



## Operating Instructions Filter controller

Document-No. EN83491XX.0000.XXXXXBA

- Preface & Legal regulations**
- Safety instructions**
- Description of the device**
- Assembly**
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- Parameterization**
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### 1 Preface & Legal regulations

#### 1.1 Instructions for use

The solenoid valve controller is used for the time- or differential pressure-dependent control of solenoid valves in industrial dust extraction technology. Up to 64 valves are controlled with the base unit and three expansion units. The base unit communicates with the expansions over a RS-485 connection. The valves are activated sequentially and are not chamber-oriented. They are monitored for excess current and interruption. Errors are displayed on the base unit. The controller is simple to operate through symbol labelling and LEDs for status and differential pressure indications. The differential pressure signal is supplied as 4...20 mA value. The controller is available purely as time controller in a version without differential pressure display. Accessories, such as the differential pressure sensor, the dp-connection set and the valve connector with various line lengths complement the controller.

#### 1.2 Legal regulations

##### Intended use

The Valve Control 83491XX.0000.XXXXX is used to control solenoid valves in industrial dust removal filters. The number of valves is from 1 to a maximum of 64, and can be scaled, using modular extension units. The controller can be used with or without differential pressure control. It can be operated with, as well as without an actual valve control. A total of 64 valves can be controlled, at one time. The device can only be operated without any danger to the device itself, if it is operated within the allowed environmental conditions (see the technical data section of this document, on that).

The manufacturer is not liable for use not as intended, or for the resulting personal or property damage that results from such use; the user solely assumes the liability for such use. Not following the above-listed criteria on use as intended can result in the warranty being invalidated, and liability being assumed for the device, by the user.

##### Qualification

Only properly instructed persons may operate the device. Only trained and knowledgeable persons who have been made aware of the risks and dangers that potentially exist may carry out maintenance or make the device operational.

##### Device safety

This device has been built and tested based on VDE 0411 / EN 61010-1 (the German Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use regulation), and has left the factory in safe and technically defect-free condition. The device was tested before being shipped, and passed the prescribed tests in the test plan. To maintain that condition and to ensure operation of the device in a safe manner, the user must follow the safety information and warnings that are contained in this safety information and in the operating manual.

### 2 Safety instructions

#### 2.1 Symbols and safety instructions

This chapter contains important safety regulations and instructions. To protect against injury to persons and damage to property it is necessary to read through this chapter carefully before working on the device.

##### Used symbols

The following symbols are used in this operation manual. All safety instructions are structured uniformly.



##### Warning of personal injury!

→ The severity of the hazard is indicated by the respective signal word (see below).



##### Warning of potentially explosive atmosphere!

→ The severity of the hazard is indicated by the respective signal word (see below).



##### Warning of property damage through electrostatic charge!

→ The severity of the hazard is indicated by the respective signal word (see below).



##### Warning of property damage!

→ The severity of the hazard is indicated by the respective signal word (see below).



##### Warning of hazardous electrical voltage!

→ The severity of the hazard is indicated by the respective signal word (see below).

#### NOTE!

→ Indicates possible malfunctions and provides recommendations for optimum operating conditions.

#### Signal words

##### ⚠ DANGER!

→ Indicates an immediate threat with high risk, which will result in death or serious physical injury, if not avoided.

##### ⚠ WARNING!

→ Indicates a possible threat with medium risk, which can result in death or serious physical injury, if not avoided.

##### ⚠ CAUTION!

→ Indicates a threat with low risk, which could result in minor or moderate physical injury, if not avoided.

All warnings in this manual are structured uniformly. The pictogram indicates the type of danger.



##### SIGNAL WORD! (indicates the type of danger)

→ A note describes the danger and suggests how it can be avoided.

## 2.2 Safety in operational phases

Consider the following safety tips when installing the control unit and during the operation.



### DANGER OF ELECTRIC SHOCK!

→ The electrical lines must be installed in accordance with the relevant country regulations (in Germany, that is: VDE 0100). The measurement lines must be installed separate from the power lines. The connection between the grounding conductor connection (in the relevant device carrier) and a grounding conductor must be set up.



### DANGER OF ELECTRIC SHOCK!

→ Any and all interruptions of the protective grounding in the device carrier can make the device hazardous, potentially. Intentional interruptions are not allowed. When it is assumed that operation cannot be done without dangers arising, the device may no longer be used, and must be secured so that it cannot be operated.



### DANGER OF ELECTRIC SHOCK!

→ Do not open the device under electrical voltage! When opening devices or removing coverings and parts, parts that can conduct electricity can be exposed. Connection points can also be electrically conductive!



### WARNING!

→ If the device has any damage that leads one to believe that operating it cannot be done without risk, the device may not be used.



### WARNING!

→ Attend the relevant accident prevention regulations for your facility when mounting, commissioning, maintenance and trouble shooting.



### WARNING!

→ Clean dirty contacts with oil-free compressed air or spirit and a lint-free cloth.



### DAMAGE TO PROPERTY THROUGH ELECTROSTATIC CHARGE!

→ Observe the safety measures specified in DIN EN 61340-51/-3 to avoid electrostatic discharge!



### EXPLOSION PREVENTION!

→ The device can be used – assuming that the cover is closed – in explosion zone 22. Before opening the device, for example, for parameterization, it must be absolutely assured that no explosive conditions exist in the area around the device, for example, dust accumulation.



### REMOVE FROM OPERATIONAL USE!

→ If the device is to be taken out of operation, turn the power off (all-pole shut-off). Ensure that the device cannot be operated unintentionally. If the device is connected electronically with other devices and / or equipment, one should first consider the effects that disconnecting it will have, before disconnecting it, and take the appropriate precautions.

