



Technology for Vacuum Systems

Instructions for use



DVR 3
DVR 4
DVR 4S

II 2 G EEx ia IIC T4
II 1/2 G EEx ia IIC T5
II 1/2 G EEx ia IIC T5

Digital/Analogue Rough Vacuum Gauges

PTB 98 ATEX 2207

Dear customer,

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

Our quality maxim is the "zero fault principle":

Every delivered vacuum gauge 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 gauge 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 troublefree realisation of your work.

Yours

VACUUBRAND GMBH + CO KG

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

Contents

Safety information!	4
Technical data	5
Accessories	7
Spare parts	7
Use and operation	8
Description of the current loop (DVR 4S)	10
Troubleshooting	12
Readjustment of the vacuum gauge	13
Calibration in the factory	14
Readjustment of the current loop (DVR 4S)	15
Replacement of power supply unit	16
Notes on return to the factory	17
Health and safety clearance form	18



Attention! Important notes!



Not permitted! Misuse may cause damage.



Caution! Hot surface!



Isolate equipment from mains.



Note.



Safety information!

Remove all packing material, remove the product from its packing-box, remove the protective covers and keep them, 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 under suitable conditions.

☞ **Read and obey this manual before installing or operating the equipment.**

The devices DVR 3, DVR 4 and DVR 4S are electronic rough vacuum gauges of the facility performance group II for the intended use in hazardous areas. They have a special approval and are subject to the **guideline 94/9/EG** (see "Declaration of Conformity").

Obey the instructions for use.

☞ **Respect the permitted connection parameters.**

☞ **Obey all applicable regulations and realize all required measures.**

☞ **Electrical and vacuum components might require a separate approval (see also "Accessories").**

The vacuum gauges DVR 4 and DVR 4S are devices to be operated with the vacuum connection mounted at hazardous areas of category 1 (or higher) whereas the housing is within hazardous areas of category 2 (or higher).

☞ Check the devices together with the regularly pressure test of the recipient regarding tightness.

☞ **Obey the requirements according to EN 50284.**



Attention:

DVR 3 has only an approval for zone 1.

DVR 4 / DVR 4S has only an approval for zone 1, **only the measuring connection has an approval for zone 0.**

Prevent any condensate to reach the pressure transducer inside the vacuum gauge (risk of false measurement).

Max. permitted pressure at the vacuum gauge:

☞ **DVR 3:** 1.1 bar absolute; with small flange connection 2.5 bar absolute.

☞ **DVR 4 / DVR 4S:** 2.5 bar absolute; when using clamping rings made of stainless steel, the max. permitted pressure at the measuring connection is 6.0 bar absolute.

☞ The display flashes at a pressure above 1060 mbar.

The power supply unit BVE 9V is an intrinsically safe electrical operating device of the facility performance category 2 (PTB 98 ATEX 2206). The user can replace the sealed power supply unit of vacuum gauges DVR 3 / DVR 4 / DVR 4S within the hazardous area of category 2 (according to the approvals of power supply unit and vacuum gauge). **Further interventions and repair must only be done by the manufacturer.**

☞ **Warning:** For replacing the power supply unit of the DVR 4S in explosive atmosphere the current loop must be **disconnected**.

☞ **Using non-genuine power supply units or doing further interventions void the approval for use in explosive areas.**

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

Technical data

Technical data DVR 3	
Pressure transducer	capacitive / ceramic
"On" period	user selectable operation time 1-999 min. or "On" (continuous operation) (factory-set: 15 min.)
Pressure reading	digital and analogue LCD display mbar, hPa or Torr (selectable)
Measuring cycle time	selectable: automatic, 1 x within 3s, 1 x within 1s, 3 x within 1s (factory-set: automatic)
Measuring range	1080 mbar - 1 mbar (810 Torr - 1 Torr)
Max. permitted pressure at the vacuum gauge	2.5 bar absolute
Uncertainty (with transducer carefully adjusted and at constant temperature)	<+/-1 mbar (0.75 Torr) +/-1 digit
Temperature coefficient	<+/-0.07 mbar/K (<0.05 Torr/K)
Max. temperature of gaseous media at the pressure transducer (gas only!)	+80°C
Temperature range (operating)	+10°C to +40°C
Temperature range (storage)	-10°C to +60°C
Enclosure classification	40
Ex proof classification	II 2 G EEx ia IIC T4, for use in zone 1
Vacuum connection	small flange NW 16 and screw-in stepped hose nozzle for vacuum hoses with 6/10 mm inside diameter
Power supply unit	BVE 9V, PTB 98 ATEX 2206, II 2 G EEx ia IIC T5
Weight	430 g
Dimensions of housing (L x W x H)	116 mm x 116 mm x 35 mm (without measuring connection)

