



Technology for Vacuum Systems

Instructions for use



VNC 2 E

Vacuum Controller

Dear customer,

Your VACUUBRAND vacuum controller shall support you at your work for a long time without any trouble and with full load output. Thanks to our large practical experience we attained much information how you could add to an efficient application and to personal safety. Please read these instructions for use prior to the initial start-up of your controller.

VACUUBRAND vacuum controllers are the result of many years of experience in construction and practical operation of these vacuum controllers combined with the latest results in material and manufacturing technology.

Our quality maxim is the "zero fault principle":

Every delivered vacuum controller is tested extensively including an endurance run. Due to this endurance run, also faults, which occur rarely, are reported and can be corrected. Every single vacuum controller is tested on achievement of the specification after the endurance run.

Every VACUUBRAND controller leaving our factory achieves the specification. We feel obliged to this high quality standard.

We are aware that the controller should not draw a part of the real work and we hope to contribute with our products to an effective and trouble-free realisation of your work.

Yours

VACUUBRAND GMBH + CO KG

After sales service: Contact your local dealer or call +49 9342 808-193.

Trademark index:

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➔ DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.



⚠ WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.



• CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



NOTICE is used to address practices not related to personal injury.



Isolate equipment from mains.



Safety information

General information

NOTICE

Read and comply with this manual before installing or operating the equipment.
To operate the vacuum controller, valves and/or vacuum pumps are necessary. Otherwise the controller works as measuring device.

Remove all packing material, remove the product from its packing-box, remove the protective covers and keep, inspect the equipment.

If the equipment is damaged, notify the supplier and the carrier in writing within three days; state the item number of the product together with the order number and the supplier's invoice number. Retain all packing material for inspection.

Do not use the equipment if it is damaged.

If the equipment is not used immediately, replace the protective covers. Store the equipment in suitable conditions.

Intended use

WARNING

- ☞ Ensure that the individual components are only connected, combined and operated according to their design, or with OEM parts, and as indicated in the instructions for use.
- ☞ Comply with notes on correct vacuum and electrical connections, see section "Description" p. 9.

CAUTION

- The equipment is designed for **ambient and gas temperatures** at continuous operation between +10°C and +40°C and up to 80°C for short periods at the vacuum connection. Check the maximum temperatures, especially if installing the equipment in a cabinet or a housing and make sure ventilation is adequate. Ensure that the maximum permitted gas temperature at the pressure transducer (see "Technical data" p. 7) is not exceeded.

NOTICE

Use the equipment and all system parts **for the intended use only**, i.e. for control and measurement of vacuum in vessels designed for that purpose.

Connecting the controller

WARNING

- ☞ **Comply with max. permitted pressure** at the pressure transducer, see section "Technical data" p. 7.
- ☞ **Avoid uncontrolled overpressure** (e. g. when connecting to a locked or blocked tube system). **Risk of bursting.**

CAUTION

- The VNC 2E is equipped with a **short circuit proof wide range power supply** with an integrated overload protection. Check that mains voltage and current conform with the equipment (see rating plate).
- In case of residues, aggressive or condensable media, install a gas washing bottle if necessary.
- Connect hoses at the vacuum connection of the pressure transducer gas tight. Ensure stability of the hose connection.

- Comply with **max. permitted gas and ambient temperatures** (see "Technical data" p. 7) and make sure ventilation is adequate, especially if the equipment is installed in a housing.
- Avoid high heat supply (e. g. due to hot process gases).

NOTICE

Position device and vacuum connection lines so that condensate can not flow towards the pressure transducer.

Use inert gas for venting if necessary. Avoid overpressure of more than 0.2 bar in case inert gas is connected

Comply with all relevant **safety requirements**.

If the equipment is brought from cold environment into a room for operation, allow the equipment to warm up (pay attention to **water condensation** on cold surfaces). Comply with **national safety regulations and safety requirements** concerning the use of vacuum and electrical equipment. Comply with all **applicable and relevant safety requirements** (regulations and guidelines), **implement the required actions and adopt suitable safety measures**.

Do not connect to a VACUUBRAND NT VARIO pump or pumping unit.

Ambient conditions

NOTICE

To the best of our knowledge the equipment is in compliance with the requirements of the applicable EC-directives and harmonized standards (see "Declaration of conformity" p. 35) with regard to design, type and model. Directive EN 61010-1 gives in detail conditions under which the equipment can be operated safely (see also IP degree of protection, p. 7).

Adopt suitable measures in case of differences, e. g. using the equipment outdoors, installation in altitudes of more than 1000 m above mean sea level, conductive pollution or bedewing.

Pay attention to the **permissible maximum ambient and gas temperatures** (see "Technical data" p. 7).

Operating conditions

DANGER

- ➔ **The devices have no approval for operation in or measurement at explosive atmospheres.**

NOTICE

Ensure that the materials of the wetted parts are compatible with the substances in the vacuum system, see section "Technical data" p. 7.

Safety during operation

DANGER

- ➔ Adopt suitable measures to prevent the release of dangerous, toxic, explosive, corrosive, noxious or polluting fluids, vapours and gases.

WARNING

- ☞ Prevent any part of the human body from coming into contact with vacuum.
- ☞ **Max. permitted pressure at the vacuum connection:** 1.5 bar (absolute).
In case of pressures above 1060 mbar, the **display flashes**.
"p Error" is displayed and the controller sounds five blips.

CAUTION

- **Attention:** In case of pressures above approximately 1100 mbar the pressure reading gets incorrect (saturation of the pressure transducer).
Immediate pressure relief necessary! Risk of bursting!
- Use only **genuine spare parts and accessories**. Otherwise safety and performance of the equipment as well as the electromagnetic compatibility of the equipment might be reduced.
Possibly the CE mark or the C/US conformity becomes void if not using genuine spare parts.
- Electronic equipment is never 100% fail-safe. This may lead to an ill-defined status of the equipment or of other connected devices. Provide protective measures against malfunction and failure. Ensure that in case of failure the controller and the vacuum system always will turn into a safe status.
- **Attention: If Auto-Start "Auto-St."** is preselected, the process starts immediately after a power failure without pressing any further key. It is the user's responsibility to ensure that no dangerous status of the system due to the automatic start-up can occur and to provide appropriate safety measures. If necessary, the user has to check **prior to starting process control**, whether the option "Auto-Start" is enabled.
- Switching of an in-line valve or a vacuum pump, or opening of a venting valve by the controller must not lead to a critical dangerous situation under any circumstances.

NOTICE

The VNC 2E is equipped with a **short circuit proof wide range power supply** with an integrated overload protection and a fuse T8A.

Maintenance and repair**NOTICE**

Interior components of the controller can only be repaired at the factory.



- ➔ Before starting maintenance, isolate the vacuum controller from the vacuum system and the electrical supply.
- ➔ **Wait two minutes** after isolating the equipment from mains to allow the capacitors to discharge.

WARNING

- ⚠ **Attention:** Due to the operation the device might be contaminated by harmful or dangerous substances, clean or decontaminate prior to maintenance.

CAUTION

- Before starting **maintenance** vent the vacuum controller and isolate the it from the vacuum system.

Ensure that maintenance is done only by suitably trained and supervised technicians.

In order to comply with law (occupational, health and safety regulations, safety at work law and regulations for environmental protection) vacuum pumps, components and measuring instruments returned to the manufacturer can be repaired only when certain procedures (see section "**Notes on return to the factory**" p. 33) are followed.

Technical data

Controller	VNC 2 E
Pressure transducer	capacitive, absolute pressure transducer made of aluminium oxide ceramics, independent of gas type
Display	alphanumeric LCD display, illuminated 2 x 8 characters
Pressure units / scale (selectable)	mbar, Torr or hPa
Measuring range (absolute)	1100 mbar - 1 mbar (825 Torr - 1 Torr)
Maximum range of pressure control (absolute)*	1060 mbar – 1 mbar (795 Torr – 1 Torr)
Maximum permissible pressure at pressure transducer (absolute)	1.5 bar (1125 Torr)
Measurement uncertainty (absolute) after careful adjustment and at constant temperature	<±1 mbar (0.75 Torr) ±1 digit
Temperature coefficient	<± 0.07 mbar/K (0.05 Torr/K)
Ambient temperature range (operation)	10°C to +40°C
Ambient temperature range (storage)	-10°C to +70°C
Permitted relative atmospheric moisture during operation (no condensation)	30% to 85%
Maximum permissible temperature of gaseous media at pressure transducer	continuous operation: 40°C, for short periods up to 80°C
Max. permitted range of supply voltage	100 V~ (-10%) to 230 V~ (+10%) 50/60 Hz
Fuse (IEC connection)	5x20 mm, T 8 A / 250 V
Power draw (no-load operation)	3 VA
Power draw with VACUUBRAND VV-B 6C in-line valve and coolant valve VKW-B	max. 10 VA (without switch output)
Serial interface	RS 232 C
Supply line VACU•UBUS voltage supply 110-230 V 50/60 Hz voltage supply 100-110 V 50/60 Hz designed for the simultaneous operation (parallel connection) with the following original accessories:	24 V, max. 400 mA 24 V, max. 340 mA one in-line valve VV-B 6C 24V= one coolant valve VKW-B 24 V= one venting valve VB M-B 24 V=
Breaking capacity of IEC socket** ambient temperature 30°C ambient temperature 40°C	7.2(4) A 250 V~ / 7.2(7.2) A 125 V~ 6(4) A 250 V~ / 6(6) A 125 V~

* The actual available range of the vacuum control can be limited due to the ultimate vacuum of the pump, the developed amount of gas, etc.

