and requirements

You need the following tools to install the products:

- basic tools
- tools for electrical connections⁷



4.1.1 To be sourced locally

Mounting material⁸:

- to install the Panel to the wall (hardware max. Ø 10 mm)



Connection cables⁹:

- refer to Table I on page 19 (#3 to 13) for the cable specifications

If necessary:

- additional cable glands M16

4.2 Unpacking

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



4.2.1 ControlGo/Panel

- Panel (control panel)
- double-bit key
- mounting bracket (4), incl. mounting material
- pneumatic hoses, incl. mounting material:
 - 2x10 m (for filter pressure)
- installation and user manual
- electrical diagram
- UL compliance sticker¹⁰

4.2.2 Connection cables¹¹

Fig. 4.1

- A Panel → SlaveBoard cable¹¹, incl. cable gland, termination plug and heat shrink tubes
- B SlaveBoard → SlaveBoard cable¹², incl. cable glands

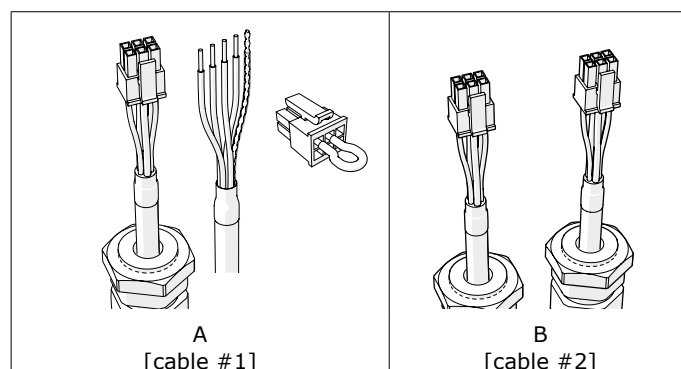


Fig. 4.1 Connection cables

- E.g. heat gun, cable stripping tool
- The type of mounting material depends on the wall type
- Number and type of cables depends on the selected options and control equipment
- For use in North America
- The packages contain mounting material for the cables as well; refer to paragraph 4.4.3 and 4.4.4
- MDB only

3 SAFETY INSTRUCTIONS

General

The ControlGo is delivered as part of a filter system MDB or SCS of Plymovent. The safety instructions written in the related manuals apply to the ControlGo as well.



Intended use⁶

The product has been designed exclusively as control equipment for use with a filter system type MDB or SCS of Plymovent with the connected extraction fan. Using the product for other purposes is considered contrary to its

5. 40 pulses per cycle

6. "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.

4.3 Mounting



ATTENTION

Do not expose any component of ControlGo to vibrations or heat radiation.

You must install the Panel at a clearly visible and accessible position.

4.3.1 ControlGo/Panel

To install the Panel, do the following.

Fig. 4.2

- Attach the mounting brackets (A) to the Panel with the supplied mounting material (B).
- Install the Panel to the wall. Make sure that it is level.



ATTENTION

Before you install the Panel, make sure that the wall is strong enough. Refer to paragraph 1.5.1 for the weight.

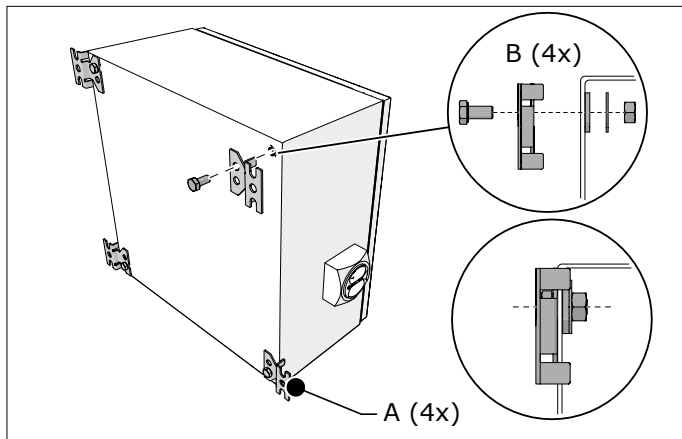


Fig. 4.2 Mounting of the Panel

Fig. 4.3

North America only:

- To comply with UL standard 508A, put the corresponding sticker on the Panel.

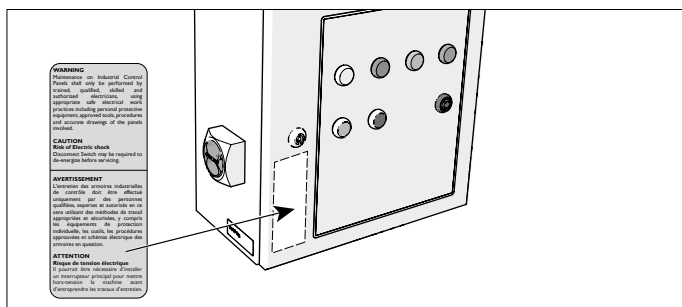


Fig. 4.3 UL compliance sticker

The bottom plate contains the following cable glands and connectors:

Fig. 4.4

- A metal cable gland M20 for the mains cord
- B universal cable glands M16 (6)
- C bulkhead connectors (2) for the pressure tubes¹³

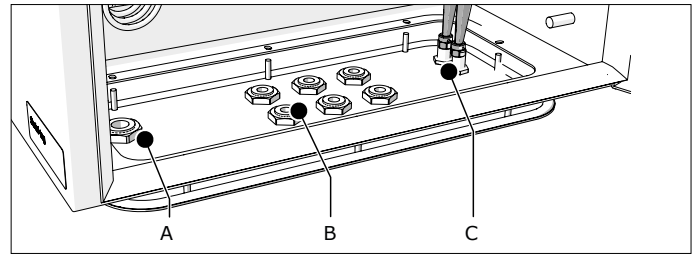


Fig. 4.4 Bottom plate

Table I on page 19 gives an overview of the necessary and optional cables that you need to install the system.

- Depending on the selected options and control equipment, determine the number and type of cables that you need.

If the number exceeds 6 cables (excluding the mains cord), you must install additional cable glands. In that case, do the following.

Fig. 4.5

- Loosen the pneumatic hoses (B) from the bulkhead connectors from the inside of the Panel.
- Loosen and remove the bottom plate (C+D).
- Open the necessary number of knock-out holes¹⁴ (A).
- Put additional cable glands M16 (E) in the bottom plate and tighten them.
- Install the bottom plate.
- Fasten the pneumatic hoses to the bulkhead connectors.



WARNING

You must remove the bottom plate to put additional cable glands to avoid damage to the interior parts of the Panel.

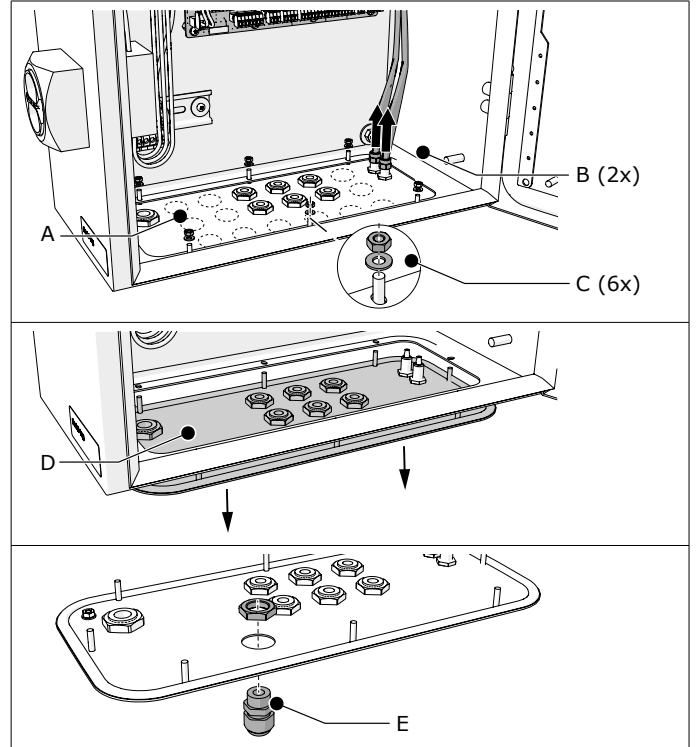


Fig. 4.5 Additional cable glands (optional)

4.4 Electric connection

This chapter describes the electric connection of all necessary and optional components to the Panel.






13. Filter pressure + and -

14. Max. 12

Depending on the specific configuration of the filter system, some of the connections on the PC board inside the Panel remain unused. The PC board contains detachable screw terminal blocks ("connectors").

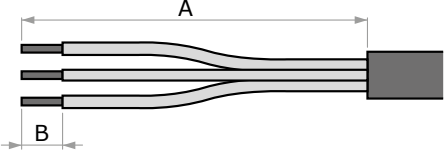
Table I on page 19 gives an overview of the necessary and optional cables¹⁵ that you need to install the system.

	<p>CAUTION</p> <ul style="list-style-type: none"> - Shorten excessive cable lengths. A coil or bundle of cables can cause electromagnetic interference. - Make sure that you connect the wiring in the correct way. Wrong wiring may cause permanent damage to the PC board. - Use cable glands to insert cables into the Panel. - Keep the blanking plugs on the cable glands that are not in use to avoid pollution of the Panel.
	<ul style="list-style-type: none"> - For all connections, also refer to the separately supplied electrical diagram. - Refer to Table II on page 19 for a specification of the digital inputs (high/low).

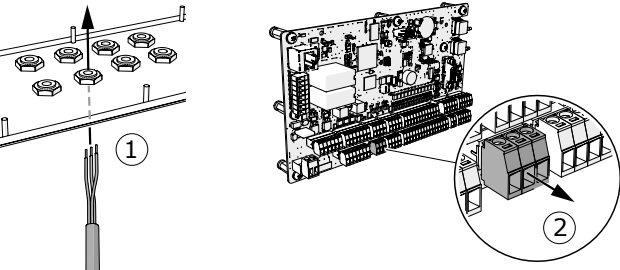
 **General instructions to connect a cable to a certain connector** (unless otherwise stated)

Wire stripping:

	mm	in.
A	50	2
B	6	¼

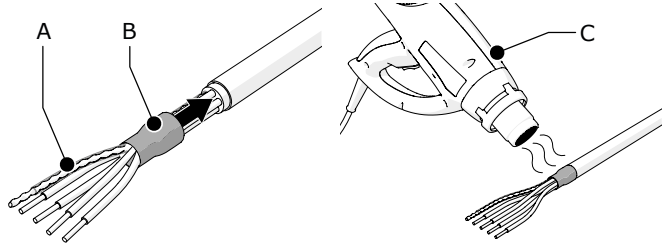


- (1) Put the cable through a cable gland M16 into the Panel.
- (2) Carefully remove the connector from the PC board. Pull the connector in a *horizontal* direction.
- Cut the cable to the correct length and strip the wires.