### SEARCHING FOR THE CAUSE OF THE DISRUPTION!

→ At the start of searching for the cause of any disruption, all possibilities of sources of defects in connected devices or connected lines should be considered (measurement lines, cables, follow-on devices). If, after checking those, the defect or defects have not been found, we recommend that the device be sent back to the supplier.

This instrument may be operated in areas of explosion zone 22 classification (occurrence of clouds of flammable air-borne dust for short periods) due to its dust-proof housing. The special instructions for this device have to be observed.

The device is identified with:

**CE** **II 3D T60°C IP65**

II Use above ground  
3D Dust, normal safety  
T60 °C Surface temperature  
IP65 Dust-proof protection class, scoop-proof

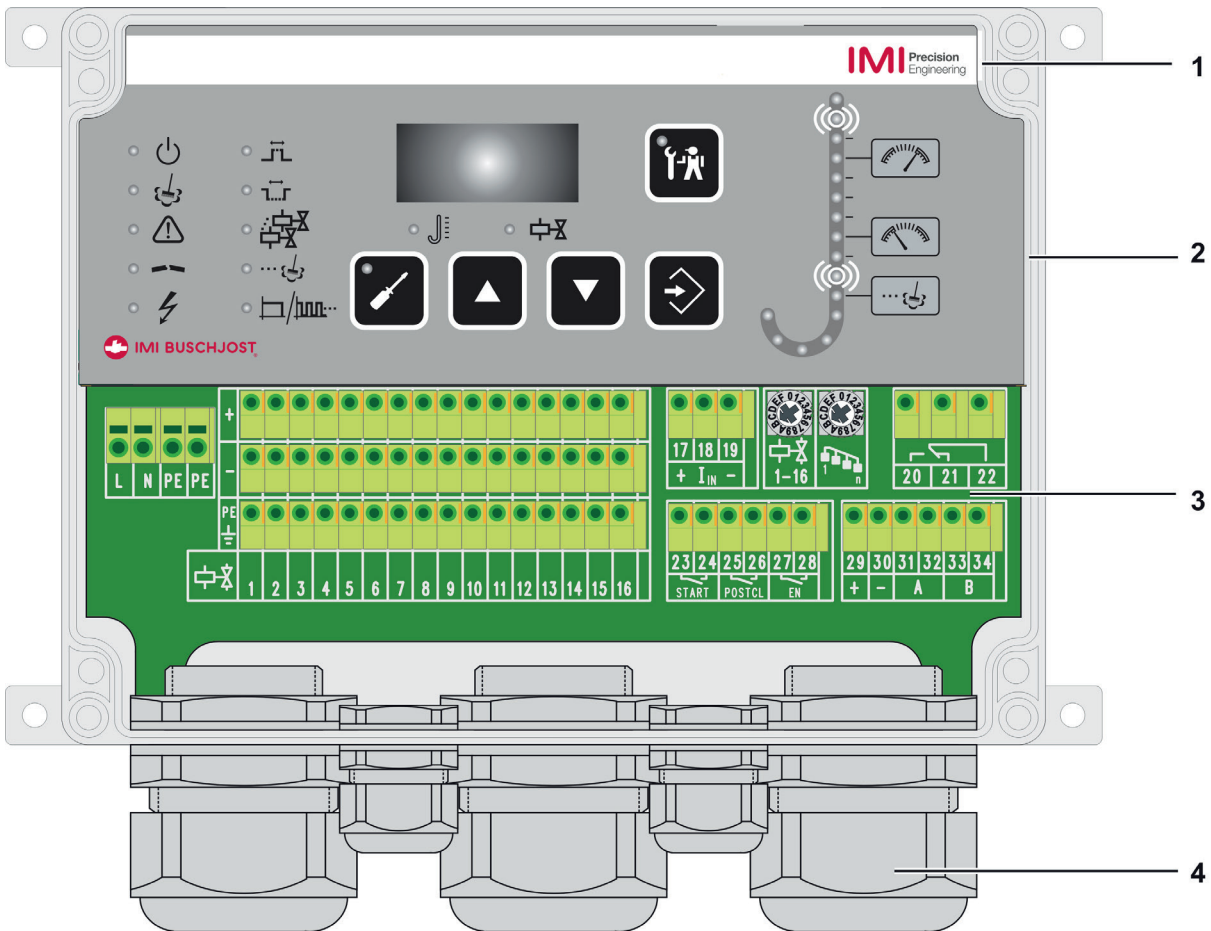
The following special instructions must be followed:

- Lines are connected in the screw connections, in a manner that is technically correct.
- Holes in the housing that are not required must be covered with covering bolts.
- Only clean the housing with damp cleaning instruments. This prevents any static charge from being created.
- Cleaning is necessary to avoid an increased dust development.