** ohm resistive (inductive) load

We reserve the right for technical modifications without prior notice!

Controller	VNC 2 E
Degree of protection according to IEC 529	IP 20 (rear) IP 54 (front)
Vacuum connection	hose connection for PTFE tubing 8/10mm
Weight	1.4 kg
Dimensions (without cable) L x W x H	193 x 113 x 120 mm
Installation depth behind rear of front panel	120 mm
Mains connection	IEC plug / socket at cable 1m

Solenoid operated valve	
Operating cycles per minute	max. 50
Power draw	6 W
Power supply	24 V= ±10%
Current draw approx.	0.22 A
Degree of protection according to IEC 529	IP 65
Max. permitted difference pressure, pressure gradient in direction of flow-through	1.5 bar

- ➔ The VACUUBRAND controller VNC 2 E can only be operated with components compatible to the VACUUBRAND **VACUU•BUS system**, see accessories.

Wetted parts

Components	Wetted materials
Sensor	aluminium oxide ceramics
Sensor housing	PPS / glass fibre
Sensor seal	chemically resistant fluoroelastomer
Valve block	PP
O-rings	FPM
Housing of isolation valve	PVDF
Non return valve	FFKM
Diaphragm / seal ring	PTFE
Screw-in fittings	PVDF

We reserve the right for technical modifications without prior notice!

Description

NOTICE

When switching on the controller, the current basic mode and the **version number** are displayed for 2s.

Display and keys

Display

In menus
line 1: caption
line 2: menu item

In submenus (only setting of RS 232C)
line 1: menu item (RS 232)
line 2: submenu

After selection of menu item
line 1: menu item (or submenu)
line 2: value to be set

In program
line 1: pressure
line 2: status message



key "Esc":

- stop of control
- go to previous level of program (operation menu)
- interruption of operation (reset to previous settings)
- venting until atmospheric pressure (pressing > 2 seconds)

key "up"

- select menu
- previous menu item
- increase value
- venting during control

key "Enter"

- start of control
- next step in menu setting
- adopt set value and quit menu

key "down"

- select menu
- next menu item
- decrease value
- decreasing pressure during control

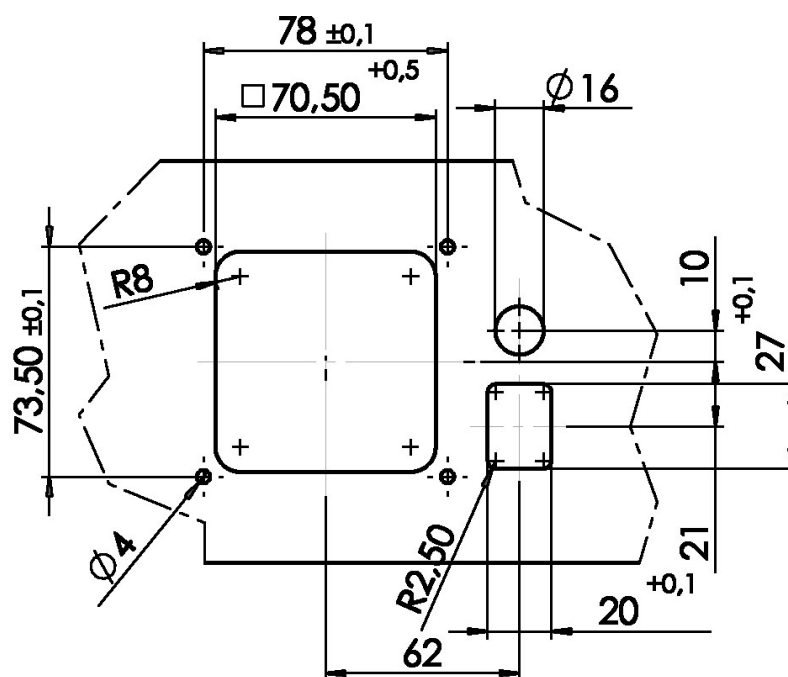
mains switch

VNC 2 E connections



Note: The second label "8 AT" fixed with adhesive tape is intended to be glued onto the front plate of the laboratory furniture.

Attention: Do not cant when assembling or removing plug connections! Comply with correct positioning of the plug. To connect further components use Y-adapters and extension cables VACUU•BUS. When connecting an external pressure transducer, it is used automatically. Further information on how to use several sensors simultaneously is available on request.

Cut-out for front assembly

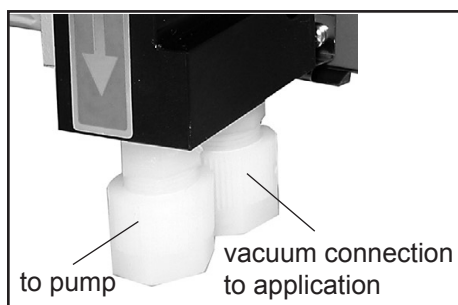
Notes on operation

For operation it is necessary to install valves and/or vacuum pumps. Without those components, the controller will work only as a vacuum measurement device. As such the controller will switch a possibly connected coolant valve.

When switching on the controller VNC 2 for the very first time, a menu to select the language of the controller menu is displayed. Select the desired language ("Deutsch", "English", "Français") using the keys ▼ and ▲, and press "Enter" to confirm. Then select the pressure unit ("mbar", "Torr" or "hPa") in the same way.

Note: Texts written in Courier font mirror the display of the LCD of the controller.

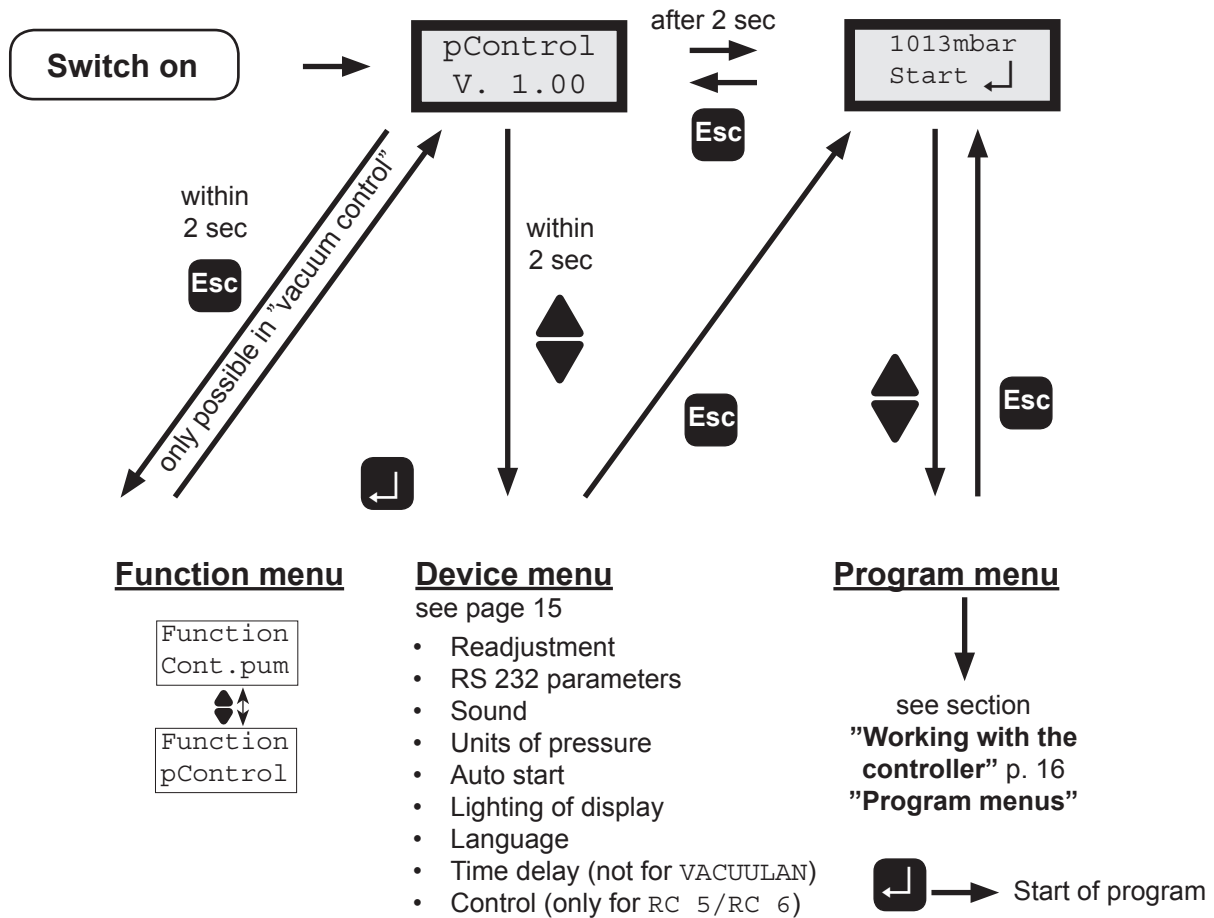
Connecting an external pressure transducer VSK 3000 will automatically replace the internal pressure transducer as active sensor. The display will show the vacuum measured by the VSK 3000, the vacuum connection of the controller is rendered inoperable.