Technical data DVR 4 / DVR 4S	
Pressure transducer	capacitive / ceramic
"On" period	user selectable operation time 1-999 min. or "On" (continuous operation) (factory-set: 15 min.)
Pressure reading	digital and analogue LCD display mbar, hPa or Torr (selectable)
Measuring cycle time	selectable: automatic, 1 x within 3s, 1 x within 1s, 3 x within 1s (factory-set: automatic)
Measuring range	1080 mbar - 1 mbar (810 Torr - 1 Torr)
Max. permitted pressure at the vacuum gauge	2.5 bar absolute
Uncertainty (with transducer carefully adjusted and at constant temperature)	<+/-1 mbar (0.75 Torr) +/-1 digit
Temperature coefficient	<+/-0.07 mbar/K (<0.05 Torr/K)
Max. temperature of gaseous media at the pressure transducer (gas only!)	+80°C
Temperature range (operating)	+10°C to +40°C
Temperature range (storage)	-10°C to +60°C
Enclosure classification	DVR 4: 40 / DVR 4S: 54
Ex proof classification	II 1/2 G EEx ia IIC T4, for use at Ex zone 0 (only measuring volume), otherwise Ex zone 1
Vacuum connection	similar to small flange NW 16, different adapters
Power supply unit	BVE 9V, PTB 98 ATEX 2206, II 2 G EEx ia IIC T5
Weight	730 g
Dimensions of housing (L x W x H)	116 mm x 116 mm x 35 mm (without measuring connection)

We reserve the right for technical modification without prior notice!

Components	Wetted parts
Vacuum connection	stainless steel
Seals	chemically resistant fluoroelastomer
Pressure transducer housing	stainless steel
Pressure transducer	aluminiumoxide-ceramic

Accessories

The approval for use in hazardous areas covers also the following accessories.
For connections to hazardous areas of category 1, obey separate regulations (see EN 50284).

Adapter (material: stainless steel) to connect the vacuum gauges to pipeline systems:

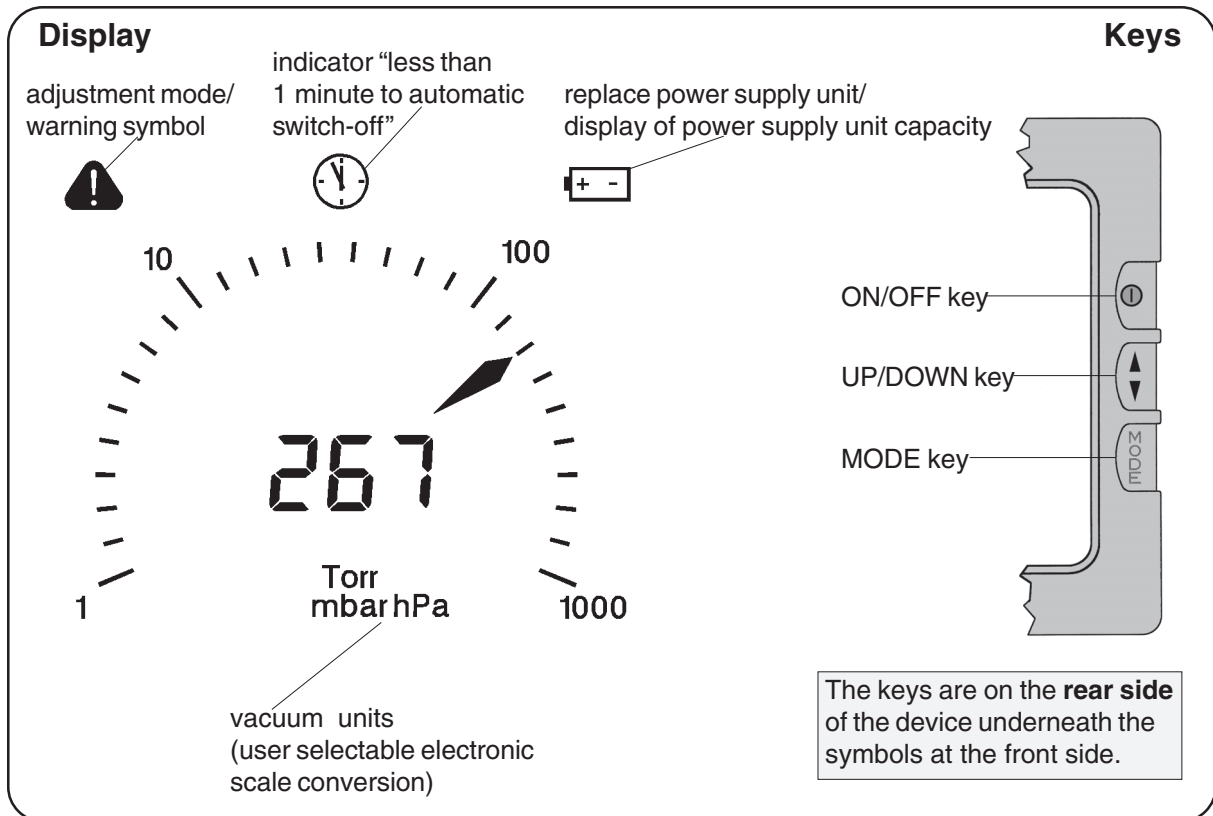
Small flange NW 10, G 3/8 female thread	64 38 13
Small flange NW 10, G 3/8 male thread	64 38 10
Small flange NW 16, G 1/2 female thread	64 38 12
Small flange NW 16, G 1/2 male thread	64 38 09

