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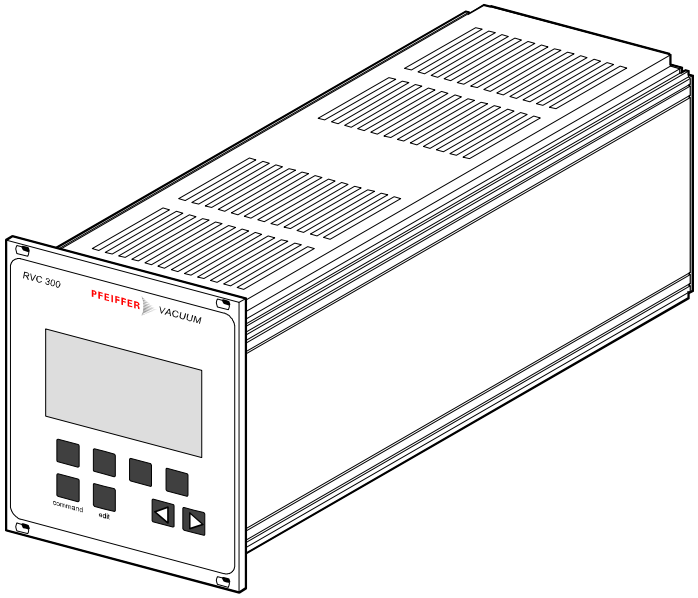
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A PASSION FOR PERFECTION

PFEIFFER VACUUM



RVC 300

Controller

Operating Instructions

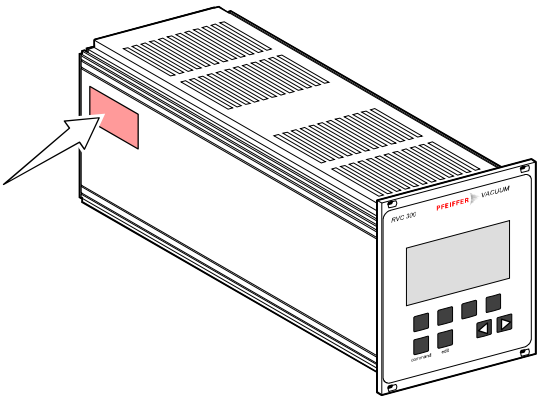
BG 5280 BEN / A (2013-02)

EN

Product Identification

In all communications with Pfeiffer Vacuum, please specify the information on the product nameplate. For convenient reference copy that information into the nameplate replica below:

Pfeiffer Vacuum, D-35614 Asslar
Typ:_ _ _ _ _ _ _ _ _ _ _ _ _ _ _
No: _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
F-No:_ _ _ _ _ _ _ _ _ _ _
_ _ _V _ _ _Hz _ _ _VA CE



Validity

This document applies to products with part number

PF I00 792

The part number can be taken from the product nameplate.

This document is based on firmware version 3.1X.

If your unit does not work as described in this document, please check that it is equipped with the above firmware number (→ 🗎 21).

We reserve the right to make technical changes without prior notice.

Intended Use

The RVC 300 Pressure Controller is used for pressure control or gas flow adjustment in a vacuum system. An overview of the operating modes and possible vacuum system configurations is given on 🗎 6.

The RVC 300 has been designed for incorporation into a 19" rack chassis.

Scope of Delivery

1	Controller RVC 300
4	collar screws with plastic sleeves for rack installation
1	power cord (country-specific), 2 m
1	digital IN/OUT cable connector (D-Sub, 25-pin, female)
1	analog IN/OUT cable connector (D-Sub, 15-pin, male)
1	CD-ROM Manuals Total Pressure
1	Installation Manual
1	EC Declaration of Conformity

Contents

Product Identification 2
Validity 2
Intended Use 2
Scope of Delivery 2

1 Safety 4
1.1 Symbols Used 4
1.2 Personnel Qualifications 4
1.3 General Safety Instructions 5
1.4 Liability and Warranty 5

2 Design and Functional Principle 6
2.1 Overview 6
2.2 Operating Modes 6

3 Technical Data 10

4 Installation 13
4.1 Rack Installation 13
4.2 Mains Power Connection 14
4.3 Valve Connection 15
4.4 Pressure Sensor 16
4.5 Digital Inputs/Outputs 17
4.6 Analog Inputs/Outputs 19
4.7 RS232 and RS485 Serial Interfaces 20

5 Turning the RVC 300 On and Off 21

6 Configuration 24
6.1 LCD Contrast 26
6.2 Measurement Unit of the Pressure 27
6.3 Language 28
6.4 Automatic Booting Function 29
6.5 Automatic Reset Function 30
6.6 Operating Mode 31
6.7 Valve 32
6.8 Control Mode 33
6.9 Pressure Sensor 34
6.10 Digital Inputs 36
6.11 Digital Outputs 37
6.12 Analog Inputs/Outputs 40
6.13 Serial Interface 41

7 Operation Via Keys 43
7.1 Pressure Control 44
7.2 Gas Flow Adjustment 49

8 Operation Via Inputs and Outputs 52

9 Operation Via Serial Interface 54

10 Maintenance 62

11 Repair 63

12 Returning the Product 63

13 Accessories 64

14 Storage 65

15 Disposal 65

Appendix 66
A: Implemented Pressure Sensors 66
B: Troubleshooting 67
C: Conversion Tables 68
D: Literature 68

EC Declaration of Conformity 70

For cross-references within this document, the symbol (→ 🗎 XY) is used, for cross-references to further documents, listed under literature, the symbol (→ 🕮 [Z]).

1 Safety

1.1 Symbols Used

DANGER

Information on preventing any kind of physical injury.

WARNING

Information on preventing extensive equipment and environmental damage.

Caution

Information on correct handling or use. Disregard can lead to malfunctions or minor equipment damage.

Practical advice, tip, recommendation

Waiting time, response time

→ See page …

<....> Labeling

1.2 Personnel Qualifications

Skilled personnel

All work described in this document may only be carried out by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

1.3 General Safety Instructions

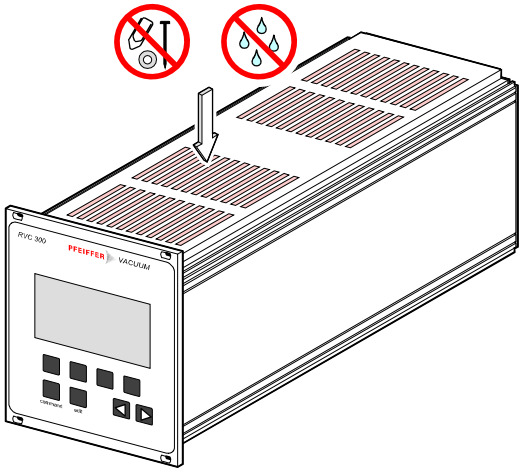
Adhere to the applicable regulations and take the necessary precautions for all work you are going to do and consider the safety instructions in this document.

DANGER

DANGER: mains voltage

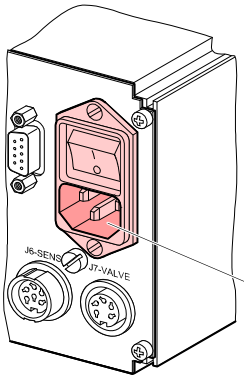
Contact with live parts is extremely hazardous when any objects are introduced or any liquids penetrate into the unit.

Make sure no objects enter through the louvers and no liquids penetrate into the equipment.



Disconnecting device

The disconnecting device must be readily identifiable and easily reached by the user. To disconnect the controller from mains, you must unplug the mains cable.



Disconnecting device acc. to EN 61010-1

Communicate the safety information to all other users.

1.4 Liability and Warranty

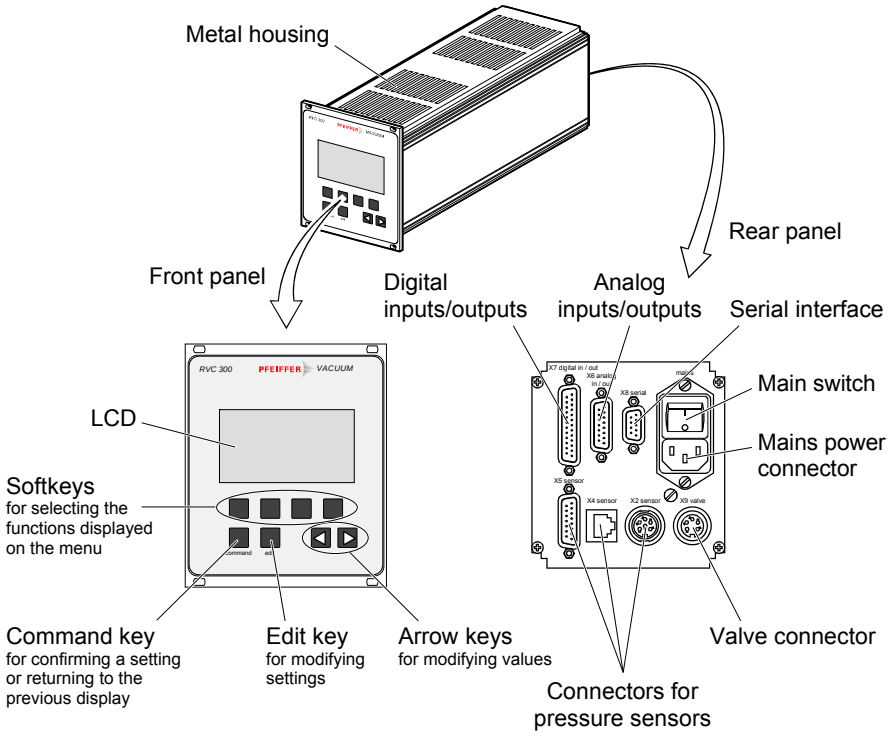
Pfeiffer Vacuum assumes no liability and the warranty becomes null and void if the end-user or third parties

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of interventions (modifications, alterations etc.) on the product
- use the product with accessories, options, and add-ons not listed in the corresponding product documentation.

The end-user assumes the responsibility in conjunction with the process media used.

2 Design and Functional Principle

2.1 Overview



2.2 Operating Modes

The RVC 300 works in the following operating modes:

- Pressure (pressure control mode)
- Flow (gas flow adjustment mode)

Pressure control (Pressure)

This operating mode is used for controlling the pressure in a vacuum system either with a variable gas flow (upstream control) or with a variable conductance (downstream control). Any of the implemented gauges (→ 🗎 66) or another appropriate pressure sensor and a suitable control valve are required for this mode.

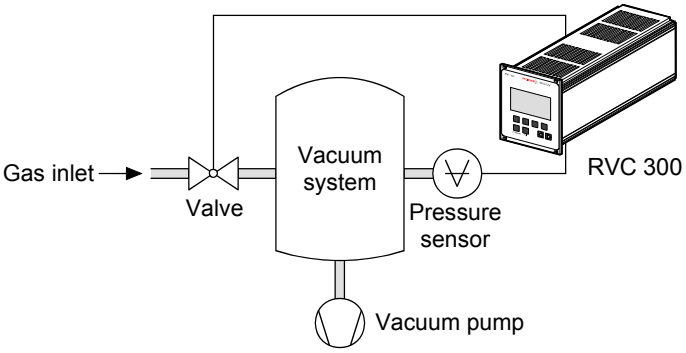
The pressure sensor supplies a continuous pressure signal (0 … +10 VDC) to the RVC 300. The RVC 300 compares the pressure signal (actual value) with the nominal pressure and controls the control valve in a way which compensates for the dynamic characteristics of the controlled process. This means that the actual value should attain the setpoint (nominal value) as rapidly as possible and then fluctuate as little as possible about it. The setpoint (nominal value) can be entered manually on the Pressure Controller or provided by an external control system.

Control modes

The RVC 300 can be operated in two control modes:

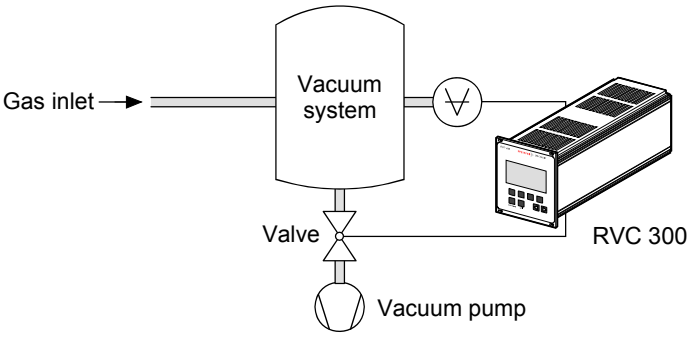
STD: Pressure control with variable gas flow (upstream control):

The control valve regulates the gas inlet of the vacuum system. The valve plate moves in closing direction when the pressure in the vacuum system rises.