Shielded cables only:

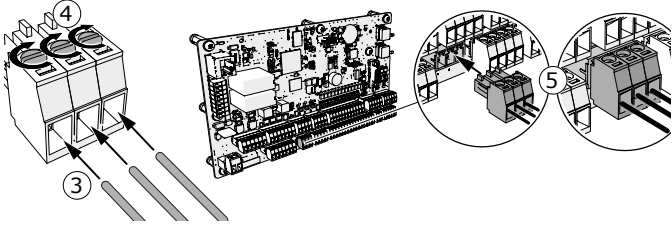
- Put a shrink tube on the drain wire (A) and the cable jacket (B).
- Heat shrink the shrink tube with a heat gun (C).



15. Recommended cable specifications; use cables with a max. wire diameter 1,5 mm² (AWG 16)

All cables:

- (3) Put the wires into the connector.
- (4) Tighten the screws.
- (5) Put the connector back on the PC board.
- Tighten the cable gland.



Detachable screw terminal block ("connector")

Wire bridges

The PC board is provided with a number of wire bridges.

Connection	Remark																																																																
<table border="1"> <tr> <th colspan="12">Digital input 1-5</th> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td> </tr> <tr> <td>+24V</td><td>IN 1</td><td>+24V</td><td>IN 2</td><td>+24V</td><td>IN 3</td><td>+24V</td><td>IN 4</td><td>+24V</td><td>IN 5</td><td>COM1</td><td>GND</td> </tr> <tr> <td colspan="7"></td> <td style="text-align: center;">A</td> <td colspan="4"></td> <td style="text-align: center;">B</td> </tr> </table>		Digital input 1-5												1	2	3	4	5	6	7	8	9	10	11	12	+24V	IN 1	+24V	IN 2	+24V	IN 3	+24V	IN 4	+24V	IN 5	COM1	GND								A					B															
Digital input 1-5																																																																	
1	2	3	4	5	6	7	8	9	10	11	12																																																						
+24V	IN 1	+24V	IN 2	+24V	IN 3	+24V	IN 4	+24V	IN 5	COM1	GND																																																						
							A					B																																																					
A	<u>IN 4</u>	internal filter pressure sensor (refer to paragraph 4.4.10)																																																															
B	<u>COM1 to GND</u>	<i>do not remove the wire bridge!</i>																																																															
<table border="1"> <tr> <th colspan="16">Digital input 6-12</th> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> <tr> <td>+24V</td><td>IN 6</td><td>+24V</td><td>IN 7</td><td>+24V</td><td>IN 8</td><td>+24V</td><td>IN 9</td><td>+24V</td><td>IN 10</td><td>+24V</td><td>IN 11</td><td>+24V</td><td>IN 12</td><td>COM2</td><td>GND</td> </tr> <tr> <td colspan="3"></td> <td style="text-align: center;">C</td> <td colspan="6"></td> <td style="text-align: center;">D</td> <td colspan="4"></td> <td style="text-align: center;">E</td> </tr> </table>		Digital input 6-12																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	+24V	IN 6	+24V	IN 7	+24V	IN 8	+24V	IN 9	+24V	IN 10	+24V	IN 11	+24V	IN 12	COM2	GND				C							D					E
Digital input 6-12																																																																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																																																		
+24V	IN 6	+24V	IN 7	+24V	IN 8	+24V	IN 9	+24V	IN 10	+24V	IN 11	+24V	IN 12	COM2	GND																																																		
			C							D					E																																																		
C	<u>IN 6</u>	<i>do not remove the wire bridge!</i>																																																															
D	<u>IN 11</u>	external alarm signal (refer to paragraph 4.4.7)																																																															
E	<u>COM2 to GND</u>	<i>do not remove the wire bridge!</i>																																																															

Fig. 4.6 Wire bridges

4.4.1 Mains cord (cable #3)

To install the mains cord, do the following.


	<p>CAUTION</p> <p>High voltage connection</p>
---	--

Fig. 4.7

- Put the mains cord (B) through the metal cable gland¹⁶ (C) into the Panel.
- Connect the mains cable to the terminal block (A).
- Tighten the cable gland.

16. Size M20

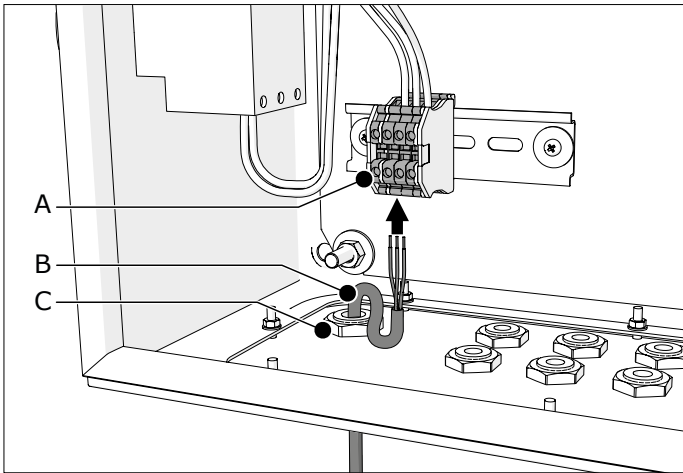



Fig. 4.7 Connection of the mains cord

4.4.2 Fan control

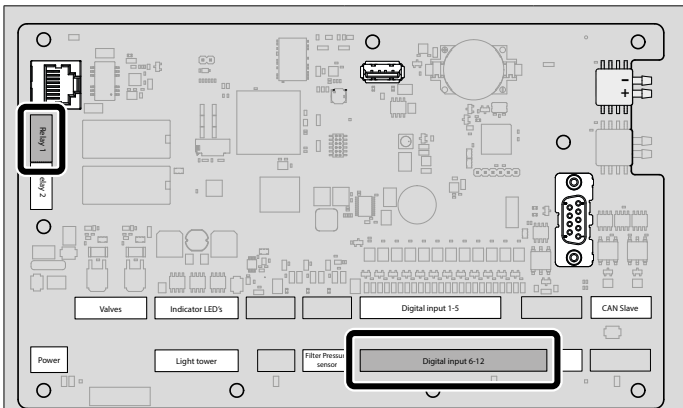
There are various types of fan control equipment:

- Plymovent VFD/Panel (frequency inverter)
- other type of frequency inverter (third party)
- star-delta switch
- other type of motor starter, e.g. Direct online (DOL)

 For more information about the Plymovent VFD/Panel, refer to the Danfoss documentation that is supplied with the product.

Connections/functionalities:

- relay output (potential-free contact) for start/stop signal¹⁷
- alarm input; high input triggers the "Fan alarm"



Cable #11

NO 1	1	Relay 1
NC 1	2	
COM 1	3	
	4	



[page 6]

Digital input 6-12															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
+ 24V	IN 6	+ 24V	IN 7	+ 24V	IN 8	+ 24V	IN 9	+ 24V	IN 10	+ 24V	IN 11	+ 24V	IN 12	COM2	GND

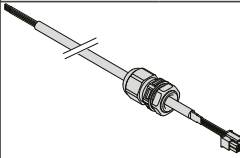
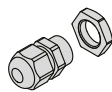
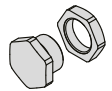


input IN 9

Fig. 4.8 Connection of fan control equipment

4.4.3 Panel → SlaveBoard (MDB only)

The SlaveBoard is integrated on the rear of each filter module MDB-BM/2 and MDB-BM/4 (refer to Fig. II on page 17).

Cable #1 is supplied with a cable gland for connection to the SlaveBoard box. You need the other parts in this kit to complete the installation (see text in italics for an explanation).

Scope of supply	Cable #1
	Cable Panel → SlaveBoard, incl. cable gland
 3x	Cable gland M16 + nut <i>For installation of the pneumatic hoses (filter pressure sensor); refer to par. 4.5</i>
	Screw plug + nut M20 <i>For installation on the last filter module</i>
	Heat shrink tube 50 mm + 30 mm <i>Refer to "Shielded cables only:" on page 6</i>
	Termination plug <i>Refer to Fig. 4.11B on page 9</i>

Each SlaveBoard box contains two blind plugs and two disposable cover caps on the sides. The final position of the blind plugs depends on the connection sequence of the SlaveBoards.


 - Connect the cable to the SlaveBoard first. Then cut the cable to the necessary length.
- Start to connect the filter module that is closest to the Panel.
- Refer to Fig. IV on page 17 for an example of the correct connection sequence.

Fig. 4.9

- Remove the lid (A) of the SlaveBoard box.
- Remove the two cover caps (E).
- If necessary, change the position of the blind plug(s).
- Loosen the cable gland (C) from the cable and remove the nut.
- Put the cable into the SlaveBoard and put the nut (B) back over the cable.
- Connect the cable to the CAN IN connector (D) on the PC board.
- Tighten the cable gland.

17. Max. 30V, 2,5A

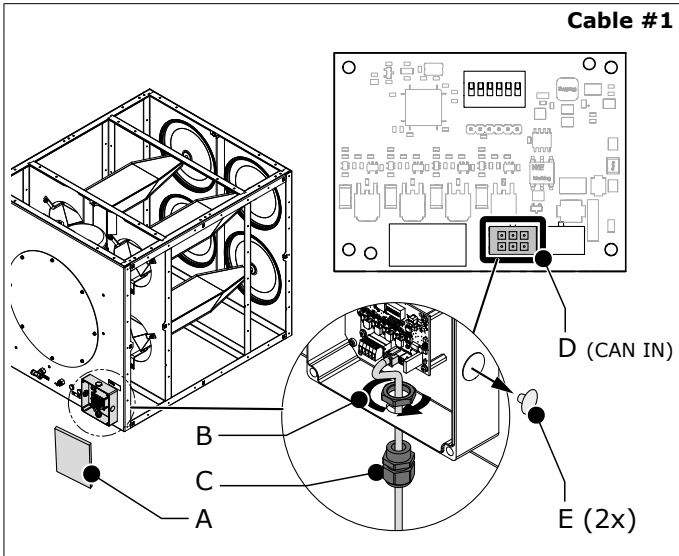


Fig. 4.9 Connection of SlaveBoard

Fig. 4.10

- Cut the cable to the necessary length for connection to the Panel.

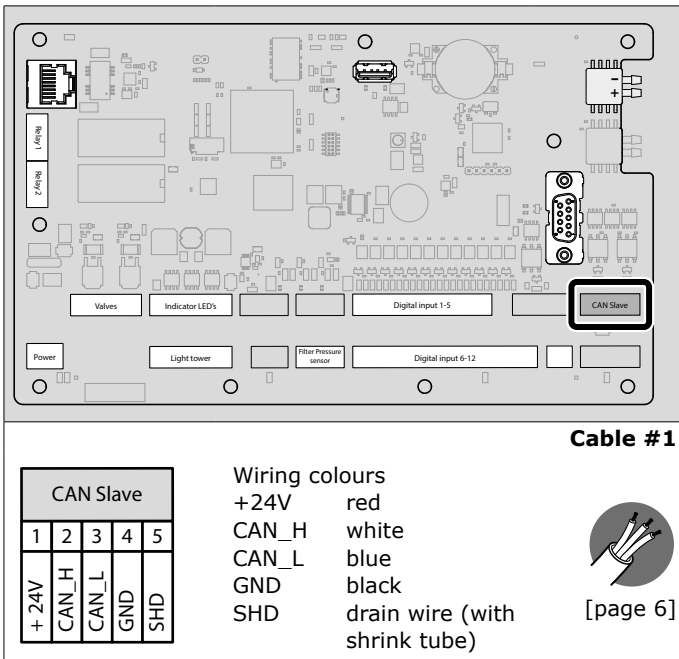


Fig. 4.10 Connection of SlaveBoard → Panel

In case of multiple filter modules

- Proceed with paragraph 4.4.4

In case of one (1) filter module

Fig. 4.11

- Put the termination plug¹⁸ (B) on the CAN OUT connector on the PC board.