For welding:

Small flange NW 10 with pipe socket (long)	66 21 00
Small flange NW 10 with pipe socket (short)	66 13 00
Small flange NW 16 with pipe socket (long)	66 21 04
Small flange NW 16 with pipe socket (short)	66 13 04

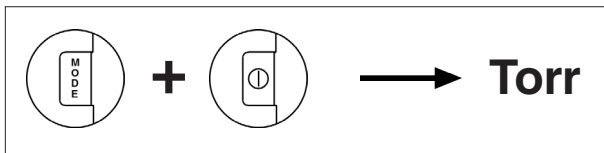
Spare parts

Power supply unit BVE 9V	63 79 86
O-ring 28x2	63 69 75
Form seal 111x111x1	63 78 74



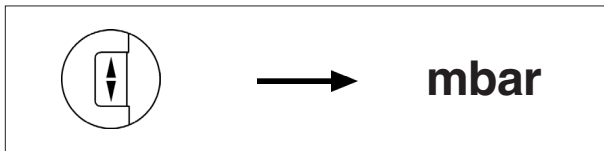
Use and operation

Switch between vacuum units:

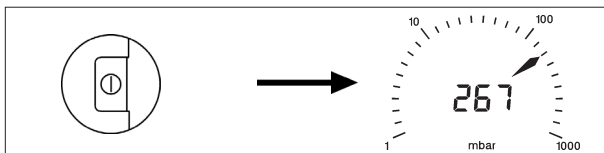


During switch on, press key MODE simultaneously.

☞ The vacuum unit used during the last operation is displayed.

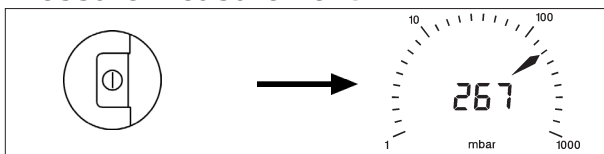


Select desired vacuum unit by using key UP/DOWN.



Press key ON/OFF to enter the selected vacuum unit and to terminate mode.

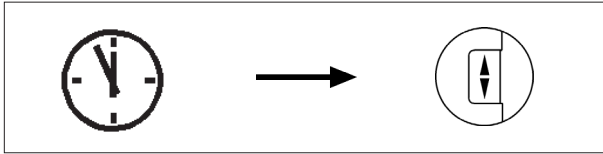
Pressure measurement:



Upon switching on, the absolute pressure (total pressure, independent of gas type) ranging from 1080 mbar to 1 mbar is displayed in the selected vacuum unit (Torr, mbar or hPa).

☞ The pressure transducer has been adjusted in the factory. In general, there is no need for re-adjustment by the user because of the excellent longtime stability (see section "Readjustment").

Clock symbol

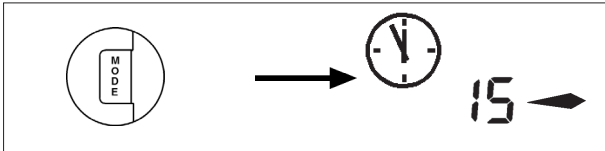


- ☞ The vacuum gauge is equipped with an automatic sleep mode to save power of the power supply unit when the instrument is not used. When the clock symbol appears on the display, the vacuum gauge will switch off automatically after approx. 1 minute.

Press key ON/OFF, the clock symbol disappears and the preselected operating time will start again.

Adjusting the operating time and measuring cycle

- ☞ The time until automatic switching off (operating time) can be set by the user within a range of 1 to 999 minutes (factory-set: 15 minutes) or continuous operation "On".



Press key MODE to select the time setting mode.

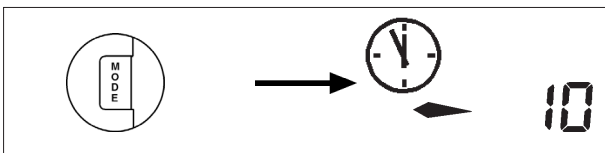
- ☞ The clock symbol and the actually set operating time in minutes are displayed.