INV: Pressure control with variable conductance (downstream control):

The control valve regulates the pumping speed of the vacuum system. The valve plate moves in opening direction when the pressure in the vacuum system rises.



Controller types

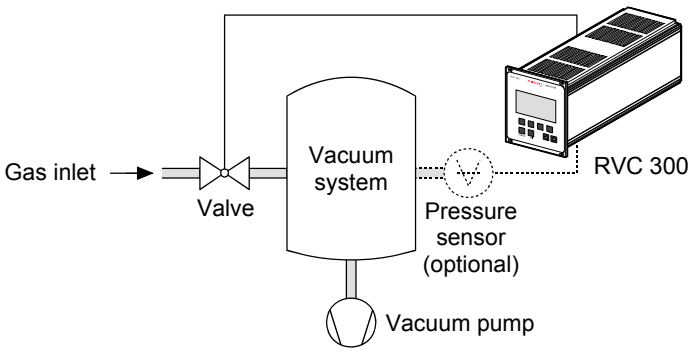
The RVC 300 features two controller types:

Auto: Auto is a PI (proportional/integral) controller type working with control speeds 1 … 99 (1 = slow, 99 = fast). This controller type is used for fast optimization of the process.

PID: The gain (Kp), reset time (Tn), and derivative time (Tv) of the PID (proportional/integral/derivative) controller type are user-definable. The PID controller is used when good control to a setpoint (nominal value) combined with a fast response is required.

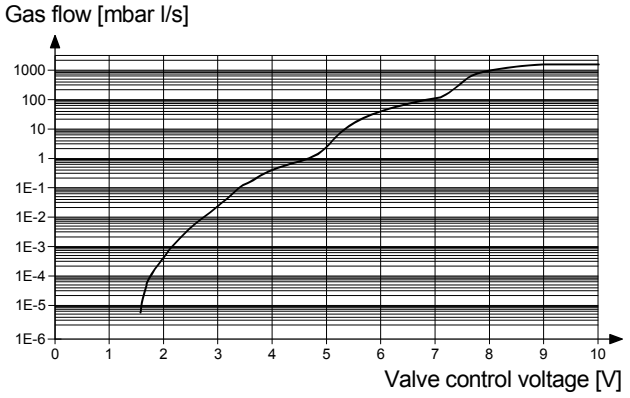
Gas flow adjustment (Flow)

This operating mode is used for gas flow adjustment in a vacuum system (upstream control). The EVR 116, RME 005 or RME 005 A Control Valve is required for this mode.

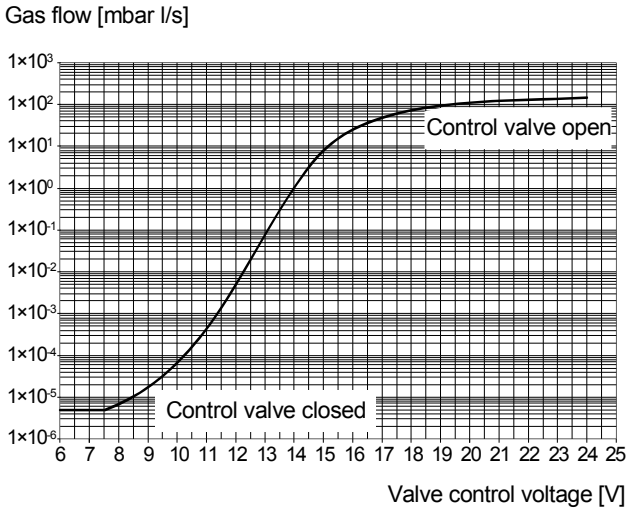


The gas flow setting is made on the RVC 300 and results in a corresponding gas flow rate through the control valve used at a pressure difference Δp of 1 bar. The flow rate curve depends on the control valve used. The curves shown in the following diagrams correspond to a mean value for air at a pressure difference Δp of 1 bar.

Flow rate curve for EVR 116

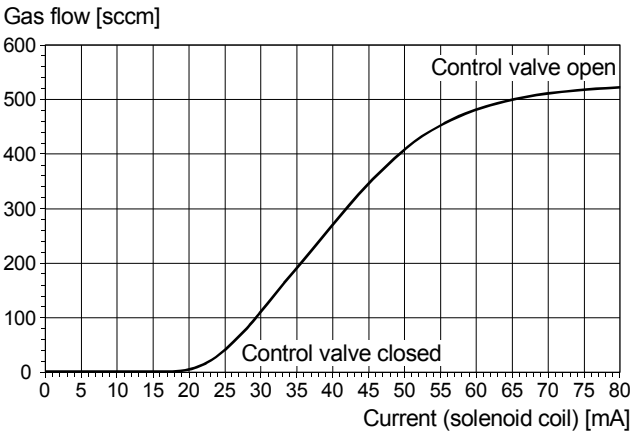


Flow rate curve for RME 005



Flow rate curve for RME 005 A

Example of a flow rate curve (mean values 500 sccm F.S) at a pressure difference Δp = 1 bar



3 Technical Data

Mains specifications

Mains voltage	90 … 250 VAC, 50/60 Hz
Power consumption	50 VA
Overvoltage category	II (EN 61010-1)
Protection class	I (EN 61010-1)
Main switch	On the rear of the RVC 300

Controller

Controller types	
Auto (PI) adjustable	1 … 99 (1 = slow, 99 = fast)
PID adjustable	Gain Kp: 0.1 … 100.0 Reset time Tn: 0.0 … 3600.0 s Derivative time Tv: 0.0 … 3600.0 s
Control accuracy [1]	0.5 % F.S.
Scan rate of pressure sensors	<100 ms
Update rate	
Inputs/outputs	<100 ms
RME 005, RME 005 A	<100 ms
EVR 116	<500 ms

[1] Valid for sensor setting 0 … +10 V lin and output AO 2.

Display

Display	LCD 64×128 pixel
Measurement units (selectable)	
Pressure	mbar, Torr, Pa, mV
Flow	mbar l/s, Torr l/s, Pa l/s, %, mV

Connectable linear pressure sensors [1]

Pressure sensor	Full Scale (F.S.)	Display	Display range [mbar]
APR 250, APR 260	1000 mbar	APR 1000	1.00E+00 … 1.10E+03
CMR 261, 271, 361, 371	1000 mbar	CMR 1000	1.00E+00 … 1.10E+03
CMR 262, 272, 362, 372	100 mbar	CMR 100	1.00E–01 … 1.10E+02
CMR 263, 273, 363, 373	10 mbar	CMR 10	1.00E–02 … 1.10E+01
CMR 264, 274, 364, 374	1 mbar	CMR 1	1.00E–03 … 1.10E+00
CMR 275, 365, 375	0.1 mbar	CMR 0.1	1.00E–04 … 1.10E-01
Other pressure sensor [2]	–	0–10V lin	0 … 10000 mV

[1] As the products of Pfeiffer Vacuum are subject to continual development, new pressure sensors may have been implemented in your RVC 300.

[2] The 0-10 V lin setting can be used for controlling appropriate linear sensors other than the implemented ones (→ 34).

Connectable logarithmic pressure sensors [1]

Pressure sensor	Display	Display range [mbar]
IKR 251, IKR 261	IKR 2XX	2.00E–09 … 1.00E–02
IMR 265	IMR 2XX	1.00E–6 … 1.00E–03
PBR 260 [2]	PBR 2XX	5.01E–10 … 1.00E+03
PCR 260	PCR 2XX	5.00E–4 … 1.50E+03
PKR 251, PKR 261	PKR 2XX	5.01E–09 … 1.00E+03
TPR 261, TPR 265, TPR 280, TPR 281	TPR 2XX	5.00E–04 … 1.00E+03

[1] As the products of Pfeiffer Vacuum are subject to continual development, new pressure sensors may have been implemented in your RVC 300.

[2] The degas function of the PBR 260 is not supported by the RVC 300.

Connectable control valves [1]

Valve	Display	Display range
EVR 116	EVR116	Closed, 5.00E-06 … 1.25E+03 mbar l/s
RME 005	RME005	Closed, 1.00E-05 … 1.00E+02 mbar l/s
RME 005 A	RME005A	Closed, 0.1 … 100 %
Other control valve [1]	AA 2	0 … 10000 mV

[1] The 0 … +10 VDC analog output AO 2 can be used for controlling valves other than the EVR 116, RME 005 and RME 005 A.

Digital inputs

Digital inputs [1]	(8 channels)
DI 1	Flow decrease
DI 2	Flow increase
DI 3	External CLOSE
DI 4	External OPEN
DI 5	Flow mode
DI 6	Pressure mode
DI 7	Emission ON
DI 8	Degas ON
Voltage	+24 VDC (external)
Current	<2.5 mA
Signal level	
ON	+15 … 33 VDC
OFF	≤+5 VDC

[1] For information on wiring → 18, on configuration → 36, on operation → 52.

Digital outputs

Digital outputs [1]	(8 channels)
DO 1	Valve closed
DO 2	Valve open
DO 3	Valve in position
DO 4	Valve error
DO 5	Sensor error
DO 6	ready
DO 7	Emission ON
DO 8	Sensor status
Digital output parameters [2]	
DO 3 Deviation	0.1% … 50.0% F.S. of pressure sensor
Signal ON	0.1% … 50.0% F.S. of pressure sensor
Signal OFF	0 … 999 s
ON-delay	
Voltage	+24 VDC
Current	1 output max. 100 mA The current of all outputs together must not exceed 150 mA!

[1] For information on wiring → 18, on configuration → 37, on operation → 52.

[2] For explanation and information on configuration → 38.

Analog inputs

Analog inputs [1]	(2 channels)
AI 1	Pressure setpoint (nominal value)
AI 2	Flow setpoint (nominal value)
AI 3	Not used
AI 4	Not used
Voltage range	0 … +10 VDC
Internal resistance	40 kΩ

[1] For information on wiring → 19, on configuration → 40, on operation → 53.

Analog outputs

Analog outputs [1]	(4 channels)
AO 1	Pressure sensor signal
AO 2 [6]	Valve signal (0 … +10 VDC)
AO 3	Valve position EVR 116
AO 4	+10 VDC reference voltage (10 mA)
Voltage range	0 … +10 VDC
Load resistance	≥2 kΩ

[1] For information on wiring → 19, on configuration → 40, on operation → 53.

[2] The 0 … 10 VDC analog output AO 2 can be used for controlling valves other than the EVR 116, RME 005 and RME 005 A.

Serial interface

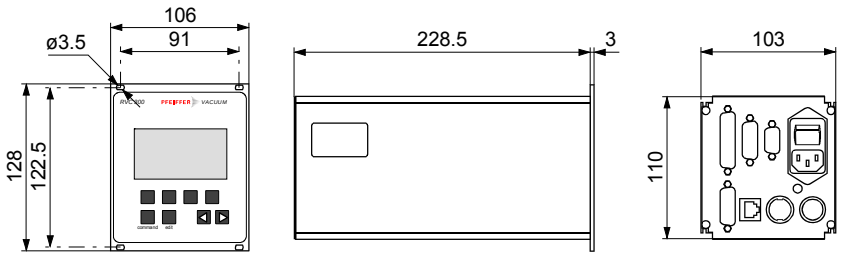
Types [1]	RS232, RS485
Transmission rate	9600 baud
Data bits	8
Stop bits	1
Parity bit	0 (none)

[1] For information on wiring → 20, on configuration → 41, on operation → 54.

Ambience

Temperature	
operation	+5 … 50 °C
storage	–40 … 60 °C
Relative humidity	≤80% up to +31 °C decreasing to 50% at +40 °C
Use	Indoors only Max. altitude 2000 m NN
Pollution degree	2 (EN 61010-1)
Degree of protection	IP 30 (EN 60529)

Dimensions [mm]



Weight

1.65 kg

4 Installation

4.1 Rack Installation

DANGER

Putting a product which presents a visible damage into operation can be extremely hazardous. If the product presents a visible damage do not put it into operation and make sure it is not inadvertently put into operation.

The RVC 300 is designed for installation into a 19" rack chassis (height 3 U, depth 21 U according to DIN 41 494).