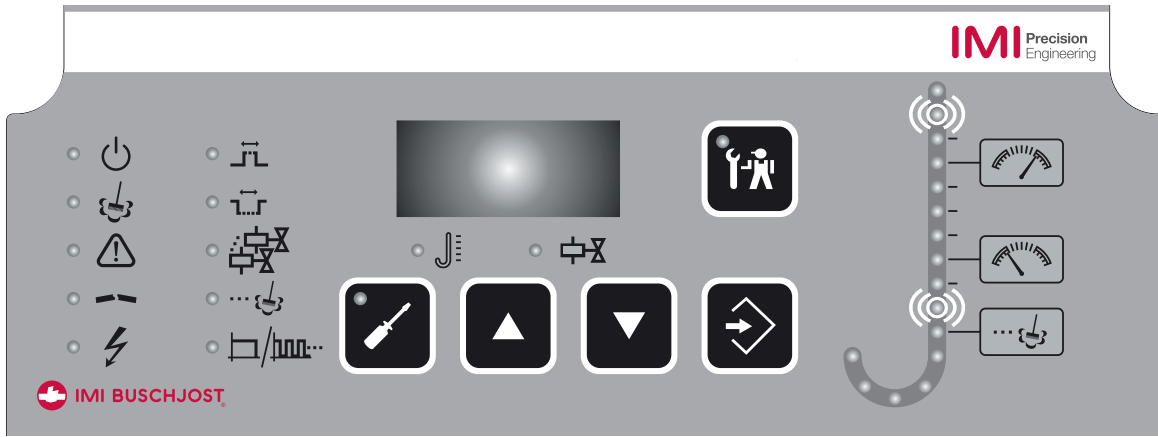
### 3 Description of the device

#### 3.1 Top view

- 1 Type designation
- 2 Control
- 3 Terminal compartment
- 4 Screw connections



### 3.2 Display and control



- Operational signal
- Cleaning is active
- Alarms are active
- Interruption due to defective valve line or solenoid valve
- Short circuit of a valve line (oversurge)

- Active valve number is displayed
- Differential pressure is displayed

- Test mode ON/OFF active
- Parameter mode ON/OFF
- UP button to increase value
- DOWN button to decrease value
- ENTER button to accept the value

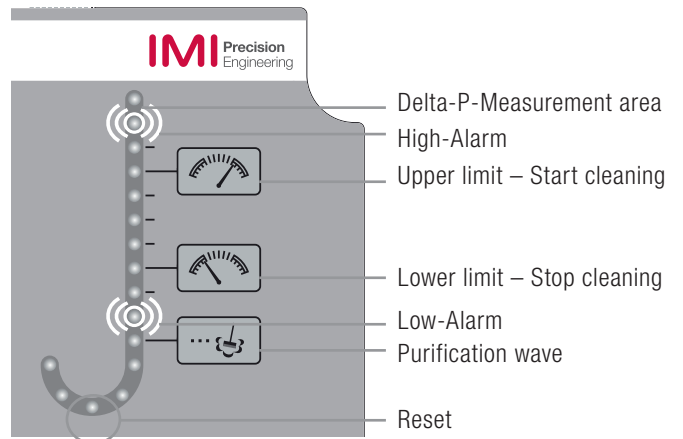
- Pulse time
- Pause time
- Valve number
- Number of purification cycles
- Complete/part cycle



Display of the current differential pressure, or of the current valve. Display for parameter values and alarm information. Use the UP/DOWN button to switch.

### 3.3 Differential pressure column

In normal operation, the LEDs display the differential pressure. In parameterization mode, the selected parameter value blinks to show that it is operational.



### 3.4 Technical Data

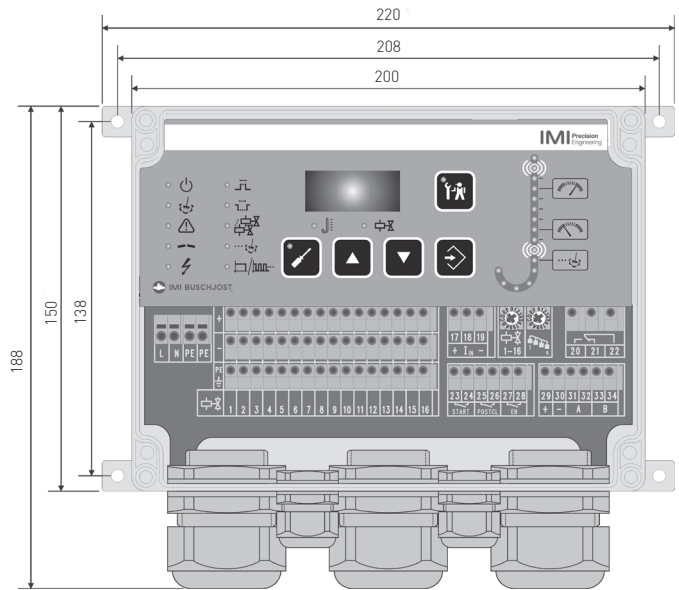
<b>Use:</b>	Solenoid valve controller for cleaning and de-dusting industrial filter installations
<b>Design:</b>	Basic device as a master controller with max. 16 valve outputs Extension units as slave controls, a total of 64 valves can be controlled
<b>Supply voltage:</b>	100 - 240 V AC / 50 - 60 Hz 24 V DC $\pm 10\%$ (Option) Extension units are supplied from the master control
<b>Power consumption:</b>	Max. 30 VA at 100 - 240 V AC controls Max. 30 W at 24 V DC controls
<b>Valves:</b>	24 V DC, max. 1 A, 16 valves per device, 64 valves per unit
<b>Pulse time:</b>	0,01 – 9,99 seconds can be set
<b>Pause time:</b>	1,0 – 999 seconds can be set
<b>Display:</b>	7-segment display, 3-characters, 14 mm height, red, for differential pressure / valve display, parameter and alarm values
<b>LEDs:</b>	14 LEDs for condition displays, 16 LEDs for differential pressure displays
<b>Keys:</b>	Value setting: Para (ESC), UP, DOWN, Enter, Test key
<b>Analog input:</b>	4 – 20 mA + input supply for the differential pressure sensor, 24 VDC max. 80 mA
<b>Digital input:</b>	Start, purification, release
<b>Relay output:</b>	1 changeover contact 250 VAC, 5 A As combined operation and disturbance message
<b>Interfaces:</b>	USB device, Type B, for writing and reading the parameters (USB / TTL adapter required)
<b>Environmental temp:</b>	Operation: -20 ... +50 °C; Storage: -20 ... +70 °C; Transport: -25 ... +85 °C Operation in EX Zones 22: -20 ... +40 °C Humidity: 95% rel. humidity, no condensation, KUF based on DIN40400
<b>Air gap and creepage paths:</b>	Degree of contamination 2, Overload category II
<b>EMC:</b>	Electromagnetic interference: DIN EN 61000-6-4 Electromagnetic immunity: DIN EN 61000-6-2
<b>Housing:</b>	200 x 150 x 80 mm (B x H x T)
<b>Screw connections (option):</b>	3 x M32 with multiple sealing inserts for 6 lines with 6 mm diameter; 2 x M16 for supply and communication
<b>Electrical connections:</b>	Supply: rigid cross-section: max. 4.0 mm <sup>2</sup> , Flexible: max. 2,5 mm <sup>2</sup> without ferrule Remainder: rigid cross-section: max. 1.5 mm <sup>2</sup> , Flexible: max. 1,5 mm <sup>2</sup> without ferrule
<b>Installation:</b>	Wall installation, installation position: vertical

The right to make technical changes is reserved.