- ☞ The arrow to the right indicates that the time can be increased by using key UP/DOWN.

Press key UP/DOWN to increase operating time.

To decrease operating time:



Press key MODE to change arrow to left.

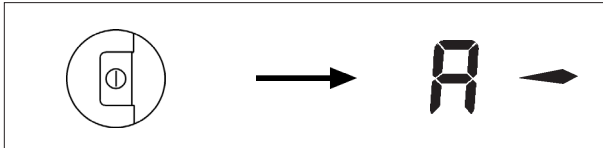
Press key UP/DOWN to reduce operating time.

Press key ON/OFF to confirm.

- ☞ The device switches to mode "adjustment of measuring cycle".

- ☞ The measuring cycle can be chosen between Automatic, 1 measurement in 3s, 1 measurement in 1s and 3 measurements in 1s.

To adjust measuring cycle:

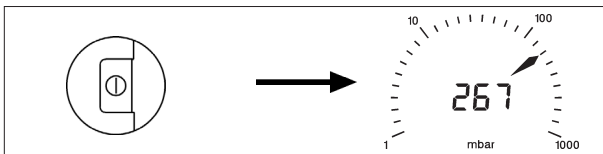


- ☞ The measuring cycle as from the last operation (factory-set: "A") is displayed.

Press key UP/DOWN to select the measuring cycle: A = Automatic (automatic determination of the measuring cycle; frequent measurement in case of large pressure change), S1 = 1 measurement in 3s, S2 = 1 measurement in 1s, S3 = 3 measurements in 1s.

- ☞ The flashing of the arrow (only "S1", "S2" or "S3") equals the frequency of the pressure measurement).

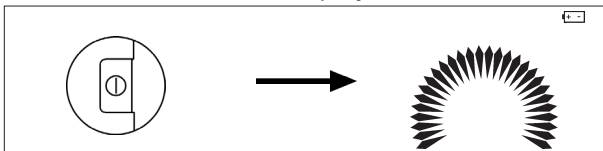
Press key MODE to change arrow to left.



Press key ON/OFF to confirm the measuring cycle and to terminate mode.

Display of the status of discharge of the power supply unit

When switching off the device, the remaining power supply unit capacity is indicated qualitatively by the number of arrows in the display for a few seconds.



If the power supply unit symbol displays during operation, the power supply unit needs to be replaced.

- ☞ Proper working of the instrument is no more maintained.

Description of the current loop (DVR 4S)

Note: Pressure measurement and output of the measured value starts as soon as the supply voltage is connected to the current loop. This is independent from switching on the device with key ON/OFF (switches on the display).

☞ The lifetime of the power supply unit increases as the display is not switched on.

Attention: In case of applied power supply permanent vacuum measurement occurs, which may cause a reduced lifetime of the power supply. The interface provides only a means of communication and doesn't serve as current supply.

Electrical description of the current loop

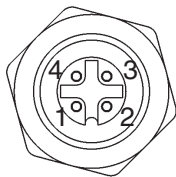
Operating current 4 20 mA

Supply voltage 5 30 V

Max. load resistance depending on supply voltage						
Supply voltage (V)	5	10	15	20	25	30
Load resistance (Ω)	0	250	375	500	625	750

Consider the cable resistance for determination of the load resistance.

Electrical connection



(view from outside)

- 1: current loop +
- 2: current loop -
- 3: N. C. (not connected)
- 4: N. C. (not connected)

The mounting angle of the connector can be changed in steps of 90° (factory-set: cable below).

Max. cable diameter: 8 mm

Max. wire diameter: 0.75 mm²

A non-shielded cable can be used.

Safety specifications

Connect the current loop only to an intrinsically safe signal circuit: Electrical equipment of the facility performance group II category (2) G, approval: EEx ia IIC.

Max. connection parameters:

Max. supply voltage: $U_i = 30$ V

Max. supply current: $I_i = 100$ mA

Max. internal parameters:

Capacitance: $C_i = 64$ nF

Inductance: $L_i = 60$ μ H

If an **isolating interface unit** is connected, respect the following maximum values:

Max. supply voltage: 30 V

Max. supply current: 100 mA

Series resistance: 300 Ω

Calculation example for the connection of an intrinsically safe circuit to the DVR 4S

Do not exceed the max. permitted capacity and inductance of the intrinsically safe circuit (according to corresponding standards).