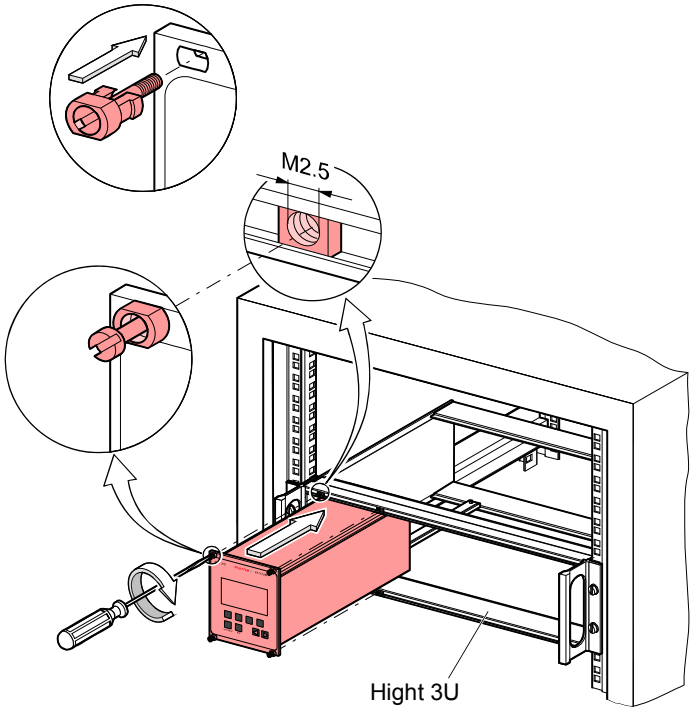
DANGER

DANGER: protection category of the rack

If the product is installed in a rack, it is likely to lower the protection category of the rack (protection against foreign bodies and water) e.g. the EN 60204-1 regulations for switch cabinets.

Take appropriate measures for the rack to meet the specifications of the protection category.

Slide the RVC 300 into a 19" rack chassis and fasten it with the supplied four collar screws and plastic sleeves.



4.2 Mains Power Connection

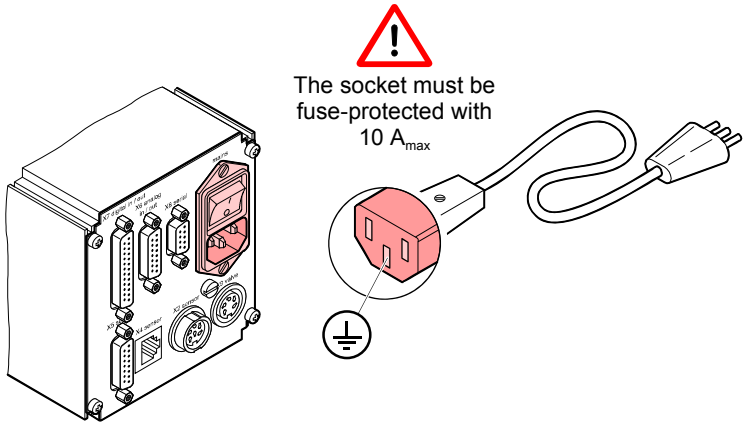
DANGER

DANGER: line voltage

Incorrectly grounded products can be extremely hazardous in the event of a fault.

Use only a 3-conductor power cable with protective ground. The power connector may only be plugged into a socket with a protective ground. The protection must not be nullified by an extension cable without protective ground.

The unit is supplied with a 2 m power cord. If the mains cable is not compatible with your system, use your own, suitable cable with protective ground.



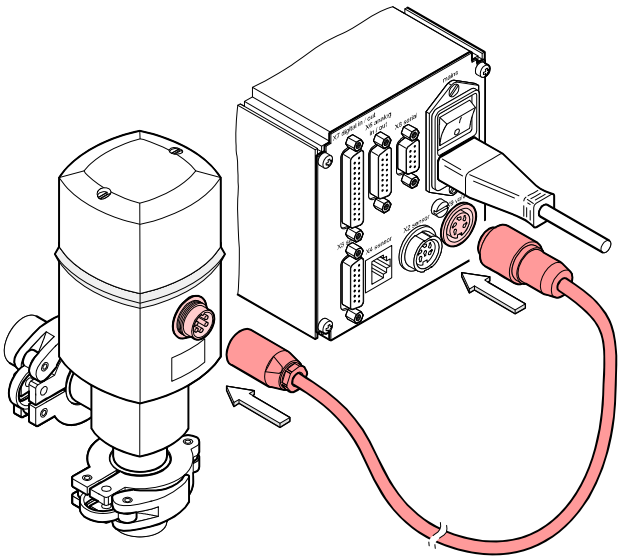
The mains voltage should be supplied and turned on via a central power distributor because the main switch of the RVC 300 cannot be reached from the front.

4.3 Valve Connection

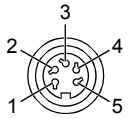
The «X9 valve» receptacle is configured especially for the EVR 116, RME 005 and RME 005 A Control Valves. For controlling valves other than the EVR 116, RME 005 and RME 005 A, the 0 … +10 VDC analog output AO 2 must be used (Pin assignment → 19).

EVR 116

Connect the EVR 116 Control Valve to the «X9 valve» receptacle (EVR 116 and connection cable → 64, Operating Instructions → [1]).



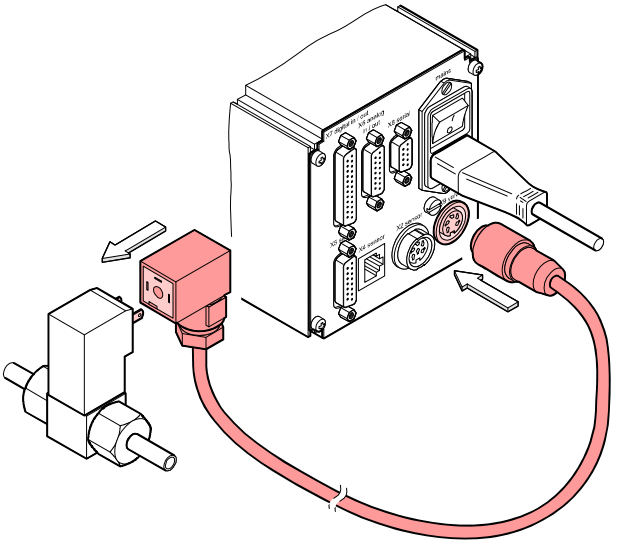
X9 valve



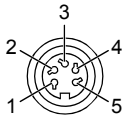
Signal	Pin
SIO	**1**
GND	**2**
ANOUT+	3 (not used)
ANOUT-	4 (not used)
24VDC	**5**

RME 005, RME 005 A

Connect the RME 005 or RME 005 A Control Valve to the «X9 valve» receptacle (RME 005 and connection cable → 64, Operating Instructions → [2]).



X9 valve



Signal	Pin
SIO	1 (not used)
GND	2 (not used)
ANOUT+	**3**
ANOUT-	**4**
24VDC	5 (not used)

4.4 Pressure Sensor

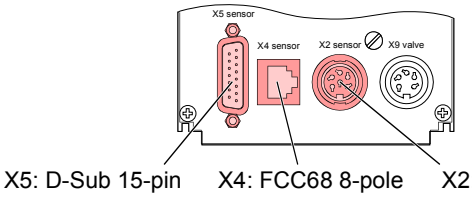
Caution

Caution: malfunctions

Connecting more than one pressure sensor at a time may cause malfunctions.

Connect only one sensor at a time.

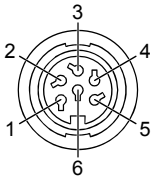
The RVC 300 is equipped with three different sensor receptacles (compatible pressure sensors → 66).



Pin assignment

DIN receptacle

X2 sensor



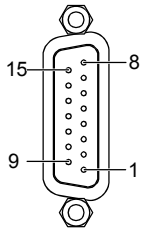
Designation	Signal	Pin
Identification [1) 2)]		1
Supply common	GND	2
Signal input	0 … +10 VDC	3
Signal common	GND	4
Shielding	GND	5
Supply	+24 VDC	6

1) The identification information of the sensors is not processed by the RVC 300.

2) On the PPR 260, this pin is also used to control the the sensor's degas function. Degas of the PPR 260 is not supported by the RVC 300.

X5 D-Sub receptacle

X5 sensor



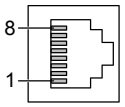
Designation [3)]	Signal	Pin
Emission status input	+24 VDC	1
Signal input (measurement signal)	0 … +10 VDC	2
Warning status input	+24 VDC	3
Control output Emission ON (HV ON) [4)]	+24 VDC	4
Supply common	GND	5
Not connected		6
Degas ON control output	+24 VDC	7
Supply	+24 VDC	8
Not connected		9
Not connected		10
Not connected		11
Signal common	GND	12
Not connected		13
Not connected		14
Shielding of housing	GND	15

3) The pin assignment depends on the pressure sensor used.

4) Pressure sensors specified for a max. operating pressure will start operation only after the signal "Emission ON" is applied to the digital input DI 7 of the RVC 300 (→ 52).

X4 FCC68 receptacle

X4 sensor



Designation [1]	Signal	Pin
Supply	+24 VDC	1
Supply common	GND	2
Signal input	0 … +10 VDC	3
Identification [2]		4
Signal common	GND	5
Not connected		6
Not connected		7
Emission ON (HV ON) [3]	+24 VDC	8

[1] The pin assignment depends on the pressure sensor used.

[2] The identification information of the sensors is not processed by the RVC 300.

[3] Pressure sensors specified for a max. operating pressure will start operation only after the signal "Emission ON" is applied to the digital input DI 7 of the RVC 300 (→ 52).

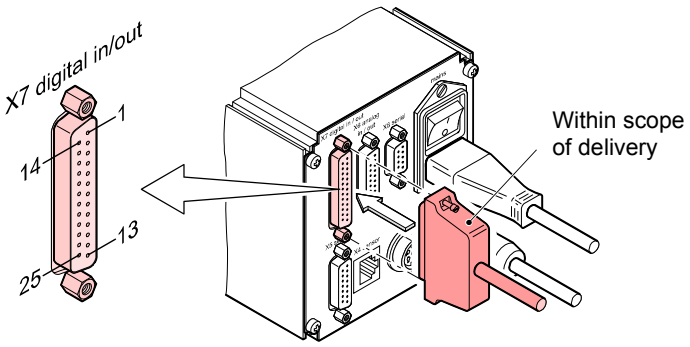
4.5 Digital Inputs/Outputs

Caution

Caution: Interference caused by parasitic induction

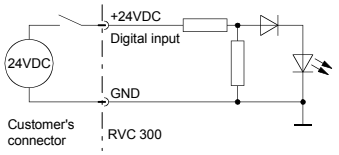
- Use signal lines ≤25 m.
- The signal lines should be shielded and connected to ground at only one end.
- Run the signal lines physically separated from the supply and control lines.

Wire the enclosed 25-pin female D-Sub cable connector in accordance with the pin assignment, plug it in and secure it with the screws.



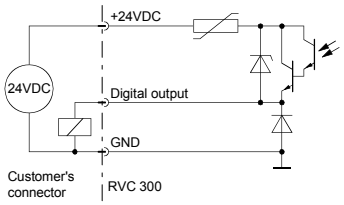
Pin assignment

Digital inputs



Designation	Description	Signal	Pin
DI 1	Flow decrease	+24 VDC/2.5 mA	11
DI 2	Flow increase	+24 VDC/2.5 mA	23
DI 3	External CLOSE	+24 VDC/2.5 mA	10
DI 4	External OPEN	+24 VDC/2.5 mA	22
DI 5	Change to Flow mode	+24 VDC/2.5 mA	9
DI 6	Change to Pressure mode	+24 VDC/2.5 mA	21
DI 7	Emission ON (HV ON)	+24 VDC/2.5 mA	8
DI 8	Degas ON	+24 VDC/2.5 mA	20
DI GND	Ground digital inputs	0 VDC	12
DI GND	Ground digital inputs	0 VDC	24

Digital outputs



The current of all outputs together must not exceed 150 mA!

Designation	Description	Signal	Pin
DO 1	Valve close	+24 VDC/100 mA	14
DO 2	Valve open	+24 VDC/100 mA	2
DO 3	in position	+24 VDC/100 mA	15
DO 4	Valve error	+24 VDC/100 mA	3
DO 5	Sensor error	+24 VDC/100 mA	16
DO 6	ready	+24 VDC/100 mA	4
DO 7	Emission ON (HV ON)	+24 VDC/100 mA	17
DO 8	Sensor status	+24 VDC/100 mA	5
DO GND	Ground digital outputs	0 VDC	6
DO GND	Ground digital outputs	0 VDC	18
DO +24VDC	Supply digital outputs	+24 VDC	1
–	Not connected		7
–	Not connected		13
–	Not connected		19
–	Not connected		25

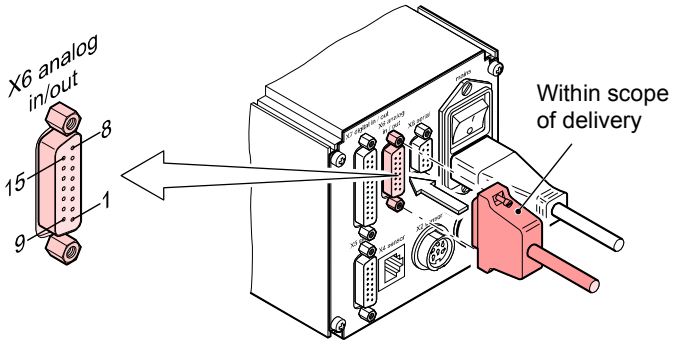
4.6 Analog Inputs/Outputs

Caution

Caution: Interference caused by parasitic induction

- Use signal lines ≤25 m.
- The signal lines should be shielded and connected to ground at only one end.
- Run the signal lines physically separated from the supply and control lines.