Fig. 4.12 + Fig. 4.13¹⁹

- Make sure that the DIP switches are correctly set.
- Close the lid.

4.4.4 SlaveBoard → SlaveBoard

In case of multiple filter modules, you must make a serial connection of the cables.

The number of cables supplied is equal to the number of filter modules, minus 1 (one). Each filter module contains four screw holes for connection of the tube clamps.

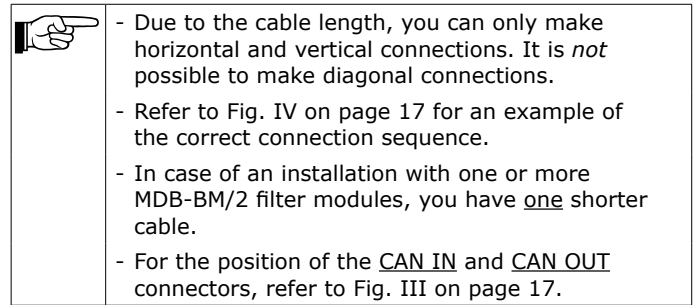
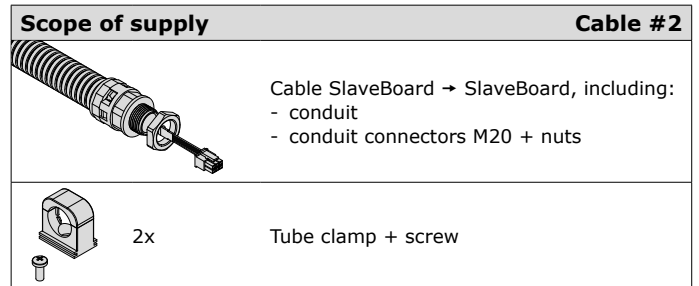


Fig. 4.11

- Remove the lids of all SlaveBoards.
- Remove the cover caps²⁰ from the sides.
- If necessary, change the position of the blind plug(s).
- Install 2 tube clamps per cable in the screw holes (A) of each filter module²¹. Fasten them with a screw.

To install the conduit – including cable – between two SlaveBoard boxes:

- Remove the nuts of the conduit connectors.
- Put the cable ends through the openings of the SlaveBoard boxes that you want to connect.
- Put the nuts over the cable ends inside the box and fasten them to the conduit connectors (C).
- Click the conduit in the tube clamps.
- Connect the cable to the CAN OUT connector of the first filter module.
- Connect the other end of the cable to the CAN IN connector of the next filter module.
- Continue the same way to connect all SlaveBoards.
- Put the termination plug²² (B) on the CAN OUT connector of the last filter module.
- Put a screw plug in the opening of the last SlaveBoard box and tighten it with the nut M20²³.

20. 2 per SlaveBoard

21. 1 tube clamp in case of a filter module MDB-BM/2

22. Supplied with Panel → SlaveBoard cable (#1)

23. Both supplied with Panel → SlaveBoard cable (#1)

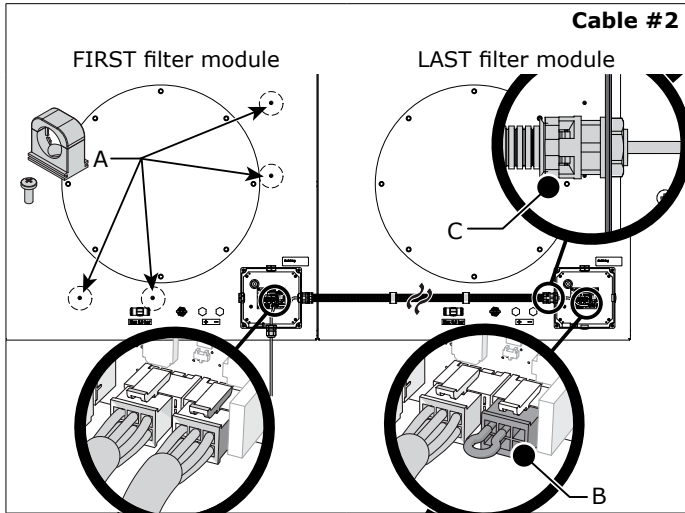


Fig. 4.11 SlaveBoard → SlaveBoard

Address SlaveBoards

To arrange the compressed air valves of the entire filter system to pulse in the correct sequence, you must configure the DIP switches of each individual filter module.

The DIP switch module²⁴ contains 6 DIP switches. Position 5+6 are pre-configured in the factory.

Fig. 4.12

- Make sure that DIP switches position 5+6 are correctly set.

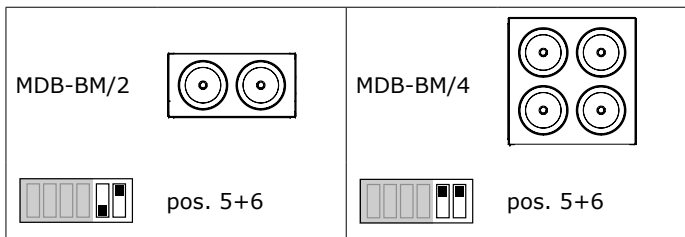


Fig. 4.12 DIP switches pos. 5+6

Fig. 4.13

- Set the DIP switches 1 to 4 as indicated. It shows the address configurations of max. 16 filter modules (=MDB-64).

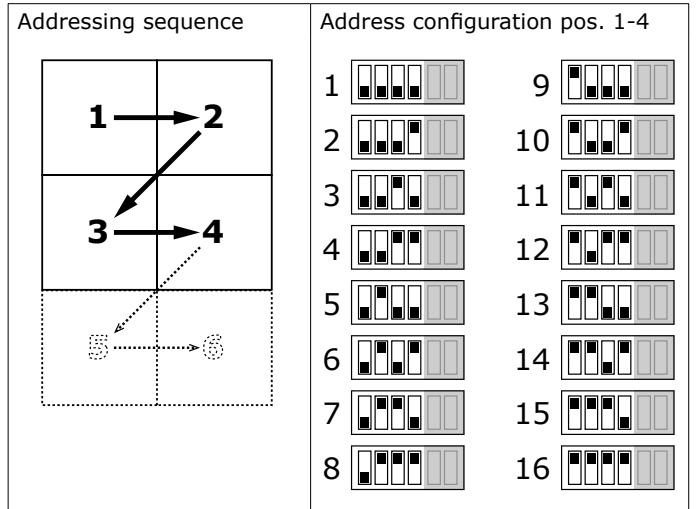


Fig. 4.13 Setting of DIP switches pos. 1 to 4

- Close all lids.

The outside of the lid contains a sticker that helps you to identify each separate filter module.

Fig. 4.14

- Use a black marker to number the filter modules. Make sure that the sequence corresponds with the setting of the DIP switches.

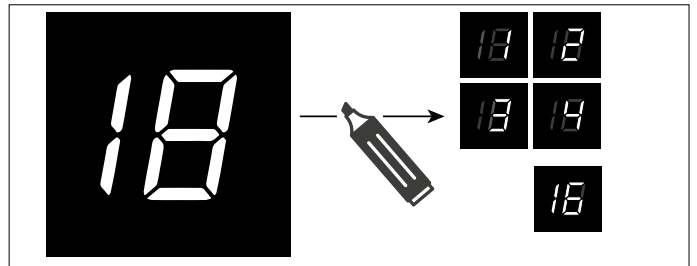


Fig. 4.14 Numbering of the filter modules

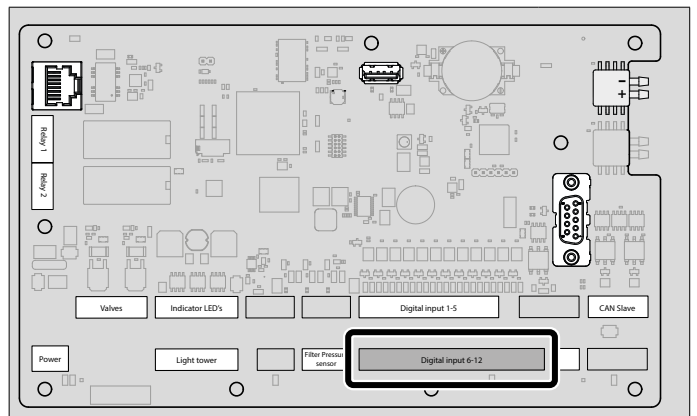
4.4.5 Compressed air switch MDB²⁵

The compressed air switch monitors the availability of compressed air²⁶.

ATTENTION

Make sure that you address the filter modules in the correct sequence:

- start with the upper left filter module (1)
- address from left to right
- subsequently from top to bottom



24. The red module on the PC board

25. Proceed with paragraph 4.4.6 in case of an SCS

26. The system gives a warning signal when there is no compressed air available

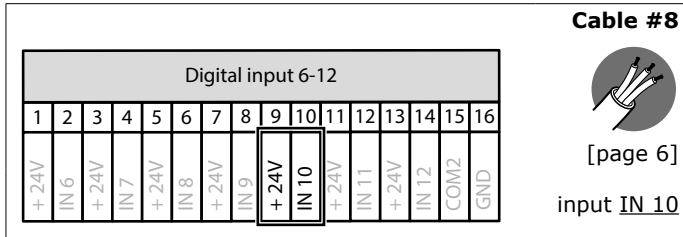
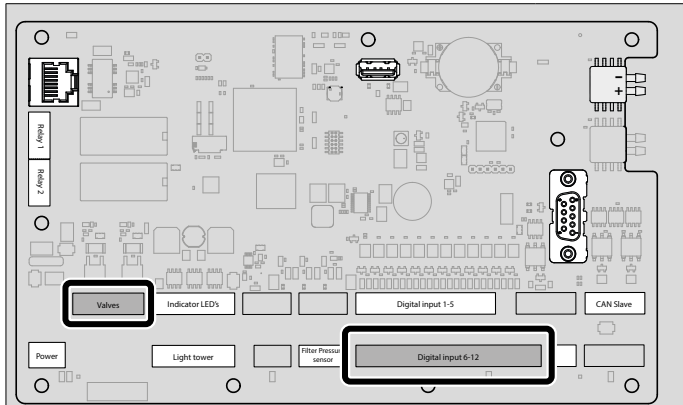


Fig. 4.15 Connection of compressed air switch

4.4.6 Control cable

In case of one (1) SCS

Besides the compressed air switch, cable #12 connects the compressed air valve of the SCS as well.



