vacuubrand

Technology for Vacuum Systems

ANALOG MODULE

Analog-I/O-Module 0-10 V/0-10 V VACUU·BUS®

Instructions for use

Original instructions

N°: 999344_EN

Original instructions
Keep for further use!

This manual is only to be used and distributed in its complete and original form. It is the responsibility of the user to check carefully the validity of this document with respect to his product.

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Thank you for purchasing this product from **VACUUBRAND GMBH + CO KG** *. You have chosen a modern and technically high quality product.*

TABLE OF CONTENT

1 Introduction

This manual is part of your product.

1.1 User information

Safety

Instructions for use and safety

- Read this manual thoroughly and completely before using the produkt.
- Keep this manual in an easily accessible location.
- Proper use of the product is essential for safe operation. Comply with all safety instructions provided!
- In addition to this manual, adhere to any relevant local accident prevention regulations and comply with industrial safety regulations.

General

General information

- For better legibility, the general expression *I/O module* is used instead of the complete product name *Analog-I/O-Module*.
- The illustrations in this manual are provided as examples in order for a better understanding.
- VACUUBRAND GMBH + CO KG reserves the right to modify or change the product design and/or technical specifications at any time without advanced notice.

Contact

Contact us

- Please ask for replacement in case of an incomplete manual or download instructions for use on our web page: www.vacuubrand.com
- Contact us regarding any questions about this product, if you need further information, or to provide us with feedback.
- When contacting our Customer Service Department give us the name of your product → *see the label on the product.*

Copyright

Copyright ©

1.2 About this document

1.2.1 Display conventions

Warning levels

Display conventions

NOTICE

Notice for a potentially harmful situation.

Disregarding the notice could lead to material damage.

Additional notes

IMPORTANT!

⇨ Information or specific use recommendation, which must be observed.

⇨ Important information for proper operation.

⇨ Helpful tips and tricks

⇨ Additional information

1.2.2 Symbols and icons

Symbols and icons

This manual includes symbols and icons. Safety symbols indicate special danger in handling the product. Icons shall help to identify the danger directly and easier.

Safety symbols

General warning symbol.

danger: electricity

Additional icons

Notes

✓	Positive example – **Do!** Result – **o. k.**	✗	Negative example – **Do not!**
	Refers to content in this manual.		Refers to content of other supplementary documents.

→ *further icons see: Action icons on page 18*

1.2.3 Handling instructions (action steps)

Action step (single step)

Action request

⇨ Do the described step.

☑ Result of action

Handling instructions (multiple steps)

1. first step

2. next step

☑ Result of action

Follow steps in the described order.

1.2.4 Term definition

Product specific terms

... I/O module	The .. -I /O module is an interface to connect an external peripheral device to a ***VACUU·BUS®*** compatible vacuum gauge or controller. By connecting to an ... I/O module, peripheral devices such as sensors, valves, writers, programmable logic controllers (PLC), etc., can be integrated as client into the ***VACUU·BUS®*** system of **VACUUBRAND**. **Functional principle Analog-I/O-Module** The module works with continuous signals within the voltage range 0–10 VDC. *On request also available for 4–20 mA, e. g., for long signal lines.*
DCP 3000	Vacuum gauge
CVC 3000	Vacuum controller, controller
VACUU·BUS®	Bus system by **VACUUBRAND** for communication of peripherals with ***VACUU·BUS®*** compatible gauges and controllers.
VACUU·BUS® configuration	Assigning a specific function to the I/O module by changing the ***VACUU·BUS®*** address, e. g., with a CVC 3000.
VACUU·BUS® plug	4-pole round connector for the bus system by **VACUUBRAND**.
VARIO® control	With ***VARIO®*** diaphragm pumps or ***VARIO®*** chemistry diaphragm pumps vacuum is precisely controlled by continuously adapting the pumping speed to the system demands.

2 Safety instructions

The complete information of this chapter must be observed by all persons working with the herein described product.

Use the product only when it is in proper working condition.

2.1 Intended use

Intended use

The *Analog-I/O-Module 0-10 V/0-10 V VACUU·BUS®* is an analog interface and designed as an accessory for ***VACUU·BUS®*** compatible vacuum controllers and gauges.

A specific function can be assigned to an I/O module by configuration with a vacuum controller or gauge
→ *see table: 6.4 Functional overview on page 34*.

The I/O module may only be used in non-explosive areas and indoor. Only connect the allowed components.

Any other use is considered to be improper use.

2.2 Improper use

Improper use includes:

Improper use

- Using the product contrary to its intended use.
- Operation with obvious malfunctions.
- The connection of unauthorized equipment.
- Operation at inadmissible operating conditions.

2.3 General safety instructions

2.3.1 Safety precautions

Safety precautions

⇨ Use the product only if you have understood its function and this manual.

⇨ Repairs are only allowed by the Service Department.

⇨ Always be conscious of safety, and work in a safe manner.

⇨ Observe the owners‘ directives at work, the national accident prevention regulations and occupational safety provisions.

2.3.2 Target group

Personnel and qualifications

Installation and assembly of electrical equipment must be performed by a qualified electrician.

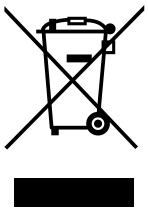
Only persons authorized by the operator may carry out changes in the address assignment of the controller or the gauge.

2.4 Proper disposal

NOTICE

Risk of environmental damage due to incorrect disposal of the product.

⇨ Do not dispose your product in household waste! Electronic components are subject to hazardous waste treatment and must only be disposed of by certified specialists.



⇨ Observe the national regulations for safe disposal and environmental protection.

⇨ Receive detailed information for respective regulations from your competent administrative authority.