- 1 Maximum values for the intrinsically safe circuit defined in the standard (depending on connected components):

$$C_{\max} = 110 \text{ nF}$$

$$L_{\max} = 5 \text{ mH}$$

- 2 Subtract the effective maximum capacities and inductances of the connected devices, e. g. DVR 4S:

$$C_{\max}' = 110 \text{ nF} - 64 \text{ nF} = 46 \text{ nF}$$

$$L_{\max}' = 5 \text{ mH} - 60 \text{ }\mu\text{H} = 4.9 \text{ mH}$$

- 3 Calculation of the permitted cable length:

Assumed values of the cable parameters in case of non-shielded cable:

$$C = 110 \text{ nF/km}$$

$$L = 0.65 \text{ mH/km}$$

Calculation with regard to the capacity:

$$l = (46 \text{ nF}/110 \text{ nF}) \times 1000 \text{ m} = 418 \text{ m}$$

Calculation with regard to the inductance:

$$l = (4.9 \text{ mH}/0.65 \text{ mH}) \times 1000 \text{ m} = 7500 \text{ m}$$

- 4 The smaller value limits the cable length:

$$l_{\max} = 400 \text{ m}$$

Troubleshooting

Fault	Possible cause	Remedy
<input type="checkbox"/> No display or display disappears. Display is flickering and/or Low-Bat display.	<ul style="list-style-type: none"> ➔ Power supply unit empty? ➔ Automatic sleep mode? ➔ Other causes? 	<ul style="list-style-type: none"> ☞ Replace power supply unit BVE 9V. ☞ Switch on, increase operating time if necessary. ☞ Contact local distributor.
<input type="checkbox"/> Incorrect display.	<ul style="list-style-type: none"> ➔ Pressure transducer has drifted off? ➔ Moisture in the pressure transducer? ➔ Power supply unit empty, Low-Bat display? 	<ul style="list-style-type: none"> ☞ Readjust pressure transducer. ☞ Dry, respectively evacuate the transducer and readjust if necessary. ☞ Replace power supply unit BVE 9V.
<input type="checkbox"/> Adjustment mode cannot be activated.	<ul style="list-style-type: none"> ➔ At the actual pressure, readjustment is not possible. 	<ul style="list-style-type: none"> ☞ Admit air to atmospheric pressure or evacuate to a pressure < 20 mbar.
<input type="checkbox"/> Only DVR 4S: Adjustment mode of the current loop cannot be activated.	<ul style="list-style-type: none"> ➔ Current loop not correctly wired or no voltage supply? 	<ul style="list-style-type: none"> ☞ Check signal circuit.
<input type="checkbox"/> All segments of the LCD are displayed or no displayed although power supply unit BVE 9V has been replaced.	<ul style="list-style-type: none"> ➔ Pressure transducer or measuring electronics defective? 	<ul style="list-style-type: none"> ☞ Contact local distributor.
<input type="checkbox"/> Incorrect output at the current loop.	<ul style="list-style-type: none"> ➔ Current loop not correctly adjusted? 	<ul style="list-style-type: none"> ☞ Readjust current loop.
<input type="checkbox"/> Output at the current loop < 1 mA.	<ul style="list-style-type: none"> ➔ Current loop not correctly wired? ➔ Overpressure (display is flashing)? ➔ Power supply unit empty (Low-Bat display)? ➔ Pressure transducer defective (all segments of the LCD)? 	<ul style="list-style-type: none"> ☞ Check signal circuit and voltage supply. ☞ Reduce pressure, operate the device within the permitted pressure range. ☞ Replace power supply unit BVE 9V. ☞ Contact local distributor.

Readjustment of the vacuum gauge

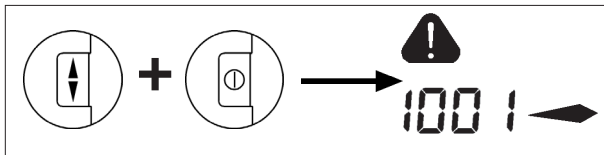
The equipment has been adjusted at the factory. In general due to the excellent longtime stability, there is no need for readjustment by the user on receiving.

Depending on operating conditions, type of application and accuracy requirements, an inspection and readjustment may become necessary.

Adjustment at atmospheric pressure

Admit air to the vacuum gauge. Make sure that the vacuum connection at the vacuum gauge is at atmospheric pressure.

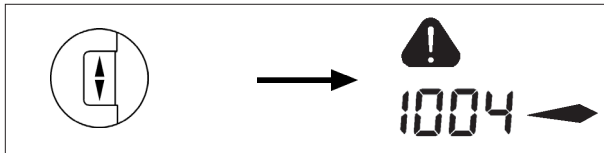
Attention: Determine the exact actual atmospheric pressure, e. g. by using an accurate barometer or get accurate reading from the weather service, e. g. at the next airport, etc. (take into account the difference in altitude between e. g. airport and laboratory).