Max. permitted pressure at pressure transducer: 1.5 bar (absolute).

- ☞ At pressures higher than 1060 mbar the display flashes.
 - ☞ Inside a vacuum system where evaporation occurs, the vacuum is not uniform. This effects the value of the measured pressure and such the controlling. Therefore carefully choose the position where to connect the pressure transducer.
 - ☞ Condensate and deposits at the pressure transducer falsify the measurement result.
 - ☞ If residues occur or when working with aggressive or condensable substances, install a gas washing bottle in front of the pressure transducer.
 - ☞ **Position controller in such a way, that condensate can not flow into the pressure transducer.**
 - ☞ If necessary, clean the pressure transducer, see section "Cleaning the pressure transducer" p. 31.
-
- ☞ Setting of interface parameters, see "**Interface parameters**" p. 21.
 - ☞ Presettings at controller, see "**Menu structure**" p. 13.
 - ☞ Operating the controller, see "**Working with the controller**" p. 16.

Menu structure of controller



Notes on menu structure of the controller

Function menu:

- Setting of the basic function of the controller (only in "vacuum control" (pControl)).

Device menu:

- Setting of the device specific features and the periphery of the controller.
- Readjustment: Adjusting the pressure transducer at atmospheric pressure and under vacuum, see section "Readjustment" p. 20.
- RS 232 parameters: Setting of the interface parameters, see section "Interface parameters" p. 21.
- Sound: Switching the function "acoustic warning signal" on/off.
- Pressure unit: Selection of the pressure unit mbar, Torr or hPa.
- Auto start: Process starts immediately after switching on the controller.
- Lighting: Setting of the lighting intensity of the display.
- Language: Selection of the language of the menus (English, German, French).
- Time delay: Delayed switching off of the coolant and the pump (not for VACUULAN)
- Control: Control of a valve or a pump via the IEC control line (only for RC5/RC6).

Program menu:

- Setting of the function specific parameters (e. g. preset pressure).

Attention: Depending on factory-set configurations, some menu options are not active!

Notes on configuring the controller

Time delay

- At the end of the process the coolant continues to flow according to the preset time delay. If an in-line valve is connected, a connected pump also runs for the preset time delay with in-line valve closed for self cleaning.

Notes on selecting the factory-set configuration

NOTICE

The controller VNC 2 can be adapted optimally to the specific application by choosing the appropriate factory-set mode depending on the components, the application, and the process.

Automatic valve detection:

When switching on, the controller checks the actual valve configuration. If a valve is connected, it is monitored and operated automatically until the controller is switched off. In-line valves and coolant valves are monitored equally.

The preselected values from last operation (e.g. for pressure, speed or switch-off time) are stored. In case of similar operation conditions it is possible to start immediately, if the preselections are chosen appropriately.

If selecting another factory-set mode (keep key "Esc" pressed while switching on), the configuration for this mode is adopted, the actual configuration gets replaced.

Factory-set mode "Vacuum control" (pControl)

Controller controls

- pump and / or isolation valve according to preset pressure in two-point control or continuous pumping
- coolant valve

Vacuum control (pControl): Two point control with 5 minutes time delay.

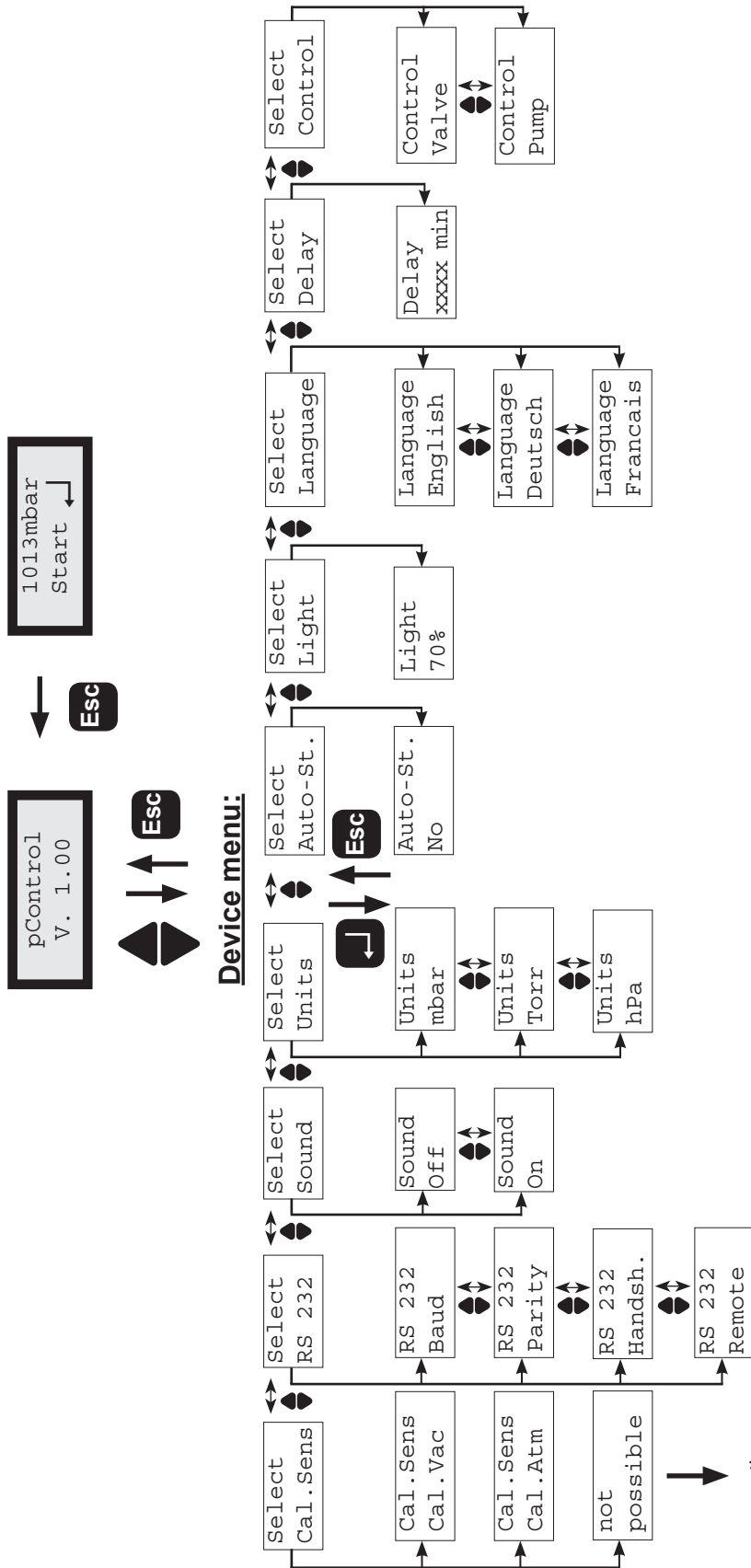
p set: 25 mbar, Δp : Auto, t Off: off, limit: 1060 mbar.