3 Product description

3.1 Scope of supply

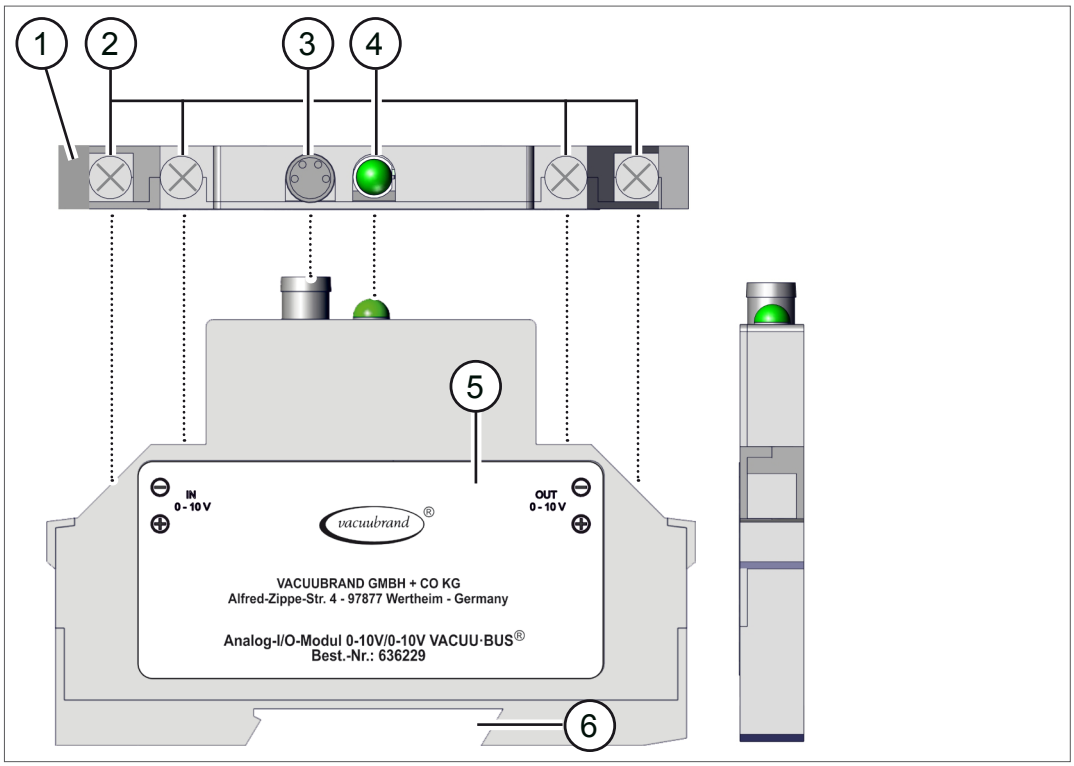
Scope of supply

Analog-I/O-Module 0-10 V/0-10 V VACUU·BUS®	636229
Extension cable ***VACUU·BUS®***, 2m	612552
Instructions for use	999344
Original packaging	------

3.2 Product view

Analog-I/O-Module

... I/O module (different views)



1	Analog-I/O-Module 0–10V ***VACUU·BUS®***
2	Connection terminals, screw terminals 0.5–2.5 mm² ▸ IN: Input signal 0–10 V ▸ OUT: Output signal 0–10 V
3	Connection for ***VACUU·BUS®*** extension cable
4	LED – status display ▸ Green: Operation ▸ Red: Error
5	Product label with connection sketch
6	Cut-out for assembly on hat rail

3.3 System requirements vacuum controller/gauge

Firmware

Firmware version

VACUUBRAND peripheral	Version
Vacuum controller CVC 3000	from 1.47
Vacuum gauge DCP 3000	from 1.20

3.4 Calculation formula voltage/pressure

The conversion of the output voltage into a vacuum value depends on the used vacuum sensor, its measuring range and type, e. g., internal vacuum sensor CVC 3000.

⇨ Please use the following calculation formula to calculate the vacuum value.

Calculation formula for the vacuum value (pressure value)

Calculation formula Analog-I/O-Module from voltage into pressure value

Output signal *(VDC)*	Calculation formula **[p]** = mbar (or Torr) **[U]** = VDC	valid for sensor type	Conversion into vacuum value
0–10	$p = U \times 100$	▪ VSK 3000 ▪ internal vacuum sensor CVC 3000 ▪ VACUU·VIEW ▪ Other	0–1000 mbar (0–750 Torr)
0.5–9.5*	$p = 10^{\frac{U - 0,5}{1,5} - 3}$	▪ VSP 3000 ▪ VACUU·VIEW extended ▪ Other	10^{-3}–1000 mbar (7.5×10^{-4} –750 Torr)
0.75–9.75**	$p = 10^{\frac{U - 0,75}{0,75} - 9}$	▪ MPT 100 ▪ MPT 200 ▪ Other	5×10^{-9} –1000 mbar (7.5×10^{2} -3.7×10^{-9} Torr)

* *logarithmic with scale of 1.5 V per decade*
⇨ total 6 decades from 10^{-3}–1000 mbar,
example formula for Excel: =POWER(10;((A1 - 0,5)/1,5)-3)

** *logarithmic with scale of 0.75 V per decade*
⇨ total 12 decades from 5×10^{-9}–1000 mbar
example formula for Excel: =POWER(10;((A1 - 0,75)/0,75)-9)

4 Assembly, Connection and Operation

NOTICE

Residual risk due to component failure in the system.

All electronic components have a residual risk of failure, which can lead to undefined states of the device.

⇨ In any case, ensure a suitable safety measure that will bring the system or the process into a safe state in the event of a failure.

IMPORTANT!

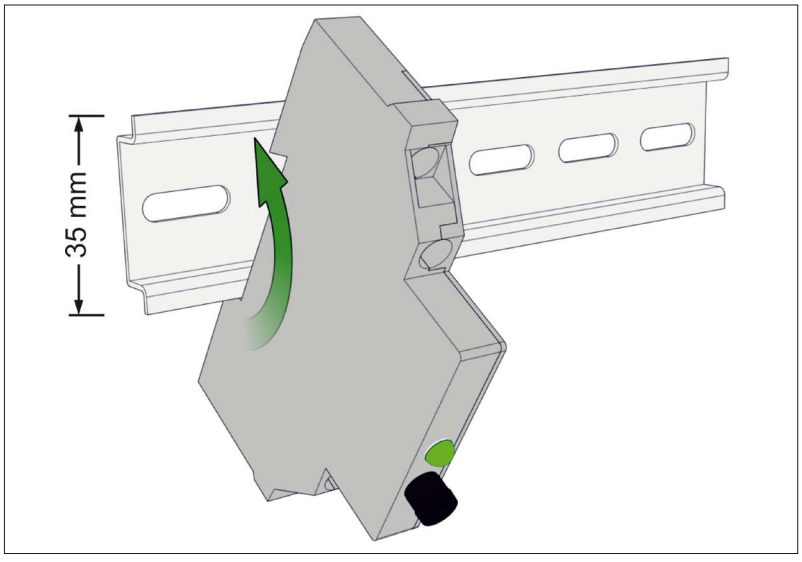
⇨ Assembly and electrical connection must be performed only by qualified electricians.

⇨ Before working on wirings, ensure zero voltage on the device.

4.1 Assembly

Install the I/O module

Assembly



⇨ Clip the I/O module onto a 35 mm hat rail, e. g., inside a switch cabinet or a distribution box.

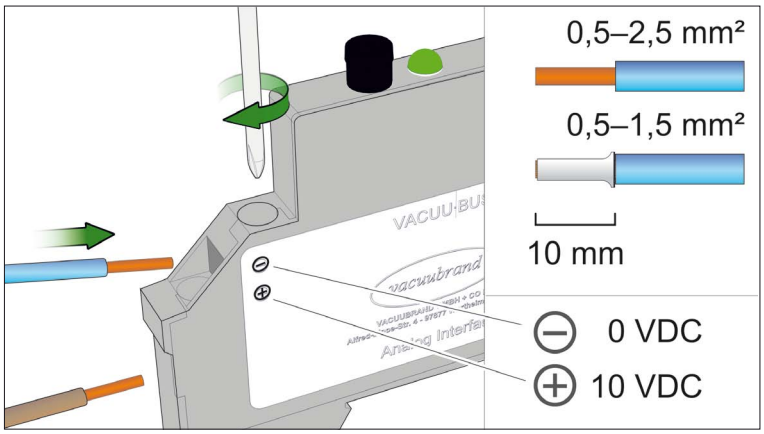
4.2 Connection

IMPORTANT! The Analog-I/O-Module must only be connected to safety extra-low voltage 0–10 VDC.

⇨ Ensure correct polarity for connection.