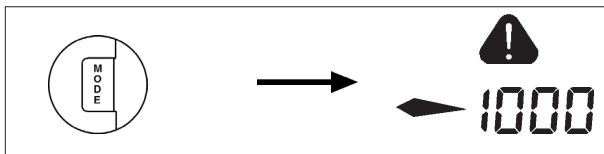
Press key UP/DOWN simultaneously with key ON/OFF.

☞ The vacuum gauge switches to the adjustment mode (indicated by a warning triangle).

☞ The arrow in the right direction indicates that the pressure value can be increased by using key UP/DOWN.



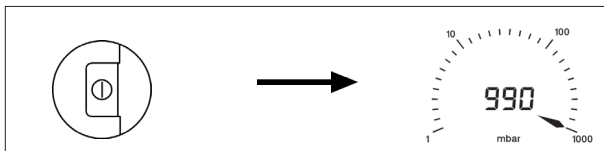
Press key UP/DOWN to increase the reading to actual atmospheric pressure.



To reduce the reading:

Press key MODE to change arrow direction to the left.

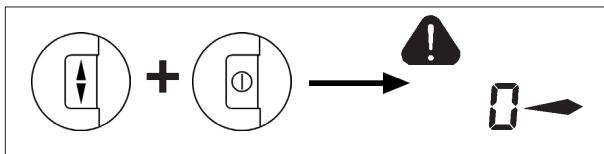
Then press key UP/DOWN to reduce the reading.



Press key ON/OFF to confirm adjustment and to terminate mode.

Adjustment under vacuum

Evacuate the vacuum gauge to a pressure <math><0.5\text{ mbar}</math> (<math><0.4\text{ Torr}</math>).

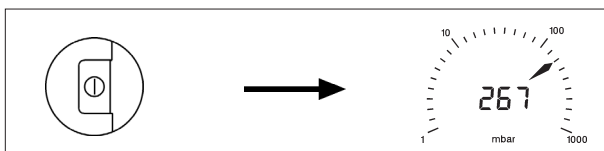


Press key UP/DOWN simultaneously with key ON/OFF.

☞ The vacuum gauge switches to the adjustment mode (indicated by a warning triangle).

☞ The reading is adjusted automatically to "zero".

Attention: Adjustment under vacuum with a pressure higher than 0.5 mbar (0.4 Torr) reduces the accuracy of measurement. If the pressure is significantly higher than 0.5 mbar (0.4 Torr), adjustment to a reference pressure is recommended (see next paragraph).

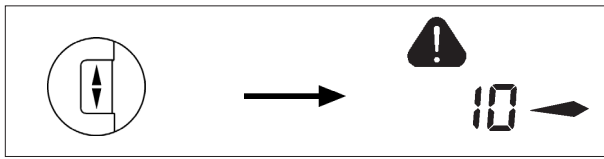


Press key ON/OFF to confirm adjustment and to terminate mode.

Adjustment at reference vacuum

Evacuate the vacuum gauge to an exactly known reference pressure within the range of 0 20 mbar (0 15 Torr).

Switch vacuum gauge to the adjustment mode (see "Adjustment under vacuum").



Press key UP/DOWN to adjust the display from "0" ("zero") to the actual reference pressure at the vacuum gauge in the range of 0 to 20 mbar (0 to 15 Torr).

Press key ON/OFF to confirm adjustment and to terminate mode.

Attention: 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 adjustment of the vacuum gauge might be doubtful. The diaphragm pump may not achieve the specified value (due to condensate, poor state, failure of the 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 range from 10^{-3} mbar to 1000 mbar** in accordance with the general criteria for the operation of testing laboratories defined in the standard EN ISO/IEC 17025:2000.

Calibration in the VACUUBRAND calibration laboratory is recommended:

- 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 the national standard of the PTB.

Readjustment of the current loop (DVR 4S)

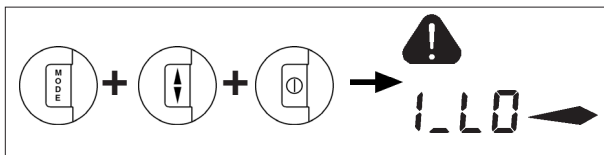
The equipment has been adjusted at the factory to 4 mA at 0 mbar and 20 mA at 1080 mbar:
Depending on application and/or accuracy requirements a readjustment may become necessary.

Before readjustment

Wire the current loop correctly, provide a suitable current measuring device, connect an external voltage supply and switch on (see description of the current loop).

Warning: Connect the vacuum gauge in accordance with all applicable regulations and the permitted connection parameters.

Starting the adjustment mode



Press key UP/DOWN simultaneously with keys ON/OFF and MODE.

- ☞ The vacuum gauge switches to mode "Adjustment of the current loop".
- ☞ The warning triangle, I_LO and an arrow in right direction are displayed.