Wire the enclosed 15-pin male D-Sub cable connector in accordance with the pin assignment, plug it in and secure it with the screws.



Pin assignment analog inputs

Designation	Description	Signal	Pin
AI 1	Pressure setpoint (nominal value)	0 … +10 VDC	1
AI 2	Flow setpoint (nominal value)	0 … +10 VDC	2
AI 3	Not used		3
AI 4	Not used		4

Pin assignment analog outputs

Designation	Description	Signal	Pin
AO 1	Pressure sensor signal (actual value)	0 ... +10 VDC/10 mA	8
AO 2	Valve signal [1)]	0 ... +10 VDC/10 mA	7
AO 3	Valve position (EVR 116)	0 ... +10 VDC/10 mA	6
AO 4	Reference voltage	+10 VDC/10 mA	5

GND analog inputs/outputs

Designation	Description	Signal	Pin
GND	Ground analog inputs/outputs	0 VDC	9 … 15

1) The 0 … +10 VDC analog output AO 2 can be used for controlling valves other than the EVR 116 and RME 005.

4.7 RS232 and RS485 Serial Interfaces

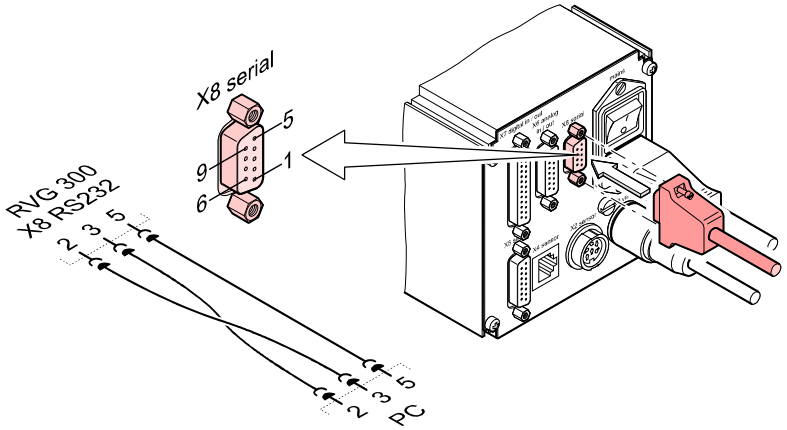
Caution

Caution: interface line

- Use a 3-core interface cable.
- Interface cable RS232 ≤25 m
  Interface cable RS485 ≤100 m
- The interface line should be shielded and connected to ground at only one end.
- Run the interface line physically separated from the feeder and control lines.

Wire a 9-pin male D-Sub cable connector in accordance with the pin assignment, plug it in and secure it with the screws.

Use a 3-core interface cable. Otherwise transmission errors could occur.



Pin assignment RS232

Designation	Pin
Not to be used	1
RXD, received data	2
TXD, transmitted data	3
Not to be used	4
SIO GND	5
Not to be used	6
Not to be used	7
Not to be used	8
Not to be used	9

Pin assignment RS485

Designation	Pin
Not to be used	1
Not to be used	2
Not to be used	3
SIO GND	4
Not to be used	5
Bus terminator (–) (connect with pin 7)	6
TXD/RXD (–)	7
TXD/RXD (+)	8
Bus terminator (+) (connect with pin 8)	9

5 Turning the RVC 300 On and Off

Make sure the RVC 300 is correctly installed and the specifications in the "Technical Data" are met (→ 🗎 10).

Turning the RVC 300 on

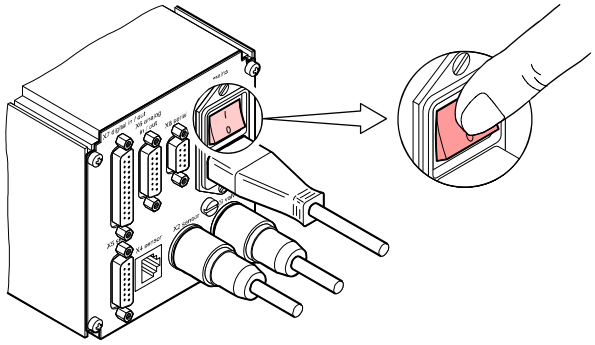
Caution

Caution: measurement range of the connected pressure sensor

If the connected pressure sensor is operated outside its specified measurement range, it may be damaged or severely contaminated.

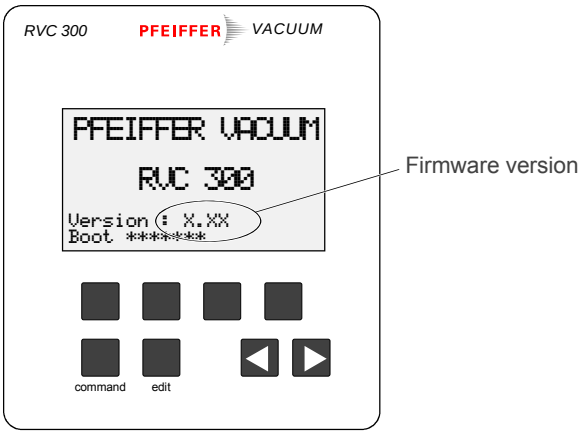
Turn the RVC 300 ON only when the pressure in the vacuum system is within the measurement range of the connected pressure sensor.

Make sure that the main switch on the rear of the RVC 300 is in the ON position.

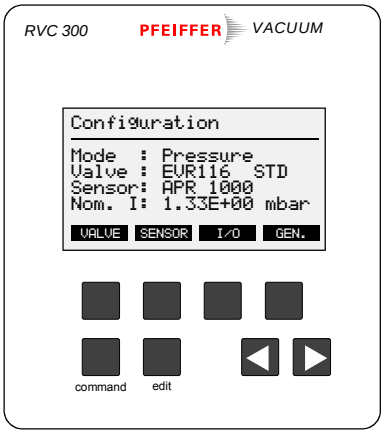


❶ Turn the RVC 300 ON via the switched power distributor.

❷ After power on, the <POWER ON> message appears for 2 seconds. Next the Initial display appears for a few seconds, …

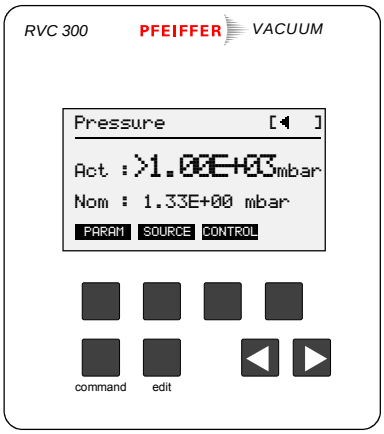


… and then, the Configuration menu is displayed.



❸ Upon the first power on,

- the EVR 116 Control Valve is identified if connected
- the RVC 300 starts operating in the Pressure control mode and with the default parameter settings after 3 seconds.



Upon any subsequent power on,

- the EVR 116 Control Valve is identified if connected
- **if the Autoboot setting is ON** (default),
  the RVC 300 starts operating in the mode and with the parameter settings in effect before the last power off after 3 seconds.
- **if the Autoboot setting is OFF** (→ 🗎 29),
  the RVC 300 keeps displaying the Configuration menu until the «command» key is pressed. Only then it starts operating in the mode and with the parameter settings in effect before the previous power off.

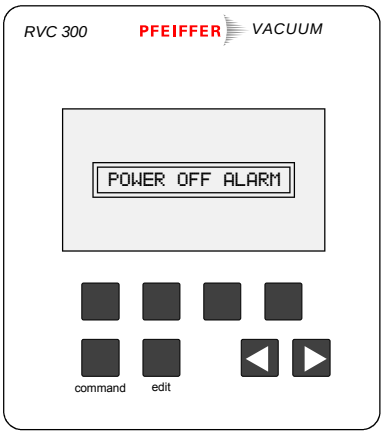
Turning the RVC 300 off

❶ Turn the RVC 300 OFF via the switched power distributor.

❷ The «POWER OFF ALARM» is displayed for a few seconds.

Caution

The control valve is closed within 3 seconds.



6 Configuration

Before putting the RVC 300 into operation, make the following basic settings:

Basic settings

- LCD contrast → 26
- Measurement unit of the pressure → 27
- Language → 28
- Automatic booting function → 29
- Automatic reset function → 30
- Operating mode → 31
- Valve → 32
- Control mode (STD/INV) → 33
- Pressure sensor → 34
- Digital inputs → 36
- Digital outputs → 37
- Analog inputs/outputs → 40
- Serial interface → 41

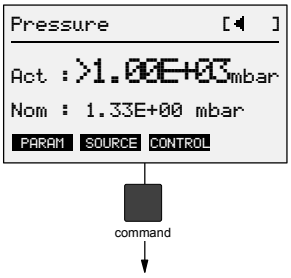
Getting to the Configuration level

For defining the above basic settings, change from the Operating level to the Configuration level:

In the Operating level (Pressure or Flow mode), press

command

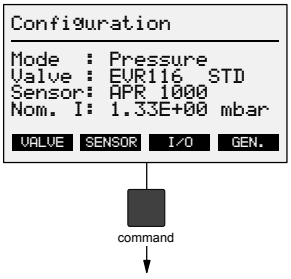
to get to the «Configuration» display.



The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press

command

to return to the Operating level (Pressure or Flow mode).



Pressure mode

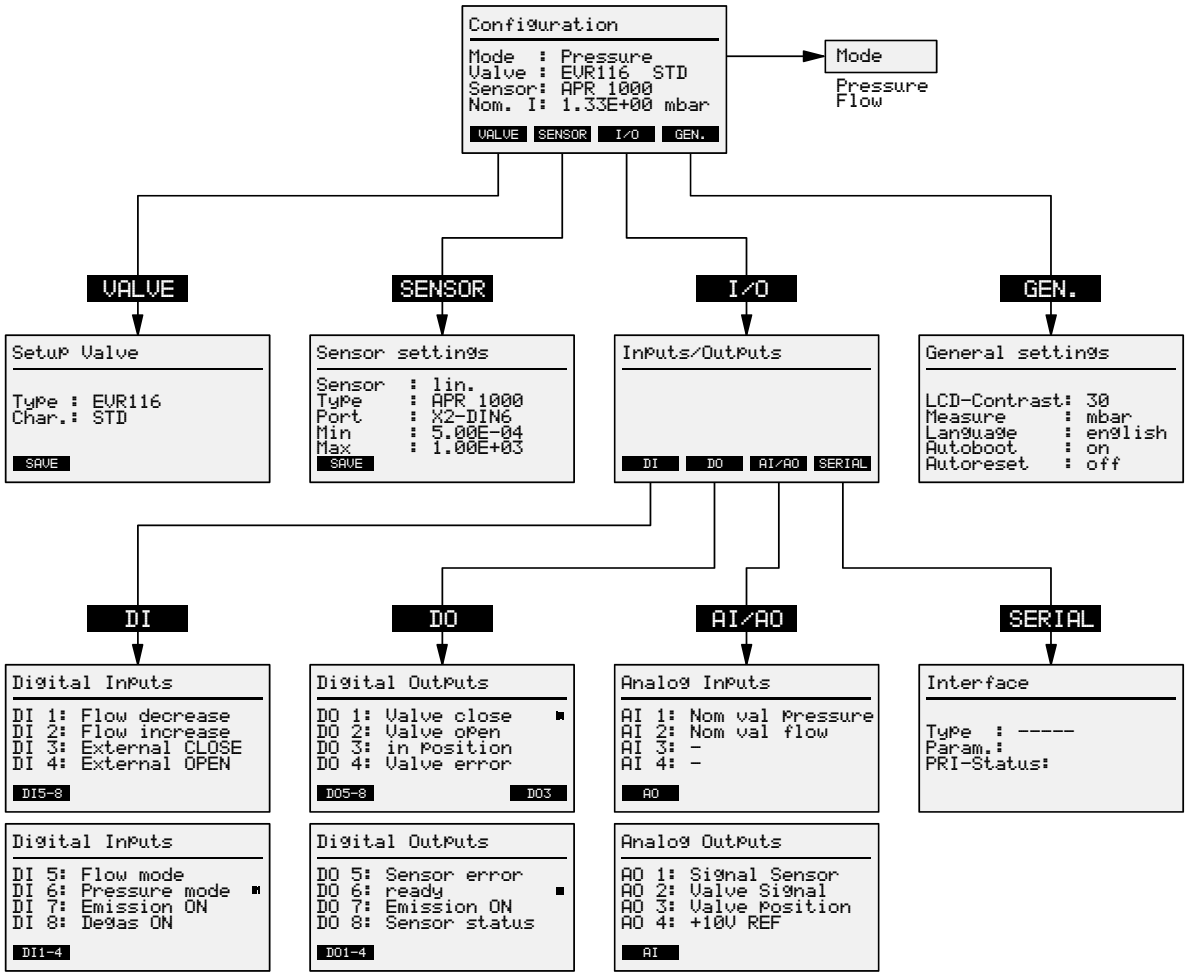


Flow mode



Structure of the configuration level

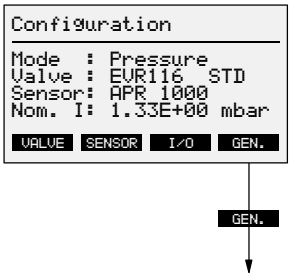
The following chart shows how the Configuration level is organized. The individual settings are described on the following pages.