Conntect the I/O module

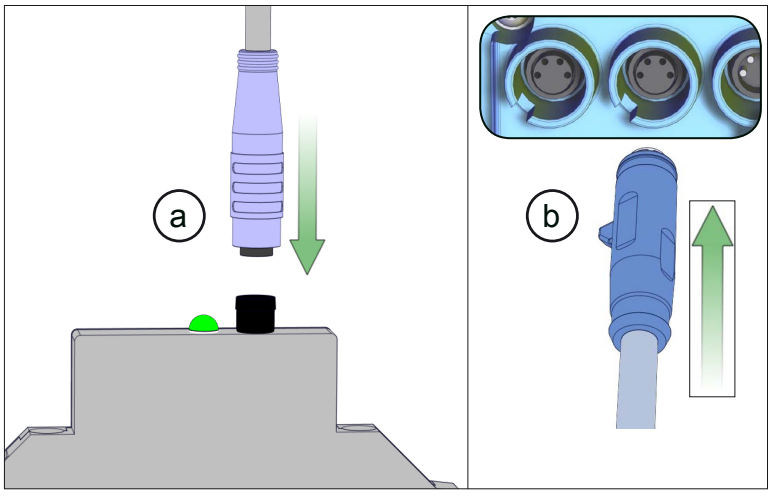
Electrical connection



1. Prepare the wires like illustrated.
2. Screw cable ends into terminal.

Connect I/O module with CVC 3000 (DCP 3000)

Connection to CVC 3000 (or DCP 3000)



1. Switch off CVC 3000 (DCP 3000).
2. Plug the ***VACUU·BUS***® extension cable **(a)** into the port on top of the I/O module.

Connection to CVC 3000 (or DCP 3000)

3. Plug the other side of the extension cable **(b)** into the ***VACUU·BUS®*** port on the rear side of the CVC 3000 (DCP 3000).
4. Switch on CVC 3000 (DCP 3000).

4.3 Functioning

4.3.1 Analog VACUU·BUS® interface

VACUU·BUS® interface to controller/gauge

The Analog-I/O-Module is used as signal interface for converting an analog input signal in the range of 0–10 VDC into a ***VACUU·BUS®*** signal and simultaneously for signal conversion of a ***VACUU·BUS®*** signal into an analog output signal in the range 0–10 V.

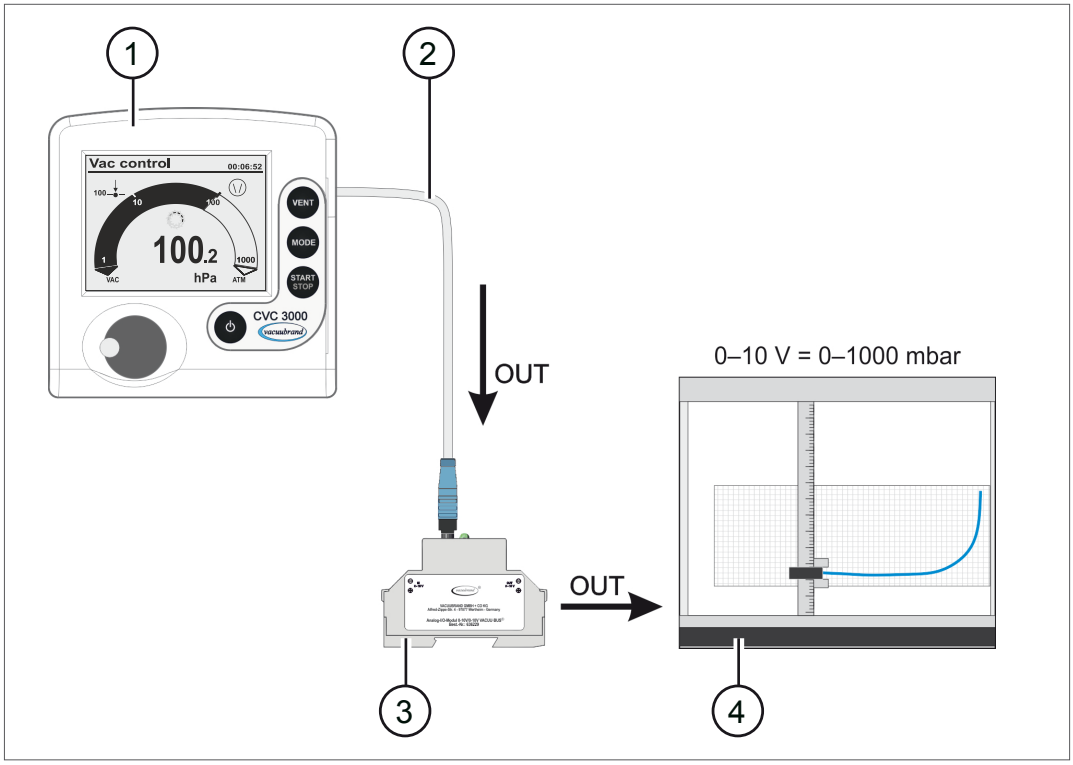
With default setting the I/O module can be connected, e. g., to a plotter for recording the actual vacuum.

→ see *3.4 Calculation formula voltage/pressure on page 12*

4.3.2 Vacuum function (State of delivery)

Application example with configuration Vacuum

→ Example Usage with default configuration



Meaning

1	CVC 3000 ▸ Mode: Vac control
2	Extension cable ***VACUU·BUS®***
3	Analog-I/O-Module 0–10V ***VACUU·BUS®*** ▸ ***VACUU·BUS®*** address: **Vacuum** ▸ Output signal OUT: = output voltage 0–10 V → actual vacuum 0–1000 mbar
4	Recording device, e. g., plotter

4.4 Function change by configuration

4.4.1 Configuration (assign VACUU·BUS®address)

Meaning configuration/ address assignment

A specified function can be assigned to an I/O module by configuration, that is, by changing the ***VACUU·BUS®*** address, e. g., for an another application.

To change the ***VACUU·BUS®*** address of an I/O module a vacuum controller CVC 3000, or at least a vacuum gauge type DCP 3000, is required.

Possible addresses for an Analog-I/O-Module

Address selection

	VACUU·BUS®- Address	Number, max.	Connection to IN (0–10 V)	Connection to OUT (0–10 V)	configurable with CVC	configurable with DCP
*	**Vacuum**	1	-	●	●	-
		1–4	-	●	-	●
	Speed	1	-	●	●	-
	Set vac	1	●	●	●	-
	SetSpeed	1	●	●	●	-
	VarioX_	1–4	-	●	●	-
	Var-SP_	1–8	-	●	●	-
	VSK _	1–4	●	-	●	●
	Ref. _	1–4	●	-	●	●

***** = *State of delivery (default configuration)*

Examples

If an other address is assigned, e. g., **Speed**, the controller sets the motor speed via the Analog-I/O-Module.

A connected plotter now records the actual speed.

If an other address is assigned, e. g., **VSK 2**, the controller accepts the Analog-I/O-Module as vacuum sensor.

Thus a rough vacuum sensor without ***VACUU·BUS***® plug can be connected.

With the assigned address the CVC 3000 (resp. DCP 3000) recognizes the new function automatically.

- ⇨ New ***VACUU·BUS***® address = new function.
- ⇨ An I/O module can always have only one of the specified functions.
- ⇨ This address is changeable, not fix. This address is not intended for continuous changes, but it can be changed when required.
- ⇨ If other specified functions are required simultaneously, please use further I/O modules.

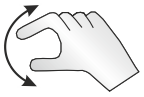
4.4.2 Assign an address with a CVC 3000

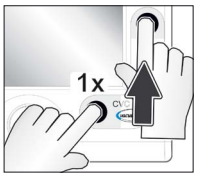
IMPORTANT! New addresses to *VACUU·BUS*® components can be assigned only individually.