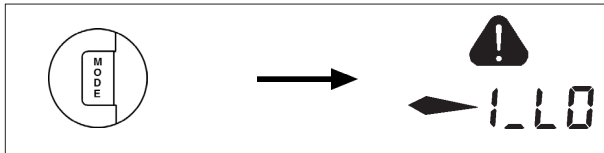
Attention: If a pressure value is displayed, the mode "Adjustment at atmospheric pressure" has been activated (key UP/DOWN pressed simultaneously with key ON/OFF).

- ☞ Press key ON/OFF to terminate the mode.

Adjustment at 4 mA

Press key UP/DOWN to adjust the current value at 0 mbar.

- ☞ Read the value at the external current measuring device.
- ☞ Setting range 2 8 mA.



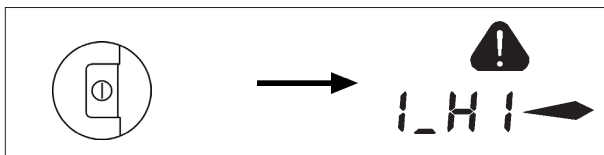
To decrease the value displayed at the current measuring device:

Press key MODE to change arrow direction to the left.

Press key UP/DOWN to decrease the value displayed at the current measuring device.

Press key ON/OFF to confirm the value actually displayed at the current measuring device.

Adjustment at 20 mA



- ☞ The warning triangle, I_HI and an arrow in right direction are displayed.

Press key UP/DOWN to change the current value at 1080 mbar.

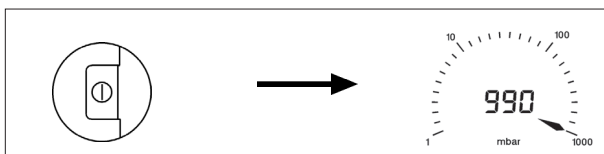
- ☞ Read the value at the current measuring device.

- ☞ Setting range 15 25 mA.

To decrease the displayed value:

Press key MODE to change arrow direction to the left.

Press key UP/DOWN to decrease the value displayed at the current measuring device.



Press key ON/OFF to confirm adjustment and to terminate mode.

Replacement of power supply unit

Technical data of the power supply unit:

Approval: II 2 G EEx ia IIC T5
 Type: BVE 9V
 PTB 98 ATEX 2206

$U_N = 9\text{ V}$
 $I_N = 23\text{ mA}$
 $U_0 = 11.1\text{ V}$
 $I_0 = 28.8\text{ mA}$
 $P_0 = 79.8\text{ mW}$
 $C_0 = 1.9\text{ }\mu\text{F}$
 $L_0 = 25\text{ mH}$

The user can replace the sealed power supply unit of vacuum gauges DVR 3 / DVR 4 / DVR 4S within the hazardous area of category 2 (according to the approvals of power supply unit and vacuum gauge).

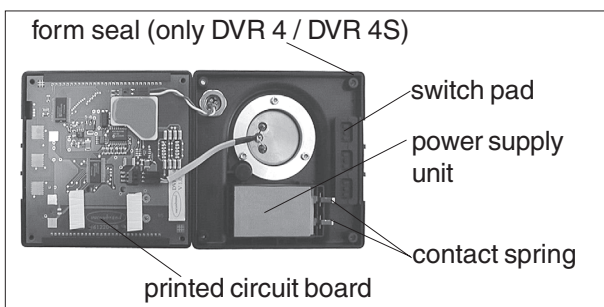
Warning: The power supply unit of the DVR 4S must only be replaced in hazardous areas with the current loop **disconnected**.

Note: Some of the components on the printed circuit board are sensitive to electrostatic discharge. Do not touch components. Ground printed circuit board and person replacing power supply unit suitably.

Attention: Use only genuine power supply unit BVE 9V. When using other power supply units the approval for use in explosive atmosphere is void!
 The power supply unit must not be charged or connected to an external voltage.



- ✎ Only DVR 4S: Disconnect the current loop.
- Unscrew the four countersunk head screws at the rear side of the housing by using a Phillips screw driver.
- Open the housing carefully.



- Remove the power supply unit from the housing rear part.
- Remove the two contact springs and insert the springs into the new power supply unit.
- Insert the new power supply unit in the housing rear part.
- ✎ When reassembling the vacuum gauge, make sure that the switch pad, the printed circuit board and the form seal (only DVR 4 / DVR 4S) are positioned correctly.
- Carefully screw both parts of the housing together.

Notes on return to the factory

Repair - return - DKD calibration

If the measures listed in section "Troubleshooting" do not work: Return the equipment to the factory for inspection and repair.

Opening or disassembly of the equipment voids all warranties and the licence if applicable.

Acceptance, handling and/or repair / DKD calibration of the returned equipment is not possible unless the properly completed health and safety clearance form is returned. Otherwise, acceptance of the returned equipment will be refused.