## 4. Assembly

### 4.1 Dimensions

Installation is done in rooms or areas that are appropriately protected. The surrounding environmental temperature at the location where the device is installed may not exceed the allowed temperature for the nominal range that is contained in the data sheet. The device may be installed in areas of explosion class EX ATEX Zone 22. All special laws and regulations must be followed.



#### NOTE!

→ On receipt check the delivery for completeness and detectable defects. In the event of a complaint contact your responsible BUSCHJOST agent immediately.

## 5. Electrical installation

### 5.1 Electrical installation

The electrical supply current is set up centrally on the controller, and the extension devices receive their 24 V DC electrical supply from the controller. Before turning the device on, ensure that the following points have been followed:

- Lines have been connected correctly, from a technical point of view, in the screw connections. You must ensure that the electrical power supply conforms to the power supply voltage listed on the technical rating plate.
- The device may only be operated in its closed condition.
- The listed temperature limitations for operating the device must be maintained, before and during operation.
- The grounding conductor connection in the relevant device carrier must be linked to the grounding conductor, to establish an electrical grounding.

#### ⚠ DANGER!



#### Warning of hazardous electrical voltage!

→ Perform electrical installation only in the de-energized state.

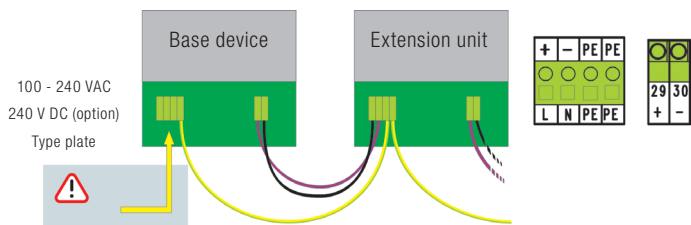


#### Damage to property through electrostatic charge!

→ Observe the safety measures specified in DIN EN 61340-51/-3 to avoid electrostatic discharge!

#### NOTE!

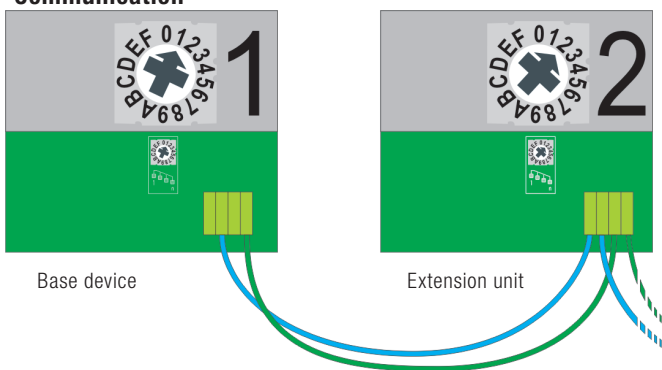
→ Connection work may only be done by authorized technicians!



### Supply voltage

1. Open terminal covers on the device at the front, at the recess, and pull the cover toward the front.
2. See the technical rating plate of the device for choosing the correct supply voltage. (There are devices with 100 – 240 VAC and different devices with 24 VDC voltage).
3. The supply for the extension units is done using the basic device, using terminals 29, 30 with 24 VDC.
4. Make sure that the PE lead is connected.

### Communication



Serial communication is enabled by connecting the “A” and “B” connections, from device to device. The coder switch provides the logical position in the sequence of the controls, which do not have to correspond to the cabling sequence.

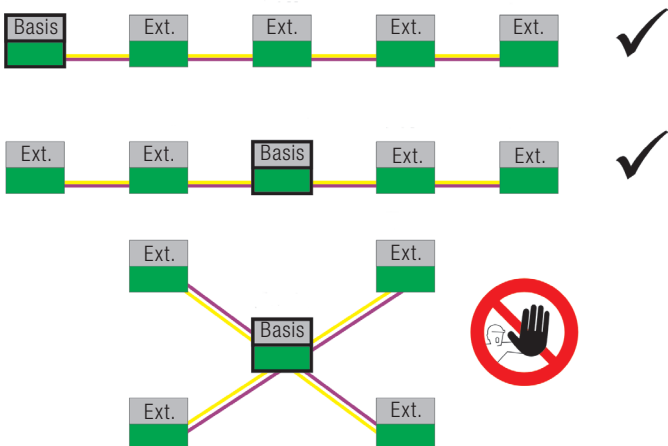
### WARNING!



#### Warning!

→ The A and B lines must not be confused with each other.

### Structure of the bus



### WARNING!



#### Warning!

→ Having a star-formed cabling or branches of the serial connection is not allowed.