- ⇨ Therefore remove all *VACUU·BUS*® plugs from CVC 3000 (DCP 3000) – except for the power supply plug.
- ⇨ Only connect the I/O module to which a new address is to be assigned.
- ⇨ If several I/O modules require new addresses, then connect and assign their addresses individually and one after another. Assign the address to each I/O module individually.
- ⇨ For the address assignment it does not matter whether wires are connected to IN or OUT.

Action icons

Meaning

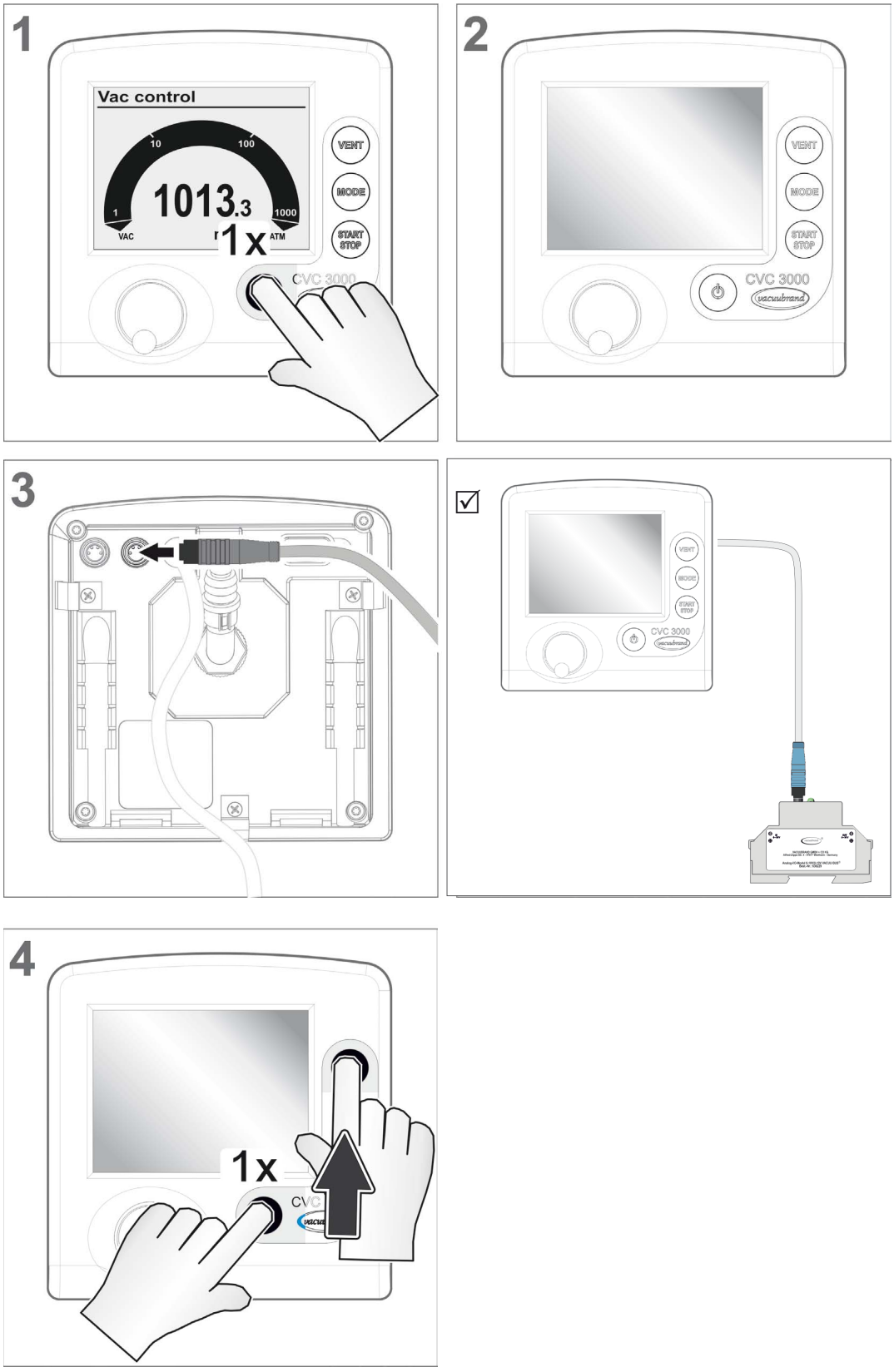
	**press** selection knob or key.		**turn** selection knob
	* **push and hold** key		**push and turn** selection knob



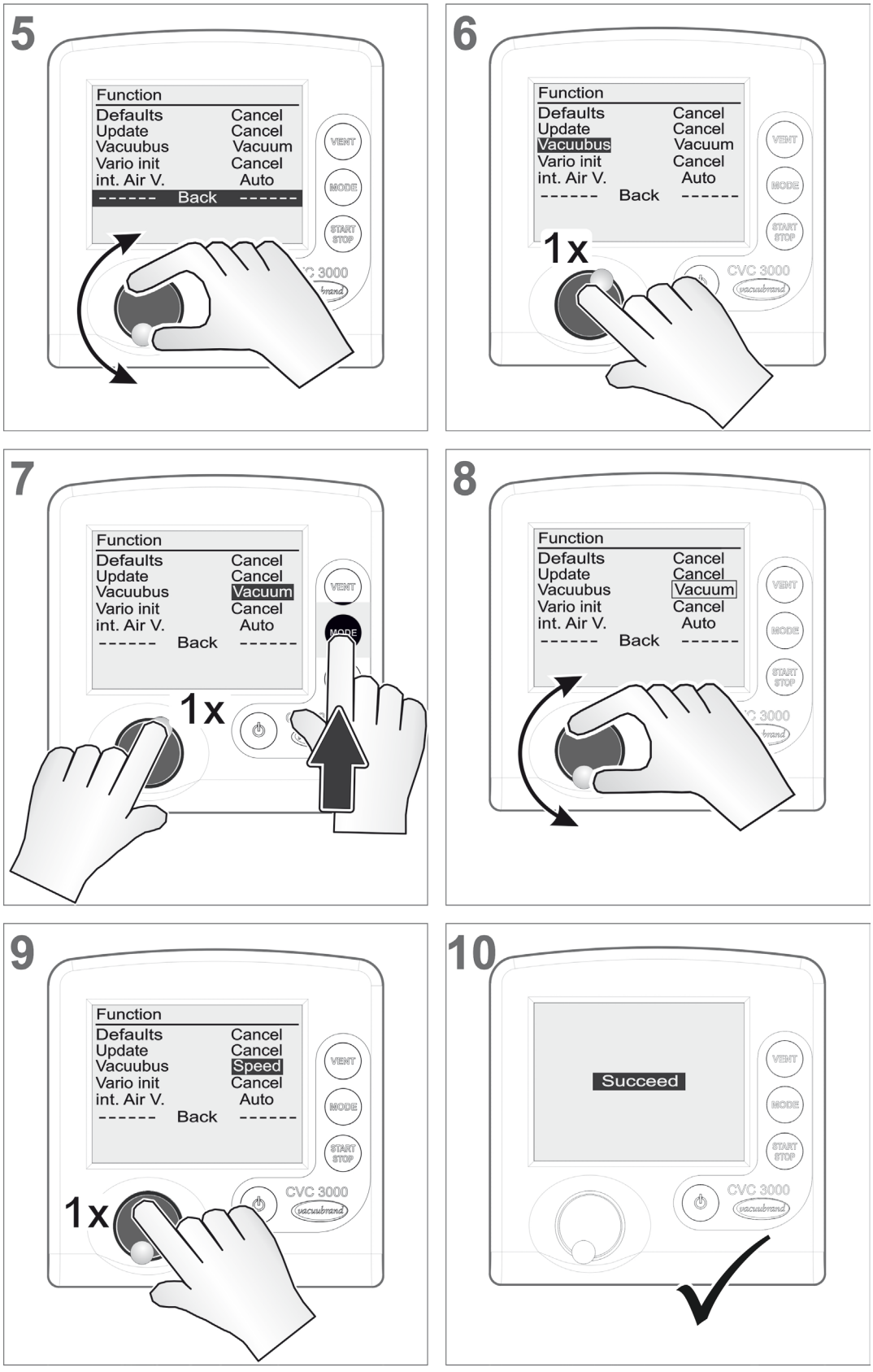
** When indicated as short-cut keys: First push and hold the key which must be hold and pressed, only then push the combination key shortly.*

How to assign an address?