Fax or post a copy of the completed health and safety clearance form (see next page) to us in advance. The information must be in house before the device arrives. Enclose the original form with the product. If the product is contaminated you must notify the carrier.

If the product was 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.

To expedite repair and to reduce costs, please enclose a detailed description of the problem and the products' operation 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.

We replace parts with optical flaws upon your request (at your expense).

Before returning the equipment, ensure that (if applicable):

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

We trust 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. 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 informations 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:</p> <p>We assure for the returned product that</p> <ul style="list-style-type: none"> - 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><input type="checkbox"/> 4.2 for dangerous goods:</p> <p>We assure for the returned product that</p> <ul style="list-style-type: none"> - all substances, toxic, corrosive, biologically active, explosive, radioactive or dangerous in any way which have 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>5. Way of transport / carrier:</p> <p>.....</p> <p>Day of dispatch to VACUUBRAND:</p> <p>.....</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"):</p> <p><input type="checkbox"/> yes <input type="checkbox"/> no</p> <p>We declare that the following measures - where applicable - have been taken:</p> <ul style="list-style-type: none"> - 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>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>
---	--

VACUUBRAND GMBH + CO KG
 -Technology for Vacuum Systems-
 © 2003 VACUUBRAND GMBH + CO KG Printed in Germany

D-97866 Wertheim - P. O. Box 1664
 D-97877 Wertheim - Alfred-Zippe-Str. 4
 Tel. (++49)9342 / 808-0 - Fax (++49)9342 / 59880



Konformitätserklärung Declaration of conformity Déclaration de conformité Conformiteitsverklaring

Vakuummessgerät / Vacuum gauge / Vacuomètre / Vacuümmeter

DVR 3 (68 29 03)

DVR 4 (68 29 04)

DVR 4S (68 29 05)

Hiermit erklären wir, daß das oben bezeichnete Gerät in Konzeption und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den grundlegenden Anforderungen der zutreffenden, aufgeführten EU-Richtlinien entspricht. Bei einer mit uns nicht abgestimmten Änderung an dem Gerät verliert diese Erklärung ihre Gültigkeit.

We herewith declare that the product designated above is in compliance with the basic requirements of the applicable EC-directives stated below with regard to design, type and model sold by us. This certificate ceases to be valid if the product is modified without the agreement of the manufacturer.

Par la présente, nous déclarons que le dispositif désigné ci-dessus est conforme aux prescriptions de base des directives EU applicables et indiqués en ce qui concerne conception, dessin et modèle vendu par nous-mêmes. Cette déclaration cesse d'être valable si des modifications sont apportées au dispositif sans notre autorisation préalable.

Hierbij verklaren wij, dat het hierboven genoemde apparaat in ontwerp en constructie zoals door ons wordt geleverd aan de fundamentele van toepassing zijnde eisen van de EU-richtlijnen voldoet. Bij een zonder onze toestemming aangebrachte verandering verliest deze verklaring zijn geldigheid.

Richtlinie Elektromagnetische Verträglichkeit / Electromagnetic Compatibility Directive / Directive concernant la compatibilité électromagnétique:

89/336/EWG, 92/31/EWG, 93/68/EWG

Explosionsschutzrichtlinie/Explosion Protection Directive/Directive concernant la protection contre les explosions:

94/9/EWG

Angewandte Harmonisierte Normen / Harmonized Standards applied / Des normes harmonisées utilisées:

EN 61326, EN 50020, EN 50014, EN 50284

Managementsysteme / Management systems / Systèmes de Management:

EN ISO 9000, EN ISO 14001

Wertheim 15.5.2002

Ort, Datum / place, date / lieu, date



(Dr. R. Lachenmann)

Geschäftsführer / Managing director / Gérant

VACUUBRAND GMBH + CO KG

-Technik für Vakuumsysteme-

-Technology for Vacuum Systems-

-Technologie pour systèmes à vide-

D-97866 Wertheim

Postfach / P. O. Box / B. P. 1664

D-97877 Wertheim

Alfred-Zippe-Str. 4



vacuubrand

Disclaimer: Our technical literature is only intended to inform our customer. The validity of general empirical values and results obtained under test conditions for specific applications depend on a number of factors beyond our control. It is therefore strictly the users' responsibility to very carefully check the validity of application to their specific requirements. No claims arising from the information provided in this literature will, consequently, be entertained.

VACUUBRAND GMBH + CO KG
-Technology for Vacuum Systems-

© 2005 VACUUBRAND GMBH + CO KG Printed in Germany 99 90 72

D-97866 Wertheim - P. O. Box 1664
D-97877 Wertheim - Alfred-Zippe-Str. 4
Tel. (++49)9342 / 808-0 - Fax (++49)9342 / 59880