Cable #12



[page 6]

input IN 10

Digital input 6-12															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
+24V	IN 6	+24V	IN 7	+24V	IN 8	+24V	IN 9	+24V	IN 10	+24V	IN 11	+24V	IN 12	COM2	GND

Valves					
1	2	3	4	5	6
+24V	OUT 1	GND	+24V	OUT 2	GND

input OUT 1

Fig. 4.16 Connection of the control cable

In case of two (2) SCS

In case of two SCS systems, you must connect the second one as a "slave" to the first one ("master").

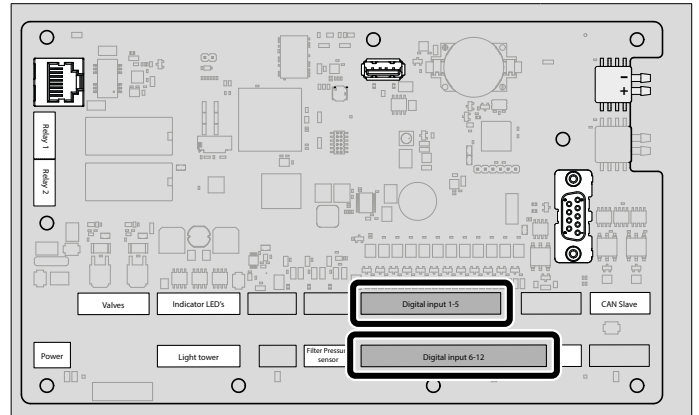
Fig. 4.16

- Connect the second SCS to output OUT 2.

4.4.7 Input signals (options)

If desired, you can connect the ControlGo to a start/stop signal and/or an alarm signal from an external device²⁷;

- start/stop signal: cable #4
- alarm signal: cable #5 [remove the wire bridge from input IN 11]



Cable #4



[page 6]

input IN 5

Digital input 1-5											
1	2	3	4	5	6	7	8	9	10	11	12
+24V	IN 1	+24V	IN 2	+24V	IN 3	+24V	IN 4	+24V	IN 5	COM1	GND

Cable #5



[page 6]

input IN 11

Digital input 6-12															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
+24V	IN 6	+24V	IN 7	+24V	IN 8	+24V	IN 9	+24V	IN 10	+24V	IN 11	+24V	IN 12	COM2	GND

Fig. 4.17 Connection of external input signals

4.4.8 Relay outputs (cable #6 and #7) (options)

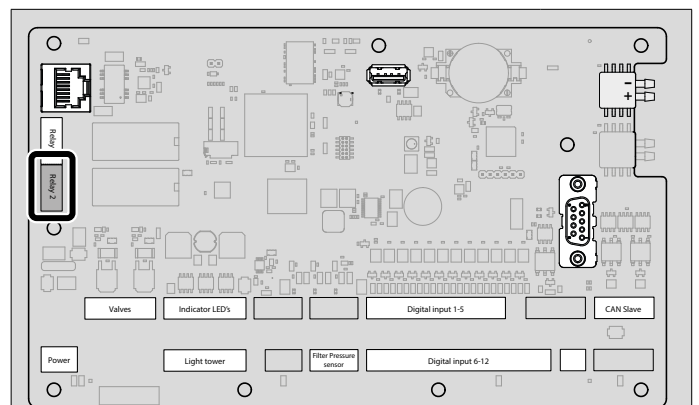
Both relay outputs are available for connection to an external device²⁸. Event to activate the relays is:

- start/stop fan



ATTENTION

- You can choose to connect the cables as NO (normally open) or NC (normally closed).
- Max. connection: 30 VDC / 2,5 A per relay.



Cable #7



[page 6]

Relay 2	
NO 2	5
NC 2	6
COM 2	7
	8

Fig. 4.18 Connection of relay outputs

27. E.g. a welding robot or a timer

28. E.g. a roof fan

4.4.9 LightTower (option)

The light tower contains the same pilot lights as the Panel, including the buzzer.

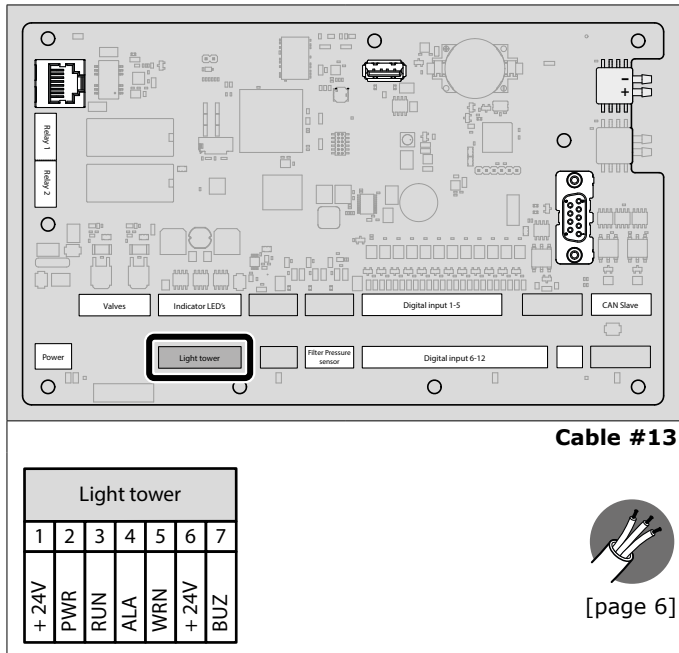


Fig. 4.19 Connection of LightTower

4.4.10 External pressure sensor (option)

The Panel contains an *internal* filter pressure sensor.

For connection of the *internal* filter pressure sensor, refer to paragraph 4.5.

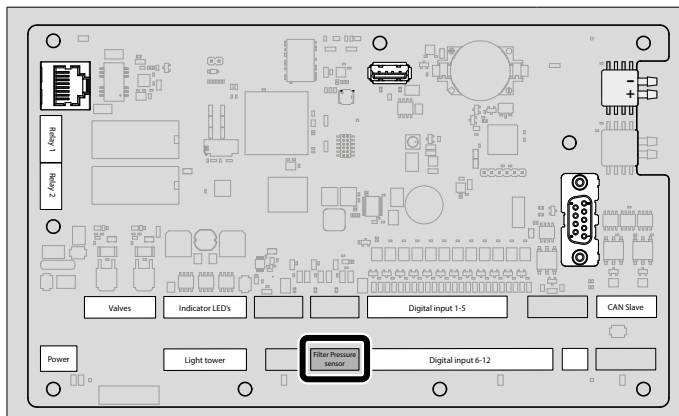
You must use an *external* pressure sensor²⁹ instead of the internal one when:

- the distance between the Panel and the filter system MDB or SCS is more than 10 m; and/or
- the Panel is installed outdoor and the temperature may drop below 0°C (32°F)

In all other cases the use of an external filter pressure sensor is optional.

In case of an external pressure sensor:

- Remove the wire bridge from input **IN 4** (refer to Fig. 4.6A).



29. Type PT-2500



Fig. 4.20 Connection of external pressure sensor

4.5 Pneumatic connection

Also refer to paragraph 4.4.10.

Filter pressure sensor

To monitor the filter pressure, you must connect pneumatic hoses to the internal filter pressure sensor (+ and -).

Fig. 4.21

- Connect the pneumatic hoses + and - to the corresponding bulkhead connectors (A).

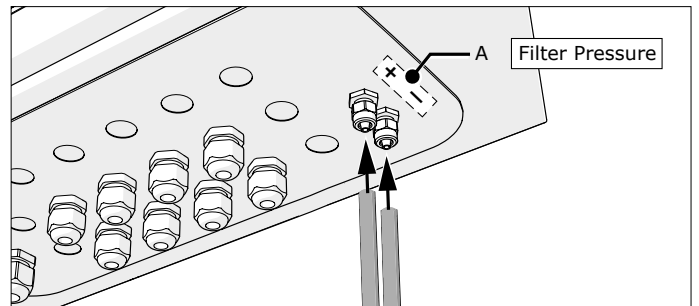
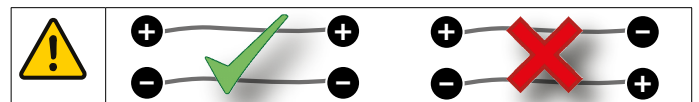


Fig. 4.21 Connection of pneumatic hoses to the Panel

You must install the other sides of the pneumatic hoses to the filter system (MDB or SCS). For connection of the hoses you need the cable glands + nuts supplied with the Panel → SlaveBoard cable (#1).



In case of an MDB system:

- Proceed with paragraph 4.5.1

In case of an SCS system:

- Proceed with paragraph 4.5.2

4.5.1 MDB

The filter pressure sensor measures the pressure difference between the filter compartment and the housing of the compressed air tank.

Fig. 4.22

- Remove the cover caps from the + and - (A+B) on the lower filter module.
- Install a cable gland in the + and - connection.

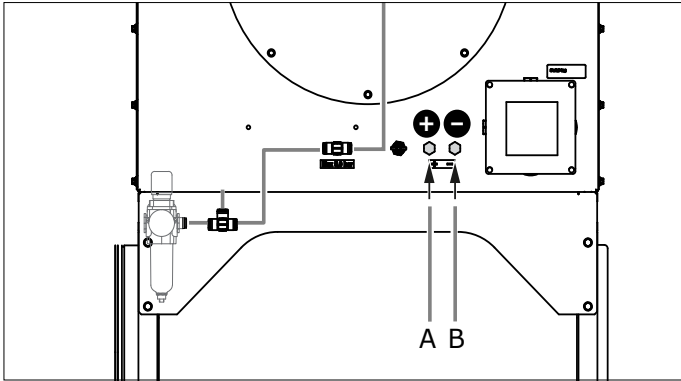


Fig. 4.22 + and - connection

Fig. 4.24

- Remove the cover cap and install another cable gland inside the filter module (+).
- (1) Put a pneumatic hose through the + connection.
- (2) Put the hose through the other cable gland into the filter compartment.
- (3) Put the other hose through the - connection.

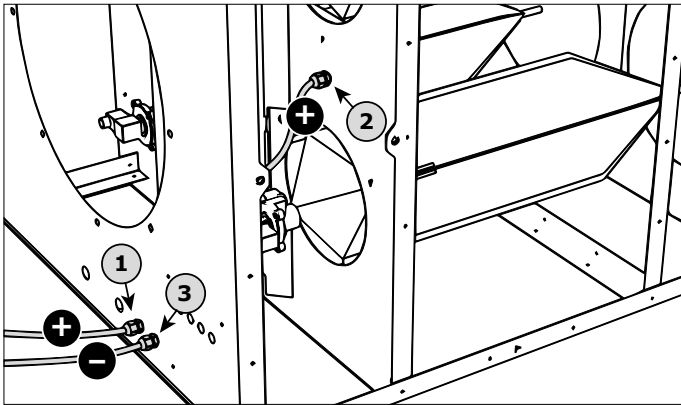


Fig. 4.23 Cable glands and pneumatic hoses

Fig. 4.24

- Make sure to have approx. 25 mm (1 in.) (A+B) hose end.
- Tighten all cable glands.