NOTICE

Changing the factory-set configuration:

Keep key "Esc" pressed while switching on the controller. Select the configuration by pressing key ▼ or ▲ and confirm by pressing key "Enter".

Attention: For factory-set configurations other than "Vacuum control" (pControl) please order separate instructions for use!



Use keys ▲ or ▼ in the device menu to select a menu item .

Confirm selection with key "Enter".

Adjust parameters with keys ▲ or ▼.

Confirm with key "Enter" or return to original setting pressing "Esc".

The device configuration is stored completely only when the device menu is terminated.

Switch off the device to ignore a started new configuration of the controller.

see section "Readjustment"

p. 20

see section

"Interface parameters"

p. 21

Working with the controller

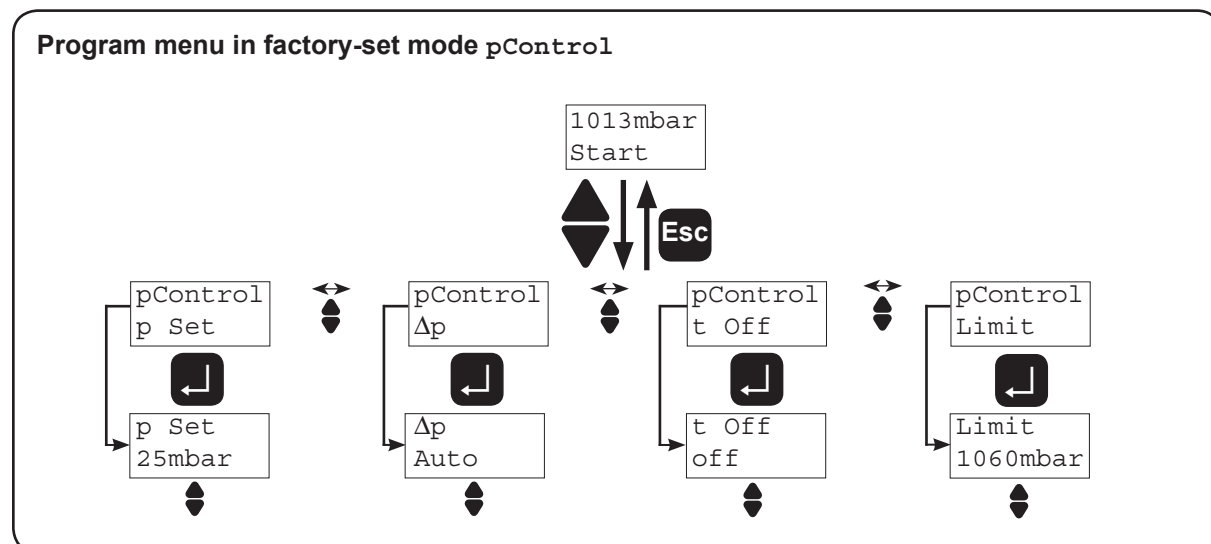
Factory-set mode "Vacuum control" (pControl)

Control with in-line valve:

- Control of a vacuum pump via an in-line valve. The pump continues to run according to the preset time delay. This can considerably reduce possible condensation inside the pump. The coolant valve is open during vacuum control and during time delay.
- For synchronous switching of the pump and the in-line valve:
Configure the time delay in the device menu: Delay: off.

- ☞ Use keys ▲ or ▼ in the program menu to select an item.
- ☞ Confirm selection with key "Enter".
- ☞ Adjust parameters with keys ▲ or ▼.
- ☞ Confirm with key "Enter" or return to original setting pressing "Esc".

Program menu in factory-set mode pControl



- **Vacuum control of a vacuum pump (with in-line valve)**

Settings in the program menu:

- ☞ **Preset pressure** (p Set): Lower pressure value for two-point control (displayed during active control by a short tip on key ▼).
- ☞ **Hysteresis** (Δp): Control range of the two-point control.
- ☞ **Switch-off time** (t Off): The duration of the process (vacuum control) can be preset. If the pump is switched off due to surpassing of the pressure limit (Limit), the switch-off time is without effect.
- ☞ **Maximal pressure** (Limit): Shut down of the pump when the "Limit" value is exceeded, e.g. at the end of filtrations or extractions (active only **after** the pressure did fall below the preset pressure (p Set) for the first time).

Suggested values for the hysteresis Δp are stored in the controller (setting: "Auto") and are adapted automatically to the preset pressure values. It is possible to adjust the parameters manually anytime.

p in mbar	5	10	50	80	100	200	500	700	900	1000
Δp in mbar (suggested values)	2	2	5	8	9	17	40	55	71	78

Adapting parameters during the regulation:

- **Interruption:** Press key "Enter", the control stops; after releasing the key, the control continues. During the interruption the preset pressure can be set to the actual pressure by pressing the key ▼. By pressing the key ▲, the hysteresis can be set to the actual pressure. Performing both tasks in a row results in hysteresis 0 = Auto, because the preset pressure as well as the hysteresis are set to the same pressure value.
- **Decrease of preset pressure:** Keep key ▼ pressed for more than 2s
- **Increase of preset pressure:** Keep key ▲ pressed for more than 2s (venting valve opens).

Temporary switching from "vacuum control" to "continuous pumping":

- ➔ Keep key ▼ pressed for more than 2s (decrease of preset pressure), then press key "Enter" additionally. The controller switches to "continuous pumping". No change of the basic mode of the controller takes place. Once the pump down is stopped ("Esc"), the controller VNC 2 switches back to the mode "vacuum control".

Temporary switching from "continuous pumping" to "vacuum control"

- ➔ If the key "Enter" is pressed while pumping down, the pumping down is interrupted. Pressing additionally the key ▼ results in switching to the mode "vacuum control". The actual pressure is stored as preset pressure. No change of the basic mode takes place. Once the regulation is stopped ("Esc"), the controller switches back to the mode "Continuous pumping".

☞ **Tip for distillation:** Temporary switching to continuous pumping enables an user friendly semiautomatic control of a distillation. Pump down ("Continuous pumping") until the boiling point is reached, then press "Enter" and key ▼. The controller keeps the reached pressure value (boiling pressure) constant. Further pumping down by firstly pressing "Esc" (vacuum control is stopped) and then pressing either "Enter" (pump down) or key ▼.

☞ **Tip for filtration:** Adjust preset pressure to a value well above the boiling pressure of the solvent (e.g. water: p Set » 100 mbar). Set "Limit" to e.g. 500 mbar. Once the filtration has finished, the pressure increases, and the pump will be switched off.

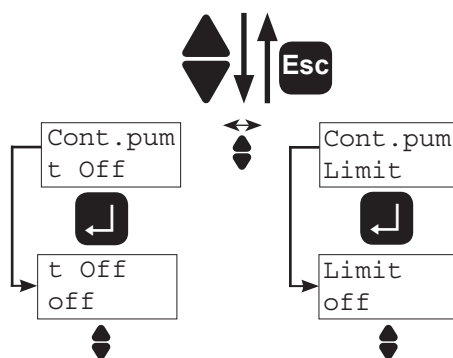
Switching to "continuous pumping" (Cont . pump) using the function menu (see section " Menu structure of controller" p. 13)

➔ Operation of a vacuum pump using an in-line valve or direct switching of a pump

Settings in the program menu:

- ☞ **Switch-off time** (t Off): The duration of the process control (continuous pumping) can be preset.
- ☞ **Limit pressure** (Limit): Shut down of the pump, if the actual pressure has fallen below a preset pressure limit "Limit", e.g. for drying chamber applications.

Program menu in basic mode Cont . pum when operating a valve or a pump



Status messages displayed during operation of a program

The messages are always displayed in the second line, the first line always displays the pressure value.

Displays in basic mode "Vacuum control"

Pressure > upper value of hysteresis:	Pump down
Pressure within preset limits:	-> p <-
After exceeding of upper pressure value:	Stopped
After expiry of process time:	Timeout
Key "ENTER" pressed:	Pause (valve closed)
Key "ENTER" and key ▼ pressed:	p Set (actual pressure value is stored as preset value)
Key "ENTER" and key ▲ pressed:	Δp (actual pressure is stored as upper pressure value)
Key ▼ pressed for less than 2s:	xxxxmbar (preset pressure is displayed)
Key ▼ pressed for longer than 2s:	Adapt p (Pump / valve starts, preset pressure is adjusted)
Key ▼ pressed for longer than 2s and key "ENTER" pressed additionally:	Pumpdown (switching to mode "Continuous pumping")
Key ▲ pressed for less than 2s:	xxxxmbar (pumping down interrupted, pause)
Key ▲ pressed for more than 2s:	Adapt p (preset pressure is adjusted), venting

Displays in basic mode "Continuous pumping"

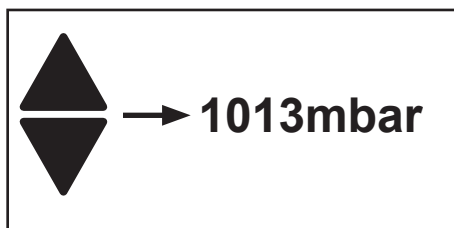
Operating with valve:	Pumpdown
Key "ENTER" pressed:	Pause (valve closed)
Key "ENTER" and key ▼ pressed:	p Set (actual pressure value is stored as preset value, switching to vacuum control)

In remote mode: **P** is displayed in the second line.