→ Example Configuration with CVC 3000



→ Example Configuration with CVC 3000



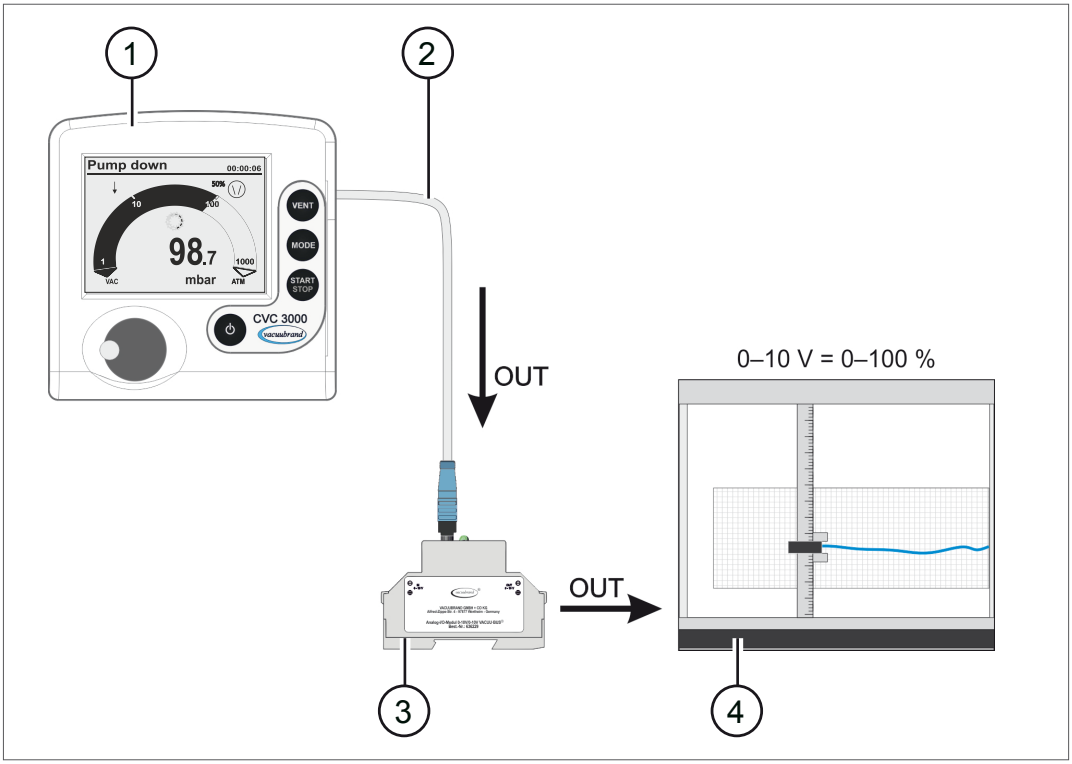
☑ New ***VACUU·BUS***® address for the Analog-I/O-Module = **Speed**

☑ A connected plotter now records the actual speed.

4.4.3 Speed function

Application example with configuration Speed

→ Example



Meaning

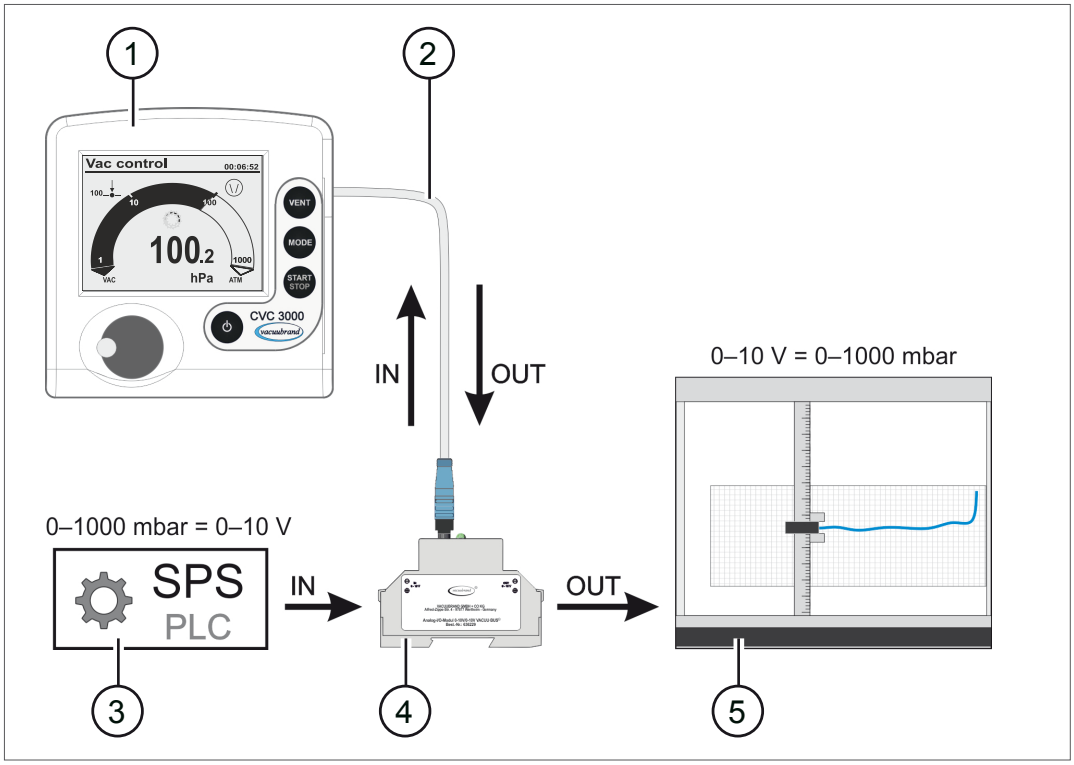
1	CVC 3000 ▸ Mode: Pump down
2	Extension cable ***VACUU·BUS®***
3	Analog-I/O-Module 0–10V ***VACUU·BUS®*** ▸ ***VACUU·BUS®*** address: **Speed** ▸ Output signal OUT: = output voltage 0–10 V → actual speed 0–100 %
4	Indicator device, e. g., plotter, PLC, voltmeter

4.4.4 SetVac function

IMPORTANT! By specifying the external control (master), the set vacuum is set for the CVC 3000 (slave). The adaption of vacuum at the CVC 3000 is disabled – other control parameters can still be modified.