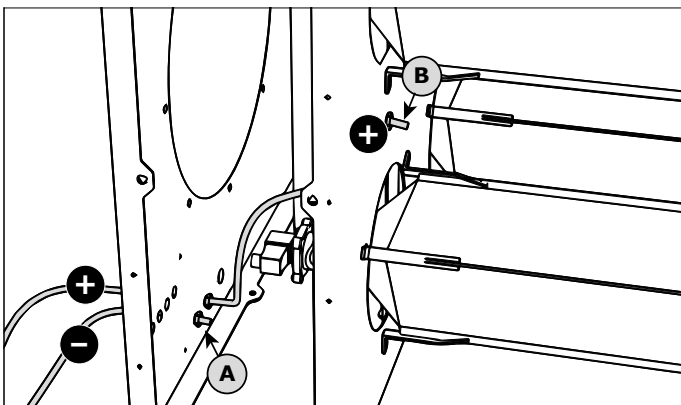


Fig. 4.24 Pneumatic hose ends

4.5.2 SCS

Fig. 4.25

- Connect the two pneumatic hoses to the corresponding + and - (A+B) on the junction box.

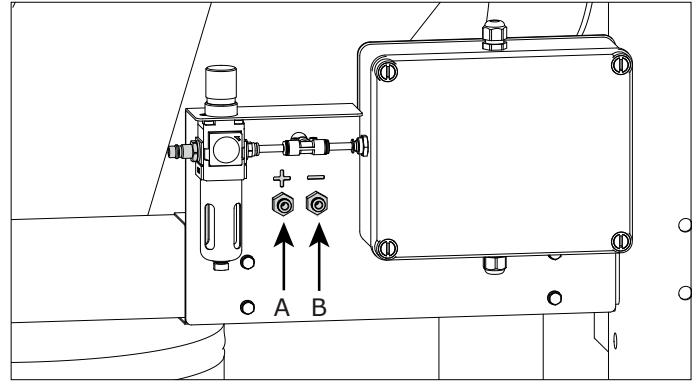


Fig. 4.25 Compressed air connection

5 COMMISSIONING

5.1 General

- Make sure that the Panel is connected to the mains.
- Turn on the main switch (refer to Fig. 6.1E).

5.2 Commissioning checklist



#	Check	Ref. par.	OK
1.	Is the addressing sequence of the filter modules correct?	4.4.4	
Extraction fan			
2.	<ul style="list-style-type: none"> • Push the START/STOP FAN button (ref. Fig. 6.1F) to start the fan. • Push the button again to stop the fan. 		
Filter cleaning system			
3.	<p>MDB only:</p> <ul style="list-style-type: none"> • Push the FILTER CLEANING button (ref. Fig. 6.1G) to activate the filter cleaning system. • If applicable: apply precoat material to the filter cartridges; refer to the MDB manual. • Push and hold the START/STOP FAN button for 20 seconds to activate the precoat timer. Feedback: the green LED blinks 4 times and the buzzer sounds shortly. <p>SCS only: Do not test this function to maintain the protective layer of precoat.</p>		
Plymovent VFD/Panel (frequency inverter) (option)			
4.	Have you changed the parameter set ^{*)} into <u>1</u> (PT-1000) or <u>2</u> (PT-2500)? Refer to the instruction sheet supplied with the VFD/Panel.	1.3.1	

^{*)} Default setting = 3 / ControlPro

If any problems or errors occur, refer to chapter 8 / Troubleshooting.


5.3 Learning Mode

The Learning Mode is only applicable for MDB systems and systems with *two* connected SCS systems (master/slave).



ATTENTION


ControlGo Panels are factory-wise prepared for use with either MDB or SCS filter systems. They are **not** interchangeable.

 In case of *one* (1) SCS system: proceed with chapter 6.

In the Learning Mode you “teach” the Panel about the size of the filter system;

- MDB: the number of filter cartridges (min. 2, max. 64)
- SCS: the number of filter systems (1 or 2; default setting: 1)

At the same time, the Learning Mode verifies the cable connections of the SlaveBoard(s) and the correct setting of the DIP switches.

 **WARNING**
You must go through the Learning Mode procedure to make sure that all SlaveBoards of the filter modules are correctly connected. If you fail to do so, it can finally lead to a malfunction of the filter cleaning system.

5.3.1 General

- Follow the flowchart GENERAL on page 20.

In case of an MDB system:

- Proceed with paragraph 5.3.2

In case of two SCS systems:

- Proceed with paragraph 5.3.3

5.3.2 MDB

- Follow the flowchart MDB on page 21.

5.3.3 SCS (two filter systems)

- Follow the flowchart SCS (#2) on page 22.

6 USE

6.1 Control panel

The control panel contains the following controls and indicators:

Fig. 6.1 (also refer to Fig. V on page 18)

- A White LED | POWER ON
 - LED off: system is off
 - LED blinking: system is starting up
 - LED on: system is ready
- B Green LED | FAN RUNNING
 - LED off: fan is off
 - LED blinking: fan is ramping down³⁰
 - LED on: fan is running
- C Yellow LED | WARNING
 - LED off: no problem
 - LED on³¹: the blinking pattern shows the cause of the warning; refer to paragraph 6.3.1
- D Red LED | ALARM
 - LED off: no problem
 - LED on³²: the blinking pattern shows the cause of the alarm; refer to paragraph 6.3.2
- E Main switch
- F Green button | START/STOP FAN
 - to start and stop the fan manually
 - to reset the precoat timer (push and hold for 20 seconds)

30. Ramp down time: 60 seconds

31. The system continues to run

32. The system stops running

- G Black button | FILTER CLEANING
 - to activate an additional filter cleaning cycle
 - to suppress the buzzer (push and hold for 5 seconds)³³
 - to reset the warning and alarm LED (push and hold for 5 seconds)
- H Buzzer | acoustic signal
 - together with the ALARM signal (D)
 - in some cases: together with the WARNING signal (C)
- I Tumbler switch 0-1 | Normal Mode / Service Mode
 - normal use: Panel in Normal Mode (1)
 - during service/maintenance/repair activities: put the Panel in Service Mode (0)³⁴

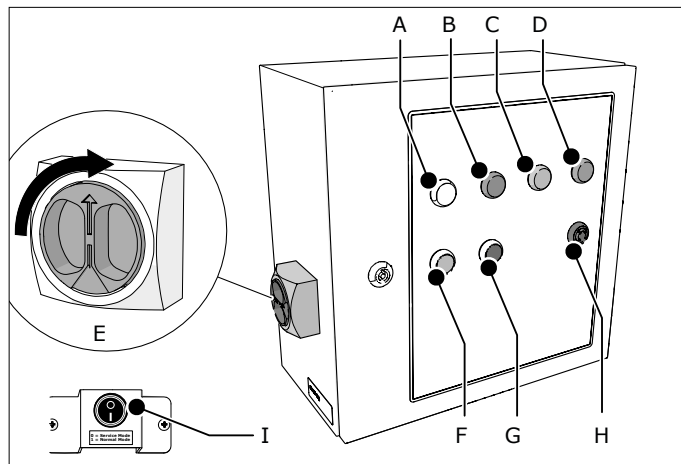


Fig. 6.1 Control panel

6.2 Use

6.2.1 Start/stop fan

You can start and stop the fan in two ways:

- manually by the START/STOP FAN button (ref. Fig. 6.1F)
- automatically³⁵ by an external signal from e.g. a welding robot or a timer

6.2.2 Filter cleaning

The filter cleaning system can be activated in two ways:

- automatically, pressure controlled (refer to paragraph 2.2.1)
- manually by the FILTER CLEANING button (ref. Fig. 6.1G)^{36 37}

6.2.3 Service Mode

When you put the Panel in the Service Mode (ref. Fig. 6.1I), the fan stops running immediately. In case the filter cleaning system is active, it stops as well.

In the Service Mode, you can only start³⁸/stop the fan and the filter cleaning system manually. The automatic functions are disabled.

33. You must still solve the cause of the alert


34. In Service Mode you can only activate the fan and the filter system manually

35. Stop delay: 3 minutes for removal of after fumes, if any


36. You cannot stop/interrupt the filter cleaning cycle

37. You cannot activate this button during the first 40 running hours of the system and within 40 running hours after filter replacement, to maintain the protective layer of precoat material on the filter cartridges

38. The filter cleaning system continues to run. Push the black button again or put the Panel in Normal Mode to stop it.






 **ATTENTION**
Manual filter cleaning while the Panel is in the Service Mode overrules the precoat timer. Therefore, do **not** activate the FILTER CLEANING button within the first 40 running hours of the system or within 40 running hours after filter replacement, to maintain the protective layer of precoat material on the filter cartridges.

6.3 Alerts

 This paragraph briefly explains the yellow and red alerts on the Panel. Refer to paragraph 8.1 for detailed troubleshooting.

6.3.1 WARNING




The yellow warning LED - in some cases accompanied by the buzzer - may show four different blinking patterns:

Yellow	Blinking pattern	Means
		Filter cartridges are clogged
		No compressed air (delay time: 10 seconds)
		Communication error
		Service Mode

In the WARNING mode the fan/system continues to run.

6.3.2 ALARM

The red alarm LED - accompanied by the buzzer - may show two different blinking patterns:

Red	Blinking pattern	Means
		Fan/motor failure
		External device


In the ALARM mode the fan/system stops immediately.

7 MAINTENANCE

7.1 Periodic maintenance



The indicated maintenance intervals can vary depending on the specific working and ambient conditions. Therefore, we recommend to thoroughly inspect the complete system once every year beside the indicated periodic maintenance. For this purpose contact your supplier.

 **WARNING**
If applicable, put the Panel in the Service Mode before you do the activities as stated below; refer to Fig. 6.1I.

Component	Action	Frequency: every X months	
		X=3	X=12
Panel	Clean with a non-aggressive detergent	X	
	Make sure that the cable glands are correctly tightened	X	
	Make sure that all detachable screw terminal blocks on the PC board are connected	X	
	Check for firmware updates; ref. par. 7.2		X
	Activate one cleaning cycle and make sure that all filter cartridges are cleaned		X

For maintenance activities of the connected filter system, fan and other components, refer to the corresponding manuals.

7.2 Firmware


The latest firmware version is available on the Plymovent extranet.

- Contact your Plymovent distributor to get the latest firmware version.
- Download the firmware to an empty USB stick.
- Follow the flowchart FIRMWARE UPDATE on page 23.

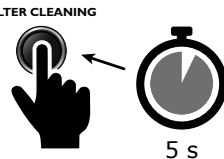
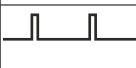

8 TROUBLESHOOTING



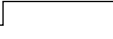
If the system does not function (correctly), consult the checklist below to see if you can remedy the error yourself. Should this not be possible, contact your supplier.