Readjustment

The vacuum gauge was adjusted using factory standards, which are traceable through regular calibration in an accredited laboratory (German Calibration service) to the national standard. Depending on the process and/or accuracy requirements, check the adjustment from time to time and readjust if necessary. For readjustment, the device has to be adjusted both at atmospheric pressure as well as under vacuum.

Adjustment at atmospheric pressure



Ventilate the controller and/or the vacuum system. Make sure that the vacuum connection at the controller is at atmospheric pressure.

- ➔ Select program "Cal . Sens" at controller.
- ➔ Use keys ▲ and ▼ to adjust the display to the actual local atmospheric pressure.
- ➔ Confirm value with key "Enter".

Note: To determine the actual atmospheric pressure, use an accurate barometer or get accurate reading from the weather service, the next airport.....(take into account the difference in altitude between e. g. airport and laboratory).

Adjustment under vacuum

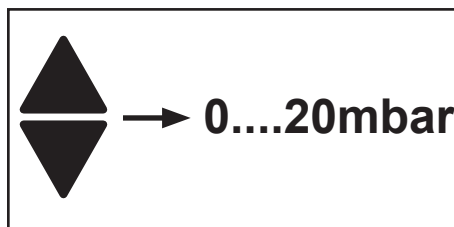


Evacuate the controller via the vacuum connection to a pressure < 0.5 mbar (e. g. by applying a good rotary vane pump).

- ➔ Select program "Cal . Sens" at controller.
- ☞ The display is set to zero automatically.
- ➔ Confirm value with key "Enter".

Note: Adjustment under vacuum with an actual pressure higher than 0.5 mbar reduces the accuracy of the measurement. If the pressure is significantly higher than 0.5 mbar, adjustment to a reference pressure is recommended.

Adjustment at a reference pressure



Instead of adjustment under vacuum to a pressure < 0.5 mbar, adjustment to a reference pressure within the range of 0 20 mbar is possible.

Evacuate the controller via the vacuum connection to a reference pressure within the range 0 20 mbar.

- ➔ Select program "Cal . Sens" at controller.
- ☞ The display is set to zero automatically.
- ➔ Use keys ▲ and ▼ to adjust the display to the actual reference pressure at the vacuum connection within the range of 0 20 mbar.
- ➔ Confirm value with key "Enter".

Note: The accuracy of the value of the reference pressure will directly affect the accuracy of the adjustment. If the nominal ultimate vacuum of a diaphragm pump is used as reference vacuum, the accuracy of the controller might be doubtful. The diaphragm pump may not achieve the specified value (due to condensate, poor state, failure of valves or the diaphragm).

Calibration in the factory

Control of measuring equipment

The **VACUUBRAND DKD calibration laboratory** is accredited by the Physikalisch-Technische Bundesanstalt (PTB; German national institute for science and technology and the highest technical authority of the Federal Republic of Germany for the field of meteorology and certain sectors of safety engineering) for the measurable variable **pressure in the pressure range from 10^{-3} mbar to 1000 mbar** in accordance with the general criteria for the operation of testing laboratories defined in DIN EN/ISO/IEC 17025:2000.

Calibration in the VACUUBRAND calibration laboratory:

- To meet the requirements of the DIN ISO 9000ff and 10012 series of standards regarding the calibration of inspection, measuring and test equipment at specified intervals.
- To document that the vacuum gauges calibrated are traceable to national standards of the PTB.

DKD Calibration Controller VNC 2.....900217

Interface parameters

The controller VNC 2 is equipped with a serial interface (RS 232C, nine-pole Sub-D-plug).

☞ Plug-in or remove the cable (cable RS 232C) from the interface only if the equipment is switched off.

☞ The interface is **not** electrically isolated from the measuring circuit.

☞ For optimal electromagnetic compatibility assemble an interface filter (cat. no.: 638235).

The controller can be operated via serial interface. Measuring results, preselections and the status of the controller can be read at any time.

Factory-set the read and write commands are completely compatible to the VACUUBRAND controller CVC 2000. An extended instruction set compatible with CVC 3000 is available using the command "CVC 3".

Setting of the interface

Setting of the interface parameters directly at the controller is described below. Enter the device menu "Select, RS 232". The factory-set values are underlined. Adjust interface parameters with keys ▲ or ▼ and confirm with "Enter".

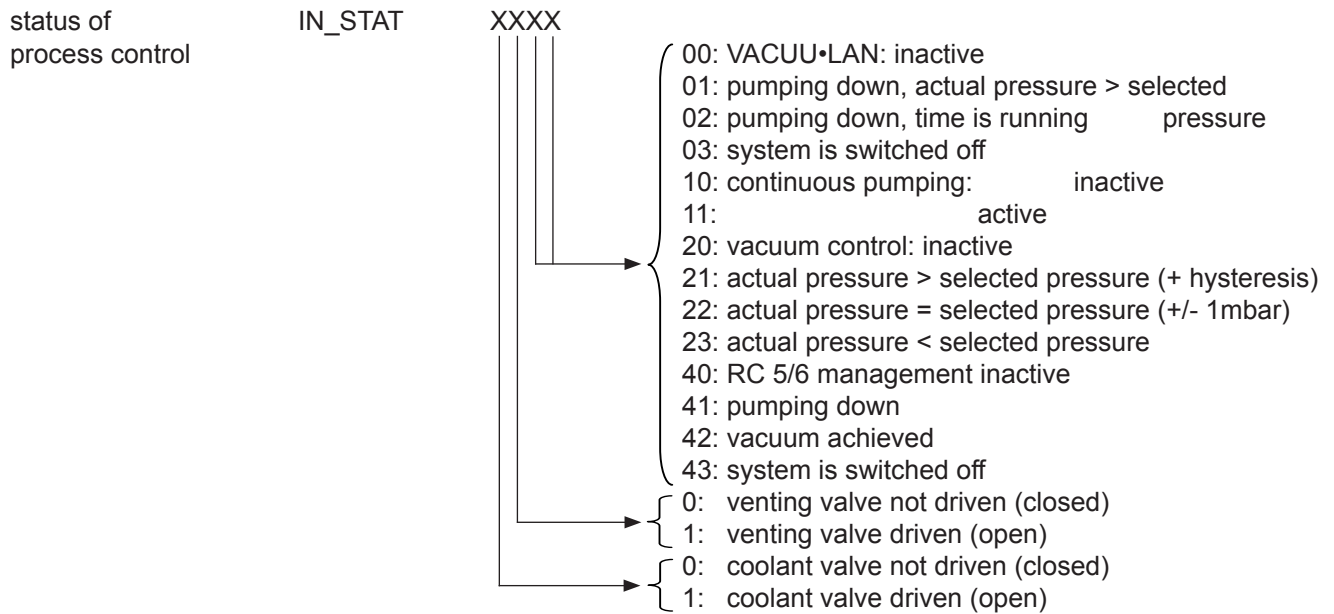
- ➔ Baud 2400, 4800, 9600 or 19200
- ➔ Parity: 7 data bits odd (Parity 7-O-1); 7 data bits even (Parity 7-E-1);
8 data bits none (Parity 8-N-1)
- ➔ Handshake (Handsh.): no Handshake (Handsh. None), XON/XOFF Handshake (Handsh. Xon-Xoff), RTS/CTS Handshake (Handsh. RTS-CTS)
- ➔ Remote On, Remote Off,
- ➔ Startbit = 1, Stopbit = 1
- ➔ Sending: timeout 1s, receiving: timeout 10s

In remote mode (Remote On, "P" is displayed) all keys at the controller are without function. To return to the manual operation of the controller, set the controller to the mode "Remote Off" via the interface or switch off controller and enter the device menu within the first 2s after having switched on the controller again.