Application example with configuration SetVac

→ Example



Meaning

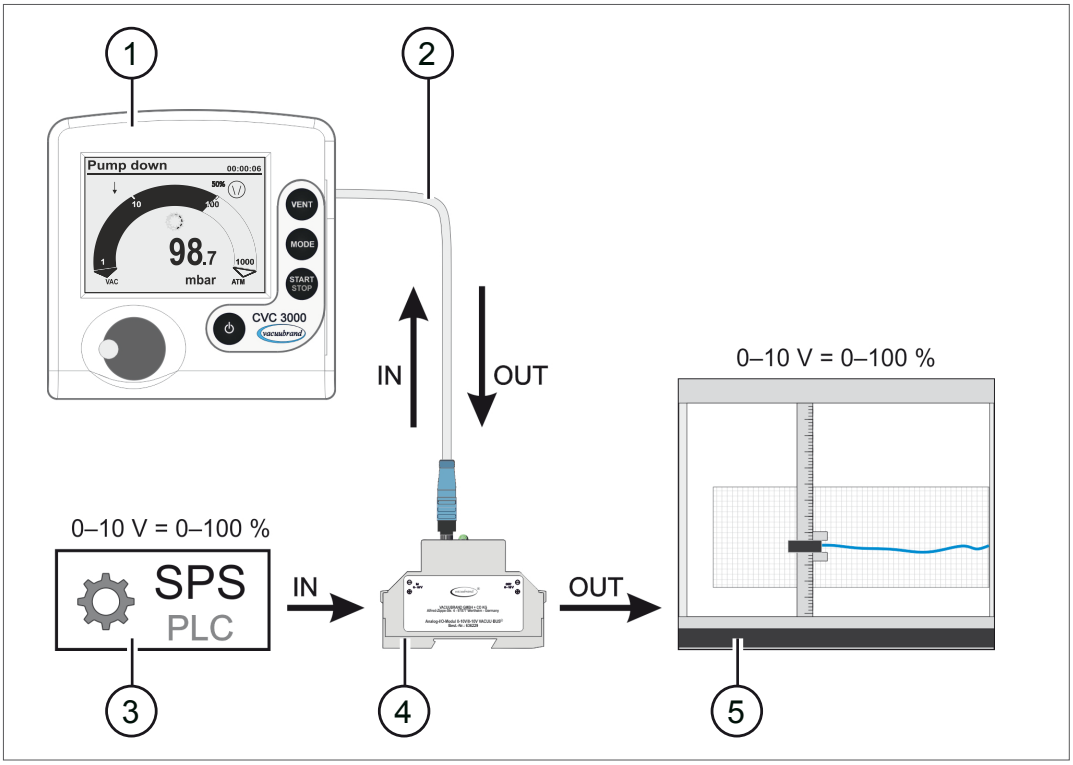
1	CVC 3000 ▸ Mode: Vac control
2	Extension cable ***VACUU·BUS®***
3	Specifying set vacuum by an external control unit, e. g., PLC The external specification has priority over settings at the controller.
4	Analog-I/O-Module 0–10V ***VACUU·BUS®*** ▸ ***VACUU·BUS®*** address: **Set vac.** ▸ Input signal IN: = input voltage 0–10 V → set vacuum 0–1000 mbar ▸ Output signal OUT: = output voltage 0–10 V → actual vacuum 0–1000 mbar
5	Indicator device, e. g., plotter, PLC, voltmeter

4.4.5 SetSpeed function

IMPORTANT! By specifying the external control (master), the set speed is set for the CVC 3000 (slave). The adaption of speed at the CVC 3000 is disabled – other control parameters can still be modified.

Application example with configuration SetSpeed

→ Example



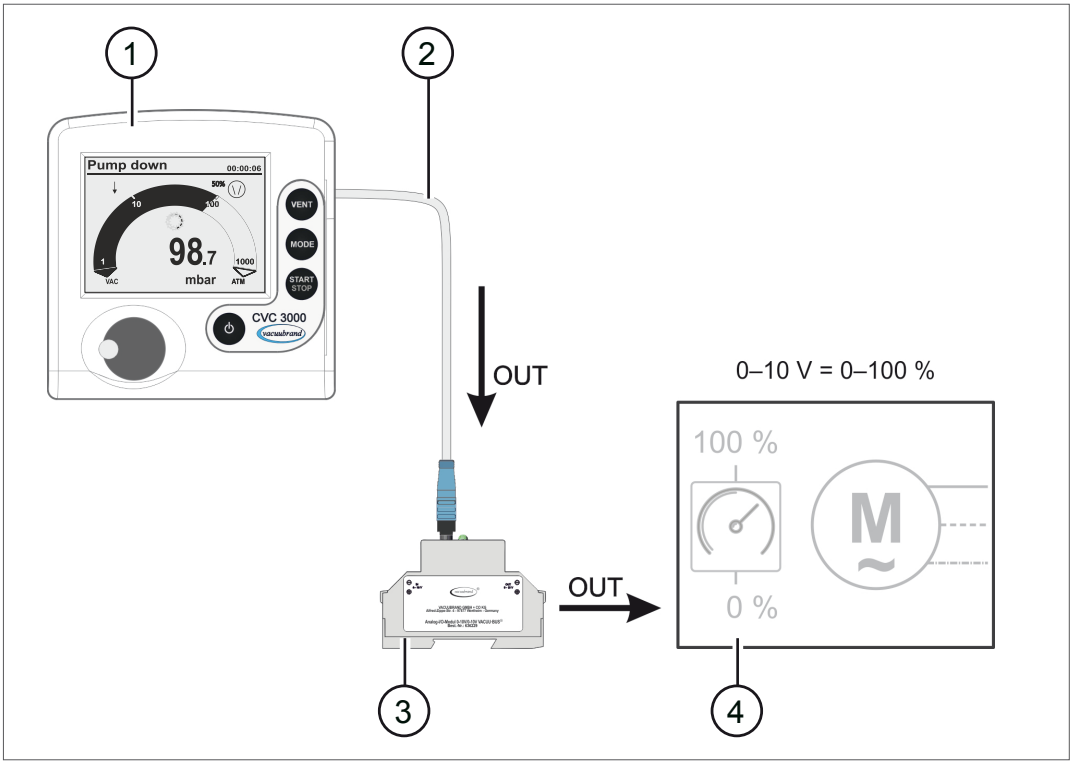
Meaning

1	CVC 3000 ▸ Mode: Pump down
2	Extension cable ***VACUU·BUS®***
3	Specifying set speed by an external control unit, e. g., PLC The external specification has priority over settings at the controller.
4	Analog-I/O-Module 0–10V ***VACUU·BUS®*** ▸ ***VACUU·BUS®*** address: **SetSpeed** ▸ Input signal IN: = input voltage 0–10 V → set speed 0–100 % ▸ Output signal OUT: = output voltage 0–10 V → actual speed 0–100 %
5	Indicator device, e. g., plotter, PLC, voltmeter

4.4.6 VarioX function

Application example with configuration VarioX

→ Example



Meaning

1	CVC 3000 ▸ Mode: Vac control ▸ Mode: Pump down
2	Extension cable ***VACUU·BUS®***
3	Analog-I/O-Module 0–10V ***VACUU·BUS®*** ▸ ***VACUU·BUS®*** address: **VarioX_** ▸ Output signal OUT: = output voltage 0–10 V → specified speed 0–100 %
4	Motor control, e. g., speed control of a vacuum pump