 **WARNING**
If applicable, put the Panel in the Service Mode before you do the activities as stated below; refer to Fig. 6.1I.

8.1 Alerts

Symptom	Problem	Possible cause	Solution
WARNING: yellow LED blinking			
<p>FILTER CLEANING</p>  <p>Two functions:</p> <ul style="list-style-type: none"> - to suppress the buzzer (if applicable) - to reset the warning LED <p><i>You must still solve the cause of the warning. If you do not, the warning LED remains blinking.</i></p>			
	Poor extraction capacity	Filter cartridges are clogged	<ul style="list-style-type: none"> - Replace the filter cartridges (refer to the MDB/SCS manual) - Reset the precoat timer (ref. par. 6.1 F)
 + buzzer during actual filter cleaning	No filter cleaning possible	No compressed air available	Repair the compressed air connection/supply
		Compressed air pressure too low	
		Compressed air switch loose or defective	Connect or replace the compressed air switch

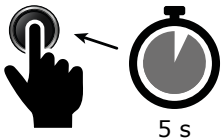
Symptom	Problem	Possible cause	Solution
	One or more filter modules are not cleaned	Communication error to one or more filter modules	<ul style="list-style-type: none"> - Make sure that all SlaveBoard connections are correct; ref. par. 4.4.3 and 4.4.4 - Make sure that all DIP switches are correctly addressed (ref. Fig. 4.12 and Fig. 4.13)
		Defective SlaveBoard cable(s) (cable #1 or #2)	Repair or replace the cable(s)
		PC board inside SlaveBoard(s) defective	Replace the PC board(s)
	No pressure controlled filter cleaning	Wire bridge on input IN 4 is loose or missing (in case the internal pressure sensor is used)	Put a wire bridge on input IN 4
		External pressure sensor (PT-2500) is not connected or defective	Connect or replace the external pressure sensor
	All automatic functions are disabled	Service Mode	Open the Panel and put the tumbler switch to 1 ("Normal Mode")
	Unknown	Unknown	Restart the system
			Contact your Plymovent distributor

8.2 Remaining troubleshooting

Symptom	Problem	Possible cause	Solution
Panel			
White LED (POWER ON) keeps blinking	No filter cleaning possible	No detection of SlaveBoards (MDB only)	<ul style="list-style-type: none"> - Repair the connection to the SlaveBoard(s) - Make sure that the setting of the DIP switches is correct; refer to Fig. 4.12 and Fig. 4.13 - If there is no communication error (yellow LED; ref. par. 6.3.1): repeat the Learning Mode procedure (ref. par. 5.3)
		Software failure during system start up	<ul style="list-style-type: none"> - Try to restart the system - Otherwise: contact your Plymovent distributor
Filter system			
Filter cleaning sequence is incorrect or illogical	No optimum cleaning performance	Addressing sequence is not correct	Correct the setting of the DIP switches; refer to Fig. 4.12 and Fig. 4.13
Button FILTER CLEANING cannot be activated	No filter cleaning	No filter cleaning possible during the first 40 running hours (after filter replacement)	Do not activate FILTER CLEANING
Extraction fan			
Fan does not stop (immediately) by an external signal	<i>No problem</i>	Stop delay of 3 minutes is active	Just wait




ALARM: red LED blinking

FILTER CLEANING



Two functions:
 - to suppress the buzzer
 - to reset the alarm LED

You must still solve the cause of the alarm. If you do not, the alarm LED remains blinking and you will be unable to restart the system.

 + buzzer	Fan/motor failure	Fan control equipment defective	Repair or replace the fan/motor (connection)
			Repair or replace the fan control equipment
 + buzzer	External device	No communication with external device	Repair the connection
 + buzzer	Unknown	Unknown	Restart the system
			Contact your Plymovent distributor

9 SPARE PARTS

The following spare parts are available for the product.



9.1 ControlGo/Panel

Refer to exploded view Fig. VI on page 18.

Article no.	Description
0000103139	Switch mode power supply 24V DC 2.5A
0000113558	Indicator light yellow 24V
0000113631	PCB main board ControlGo/MDB
0000113632	PCB main board ControlGo/SCS
0040900180	Main switch 25A
0324000300	Indicator light white 24V
0324000310	Indicator light green 24V
0324000320	Indicator light red 24V
0328050300	Push button green
0328050320	Push button black
0360000060	Buzzer

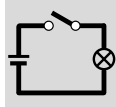
9.2 Control/SlaveBoard

Refer to exploded view Fig. VII on page 17.

Article no.	Description
0000113561	PCB slave board

10 ELECTRICAL DIAGRAM

Refer to the separately supplied electrical diagram.



11 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:
- ControlGo

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
- EN-IEC 61439-1:2011 | Low-voltage switchgear and controlgear assemblies - Part 1: General rules
- EN-IEC 61131-2:2007 | Programmable controllers - Part 2: Equipment requirements and tests
- EN-IEC 61000-6-2:2005 | Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
- EN-IEC 61000-6-4:2007 | Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