Read commands compatible to "CVC 2000"

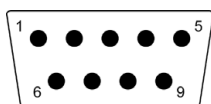
Function	Command	Response	Description
actual vacuum	IN_PV_1	XXXX mbar or XXXX Torr or XXXX hPa	unit according to preselection
actual pumping speed	IN_PV_2	XX.X Hz	
process runtime	IN_PV_3	XX:XX h:m	
LAN pressure increase	IN_PV_4	xxx/min	
LAN process time	IN_PV_5	XX:XX h:m	VACUU•LAN: runtime of pump since last switching of the pump
preset vacuum	IN_SP_1	XXXX mbar or XXXX Torr or XXXX hPa	unit according to preselection
speed	IN_SP_2	XX.X Hz	preset speed, 99.9 Hz corresponds to "HI"
preselection at controller	IN_CFG	XXXXXX	<ul style="list-style-type: none"> 0: remote mode off 1: remote mode on 0: no automatic switch off 1: automatic switch off 0: no venting valve 1: venting valve 0: no coolant valve 1: coolant valve 0: VACUU•LAN 1: continuous pumping 2: vacuum control 4: RC 5 / RC 6 management
error status	IN_ERR	XXXX	<ul style="list-style-type: none"> 1: last command to interface incorrect 1: failure at pressure transducer 1: overpressure 1: external fault pump electronics, valve, level sensor, ...

Read commands compatible to "CVC 2000"



- ➔ A maximum of ten commands per second is possible.
- ➔ Read commands and commands "REMOTE", "CVC" and "STORE" can be sent always. The sending of other write commands is only possible, if "Remote On" is selected.
- ➔ The commands have to be written in capital letters.
- ➔ Command and parameter have to be separated by a blank.
- ➔ The string is terminated with <CR> or <CR><LF>.
- ➔ The answer of the controller is always terminated with <CR><LF>.
- ➔ Numerical values and parameters can be written without leading zeros.
- ➔ The answer of the controller is always with leading zeros.

Connector assignment



2: RxD
 3: TxD
 4: DTR
 5: Mass

7: RTS
 8: CTS
 9: +5V (Bluetooth)

Write commands compatible to "CVC 2000"

Function	Command	Parameter	Description	Attention: If control is running only switching from 1 to 2 and 2 to 1 is possible.
operation mode	OUT_MODE	X └───┬───> {	0: VACUULAN 1: continuous pumping 2: vacuum control 4: RC 5/6 management	
preset vacuum	OUT_SP_1	XXXX	unit according to preselection (0001 to 1060 mbar (hPa) or 0001 to 0795 Torr)	
preset vacuum with venting*	OUT_SP_V	XXXX	unit according to preselection (0001 to 1060 mbar (hPa) or 0001 to 0795 Torr)	
preset speed	OUT_SP_2	XX.X	speed in Hz (99.9 = "HI")	
pressure for restart	OUT_SP_3	XXXX	unit according to preselection (0001 to 1060 mbar (hPa) or 0001 to 0795 Torr)	
delay	OUT_SP_4	XX:XX	hh:mm (hours:minutes)	
pressure for switch off	OUT_SP_5	XXXX	unit according to preselection (0001 to 1060 mbar (hPa) or 0001 to 0795 Torr)	
time for switch off	OUT_SP_6	XX:XX	hh:mm (hours:minutes) (00:00 = switch off)	
starting process control	START			
stopping process control	STOP	X └───┬───> {	1: termination of process control 2: termination of process control and storage of the actual pressure as new set point	
remote operation**	REMOTE	X └───┬───> {	0: remote off 1: remote on	
driving venting valve	OUT_VENT	X └───┬───> {	0: close venting valve 1: open venting valve (process control stopped) (valve does not close again automatically)	
	STORE		store settings permanently	

* Pressure setting with venting is only possible in operation mode "Vacuum control", if a venting valve is connected and configured and "Vacuum control" is started. The venting valve opens automatically, if the actual vacuum is 10 mbar below the preset vacuum. Automatic venting becomes inactive, if "Vacuum control" is stopped ("Esc"), setting a pressure value using the command OUT_SP_1 or if the operation mode is changed. Activate the command OUT_SP_V again if necessary.

** If remote operation is selected or deselected, the user has to ensure that no dangerous status of the system due to the change of the mode of operation can occur and to provide appropriate safety measures, especially if selecting remote operation interferes with a locally operated active process.

Read commands compatible to "CVC 3000"

Function	Command	Response	Description
actual vacuum	IN_PV_1	XXXX.X mbar/Torr/hPa	unit according to preselections
actual speed	IN_PV_2	XXX%	1-100% or HI
time	IN_PV_3	XX:XX hh:mm	process runtime
LAN pressure increase	IN_PV_4	xxx/min	
LAN process time	IN_PV_5	XX:XX hh:mm	VACUU•LAN: runtime of pump since last switching of the pump
preselected at the controller	IN_CFG	XXXXXXXXXXXXXXXXXX	<ul style="list-style-type: none"> 0: remote operation off 1: remote operation on 1.....9: sensor quantity 1.....9: number of active sensor 0: remote module not connected 1: remote module connected 0: level sensor not connected 1: level sensor connected 0: fault indicator not connected 1: fault indicator connected 0: venting valve not connected 1: venting valve connected 0: coolant valve not connected 1: coolant valve connected 0: in-line valve not connected 1: in-line valve connected 0: VMS not connected 1: VMS connected 0: NT VARIO pump not connected 1: NT VARIO pump connected 0: acoustic signal off 1: acoustic signal on 0: autostart off 1: autostart on 0: pressure unit mbar 1: pressure unit Torr 2: pressure unit hPa 0: language German 1: language English 2: language French 0: VACUULAN 1: continuous pumping 2: vacuum control 4: RC 5/6 mangement

Read commands compatible to "CVC 3000"

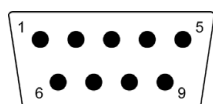
Function	Command	Response	Description
status of process control	IN_STAT	XXXXXX	<ul style="list-style-type: none"> 0: control off 1: pump down 2: set vacuum reached 3: vacuum below set vacuum 0: VACUULAN 1: Continuous pumping 2: Vacuum control 4: RC 5/6 management 0: venting valve closed 1: venting valve open 0: coolant valve closed 1: coolant valve open 0: in-line valve closed 1: in-line valve open 0: pump off 1: pump on
fault status	IN_ERR	XXXXXXXXXX	<ul style="list-style-type: none"> 0: last interface command correct 1: last interface command incorrect 0: no internal fault 1: internal fault (overtemperature at relais) 0: no external fault, catchpot empty 1: external fault, catchpot full 0: no fault at pressure transducer 1: fault at pressure transducer 0: no overpressure 1: overpressure 0: no fault at venting valve 1: fault at venting valve 0: no fault at coolant valve 1: fault at coolant valve 0: no fault at in-line valve 1: fault at in-line valve 0: no fault at pump 1: fault at pump

Read commands compatible to "CVC 3000"

Function	Command	Response	Description
set vacuum	IN_SP_1	XXXX mbar or XXXX Torr or XXXX hPa	unit according to preselections
speed	IN_SP_2	XXX%	maximum speed (100% = "HI")
start-up pressure	IN_SP_3	XXXX mbar or XXXX Torr or XXXX hPa	start-up pressure for VACUULAN or two point control
delay	IN_SP_4	XX:XX hh:mm	delay (00:00 = Off)
switch off pressure	IN_SP_5	XXXX mbar or XXXX Torr or XXXX hPa	switch off pressure ("Maximum" for "Vacuum control", "Minimum" for "Continuous pumping")
	IN_SP_6	XX:XX hh:mm	process runtime 00:00 = off

- ➔ A maximum of ten commands per second is possible.
- ➔ Read commands and commands "REMOTE", "CVC" and "STORE" can be sent always. The sending of other write commands is only possible, if "Remote On" is selected.
- ➔ The commands have to be written in capital letters.
- ➔ Command and parameter have to be separated by a blank.
- ➔ The string is terminated with <CR> or <CR><LF>.
- ➔ The answer of the controller is always terminated with <CR><LF>.
- ➔ Numerical values and parameters can be written without leading zeros.
- ➔ The answer of the controller is always with leading zeros.