6.1 LCD Contrast

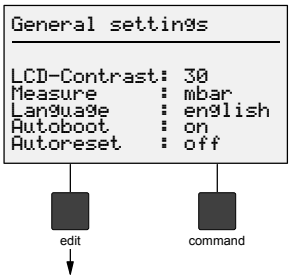
Adjust the display contrast to a value between 0 (light) and 99 (dark).

The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press



GEN. to get to the «General settings» display.

The «General settings» display shows the LCD contrast, measurement unit of the pressure, language, automatic booting and automatic reset function. Press

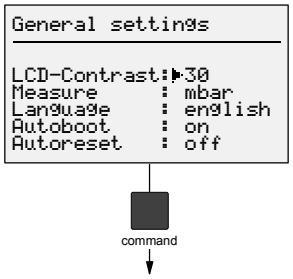


edit to edit the LCD contrast setting.

command to return to the «Configuration» display.

The Edit symbol is displayed in the «LCD-Contrast» line. Press





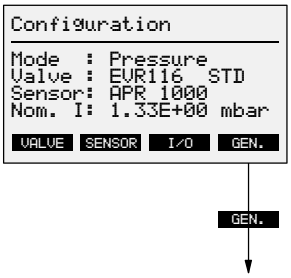
◀ ▶ to adjust the LCD contrast between 0 and 99 (0 = light, 99 = dark).

command to save the new setting and return to the «Configuration» display.

6.2 Measurement Unit of the Pressure

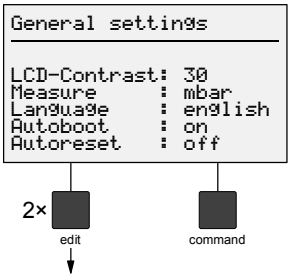
For pressure control, select mbar, Pa or Torr as measurement unit of the pressure. For gas flow adjustment, select mbar, Pa or Torr as pressure component of the flow rate.

The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press



GEN. to get to the «General settings» display.

The «General settings» display shows the LCD contrast, measurement unit of the pressure, language, automatic booting and automatic reset function. Press

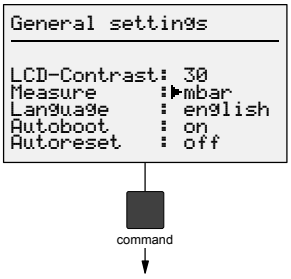


2× edit to edit the measurement unit setting.

command to return to the «Configuration» display.

The Edit symbol is displayed in the «Measure» line.





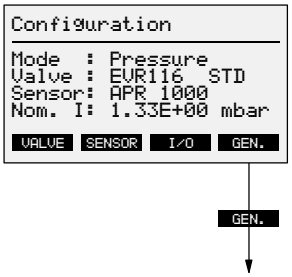
◀ ▶ to select the measurement unit of the pressure.

command to save the new setting and return to the «Configuration» display.

6.3 Language

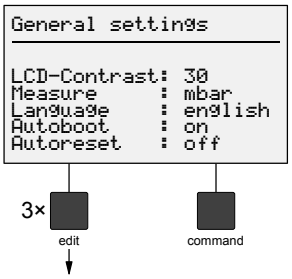
Select among English and German.

The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press



GEN. to get to the «General settings» display.

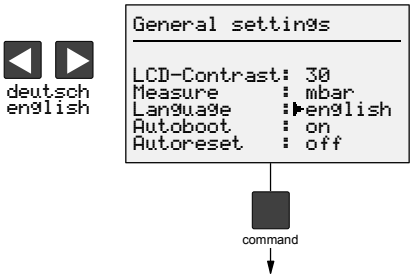
The «General settings» display shows the LCD contrast, measurement unit of the pressure, language, automatic booting and automatic reset function. Press



3× edit to edit the «Language» setting.

command to get to the «Configuration» display.

The Edit symbol is displayed in the «Language» line. Press



◀ ▶ to select the language.

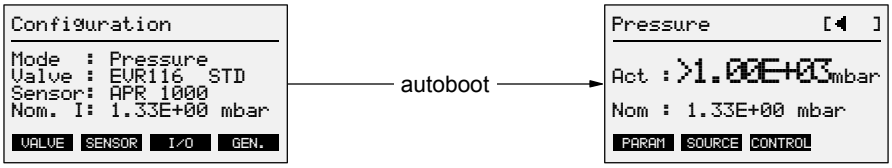
command to save the new setting and return to the «Configuration» display.

6.4 Automatic Booting Function

This setting determines how the RVC 300 will behave after a mains power failure.

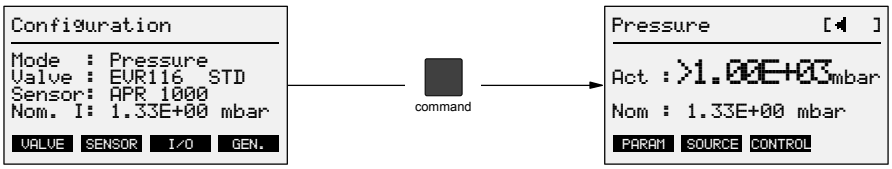
Autoboot ON

After a power failure, the RVC 300 automatically starts controlling to the previously defined nominal value (setpoint).



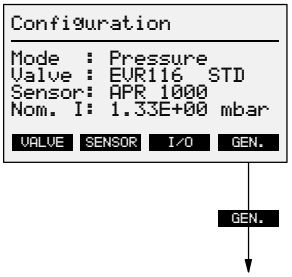
Autoboot OFF

After a power failure, the RVC 300 will show the «Configuration» display and not start working until the control process is reinitiated by pressing the «command» key. This allows for analyzing the cause of the power failure and taking the appropriate measures before starting the RVC 300 again.



The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press

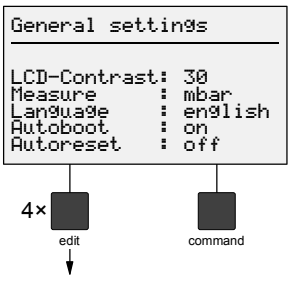
GEN. to get to the «General settings» display.



The «General settings» display shows the LCD contrast, measurement unit of the pressure, language, automatic booting and automatic reset function. Press

4× edit to edit the setting of the automatic booting function.

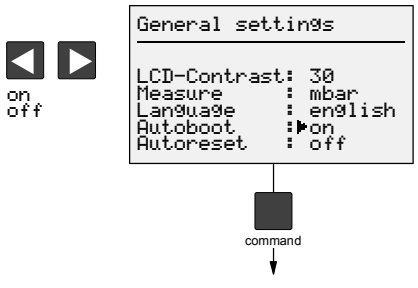
command to return to the «Configuration» display.



The Edit symbol is displayed in the «Autoboot» line. Press

◀ ▶ to set the automatic booting function to on or off.

command to save the new setting and return to the «Configuration» display.



6.5 Automatic Reset Function

This function is only effective in the Pressure control mode.

This setting determines how the RVC 300 will behave in the following cases:

- The operating mode was changed from Pressure to Flow and then back to Pressure
- Signal «Externally CLOSE» (DI 3) active
- Signal «Externally OPEN» (DI 4) active.

Autoreset ON

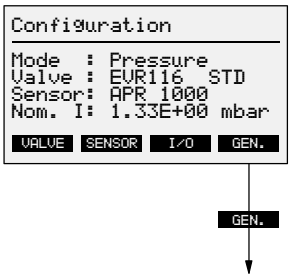
In any of the above cases, the RVC 300 resumes pressure control under the assumption that the current valve position is 0 (CLOSED).

Autoreset OFF

In any of the above cases, the RVC 300 resumes operation pressure control by going back to the position the valve was in before the condition occurred.

The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press

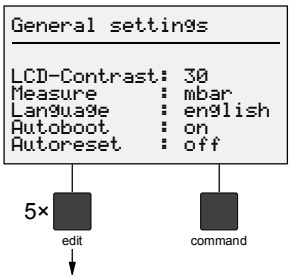
GEN. to get to the «General settings» display.



The «General settings» display shows the LCD contrast, measurement unit of the pressure, language, automatic booting and automatic reset function. Press

5× edit to edit the setting of the automatic reset function.

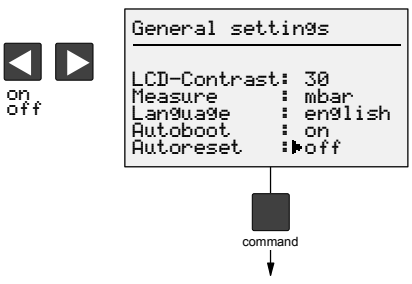
command to return to the «Configuration» display.



The Edit symbol is displayed in the «Autoreset» line. Press

◀ ▶ to set the automatic reset function to on or off.

command to save the new setting and return to the «Configuration» display.



6.6 Operating Mode

The RVC 300 works in the following operating modes:

- Pressure (pressure control mode)
- Flow (gas flow adjustment mode)

The operating modes are described in section "Design and Functional Principle" (→ 🖹 6).

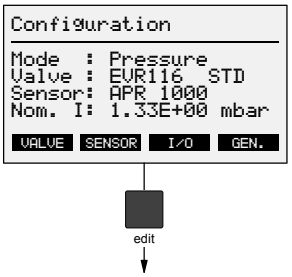
Caution

When changing the operating mode, bear in mind that the RVC 300 uses different setpoints and setpoint sources for pressure control and gas flow adjustment.

The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press



to edit the operating mode setting.



The Edit symbol is displayed in the «Mode» line. Press



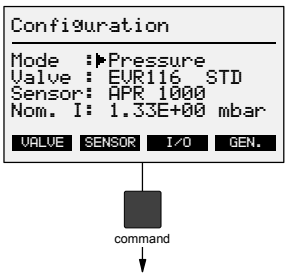
to select among Pressure and Flow

In the «Nom» line, the nominal value (setpoint) for the currently selected operating mode and its source (I = internal, E = external) are displayed.



to activate the operating mode with the currently displayed nominal value (setpoint) and return to the Operating level.





Pressure control mode (Pressure)



Gas flow adjustment mode (Flow)



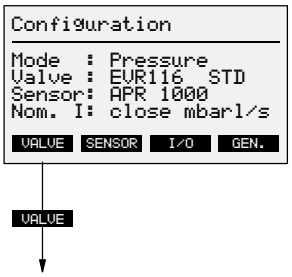
6.7 Valve

The settings of the EVR 116, RME 005 and RME 005 A control valves can be made directly on the RVC 300.

If the EVR 116 is connected to the Pressure Controller, it is automatically recognized. In this case, no other control valve setting can be made.

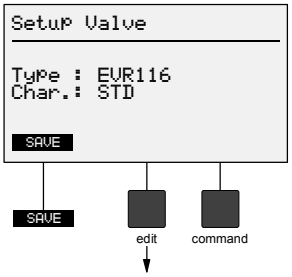
Procedure

The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press



VALVE to get to the «Setup Valve» display.

The «Setup Valve» display shows the valve type and control mode.