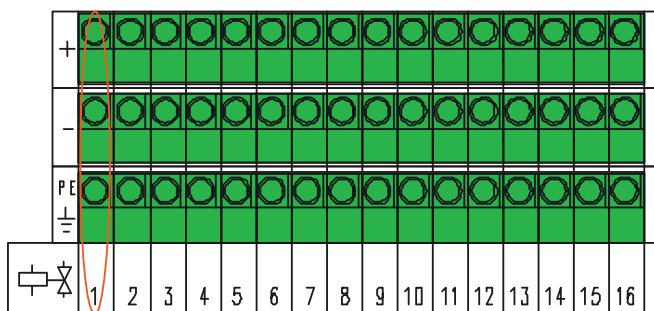
### Valve connections



A maximum of 16 valves can be connected to each device. A valve coding switch is used to set the number of valves that are controlled by this device, from 1 to 16. (valve 10-15=A-F, valve 16=0).



The device number of the communication provides the controlled sequence of the valves, independent of the cabling sequence. The device number “5” is valid for an operation unit and control unit without an effective valve connection.



The connections of a valve are located vertically directly over one another. A terminal is available for the PE connection of a valve. The valve outputs are set up for 24 VDC and 1A. The minimum recovery time (pause) must be > or = ten times the pulse time. The set pulse time specifies the minimal settable pause time.

### NOTE!

→ All valve outputs of a system refer to the same ground (-). It is permitted to use one ground wire for multiple valves.

The valves are electronically monitored. Short circuits and interruptions in operation are displayed on the controller. A test function enables individual valves to be checked.

### 6. Parameterization







#### CAUTION!



#### Explosion danger!

→ Before opening the device, make sure that no explosive conditions exist in the environment, such as dust that has accumulated.

#### 6.1 Using the device keyboard

1. Press the Para button , to change the value of the installation parameters. A blinking light will show the value that is current and that should be changed.
2. Select the desired parameters using the arrow buttons . The value that is current is shown in the display.
3. Press enter  to start a valve change of the parameter. The first number to be changed will blink on the display.
4. Set or change the value of the number using the arrow keys .
5. Press enter  to accept the value. The next number will then blink in the display.
6. Repeat steps 4-5, until the last figure is changed. The next parameter will be shown.
7. If required, change the next parameter.
8. To end parameterization, press the para button .



Parameter	Setting range	Factory setting
Pulse time	0,01 – 9,99 s	0,10 s
Pause time	1,0 s – 999 s	5,0 s
Valve number*	1 – 64	16
Purification cycles	OFF, 1 – 20	1
Purification type / complete cycle	0 – 9	0
Delta-P-measurement area (MB)	5,0 – 500 mbar	50,0 mbar
High-Alarm [mbar]	OFF, 0 % – 100 % MB	30,0 mbar
Upper limit [mbar]	0 % – 100 % MB	15,0 mbar
Lower limit [mbar]	0 % – 100 % MB	10,0 mbar
Low-Alarm [mbar]	OFF, –10 % – 100 % MB	OFF
Purification limit [mbar]	OFF, –10 % – 100 % MB	2,0 mbar
Delta-P-Offset [mbar]	-50,0 – 50,0 mbar	0,0 mbar

The number of valves is valid for the complete installation. The number of valves of the controller is set using the valve coder switch. If fewer valves as listed are connected, an interruption signal will be generated.

The following parameters can only be changed by the “EasyTool Controls” program.

Parameter	Setting range	Factory setting
<b>Delta-P-Filter</b> Filter constant for the damping of the Delta-P measurement	0,1 – 10,0 s	2,0 s
<b>Delta-P-Filter-working area</b> → defines the working area below the upper threshold in % of the measuring area → alternatively to the lower threshold	1 – 100%	10
<b>Delay high alarm</b> Delay after exceeding the high alarm threshold until switching the relay high alarm	0,1 – 30,0 s	2,0 s
<b>Delay low alarm</b> Delay after falling short of the low alarm threshold until switching the relay low alarm	1 – 600 s	300 s
<b>Password</b> → 3-digit figure to be set prior to the adjustment of parameters. → 0 = no password	0 – 900	0
<b>Precoating Offset</b> → The precoating offset increases the start threshold of the dedusting (upper threshold). → During an offset of 0 the precoating function is disabled. → After reaching the first dedusting threshold (increased by the precoating), precoating is automatically disabled.	OFF, 0 – 500,0 mbar	1,0 mbar









#### NOTE!

→ There is no logical test. If the values of the lower limits are parameterized over the upper limits, the cleaning and the pressure display will not work as expected.

#### NOTE!

→ Post-cleaning is eliminated as long as precoating is activated.

#### 6.2 Offset for reset

1. Press the Para-button .
2. Select the parameter “Nullung” using the arrow buttons  .
3. Press enter , to accept. The 7-segment display will blink.
4. If the   buttons are simultaneously pressed for 2 seconds, the currently measured value is inverted and accepted as an offset.
5. If the buttons   are pressed independently of one another, the offset value can be manually set.

#### 6.3 Using a Service PC

For the parameterization of more than one device it is appropriate to use a Service-PC. The USB/TTL adapter required for that can be obtained from BUSCHJOST. The parameters can be changed by using a PC and the ‘EasyTool Controls’ program. The program can be used to save a configuration and also to recreate a stored configuration.

1. Connect the PC with the control device by USB cable.
2. Start ‘EasyTool Controls’ to transfer the files or data.

BUSCHJOST can provide you with instructions detailing the most important program functions.






#### 6.4 Activate / disable precoating

**Activate:** Press the TEST button / UP button at the same time. The display “PrE” appears alternately with other informations.



**Disable:** Press the TEST button / DOWN button at the same time.

After reaching the first (by precoating increased) dedusting threshold, the precoating will be deactivated automatically.

#### 6.5 Parameter protection

1. Press the   buttons for 5 seconds at the same time when the device is turned on. The “cod” display will be shown.
2. Press enter , to accept.
3. Set up a code for parameter protection, using the   buttons.

The code must be entered before a parameter change is entered. You can make other additional parameter changes, up to the time when you leave the parameter mode.

If you want to read out the current code, you must press the   buttons again, when the device is turned on. Setting “0” as the code deactivates parameter protection.