Connector assignment



2: RxD
3: TxD
4: DTR
5: Mass

7: RTS
8: CTS
9: +5V (Bluetooth)

Write commands compatible to "CVC 3000"

Function	Command	Parameter	Description
operation mode	OUT_MODE	X └───┬───┐ └───┘	0: VACUULAN 1: Pump down 2: Vac control 4: RC 5/6 management
set vacuum	OUT_SP_1	XXXX	unit according to preselection (0001 to 1060 mbar (hPa) or 0001 to 0795 Torr)
set vacuum with venting*	OUT_SP_V	XXXX	unit according to preselection (0001 to 1060 mbar (hPa) or 0001 to 0795 Torr)
speed	OUT_SP_2	XXX	speed in %, (100% = "HI")
start-up pressure	OUT_SP_3	XXXX	unit according to preselection (0001 to 1060 mbar (hPa) or 0001 to 0795 Torr)
delay	OUT_SP_4	XX:XX	hh:mm (hours:minutes)
switch off pressure	OUT_SP_5	XXXX	unit according to preselection (0001 to 1060 mbar (hPa) or 0001 to 0795 Torr)
switch off time delay	OUT_SP_6	XX:XX	hh:mm (hours:minutes) 00:00 = off
	START		
	STOP	X └───┬───┐ └───┘	1 stop 2 stop with adoption of the set vacuum
	REMOTE**	X └───┬───┐ └───┘	0 remote off 1 remote on
	CVC	X └───┬───┐ └───┘	2 CVC 2000 commands 3 CVC 3000 commands
	OUT_VENT	X └───┬───┐ └───┘	0 venting valve closed 1 venting valve open
	STORE		store settings permanently


Attention: If control is running only switching from 1 to 2 and 2 to 1 is possible.

* Pressure setting with venting is only possible in operation mode "Vacuum control", if a venting valve is connected and configured and "Vacuum control" is started. The venting valve opens automatically, if the actual vacuum is 10 mbar below the preset vacuum. Automatic venting becomes inactive, if "Vacuum control" is stopped ("Esc"), if setting a pressure value using the command OUT_SP_1 or if the operation mode is changed. Activate the command OUT_SP_V again if necessary.

** If remote operation is selected or deselected, the user has to ensure that no dangerous status of the system due to the change of the mode of operation can occur and to provide appropriate safety measures, especially if selecting remote operation interferes with a locally operated active process.

Troubleshooting

Fault	Possible cause	Remedy
<input type="checkbox"/> No display.	<ul style="list-style-type: none"> ➔ Mains cable not plugged in or device not switched on? ➔ Fuse defective? ➔ Other causes (device defective)? 	<ul style="list-style-type: none"> ✓ Plug in mains cable. Switch device on. Check fuse in building. ✓ Check fuse in building and fuse at switch output of VNC 2, replace if necessary. ✓ Contact local distributor.
<input type="checkbox"/> Display disappears, internal overload protection activated.	<ul style="list-style-type: none"> ➔ Thermal overload at controller, ambient temperature too high? ➔ Short circuit at connected valves? ➔ Thermal overload at controller, overload? ➔ Other causes (device defective)? 	<ul style="list-style-type: none"> ✓ Ensure adequate ventilation. ✓ Replace valves. ✓ Check current draw of connected devices (pumps, valves). ✓ Contact local distributor.
<input type="checkbox"/> Pressure reading incorrect.	<ul style="list-style-type: none"> ➔ Device not adjusted correctly? ➔ Humidity in pressure transducer? ➔ Pressure transducer soiled? 	<ul style="list-style-type: none"> ✓ Readjust controller. ✓ Let pressure transducer dry, e.g. by pumping down. Readjust if necessary. Detect and eliminate cause. ✓ See „Cleaning the pressure transducer“ p. 31.
<input type="checkbox"/> Controller does not respond when pressing keys.	<ul style="list-style-type: none"> ➔ Controller set to remote mode, "P" is displayed? 	<ul style="list-style-type: none"> ✓ Control controller via interface or switch off remote mode.
<input type="checkbox"/> Error message "ErrValve", two beeps.	<ul style="list-style-type: none"> ➔ External venting valve removed or defective? 	<ul style="list-style-type: none"> ✓ Connect or check venting valve. In case install a new venting valve or configure controller without venting valve. Switch controller off/on.
<input type="checkbox"/> Error message "ErrValve", three beeps.	<ul style="list-style-type: none"> ➔ In-line valve removed or defective? 	<ul style="list-style-type: none"> ✓ Connect or check in-line valve. In case install a new in-line valve or configure controller without in-line valve. Switch controller off/on.

Fault	Possible cause	Remedy
❑ Error message "ErrValve", four beeps.	➔ Coolant valve removed or defective?	✓ Connect or check coolant valve. In case install a new coolant valve or configure controller without coolant valve. Switch controller off/on.
❑ Error message "p Error", five beeps.	➔ Overpressure at pressure transducer, pressure >1060 mbar? ➔ External pressure transducer VSK 3000 removed or defective? ➔ Internal pressure transducer defective?	✓ Release pressure immediately! (Risk of bursting!)  ✓ Connect or check external pressure transducer. In case install a new external pressure transducer or configure controller without external pressure sensor. Switch controller off/on. ✓ Contact local distributor.
❑ Error message "p RC5-Er", six beeps.	➔ HYBRID pump RC 5 or RC 6: increased pressure in oil reservoir?	✓ See separate instructions for use for RC 5 / RC 6 management.
❑ Error message "ErrTemp.", seven beeps.	➔ Excess temperature? ➔ Relay circuit defective?	✓ Check configuration and process parameters. ✓ Contact local distributor.
❑ Error message "CheckSys", eight beeps.	➔ Process time in mode VACUULAN expired?	✓ Check system for leaks. Select suitable pressure valve.
❑ Error message "ext. Err", nine beeps.	➔ Level sensor has set off? ➔ Level sensor has been removed? ➔ External fault indicator has set off? ➔ External fault indicator has been removed. ➔ Condenser EK Peltronic has been removed? ➔ Excess temperature at condenser EK Peltronic? Process stopped?	✓ Drain catchpots. Message disappears. In case, restart process. ✓ Connect level sensor again or reload a factory-set mode. ✓ Eliminate external error. ✓ Connect external fault indicator again or switch controller off/on. ✓ Connect EK Peltronic again or switch controller off/on. ✓ Allow condenser EK Peltronic to cool down. In case, restart process.
❑ Controller does not respond when operating any key. No change after switch off/on.		✓ Contact local distributor.

Cleaning the pressure transducer

The controller itself is maintenance-free.

Contamination of the pressure transducer or deposits will influence the accuracy of measurement.

NOTICE

Attention: Never use hard objects to clean the pressure transducer!

- ➔ Fill the chamber of the pressure transducer with a solvent (e. g. benzene) and allow sufficient cleaning time. Observe all regulations concerning usage and disposal of solvents!
- ➔ Drain the solvent and dispose of in accordance with regulations, repeat cleaning if necessary.
- ➔ Rinse the chamber of the pressure transducer several times with alcohol in order to remove all solvent residues.
- ⚠ Never use a spiky or sharp-edged tool to clean the pressure transducer.
- ➔ Allow the pressure transducer to dry.
- ➔ Readjust the pressure transducer if necessary.

Accessories


Coolant valve VKW-B 24 V= 674220

- compact design, designed for a high number of operations at short intervals
- solenoid systems with splash protection
- conductance optimised for applications with rotary evaporator and exhaust waste vapour condenser
- with integrated Y-connector to connect an in-line valve


In-line valve VV-B 6, 24 V= 674290
In-line valve VV-B 6C, 24 V= 674291
In-line valve VV-B 15C, KF 16, 24 V= 674210
In-line valve VV-B 15C, KF 25, 24 V= 674215

Pressure transducer VSK 3000, capacitive Al₂O₃ sensor 1080-0.1 mbar **636657**

Venting valve VB M-B / KF 16, hose nozzle 6/10mm, 24 V= **674217**

Level sensor (control of liquid level in catchpots) **699908**

Y-type adapter VACUU•BUS **636656**

Extension cable VACUU•BUS, 2m **612552**

Cable RS 232C, 9-pole, Sub-D **637837**

Serto angle for PTFE tube **637873**

Conversion of VACUUBRAND valves with diode plug to VACUUBRAND valves with VACUU•BUS plug

VACUUBRAND valve with diode plug	Conversion kit: Valve cable with VACUU•BUS plug
In-line valve VV 6, 24 V= (674090) In-line valve VV 6C, 24 V= (674091) In-line valve VV 15, 24 V= (674110) In-line valve VV 15C, 24 V= (674115)	612556 (conversion to in-line valve) 612566 (conversion to venting valve)
Coolant valve VKW, 24 V= (676013)	612567
Venting valve VBM, 24V= (666817)	612554
Solenoid valve for water jet pump (610623)	612556

- ➔ To control a **VACUUBRAND water jet pump** (695000) with solenoid operated valve with diode plug with a controller VNC 2, the valve cable has to be replaced (see table). After this replacement the water valve will be switched like an in-line valve.