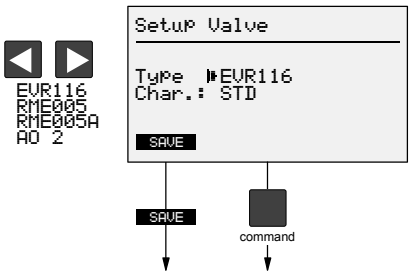


edit to edit the valve type setting.

SAVE to save the new setting and return to the «Configuration» display.

command to return to the «Configuration» display without saving the new setting.

The Edit symbol is displayed in the «Type» line.



◀ ▶ select among EVR 116, RME 005, RME 005 A and AO 2.

SAVE to save the new setting and return to the «Configuration» display.

command to return to the «Configuration» display without saving the new setting.

6.8 Control Mode

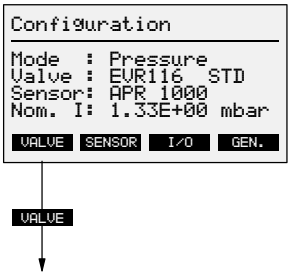
In the Pressure control mode, the RVC 300 can be operated in two control modes:

- Standard pressure control (STD) with variable gas flow (upstream control)
- Inverse pressure control (INV) with variable conductance (downstream control)

In the Gas flow adjustment mode, the RVC 300 is operated in the Standard control mode (STD) (upstream control). The control mode setting INV can be made but it will be ignored. The control modes are described in section "Design and Functional Principle" (→ 🗎 7).

The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press

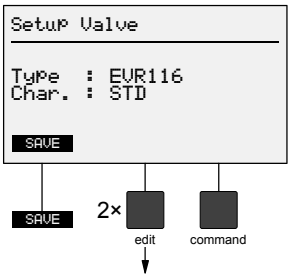
VALVE to get to the «Setup Valve» display.



The «Setup Valve» display shows the valve type and control mode.

2× edit to edit the control mode setting.

command to return to the «Configuration» display.



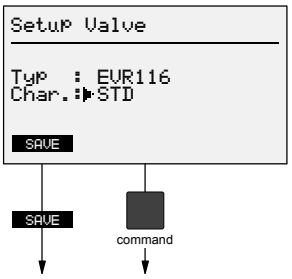
The Edit symbol is displayed in the «Char.» line. Press

◀ ▶ to select among STD and INV.

SAVE to save the new setting and return to the «Configuration» display.

command to return to the «Configuration» display without saving the new setting.



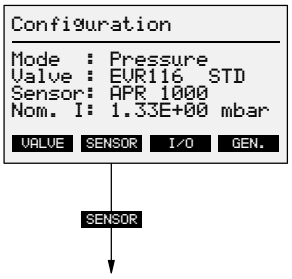


6.9 Pressure Sensor

With the sensor setting, the measurement range of the selected pressure sensor is automatically defined (list of implemented pressure sensors → 66). In the «Port» line, the RVC 300 indicates which receptacle the pressure sensor has to be connected to.

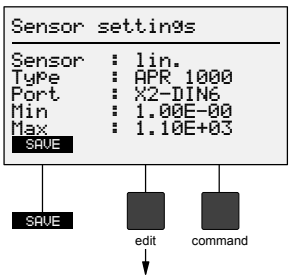
If you are using a pressure sensor which is not implemented in the RVC 300, choose the setting 0–10 V lin. The pressure reading will be displayed in mV.

The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press



SENSOR — to get to the «Sensor settings» display.

The «Sensor settings» display shows the sensor, type, receptacle, and the measurement range with its upper and lower limit. Press



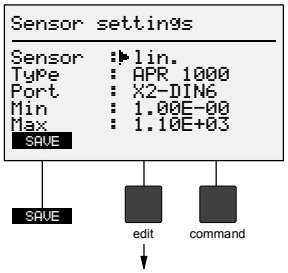
edit — to edit the sensor setting.

SAVE — to save the new setting and return to the «Configuration» display.

command — to return to the «Configuration» display without saving the new setting.

The Edit symbol is displayed in the «Sensor» line. Press





◀ ▶ — lin. = linear pressure sensor
log. = logarithmic pressure sensor

edit — to edit the sensor type setting.

SAVE — to save the new setting and return to the «Configuration» display.

command — to return to the «Configuration» display without saving the new setting.

The Edit symbol is displayed in the «Type» line. Press





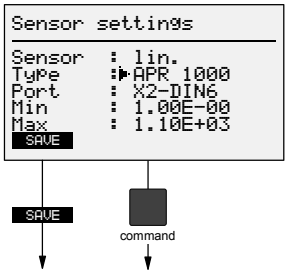
to select one of the implemented sensor types or 0 - 10V for other pressure sensors.

SAVE

to save the new setting and return to the «Configuration» display.



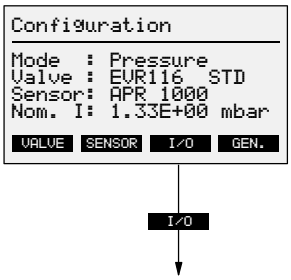
to return to the «Configuration» display without saving the new setting.



6.10 Digital Inputs

The RVC 300 has eight digital inputs. This menu informs on the assignment and status of the digital inputs but it does not allow to make any settings. If there is a black square at the right end of a line, the corresponding signal is active (Operation via inputs and outputs → 52).

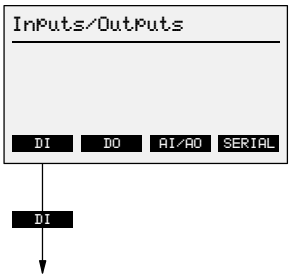
The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press



I/O to get to the «Inputs/Outputs» display.

The «Inputs/Outputs» display shows the following menu:

«DI»	Digital inputs
«DO»	Digital outputs
«AI/AO»	Analog inputs/outputs
«SERIAL»	Serial interfaces

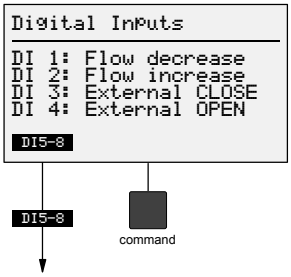


Press

DI to get to the «Digital Inputs» display.

command to return to the «Configuration» display.

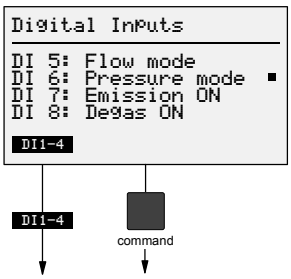
The «Digital Inputs» display shows the assignment of digital inputs 1 to 4. Press



DI5-8 to get to the «Digital Inputs 5 to 8» display.

command to return to the «Inputs/Outputs» display.

The «Digital Inputs» display shows the assignment of digital inputs 5 to 8. Press



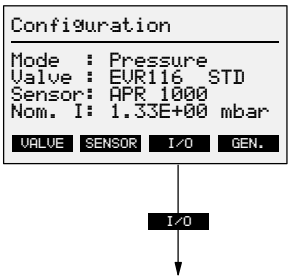
DI1-4 to get to the «Digital Inputs 1 to 4» display.

command to return to the «Inputs/Outputs» display.

6.11 Digital Outputs

The RVC 300 has eight digital outputs. This menu informs on the assignment and status of the digital outputs but it does not allow to make any settings, except for DO 3. If there is a black square at the right end of a line, the corresponding signal is active (Operation via inputs and outputs → 52).

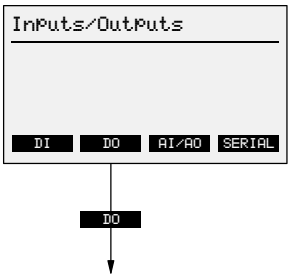
The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press



I/O to get to the «Inputs/Outputs» display.

The «Inputs/Outputs» display shows the following menu:

«DI»	Digital inputs
«DO»	Digital outputs
«AI/AO»	Analog inputs/outputs
«SERIAL»	Serial interfaces

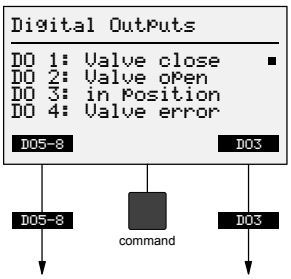


Press

DO to get to the «Digital Outputs» display.

command to return to the «Configuration» display.

The «Digital Outputs» display shows the assignment of digital outputs 1 to 4. Press

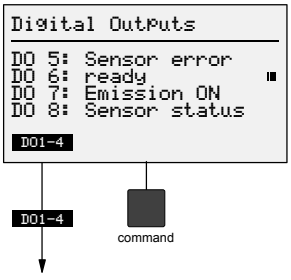


DO5-8 to get to the «Digital Outputs 5 to 8» display.

DO3 to get to the «DO 3 Deviation» display.

command to return to the «Inputs/Outputs» display.

The «Digital Outputs» display shows the assignment of digital outputs 5 to 8. Press



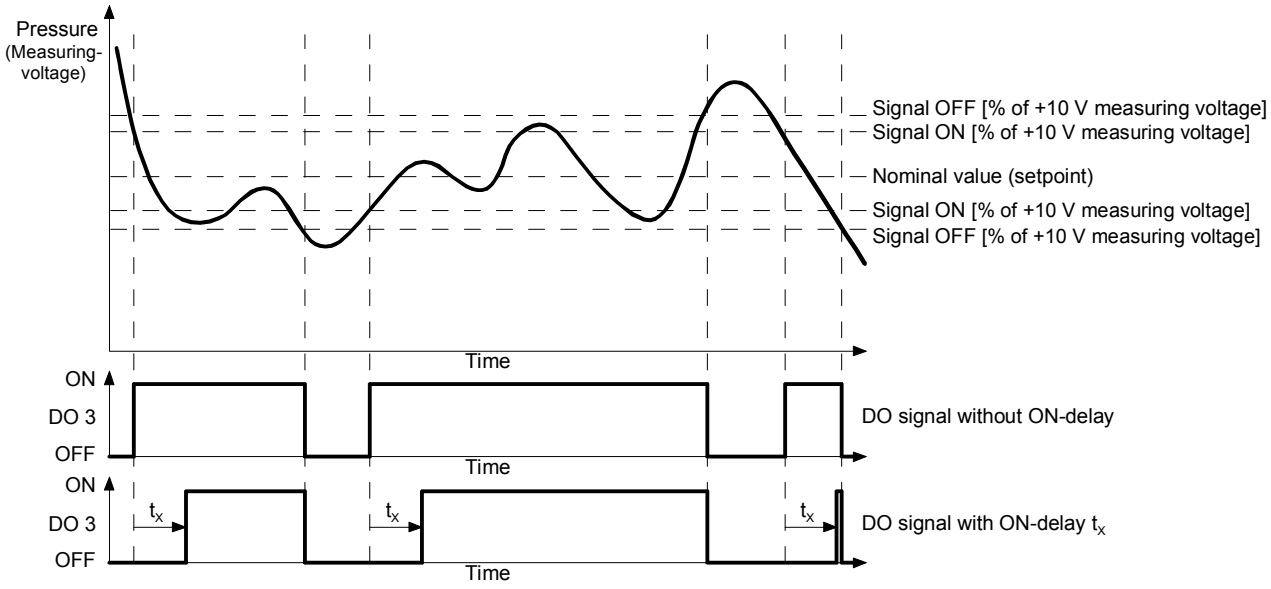
DO1-4 to get to the «Digital Outputs 1 to 4» display.

command to return to the «Inputs/Outputs» display.

DO 3 Deviation

The settings of this parameter are only effective in the Pressure control mode.

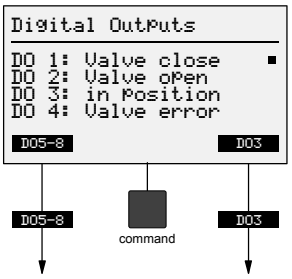
«DO 3 Deviation» is a control output. Its settings do not directly affect the pressure control process or the gas flow adjustment. They only define the conditions under which a superordinated control system considers the valve to be "in position".



100% (F.S.) +10 V measuring voltage of the sensor. The corresponding pressure values depend on the sensor used and have to be calculated individually. The formula to be applied can be found in the operating instructions of the sensor used → 🕮 [4] … [17].

This parameter is set automatically to 10% of the F.S. (+1.0 V).

The «Digital Outputs» display shows the assignment of digital outputs 1 to 4. Press

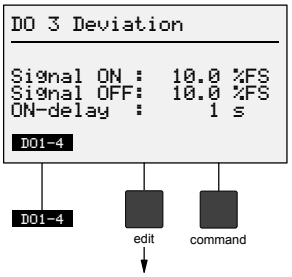


DO5-8 to get to the «Digital Outputs 5 to 8» display.