4.4.7 Var-SP function

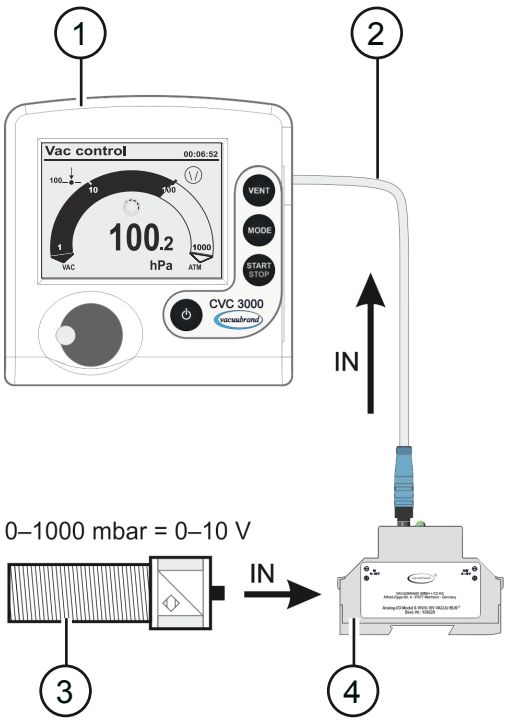
Application with configuration Var-SP _

Connection and function are similar to VarioX but only usable for one vacuum pump.

4.4.8 VSK function

Application example with configuration VSK_

→ Example



Meaning

1	CVC 3000 ▸ Mode: all
2	Extension cable ***VACUU·BUS®***
3	Vacuum sensor – rough vacuum 0–1000 mbar
4	Analog-I/O-Module 0–10V ***VACUU·BUS®*** ▸ ***VACUU·BUS®*** address: **VSK_** ▸ Input signal IN: = input voltage 0–10 V → reading value 0–1000 mbar

4.4.9 Reference sensor function

Application with configuration Ref.

Connection and function similar to VSK_ but the reading is interpreted as reference sensor. The reference sensor serves as a comparison sensor and cannot be used for vacuum control.

5 Status and error signals

5.1 LED signals

Meaning LED signals

LED status display

LED	Status	Meaning
 green	**On**	I/O module is operating normally
	Flashing cycle:	Pressure > 1000 mbar
	OFF	I/O module off or not identified by ***VACUU·BUS***® (controller switched-off, power failure etc.)

LED	Status	Meaning
 red	**On**	Input signal more than 10% too high
	OFF	No error.

5.2 Error

IMPORTANT! Do not open or modify the device. Repairs may only be carried out by the manufacturer.

Behaviour in case of error

What should I do in case of error?

⇨ In case of damage or recognizable malfunction the I/O module must be taken out of operation immediately.

⇨ Do not repair the I/O module yourself, replace it with an equivalent I/O module.

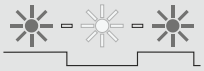
Technical support[1]

Technical support

For technical help or in case of errors, please contact our Service department.

1 -> Phone: +49 9342 808-5660, Fax: +49 9342 808-5555, service@vacuubrand.com

Fault indication at CVC 3000

Icon flash rate 	Fault and Meaning	Acoustic signal when Sound On
	▸ Analog-I/O-Module	12x 

Fault remedy at CVC 3000

Fault	▸ Possible cause	✓Remedy
Analog-I/O-Module	▸ Plug disconnected, ▸ Plug connection loose, ▸ ***VACUU·BUS*** cable defective, ▸ I/O module removed permanently.	✓ Check device connection and cable, ✓ Replace defective parts, ✓ Load factory settings, when an I/O module has been removed permanently. **CAUTION!** Save stored programs before reset.

5.3 FAQ – Frequently Asked Questions

FAQ

Will loading the factory setting at the CVC 3000 (DCP 3000) also reset the address of the I/O module?

No, the factory setting has no effect on the address of the I/O module.

What is the meaning of *VACUU·BUS* configuration?

Assignment of a specific function by changing the ***VACUU·BUS***® address of the I/O module.

How many simultaneous functions does an I/O module have?

An I/O module has only one specific function, the one assigned by configuration.

How can I use various functions at the same time?

Use several I/O modules, each with one required function, e. g., Vacuum + VSK_ = 2x Analog I/O interface module.

How many I/O modules can I connect to a CVC 3000 (DCP 3000)?

It is possible to connect as many I/O modules as appropriate addresses are free in the CVC 3000 (DCP 3000), e. g., address VSK 1–4 allows the connection of 4 Analog-I/O-Modules, configured as VSK.

May the CVC 3000 (DCP 3000) be switched on while I connect an I/O module?

No, the CVC 3000 (DCP 3000) must be switched off when connecting an I/O module.

Is it necessary for address assignment to disconnet the wires from IN/OUT?

No, they may remain connected to the I/O module, i. e. voltage can be applied.

Is it necessary for address assignment, to disconncet other VACUU·BUS® components from the CVC 3000 (DCP 3000)?

Yes, because the CVC 3000 (also DCP 3000) displays the default address in the menu, which simplifies the configuration of the I/O module.

FAQ

How can I reset an alarm at the CVC 3000 (DCP 3000) caused by an I/O module?

Check plug connections, if they are OK the I/O module might be defective. Do not use a defective I/O module and replace it.

How can I reset an alarm at CVC 3000 (DCP 3000) if an I/O module has been removed permanently?

Load factory settings of CVC 3000 (DCP 3000).

Need both contacts IN/OUT to be connected?

Depending on the configuration and preset function, only IN or only OUT might be connected or both.

What can I do if the function is not implemented or the I/O module is not accepted?

Switch off/on the CVC 3000 (or DCP 3000) shortly, to restart the query for VACUU·BUS clients. Afterwards the function should be identified.

Does the I/O module work when directly connected to the wall power supply plug?

No, the I/O module only works with CVC 3000 (or DCP 3000).

6 Appendix

6.1 Technical information

Product name
Analog-I/O-Module 0-10V *VACUU·BUS*®

6.1.1 Technical data

Technical data

Ambient conditions		(US)
Working temperature	10–40 °C	50–104 °F
Transport and storage temperature	-10–60 °C	14–140 °F
Operation altitude, max.	3000 m NHN	9840 ft above sea level
Relative humidity	30–85 %, non condensing	
Avoid condensation or contamination by dust, liquids or corrosive gases.		