Alkmaar, Netherlands, 1 April 2020

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.*

Fig. I Dimensions Panel

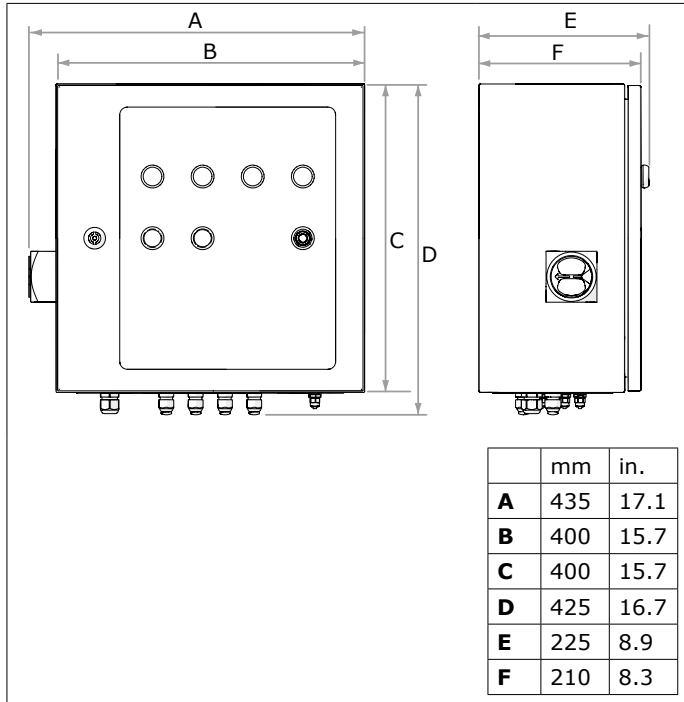


Fig. III SlaveBoard | PC board

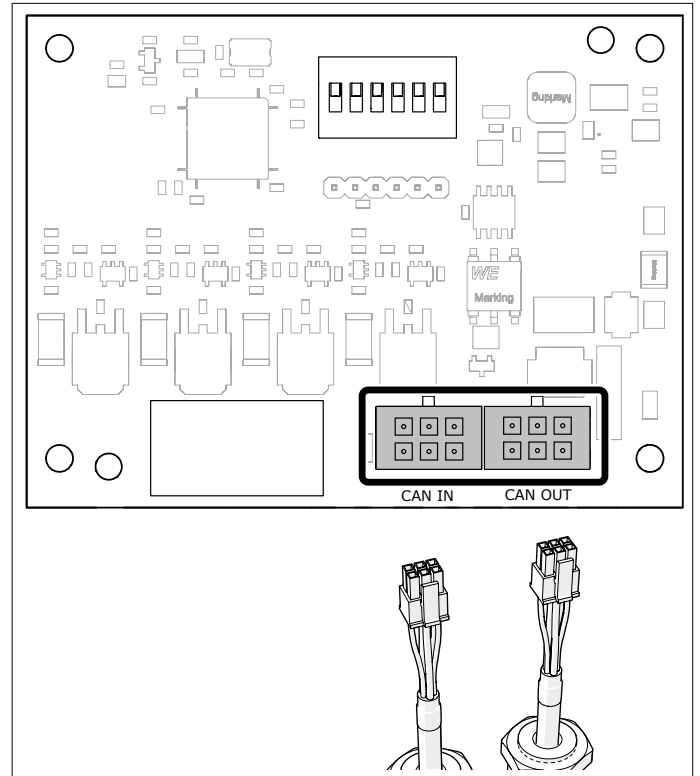


Fig. II SlaveBoards

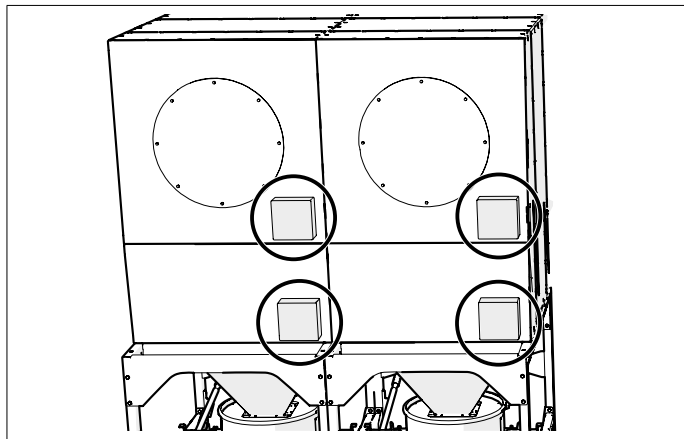


Fig. IV Connection sequence of SlaveBoards

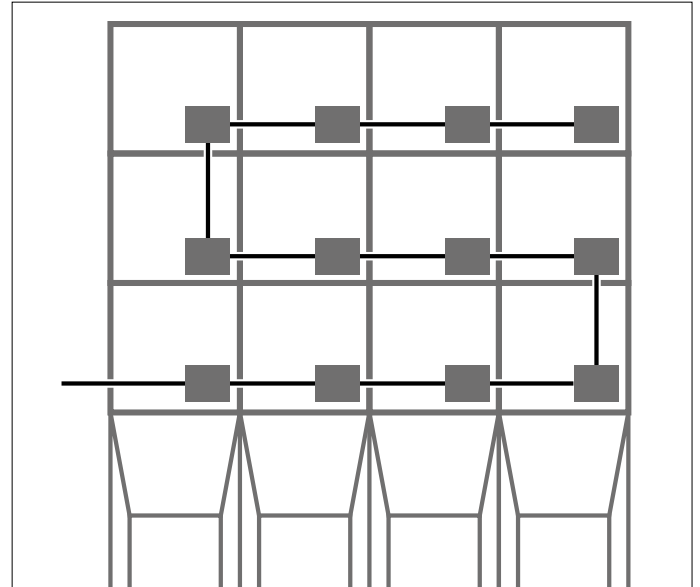


Fig. V Control panel

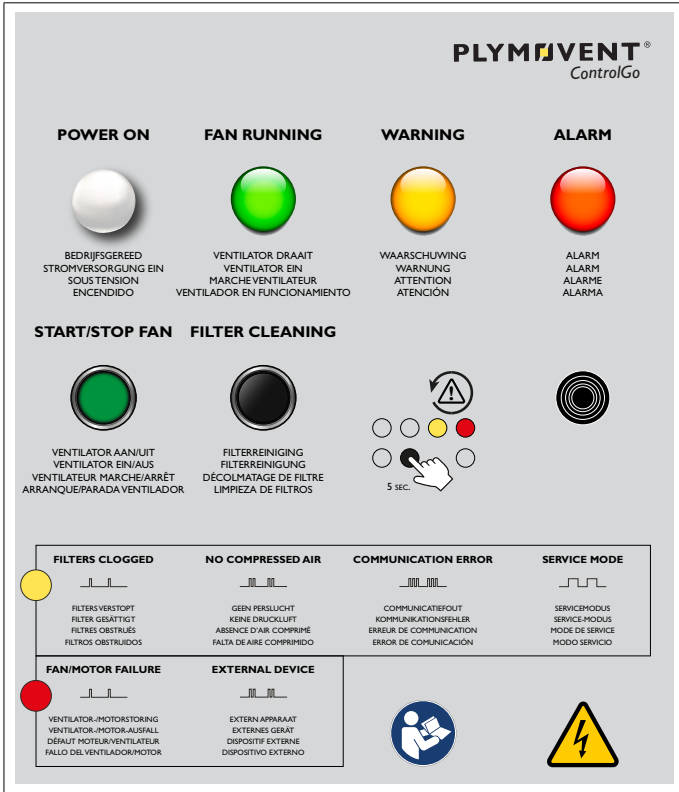


Fig. VII Control/SlaveBoard

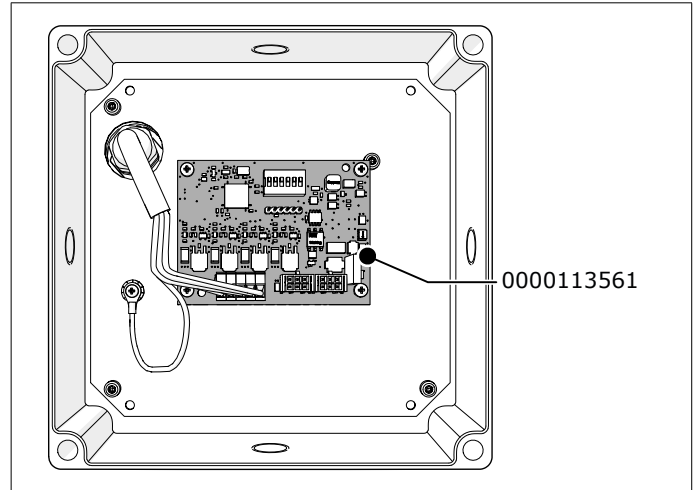


Fig. VI ControlPro/Panel

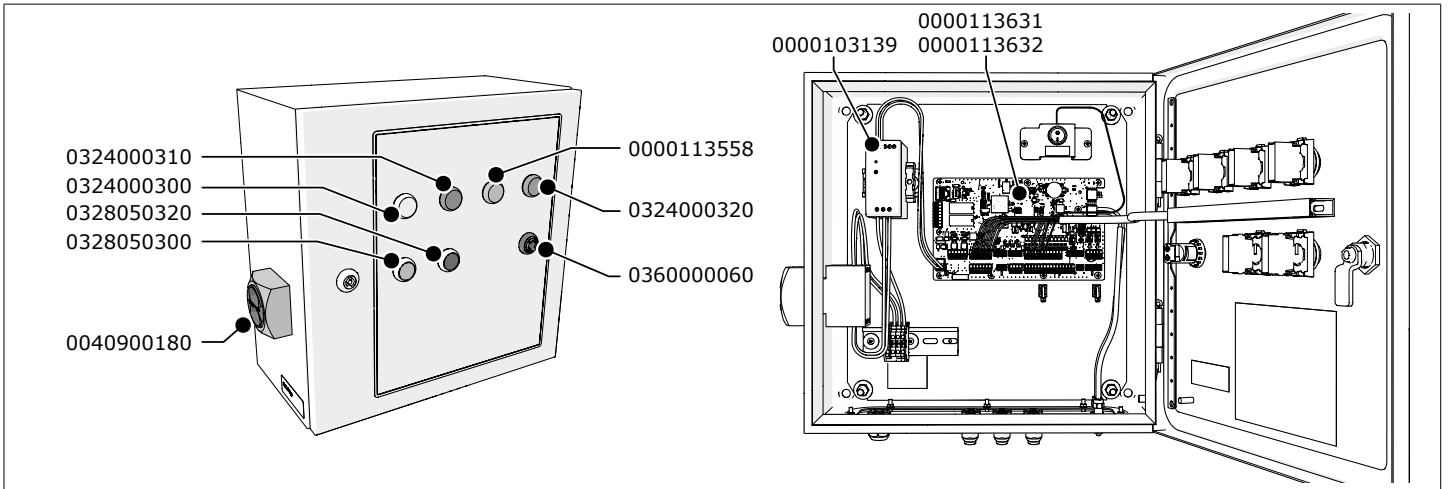


Table I Cable specifications

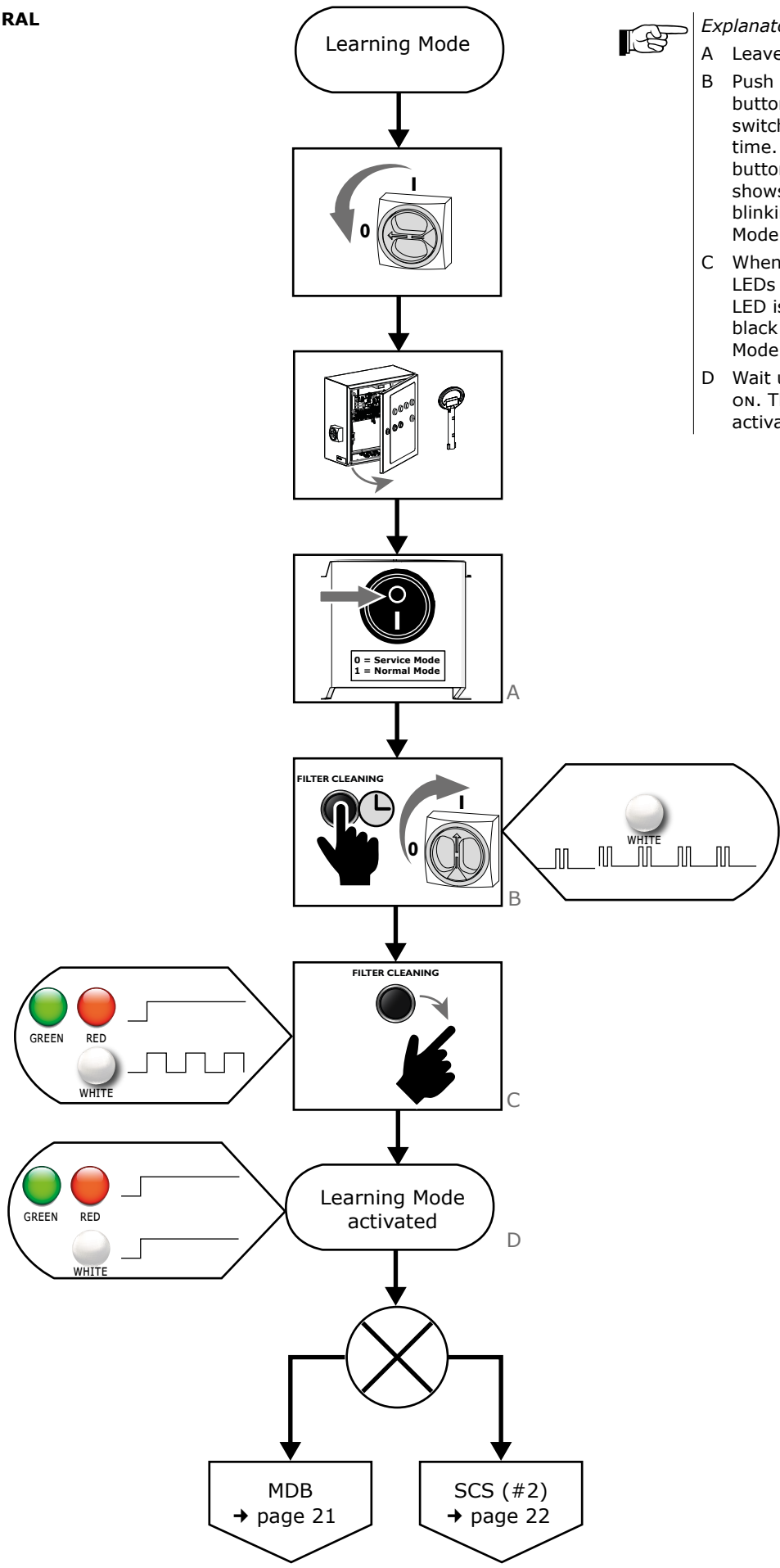
#	Connection	Recommended cable type	Included	Source locally	For use with		Option
					MDB	SCS	
1	Panel → SlaveBoard (shielded)		✓		✓		
2	SlaveBoard → SlaveBoard		✓		✓		
3	Mains cord	H05VV-F 3G1		✓	✓	✓	
4	External start/stop	H05VV-F 2X0.75		✓	✓	✓	✓
5	External alert input			✓	✓	✓	✓
6	Relay output 1			✓	✓	✓	✓
7	Relay output 2			✓	✓	✓	✓
8	Compressed air switch			✓	✓		
9	Filter pressure sensor (PT-2500)	H05VV-F 3G0.5			✓	✓	✓
10	SCS/Slave valve	H05VV-F 3G0.75		✓		✓	✓
11	Fan control (direct online)	H05VV-F 4X0.5		✓	✓	✓	✓
12	Control cable (SCS valve + compressed air switch)	H05VV-F 5G0.75		✓		✓	
13	LightTower	H05VV-F 7X0.5		✓	✓	✓	✓

Table II Digital inputs

Input		
	High	Low
IN 4	Selection of filter pressure sensor	
	internal	external (PT-2500)
IN 5	External signal fan start/stop	
	start	stop
IN 6	<i>n.a.</i>	
IN 7	<i>n.a.</i>	
IN 8	<i>n.a.</i>	
IN 9	Fan alarm	
	alarm	normal
IN 10	Compressed air switch	
	normal	warning
IN 11	External alarm signal	
	normal	alarm
IN 12	<i>n.a.</i>	