#### 6.6 Factory settings

1. Press the Para-button  and enter  at the same time.
2. In the meanwhile turn the device on and keep pushing both buttons for 5 sec.

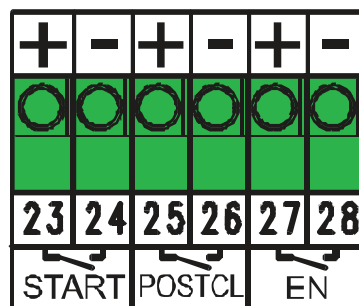
#### 7. Operating the control

##### 7.1 Normal operation

The operation of the device is started by setting up the electrical supply current. The inputs and the outputs of the device control the valve installation.

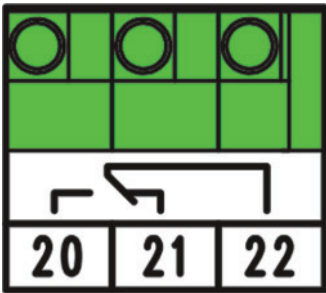
#### NOTE!

→ All digital inputs of a system refer to the same ground (-). It is permitted to use one ground wire for multiple valves.



1. As long as the start input (START) is closed the valves will be activated with the set control times. Provided the enable input (EN) is closed.

2. A trigger signal on the post-cleaning input (POSTCL) starts an activation of the valves with the set control times. The number of cleaning cycles is specified in the parameters. Precondition is a closed enable input (EN).
3. In order to trigger a cleaning cycle the enable input (EN) must be closed. A cleaning cycle can be triggered by closing the start input, a trigger signal on the post-cleaning input (POSTCL) or by exceeding the upper differential pressure threshold. Caution! In test mode valves can also be activated without enable.



### Operating messaging relay and/or error messaging relay.:

When the device is operational with no defects or errors, terminals 20 and 22 are closed. The following causes lead to an error message:

1. Power failure (fail safe operation)
2. Bus error
3. Device disturbance (parameter error)
4. Valve error
5. Delta-P alarms


### NOTE!

→ Post-cleaning is eliminated as long as precoating is activated.

### Test function

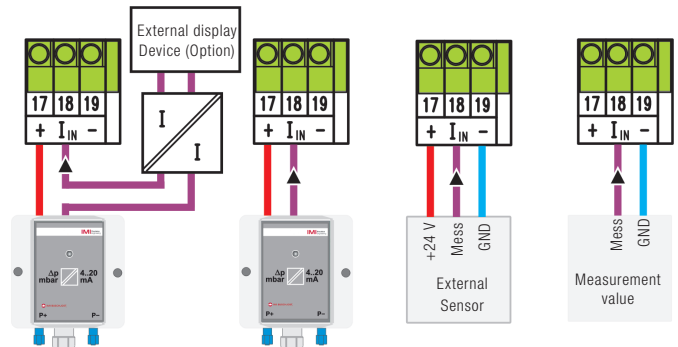
1. To carry out a functional test of the valve, press the test button.
2. Select the valve that you want using the UP and DOWN ▲▼ arrow buttons.
3. Press enter ↵. (The selected valve is continuously operated with the saved pulse time and pause time).
4. If required, test the next valve.

### Display mode

The illuminated LED signals the active test mode, and can be terminated using the para button . If the Test button is pressed for more than 2 seconds, the valve that is currently being controlled will be operated, with the saved pulse time.

1. Press the UP and DOWN ▲▼ arrow buttons to select the display mode or to change it.
2. The differential pressure, the current controlled solenoid valve or both can be displayed, in an alternating manner.

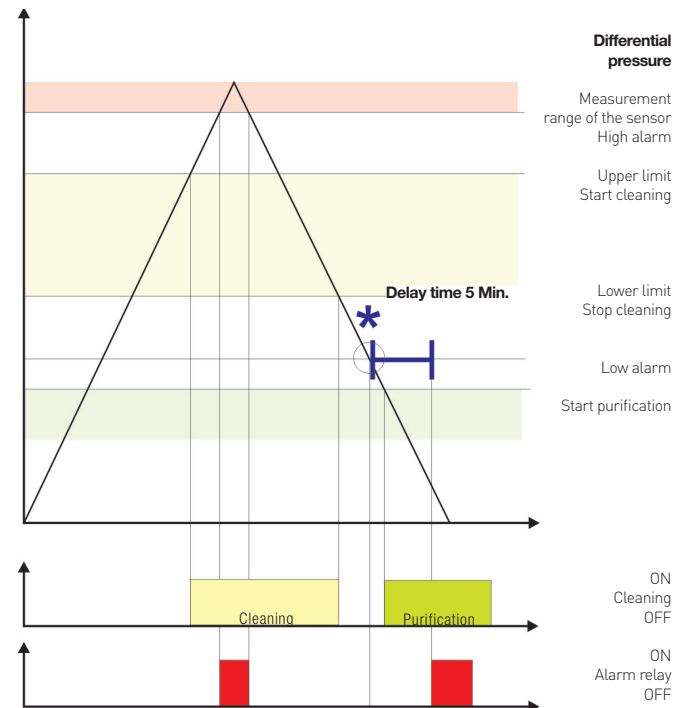
## 7.2 Differential pressure measurement



1. 2-wire sensors, such as 8349900.0000.00000, 8349900.0000.XXXXX with communication of the power signal to an external display device (optional).
1. 2-wire sensors, such as 8349900.0000.00000, 8349900.0000.XXXXX
2. 3-wire sensors with supply and measurement output
3. Providing the measurement value through an analog output

The differential pressure (does not apply to devices with pure time control) is measured externally and passed on as a 4–20 mA signal to the control. The signal can be connected to both the master, as well as to one of the extension units. In addition, there is the possibility that the 4–20 mA signal can be connected to an external display device. To do that, the display device is switched corresponding to the connection plan in sequence with the 8349900.0000.00000, see Point 1. If a galvanic separation is required, an isolation amplifier (for example HE 501/HE 502) must be used.