Electrical data	
Signal input IN / Signal output OUT	0–10 VDC safety extra-low voltage
Input impedance	10 kOhm
Input current; max.	35 mA
Input voltage; max.	60 VDC
Resolution input	10 mV
Output current, max.	30 mA
Output voltage	0–10 VDC
Resolution output	2.5 mV
Input current, max.	50 mA
Power supply via VACUU·BUS®	24 VDC
Protection type	IP20
Interface	VACUU·BUS®
Status display	LED duo red/green

Technical data

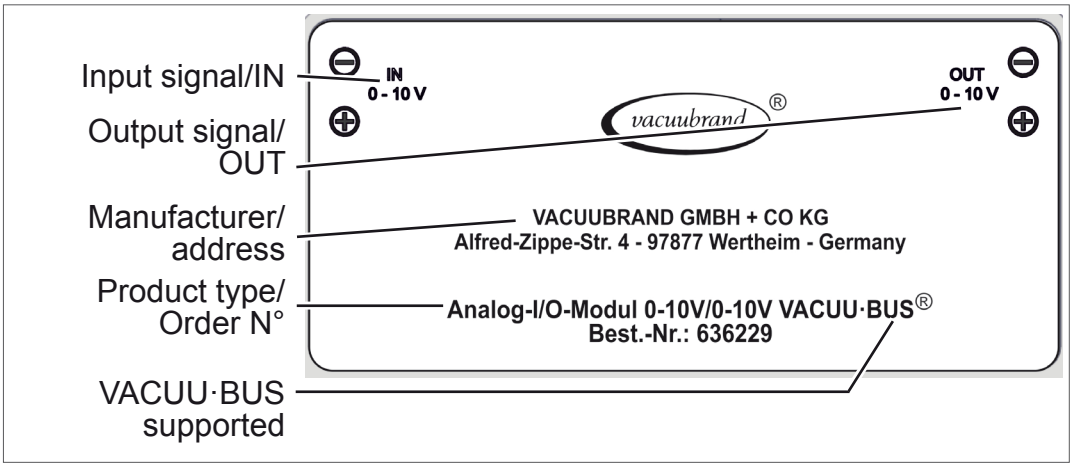
Housing data	
Housing material	PC-GF, light gray
Assemble housing	Snap-on fastener on top hat rail EN 50 022
Outer dimensions	8.8 x 89 x 58 mm
Amount of terminals	4 terminal screws (plus - minus)
Cross section, min.	0.5 mm^2
Cross section, max.	2x 2.5 mm^2, solid 2x 1.5 mm^2, stranded ferrule

6.1.2 Product label

⇨ When contacting our service department, name us product type and a short error description. With this information we can offer selective support and advice for your product.

Product label, in general

Description product label



6.2 Ordering information

Ordering information

I/O module	Order N°
Analog-I/O-Module 0-10 V/0-10 V ***VACUU·BUS***®	636229
Extension cable ***VACUU·BUS***®, 2m	612552
Instructions for use	999344

Source of supply

Purchase original accessories and spare parts from your specialized distributor or through international sales offices of **VACUUBRAND GMBH + CO KG**.

International sales offices and specialized trade

- ⇨ Information about the complete product range are available in the current product catalog.
- ⇨ For orders, questions about vacuum control and optimal accessories, please contact the international sales office of **VACUUBRAND GMBH + CO KG**.

6.3 Index

6.4 Functional overview

An Analog-I/O-Module can have only one of the specified functions.

Analog-I/O-Module			**CVC 3000 – Mode**				**DCP 3000**
Assigned as	Meaning	Signals	Pump down	Vac control	Auto mode	VACUULAN	---
Vacuum	Output of the actual vacuum as analog voltage	OUT 0–10 V = actual vacuum 0–1000 mbar		•			•
Speed	Output of the actual speed as analog voltage	OUT 0–10 V = actual speed 0–100 %	•				
Set vac	Input of the set vacuum and output of the actual vacuum as analog voltage	IN 0–10 V = set vacuum 0–1000 mbar OUT 0–10 V = actual vacuum 0–1000 mbar		•			
SetSpeed	Input of the set speed and output of the actual speed as analog voltage	IN 0–10 V = set speed 0–100 % OUT 0–10 V = actual speed 0–100 %	•				
VarioX _	Output of the speed as analog voltage	OUT 0–10 V motor speed control for vacuum pump	•	•			
Var-SP _	Output of the speed as analog voltage	OUT 0–10 V motor speed control for vacuum pump, e. g., PC 3001 series	•	•			
VSK _	Adapter for VACUU·BUS	IN 0–10 V Sensor 0–1000 mbar	•	•	•	•	•
Ref. _	Adapter for VACUU·BUS	IN 0–10 V Reference sensor 0–1000 mbar	•	•	•	•	•

6.5 Declaration of Conformity – China RoHS 2

VACUUBRAND GMBH + CO KG has made reasonable efforts to ensure that hazardous materials and substances may not be used in its products.
In order to determine the concentration of hazardous substances in all homogeneous materials of the subassemblies, a “Product Conformity Assessment” (PCA) procedure was performed. As defined in GB/T 26572 the “Maximum Concentration Value” limits (MCV) apply to these restricted substances:

- Lead (Pb): 0.1%
- Mercury (Hg): 0.1%
- Cadmium (Cd): 0.01%
- Hexavalent chromium (Cr(+VI)): 0.1%
- Polybrominated biphenlys (PBB): 0.1%
- Polybrominated diphenyl ether (PBDE): 0.1%

Environmental Protection Use Period (EPUP)

EPUP defines the period in years during which the hazardous substances contained in electrical and electronic products will not leak or mutate under normal operating conditions. During normal use by the user such electrical and electronic products will not result in serious environmental pollution, cause serious bodily injury or damage to the user’s assets.
The environmental Protection Use Period for VACUUBRAND products is 40 years.

此表格是按照SJ/T 11363-2006中规定所制定的。
This table is created according to SJ/T 11363-2006.

MATERIAL CONTENT DECLARATION FOR VACUUBRAND PRODUCTS							
	有毒有害物质或元素 Hazardous substances						
部件名称 Part name	铅 Pb	汞 Hg	镉 Cd	六价铬 Cr(+VI)	多溴联苯 PBB	多溴二苯醚 PBDE	环保期限标识 EPUP
包装 Packaging	O	O	O	O	O	O	
塑料外壳 / 组件 Plastic housing / parts	O	O	O	O	O	O	
真空油 Vacuum oil	O	O	O	O	O	O	
电池 Battery	O	O	O	O	O	O	
玻璃 Glass	O	O	O	O	O	O	
电子电气组件 Electrical and electronic parts	X	X	X	O	O	O	
控制器 / 测量设备 Controller / measuring device	X	O	X	O	O	O	
金属外壳 / 组件 Metal housing / parts	X	O	O	O	O	O	
电机 Motor	X	O	O	O	O	O	
配件 Accessories	X	O	O	O	O	O	

注释： 此表格适用于所有产品。以上列出的元件或组件不一定都属于所附产品的组成。
Note: Table applies to all products. Some of the components or parts listed above may not be part of the enclosed product.

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。
O: Indicates that the above mentioned hazardous substance contained in all homogeneous materials of the part is below the required limit as defined in GB/T 26572.

X: 表示该有毒有害物质至少在该部件某一均质材料中的含量超出GB/T 26572规定的限量要求。
X: Indicates that the above mentioned hazardous substance contained in at least one of the homogeneous materials of this part is above the required limit as defined in GB/T 26572.

除上表所示信息外，还需声明的是，这些部件并非是有意用铅（Pb）、 汞 （Hg）、铬（Cd）、六价铬（Cr(+VI)）、多溴联苯（PBB）或多溴二苯醚（PBDE）来制造的。
Apart from the disclosures in the above table, the subassemblies are not intentionally manufactured or formulated with lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (Cr+VI), polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE).

Products manufactured by VACUUBRAND may enter into further devices (e.g., rotary evaporator) or can be used together with other appliances (e.g., usage as booster pumps).
With these products and appliances in particular, please note the EFUP labeled on these products.
VACUUBRAND will not take responsibility for the EFUP of those products and appliances.

Place, date: Wertheim, 04/24/2017

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Technology for Vacuum Systems

TDD2/V1.2 (01.08.2017)

Version: 999344_EN_Analog-I-O-Modul

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