DO3 to get to the «DO 3 Deviation» display.

command to return to the «Inputs/Outputs» display.

The «DO 3 Deviation» display allows for defining the «Valve in Position» signal. Press



DO1-4 to get to the «Digital Outputs 1 to 4» display.

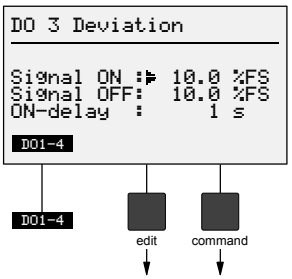
edit to make the «Signal ON» setting.

2× edit to make the «Signal OFF» setting.

3× edit to adjust the «ON-delay».

command to return to the «Inputs/Outputs» display.

The Edit symbol is displayed in the «Signal ON», «Signal OFF» or «ON-delay» line. Press



◀ ▶ to adjust a value.

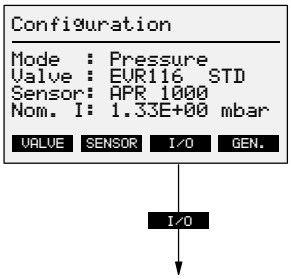
DO1-4 to get to the «Digital Inputs 1 to 4» display.

command to save the new setting and return to the «Configuration» display.

6.12 Analog Inputs/Outputs

The RVC 300 has two analog inputs and four analog outputs. This menu informs on the assignment of the analog inputs and outputs but it does not allow to make any settings (Operation via inputs and outputs → 53).

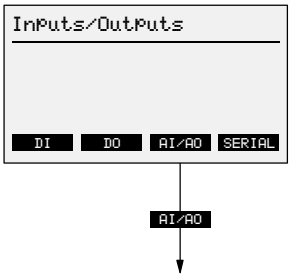
The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press



I/O to get to the «Inputs/Outputs» display.

The «Inputs/Outputs» display shows the following menu:

«DI»	Digital inputs
«DO»	Digital outputs
«AI/AO»	Analog inputs/outputs
«SERIAL»	Serial interfaces

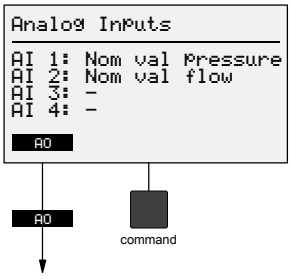


Press

AI/AO to get to the «Analog Inputs» display.

command to return to the «Configuration» display.

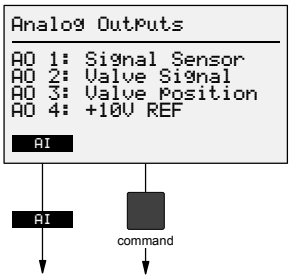
The «Analog Inputs» display shows the assignment of analog inputs 1 and 2. Press



AO to get to the «Analog Outputs» display.

command to return to the «Inputs/Outputs» display.

The «Analog Outputs» display shows the assignment of analog outputs 1 to 4. Press



AI to get to the «Analog Inputs» display.

command to return to the «Inputs/Outputs» display.

6.13 Serial Interface

The RVC 300 can be operated via the RS232 and RS485 interfaces (Operation via serial interface → 54).

Which interface should be used?

RS232: For line lengths <25 m and little interference (control and supply lines)

«PRI-Status: On» "n" is transmitted (→ 57)

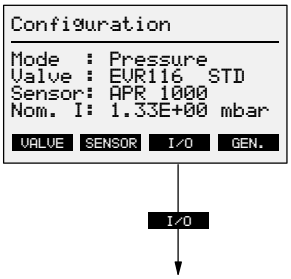
«PRI-Status: Off» "n" is not transmitted (→ 57)

RS485: For line lengths <100 m and/or much interference (control and supply lines)

«PRI-Status: On» "n" is transmitted (→ 57)

«PRI-Status: Off» "n" is not transmitted (→ 57)

The «Configuration» display shows the current settings of the operating mode, valve type, pressure sensor, and nominal value (setpoint) with source (I = internal, E = external). Press

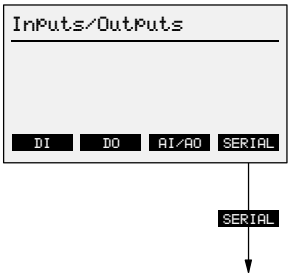


I/O to get to the «Inputs/Outputs» display.

The «Inputs/Outputs» display shows the following menu:

«DI» Digital inputs
«DO» Digital outputs
«AI/AO» Analog inputs/outputs
«SERIAL» Serial interfaces

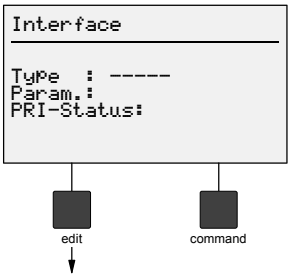
Press



SERIEL to get to the «Interface» display.

command to return to the «Configuration» display.

The «Interface» display shows the interface type, parameters and the pri-status. Press



edit to edit the interface type setting.

command to return to the «Inputs/Outputs» display.

The Edit symbol is displayed in the «Type» line. Press

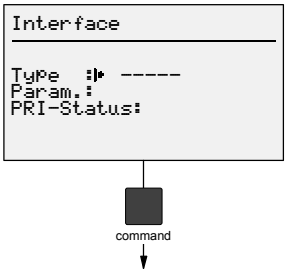


RS 232 (PRI-Status: On),
RS 485 (PRI-Status: On),
RS 232 (PRI-Status: Off),
RS 485 (PRI-Status: Off), or
----- (operation without interface); the interface parameters will be displayed.



to save the new setting and return to the «Inputs/Outputs» display.





7 Operation Via Keys

Operating mode

The RVC 300 works in the following operating modes:

- Pressure (pressure control mode)
- Flow (gas flow adjustment mode)

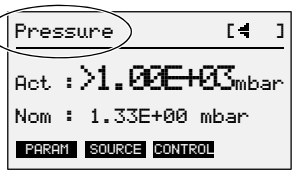
The operating modes are described in section "Design and Functional Principle" (→ 🗎 6).

When the RVC 300 is turned on, it goes to the operating mode and parameter settings in effect before it was switched off.

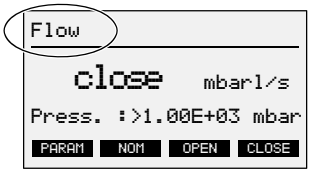
Current operating mode

The currently active operating mode is displayed in the status line:

Pressure control:



Gas flow adjustment:



Changing from the Pressure to the Flow mode:

Press



to get to the «Configuration» display.



to edit the operating mode setting.



to select among Pressure and Flow.



to return to the Operating level.

See section "Operating Mode", 🗎 31 for more details.

7.1 Pressure Control

Internal setpoint and setpoint limits

Caution

Caution: measurement range of the connected pressure sensor

If the connected pressure sensor is operated outside its specified measurement range, it may be damaged or severely contaminated.

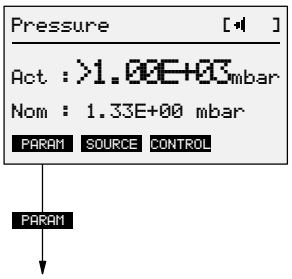
Turn the RVC 300 ON only when the pressure in the vacuum system is within the measurement range of the connected pressure sensor.

The nominal value (setpoint) for the Pressure mode can be defined internally (via keys) or externally with a corresponding setpoint signal (0 … +10 VDC) fed via analog input AI 1. For external input of the setpoint (nominal value), set the source to «external» (→ 🗎 46).

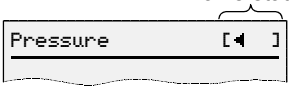
The «Min» and «Max» settings are made automatically when an implemented pressure sensor (→ 🗎 66) is connected and selected in the Configuration menu (→ 🗎 34). That automatically defined range can be narrowed by increasing the «Min» and/or decreasing the «Max» value. However, the «Max» value must always be greater than the «Min» value. When another implemented pressure sensor is connected and selected, any previously made settings are replaced by the internally stored the «Min»/«Max» settings for that pressure sensor.

The «Pressure» display shows the valve status, the actual value (pressure reading) and the nominal value (setpoint). Press

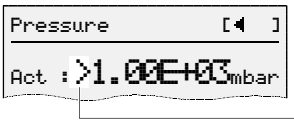
PARAM to get to the «Parameter Pressure» display.



Valve status

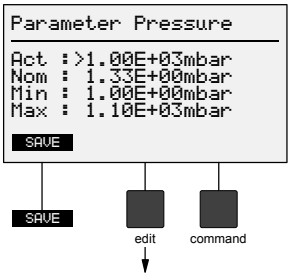


[◀]	closed	[◀]	closed & in position
[«]	closes	[«]	closes & in position
[▶]	open	[▶]	open & in position
[»]	opens	[»]	opens & in position
[=]	in position (→ DO3, 🗎 38, 52)	ERROR	error (EVR 116 only)



>	Overrange
<	Underrange
OFF	Emission off (→ 🗎 52, "DE 7")
ERROR	Sensor error

The «Parameter Pressure» display shows the actual value, nominal value (setpoint) and Min/Max setpoint limits. Press



edit — to edit the nominal value «Nom».

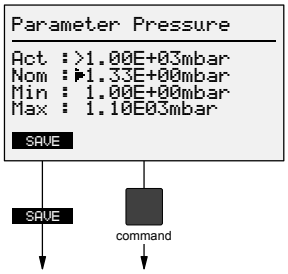
2× edit — to edit the «Min» setting.

3× edit — to edit the «Max» setting.

SAVE — to save the current setting and return to the «Pressure» display.

command — to return to the «Pressure» display without saving the new settings.

The Edit symbol is displayed in the «Nom», «Min» or «Max» line. Press



◀ ▶ — to adjust a value.

SAVE — to save the new setting and return to the «Pressure» display.

command — to return to the «Pressure» display without saving the new setting.

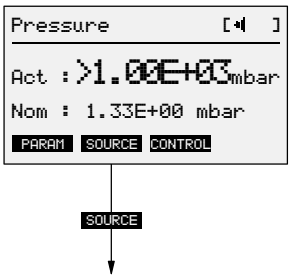
Selecting the setpoint source for the Pressure mode

The setpoint (nominal value) source setting made for the Pressure mode does not affect the source setting made for the Flow mode and vice versa.

The nominal value (setpoint) for the Pressure mode can be defined internally (via keys) or externally with a corresponding setpoint signal (0 … +10 VDC) fed via analog input AI 1.

The «Pressure» display shows the actual value (pressure reading) and the nominal value (setpoint). Press

SOURCE to get to the «Source Nom val Press» display.

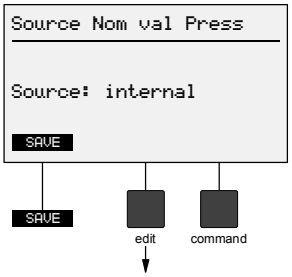


The «Source Nom val Press» display shows the setpoint source definition for the Pressure mode. Press

edit to modify the source setting.

SAVE to save the new setting and return to the «Pressure» display.

command to return to the «Pressure» display.



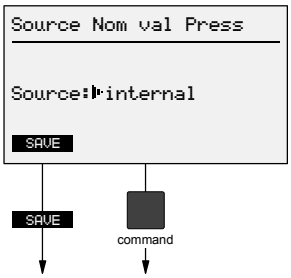
The Edit symbol is displayed in the «Source» line. Press

◀ ▶ to select among «internal» and «external AI 1».

SAVE to save the new setting and return to the «Pressure» display.

command to return to the «Pressure» display without saving the new setting.





Selecting the controller type

The following parameter settings are only effective in the Pressure control mode.

The RVC 300 offers the automatic controller types Auto 1 to Auto 99 (proportional/integral controller) and PID (proportional/integral/derivative controller).

Auto is best suited for fast process optimization, the PID controller type is used when good control to a setpoint (nominal value) combined with a fast response is required.

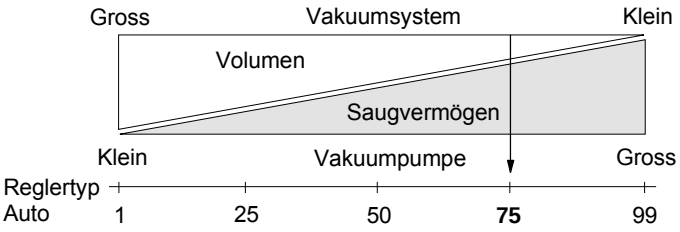
Auto controller

Auto is adjusted according to the following principles:

1 = slow reaction

99 = fast reaction

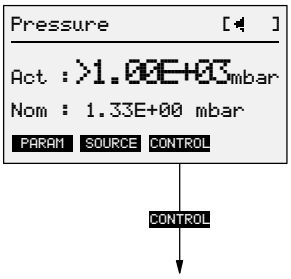
An approximate setting of Auto can be made as a function of the volume of the vacuum system and the pumping speed of the vacuum pump, according to the following diagram:



Example: For a small vacuum system and a large vacuum pump, a value between 50 and 99 should be selected.