## 7.3 Cleaning process



The cleaning process is started in normal operation, when the upper limit is exceeded, and ended when the lower limit, “cleaning”, is reached. During activated precoating function the dedusting at the upper threshold that is increased by the precoating offset starts. There is a delay time of 5 minutes to carry out purification during a normal shut-off process, without triggering an alarm warning of the low alarm. The purification limit must be reached before the end of the 5 minutes; otherwise, the low alarm is triggered.



## 7.4 Error messages

Parameter	Cause	Action
„buS“ is blinking in the display, the alarm LED is illuminated	The sum of the valves set on the devices is smaller than the set total valve number.	<ul style="list-style-type: none"> <li>→ Check the set total valve number</li> <li>→ Check the valve number set on the coding switch</li> <li>→ Check cabling of the interface and power supply (Terminals 29-34 as well as + and – on the extensions)</li> </ul>
In der Anzeige blinkt „d r x**“ *x = 1, 2, 3, oder 4 (Gerätenummer)	Ein an die Master-Ventilsteuerung angeschlossenes Slave-Gerät besitzt keine Druckschalterfunktion.  x= Gerätenummer des betroffenen Slave-Gerätes	<ul style="list-style-type: none"> <li>→ Software des Slave-Geräts updaten lassen.</li> </ul>
The differential pressure display shows „_ _ _“.	The differential pressure signal is under 2 mA .	<ul style="list-style-type: none"> <li>→ Check the differential pressure signal</li> <li>→ Check the external cabling on terminals 17-19</li> <li>→ Potentially fix any interruption in the cabling</li> </ul>
The differential pressure display shows „_ _ _“.	The differential pressure signal is above the allowed 22 mA.	<ul style="list-style-type: none"> <li>→ Check the differential pressure signal</li> <li>→ Check the external cabling on terminals 17-19</li> <li>→ Potentially fix any short circuit in the cabling</li> </ul>
The LED   is blinking. The affected valve is shown in the display.	There is no power going through the valve line.	<ul style="list-style-type: none"> <li>→ Check the cabling for the valve shown for an interruption</li> <li>→ Check the affected valve</li> <li>→ Check that the valve connector is properly connected</li> </ul>
The LED   is blinking. The affected valve is shown on the display.	The allowed valve power of 1 A was exceeded.	<ul style="list-style-type: none"> <li>→ Check the cabling of the displayed valve for a short circuit</li> <li>→ Check the affected valve</li> <li>→ Check that the valve connection is secure</li> </ul>
The high alarm LED  is blinking.	The differential pressure exceeds the set limit.	<ul style="list-style-type: none"> <li>→ Adjust the set pulse and pause times</li> <li>→ Check the filter element</li> <li>→ Check the solenoid valve, that it is mechanically functioning without defects or errors</li> <li>→ Check the air pressure system</li> </ul>
The low alarm LED  is blinking.	The differential pressure is going below the set limit for longer than 5 min. without reaching a purification limit	<ul style="list-style-type: none"> <li>→ Adjust the set pulse and pause times</li> </ul>
Display is dark or only lights up for a short time and then goes out immediately.	The internal fuse went out (after a recovery time of a few minutes, the control can be turned on again).	<ul style="list-style-type: none"> <li>→ Turn off the control</li> <li>→ Check if the environmental temperature is above the allowed value</li> <li>→ Check the relationship between the pulse and pause time (see Valve connections)</li> <li>→ Check the power input if the solenoid valve. Pay attention to the limitations. (See Valve connections)</li> </ul>
Die Segmentanzeige blinkt, im ersten Feld wird ein „d“ angezeigt. 	Der Druckschalter (als Option erhältlich) meldet Druckabfall am angezeigten Ventil oder eine Fehlfunktion am Druckschalter selbst.	<ul style="list-style-type: none"> <li>→ Ventil / Druckschalter überprüfen</li> </ul>
Auf der Ventilerweiterung leuchtet die rote LED.	Es wurde eine falsche Knotennummer eingestellt.	<ul style="list-style-type: none"> <li>→ Eingestellte Knotennummer überprüfen und korrigieren</li> </ul>
Post-cleaning is inoperative	<ul style="list-style-type: none"> <li>→ no signal at post-cleaning entry</li> <li>→ pre-coating function active</li> <li>→ differential pressure not exceeded the lower cleaning threshold</li> </ul>	<ul style="list-style-type: none"> <li>→ disable pre-coating (see chapter 6 „activate / disable pre-coating“)</li> </ul>