Flowchart: GENERAL

Learning Mode



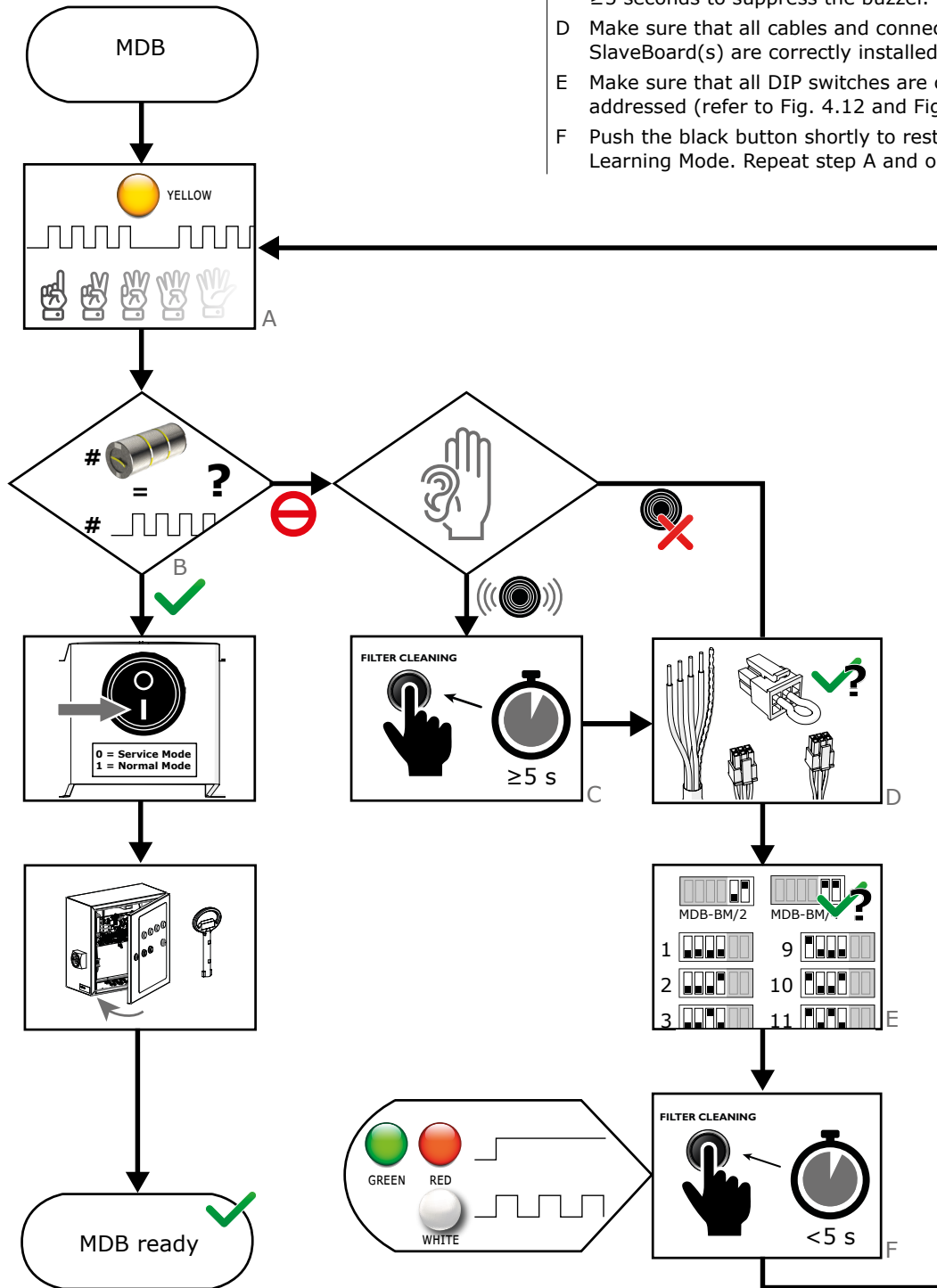
- Explanatory notes:*
- A Leave the Panel open.
 - B Push and hold the black button. Turn the main switch on at the same time. Continue to hold the button; the white LED shows a "heartbeat" blinking pattern (Learning Mode is starting up).
 - C When the green and red LEDs are on and the white LED is blinking, release the black button (Learning Mode is initializing).
 - D Wait until the white LED is on. The Learning Mode is activated now.

Flowchart: MDB



Explanatory notes:

- A Count the number of flashes of the yellow LED in one blinking cycle (min. 2, max. 64). Interval between two blinking cycles: 5 seconds.
- B Make sure that the number of flashes corresponds with the number of filter cartridges...
- C If NOT and the buzzer sounds, no filter cartridges are detected at all. Push the black button during ≥ 5 seconds to suppress the buzzer.
- D Make sure that all cables and connections to the SlaveBoard(s) are correctly installed.
- E Make sure that all DIP switches are correctly addressed (refer to Fig. 4.12 and Fig. 4.13).
- F Push the black button shortly to restart the Learning Mode. Repeat step A and onwards.

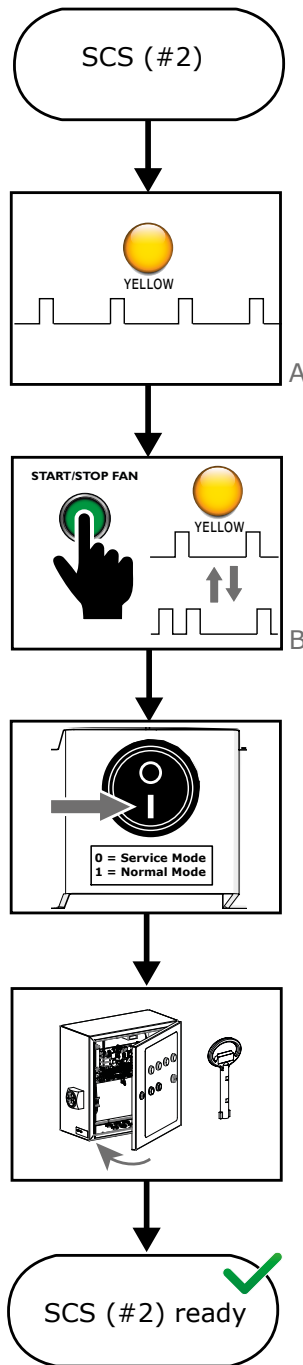


Flowchart: SCS (#2)



Explanatory notes:

- A By default, the yellow LED blinks one time, with an interval of 5 seconds.
- B Push the green button to change the setting from 1 to 2 filter systems. This is indicated by the yellow LED that flashes two times.



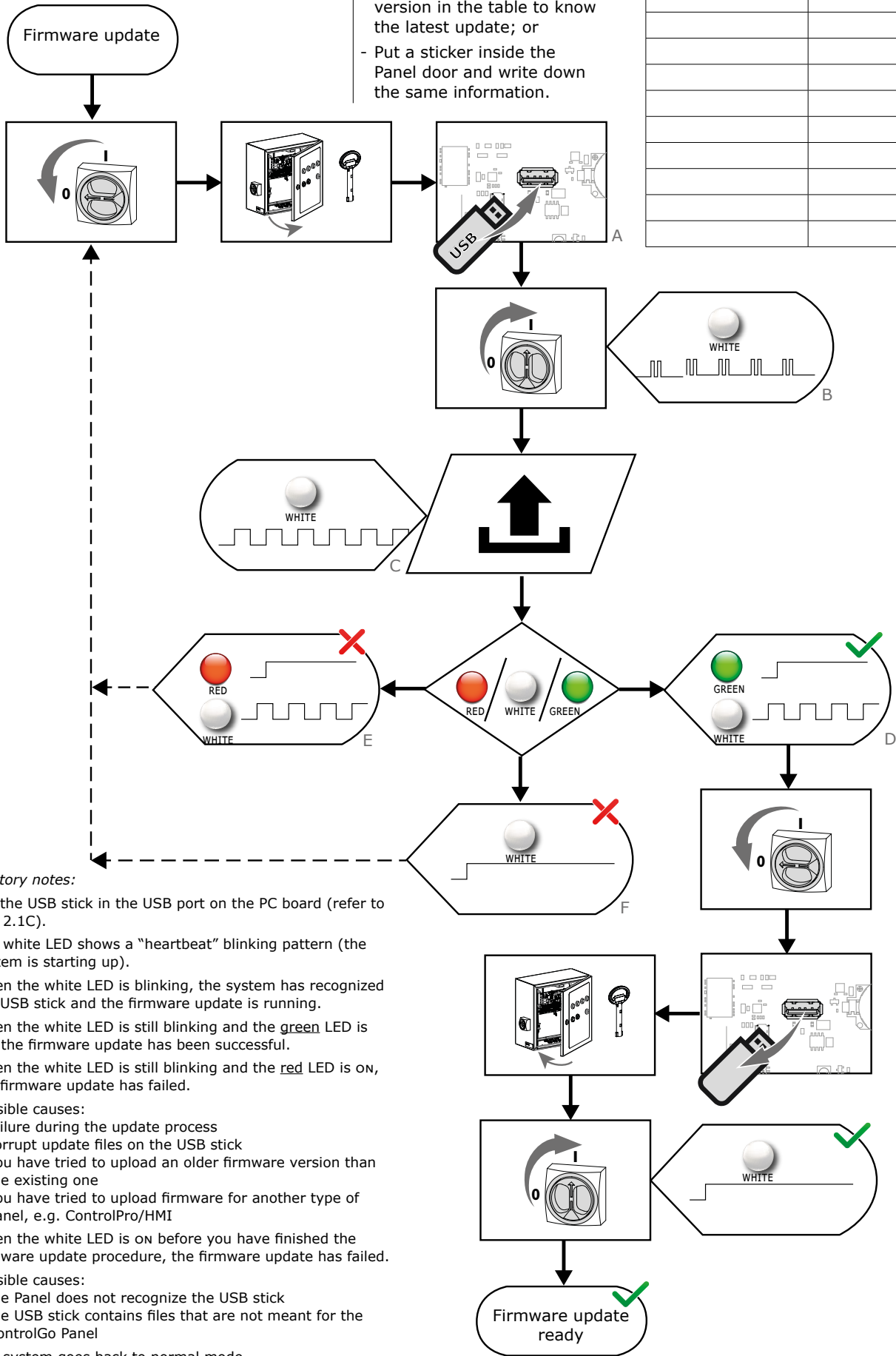
Flowchart: FIRMWARE UPDATE



TIP

- Write the date and firmware version in the table to know the latest update; or
- Put a sticker inside the Panel door and write down the same information.

Date	Firmware version



Explanatory notes:

- A Put the USB stick in the USB port on the PC board (refer to Fig. 2.1C).
- B The white LED shows a "heartbeat" blinking pattern (the system is starting up).
- C When the white LED is blinking, the system has recognized the USB stick and the firmware update is running.
- D When the white LED is still blinking and the green LED is on, the firmware update has been successful.
- E When the white LED is still blinking and the red LED is on, the firmware update has failed.
Possible causes:
- failure during the update process
- corrupt update files on the USB stick
- you have tried to upload an older firmware version than the existing one
- you have tried to upload firmware for another type of Panel, e.g. ControlPro/HMI
- F When the white LED is on before you have finished the firmware update procedure, the firmware update has failed.
Possible causes:
- the Panel does not recognize the USB stick
- the USB stick contains files that are not meant for the ControlGo Panel
The system goes back to normal mode.