Notes on return to the factory

Repair - return - DKD calibration

NOTICE

Safety and health of our staff, laws and regulations regarding the handling of dangerous goods, occupational health and safety regulations and regulations regarding safe disposal of waste require that for all pumps and other products the **“Health and safety clearance form”** must be sent to our office duly completed and signed before any equipment is dispatched to our premises.

Fax or post a completed copy of the health and safety clearance form to us in advance. The declaration must arrive before the equipment. Enclose a second completed copy with the product. If the equipment is contaminated you must notify the carrier.

No repair / DKD calibration is possible unless the correctly completed form is returned. Inevitably, there will be a delay in processing the equipment if information is missing or if this procedure is not obeyed.

CAUTION

If the product has come in contact with chemicals, radioactive substances or other substances dangerous to health or environment, the product must be decontaminated **prior to sending it back to the factory.**

- Return the product to us **disassembled and cleaned** and accompanied by a certificate verifying decontamination or
- Contact an industrial cleaning and **decontamination service** directly or
- Authorize us to send the product to an industrial cleaning facility **at your expense.**

To expedite repair and to reduce costs, please enclose a detailed description of the problem and the product's operating conditions with every product returned for repair.

We submit **quotations** only on request and always at the customer's expense. If an order is given, the costs incurred are offset from the costs for repair or from the purchase price, if the customer prefers to buy a new product instead of repairing the defective one.

- **If you do not wish a repair on the basis of our quotation, the equipment might be returned to you disassembled and at your charge!**

In many cases, the **components must be cleaned in the factory** prior to repair.

For cleaning we use an environmentally responsible water based process. Unfortunately the combined attack of elevated temperature, cleaning agent, ultrasonic treatment and mechanical stress (from pressurised water) may result in damage to the paint. Please mark in the health and safety clearance form if you wish a **repaint at your expense** just in case such a damage should occur.

We also replace parts due to optical aspects upon your request.

NOTICE

Before returning the equipment ensure that (if applicable):

- Equipment has been cleaned and/or decontaminated.
- All inlet and outlet ports have been sealed.
- Equipment has been properly packed, if necessary, please order an original packaging (costs will be charged), marked as appropriate and the carrier has been notified.
- Ensure that the completed health and safety declaration is enclosed.

We hope for your understanding for these measures, which are beyond our control.

Scrapping and waste disposal:

Dispose of the equipment and any components removed from it safely in accordance with all local and national safety and environmental requirements. Particular care must be taken with components and waste oil which have been contaminated with dangerous substances from the process. Do not incinerate fluoroelastomer seals and O-rings.

- You may authorize us to dispose of the equipment **at your expense.**

Health and safety clearance form

Declaration concerning safety, potential hazards and safe disposal of waste, e. g. used oil.

Safety and health of our staff, laws and regulations regarding the handling of dangerous goods, occupational health and safety regulations, safety at work laws and regulations regarding safe disposal of waste, e. g. waste oil, require that for all pumps and other products this form must be sent to our office duly completed and signed before any equipment is dispatched to our premises.

Products will not be accepted for any procedure, and handling and repair / DKD calibration will not start before we have received this declaration.

- a) Fax or post a **completed copy of this form** to us in advance. The declaration must arrive before the equipment. **Enclose a second, completed copy with the product.** If the product is contaminated you must notify the carrier (**GGVE, GGVS, RID, ADR**).
- b) Inevitably, the repair process will be delayed considerably, if this information is missing or this procedure is not obeyed. We hope for your understanding for these measures which are beyond our control and that you will assist us in expediting the repair procedure.
- c) **Make sure that you know all about the substances which have been in contact with the equipment and that all questions have been answered correctly and in detail.**

<p>1. Product (Model):</p> <p>2. Serial No.:</p> <p>3. List of substances in contact with the equipment or reaction products:</p> <p>3.1 Chemical/substance name, chemical symbol:</p> <p>a)</p> <p>b)</p> <p>c)</p> <p>d)</p> <p>3.2 Important information and precautions, e. g. danger classification:</p> <p>a)</p> <p>b)</p> <p>c)</p> <p>d)</p> <p>4. Declaration (please mark as applicable):</p> <p><input type="checkbox"/> 4.1 for non dangerous goods: We assure for the returned product that - neither toxic, corrosive, biologically active, explosive, radioactive nor contamination dangerous in any way has occurred. - the product is free of dangerous substances. - the oil or residues of pumped media have been drained.</p> <p><input type="checkbox"/> 4.2 for dangerous goods: We assure for the returned product that - all substances, toxic, corrosive, biologically active, explosive, radioactive or dangerous in any way which have been pumped or been in contact with the product are listed in 3.1, that the information is complete and that we have not withheld any information. - the product, in accordance with regulations, has been <input type="checkbox"/> cleaned <input type="checkbox"/> decontaminated <input type="checkbox"/> sterilized.</p>	<p>5. Way of transport / carrier: </p> <p>Day of dispatch to VACUUBRAND: </p> <p>If the paint is damaged, we wish a repaint or a replacement of parts due to optical aspects at our expense (see "Notes on return to the factory"): <input type="checkbox"/> yes <input type="checkbox"/> no</p> <p>We declare that the following measures - where applicable - have been taken: - The oil has been drained from the product. Important: Dispose of according to national regulations. - The interior of the product has been cleaned. - All inlet and outlet ports of the product have been sealed. - The product has been properly packed, if necessary, please order an original packaging (costs will be charged), and marked as appropriate. - The carrier has been informed about the hazardous nature of the goods (if applicable).</p> <p>We assure VACUUBRAND that we accept liability for any damage caused by providing incomplete or incorrect information and that we shall indemnify VACUUBRAND from any claims as regards damages from third parties.</p> <p>We are aware that as expressed in § 823 BGB (Public Law Code of Germany) we are directly liable for injuries or damages suffered by third parties, particularly VACUUBRAND employees occupied with handling/repairing the product.</p> <p>Signature:</p> <p>Name (print):</p> <p>Job title (print):</p> <p>Company's seal:</p> <p>Date:</p>
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 - Technology for Vacuum Systems -
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Alfred-Zippe-Str. 4 - 97877 Wertheim
 Tel.: +49 9342 808-0 - Fax: +49 9342 808-450
 E-Mail: info@vacuubrand.de
 Web: www.vacuubrand.com





**EG-Konformitätserklärung
EC Declaration of Conformity
Déclaration CE de conformité**

Hersteller / Manufacturer / Fabricant:

VACUUBRAND GMBH + CO KG · Alfred-Zippe-Str. 4 · 97877 Wertheim · Germany

Hiermit erklärt der Hersteller, dass das Gerät konform ist mit den Bestimmungen der Richtlinien 2006/95/EG und 2004/108/EG.

Hereby the manufacturer declares that the device is in conformity with the directives 2006/95/EC and 2004/108/EC.

Par la présente, le fabricant déclare, que le dispositif est conforme aux directives 2006/95/CE et 2004/108/CE.

Vakuum-Controller / Vacuum controller / Régulateur de vide

Typ / Type / Type: VNC 2 / VNC 2E / VNC 2 VARIO E

Artikelnummer / Order number / Numéro d'article: 683070 / 683086 / 683080

Seriennummer / Serial number / Numéro de série: Siehe Typenschild / See rating plate / Voir plaque signalétique

Angewandte harmonisierte Normen / Harmonized standards applied / Normes harmonisées utilisées:

DIN EN 61326-1, DIN EN 61010-1

Bevollmächtigter für die Zusammenstellung der technischen Unterlagen / Person authorised to compile the technical file / Personne autorisée à constituer le dossier technique:

Dr. J. Dirscherl · VACUUBRAND GMBH + CO KG · Alfred-Zippe-Str. 4 · 97877 Wertheim · Germany

Wertheim, 31.05.2011

Ort, Datum / place, date / lieu, date

(Dr. F. Gitmans)

Geschäftsführer / Managing director / Gérant

ppa.

(Dr. J. Dirscherl)

Technischer Leiter / Technical Director / Directeur technique



VACUUBRAND GMBH + CO KG

Alfred-Zippe-Str. 4 · 97877 Wertheim

Tel.: +49 9342 808-0 · Fax: +49 9342 808-450

E-Mail: info@vacuubrand.de

Web: www.vacuubrand.com

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Alfred-Zippe-Str. 4 - 97877 Wertheim
Tel.: +49 9342 808-0 - Fax: +49 9342 808-450
E-Mail: info@vacuubrand.de
Web: www.vacuubrand.de