## 8. Options

### 8.1 Terminal extender analogue output

#### NOTE!

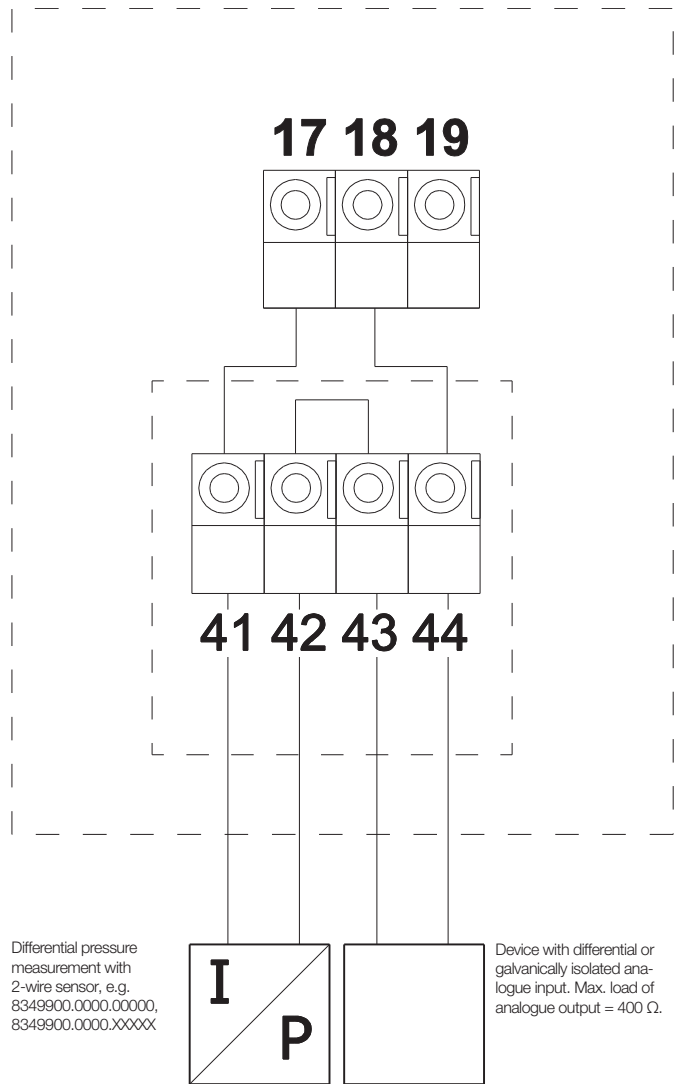
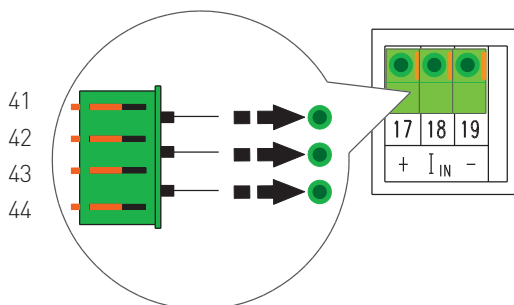
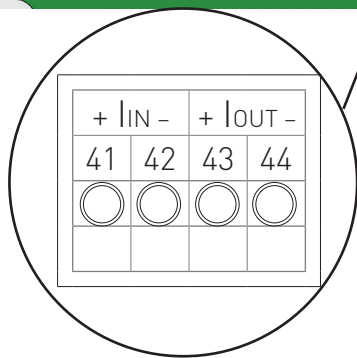
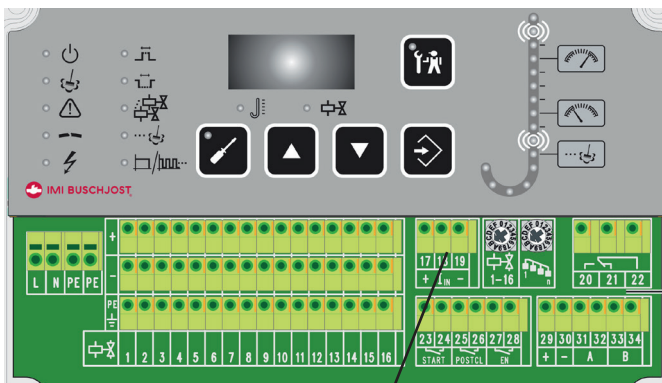
→ The external device (display unit or similar) which is connected, must have a differential or a galvanically isolated current input. Otherwise, correct operation is not guaranteed.

In addition, there is the possibility that the 4–20 mA signal can be connected to an external device. To do that, the device is switched in sequence with the 2-wire sensor. The connection adapter for the analogue current input and output is plugged onto the existing terminals 17–19.

#### NOTE!

→ Once the connection adapter has been fitted, it cannot be removed again.

1. Open terminal cover on the front of the device at the recess and pull cover forward.
2. Plug connection adapter with the male multipoint connector onto the terminals 17–19.
3. Connect ext. device (block diagram).
4. Close device again with the terminal cover.



#### NOTE!

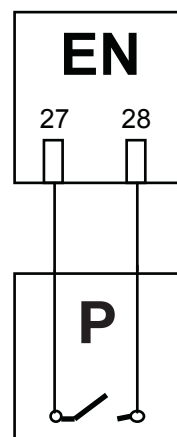
→ If no external device is connected, the analogue output must be bypassed.

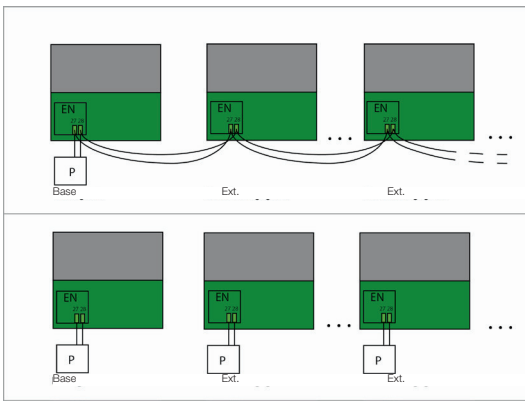
### 8.2 Pressure-Switch

Optional: The enable input (EN) can be used to connect a pressure switch to monitor the system. In this case, the "enable" function is not required at this input.

#### Pressure-Switch (optional):

The optional usage of a Pressure-Switch (P) monitors the mechanical function of the valve: When pressure is present, this switch bridges the current. When pressure is lost, it interrupts the current and reports an error message via the segment display on the 83491XX.0000.





## 9. Maintenance & Service

### 9.1 Maintenance & Repair

The device has to be cleaned regularly to avoid an increased dust deposition on the device.

### 9.2 Disposal

Send metals and plastics to recycling. Electric and electronic components must be collected separately and sent to the appropriate waste management facility. Dispose of assembled printed circuit boards in a technically correct manner.



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