The «Pressure» display shows the actual value (pressure reading) and the nominal value (setpoint). Press

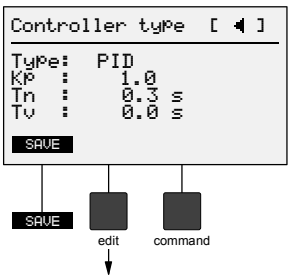
CONTROL to get to the «Controller type» display.



The «Controller type» display shows the currently selected controller type. Press

edit to edit the controller type setting.

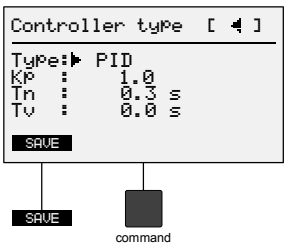
command to return to the «Pressure» display.



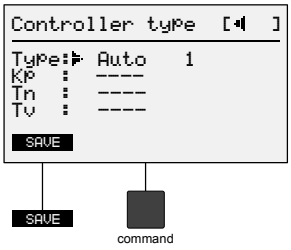
The Edit symbol is displayed in the «Type» line. Press

◀ to change the controller type setting from «PID» to «Auto 1 to 99» if required.





Press



▶ to increase the «Auto» setting.

◀ decrease the «Auto» setting. (If you press this key when the setting is «Auto 1», the controller type is set back to «PID».)

SAVE to save the new setting and return to the «Pressure» display.

command to return to the «Pressure» display without saving the new setting.

PID controller

For defining simple control processes with unknown elements, set Tn to 3600 or 0 and Tv to 0 and start adjusting Kp.

For adjusting Kp, begin with a small value (1 to 10) and gradually increase it until the actual value periodically oscillates. Now, decrease Kp until the actual value becomes stable. (The actual value will not reach the nominal value as long as Tn has not been adjusted.)

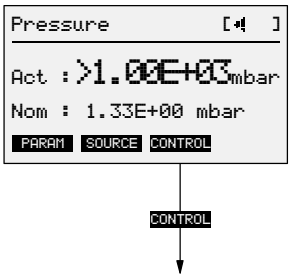
To establish an approximate value for Tn (volume time constant), divide the volume of the vacuum system by the pumping speed of the vacuum pump. Enter that value and gradually decrease it. The actual value will slowly approximate the nominal value. If Tn is set too low, the actual value will oscillate.

Now, modify the nominal value or introduce a disturbance and observe the actual value. If it overshoots, increase Tn. If it approximates the nominal value only very slowly, decrease Tn.

If required, enter a value for Tv. As thumb value, enter the value of Tn divided by 4.5.

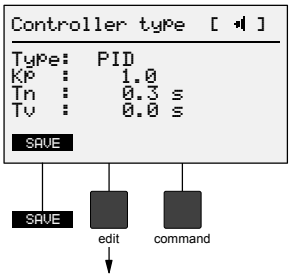
Adjust only one component setting at a time and observe the effect of that adjustment. Check the PID settings by observing (and recording) the step response of the actual value to a modification of the nominal value or to a disturbance.

The «Pressure» display shows the actual value (pressure reading) and the nominal value (setpoint). Press



CONTROL to get to the «Controller type» display.

The «Controller type» display shows the currently selected controller type. Press

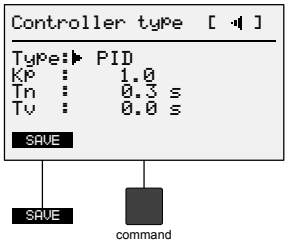


edit to edit the controller type setting.

command to return to the «Pressure» display.

The Edit symbol is displayed in the «Type» line. Press





◀ to change the controller type setting from «Auto 1 to 99» to «PID» if required. (You may first have to keep pressing this key for a countdown to «Auto 1».)

edit to adjust the gain Kp.

2× edit to adjust the reset time Tn.

3× edit to adjust the derivative time Tv.

SAVE to save the new setting and return to the «Pressure» display.

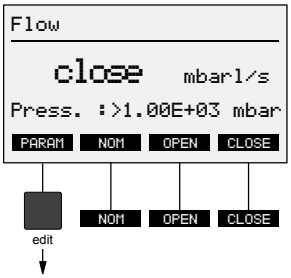
command to return to the «Pressure» display without saving the new setting.

7.2 Gas Flow Adjustment

The gas flow can be adjusted via the arrow keys or the «NOM» softkey.

Adjusting the gas flow

The «Flow» display shows the gas flow and the current pressure reading (actual value).



Unit of the gas flow:

EVR 116, RME 005: mbar l/s [1)]

RME 005 A: %

AA 2: mV

Current pressure reading (actual value):

> Overrange

< Underrange

OFF Emission off (→ 🗎 52, "DI 7")

NOM to adjust the gas flow to the predefined nominal value (setpoint).

OPEN to completely open the valve (maximum gas flow).

CLOSE to completely close the valve (closed – no gas flow).

edit to edit the gas flow.

1) Changing the unit → 🗎 27.

The Edit sign is displayed at the left or the flow value. Press

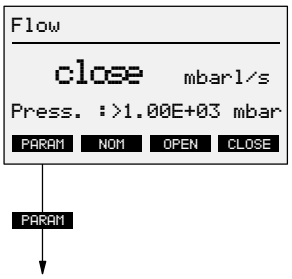
◀ ▶ to adjust the gas flow.



Predefining the gas flow

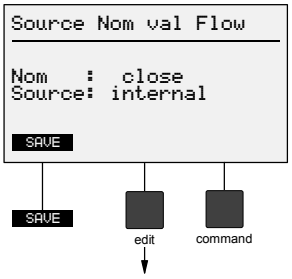
The RVC 300 allows for programming a nominal gas flow value for the «NOM» softkey. This nominal value can be activated during operation by pressing the «NOM» softkey.

The «Flow» display shows the gas flow and the current pressure reading (actual value). Press



PARAM — to get to the «Source Nom val Flow» display.

The «Source Nom val Flow» display shows the nominal value (setpoint) and the set-point source definition for the Flow mode. Press

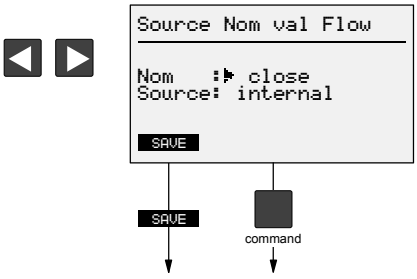


edit — to edit the nominal value (set-point).

SAVE — to save the current setting and return to the «Flow» display.

command — to return to the «Flow» display without saving the new setting.

The Edit symbol is displayed in the «Nom» line. Press



◀ ▶ — to adjust the nominal gas flow value for the «Nom» softkey.

SAVE — to save the new setting and re-turn to the «Flow» display.

command — to return to the «Flow» display without saving the new setting.

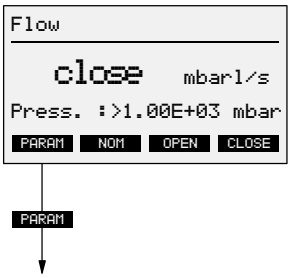
Selecting the setpoint source for the Flow mode

The setpoint (nominal value) source setting made for the Flow mode does not affect the source setting made for the Pressure mode and vice versa.

The nominal value (setpoint) for the Flow mode can be defined internally (via keys) or externally via analog input AI 2.

The «Flow» display shows the gas flow and the current pressure reading (actual value). Press

PARAM to get to the «Source Nom val Flow» display.

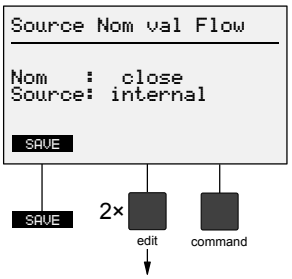


The «Source Nom val Flow» display shows the nominal value (setpoint) and the setpoint source definition for the Flow mode. Press

2× edit to select the setpoint source.

SAVE to save the new setting and return to the «Flow» display.

command to return to the «Flow» display without saving the new setting.

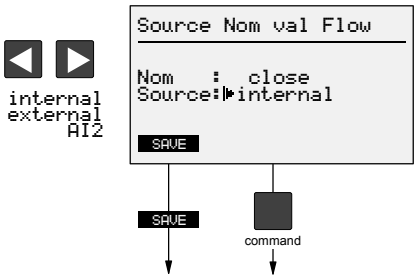


The Edit symbol is displayed in the «Source» line. Press

◀ ▶ to select among «internal» and «external AI 2».

SAVE to save the new setting and return to the «Flow» display.

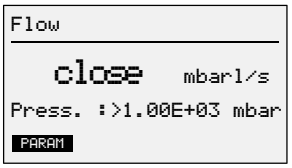
command to return to the «Flow» display without saving the new setting.



If the «internal» setpoint source was selected, the «Flow» display shows the current gas flow and pressure reading. The nominal value (setpoint) can be adjusted via the «NOM», «OPEN» and «CLOSE» softkeys.



If the «external AI 2» setpoint source was selected, the «Flow» display shows the current gas flow and pressure reading. The nominal value (setpoint) cannot be defined via the keys.



8 Operation Via Inputs and Outputs

Digital inputs

DI 1 **Flow decrease**
As long as the signal at DI 1 is active, the flow is gradually decreased until the valve is completely closed. The valve can only be controlled in the Flow mode.

DI 2 **Flow increase**
As long as the signal at DI 2 is active, the flow is gradually increased until the valve is completely opened. The valve can only be controlled in the Flow mode.

DI 3 **External CLOSE**
As long as the signal at DI 3 is active, the valve plate moves in closing direction. When the signal drops off, the RVC 300 continues controlling in the previously selected mode to the corresponding nominal value (setpoint) (Flow or Pressure).

DI 4 **External OPEN**
As long as the signal at DI 4 is active, the valve plate moves in opening direction. When the signal drops off, the RVC 300 continues controlling in the previously selected mode to the corresponding nominal value (setpoint) (Flow or Pressure).

DI 5 **Flow mode**
Changes to the Flow mode. When the signal drops off, the RVC 300 keeps working in this mode and controls to the Flow setpoint.

DI 6 **Pressure mode**
Changes to the Pressure mode. When the signal drops off, the RVC 300 keeps working in this mode and controls to the Pressure setpoint.

DI 7 **Emission ON (HV ON)**
The Emission function is activated if the connected pressure sensor offers this function.

DI 8 **Degas ON**
The Degas function is activated if the connected pressure sensor offers this function.

Digital outputs

DO 1 **Valve close**
The valve is closed.

DO 2 **Valve open**
The valve is open.

DO 3 **in position**
The nominal value (setpoint) has been reached.

DO 4 **Valve error**
Error message of the EVR 116, e.g. broken cable or overtemperature.

DO 5 **Sensor error**
The sensor line is interrupted.

DO 6 **ready**
The RVC 300 is ready for operation. There are no error messages pending.

DO 7 **Emission ON (HV ON)**
The Emission function is activated (see DI 7) if the connected pressure sensor offers this function. See instructions of the corresponding pressure sensor for further (→ 🕮 [4] … [17]).

DO 8 **Sensor status**
The Sensor status function is activated if the connected pressure sensor offers this function.

Analog inputs

AI 1 **Pressure setpoint**
Feeds the external nominal value (setpoint) for the Pressure mode.

AI 2 **Flow setpoint**
Feeds the external nominal value (setpoint) for the Flow mode.

AI 3 **Not used**
No function.

AI 4 **Not used**
No function.

Analog outputs

AO 1 **Pressure sensor signal (actual value)**
The signal of the pressure sensor can be directly processed via this output.

AO 2 **Valve signal**
In the Pressure control mode, this output can be used for controlling valves other than the EVR 116, RME 005 and RME 005 A.

AO 3 **Valve position (EVR 116)**
The valve position signal of the EVR 116 can be directly processed via this output.

AO 4 **Reference voltage**
A constant +10 VDC voltage is available at this output. It can be used for feeding the analog inputs via a voltage divider.

9 Operation Via Serial Interface

Transmission parameters

Type	RS232 / RS485
Transmission rate	9600 baud
Data bits	8
Stop bits	1
Parity bit	0 (none)
Communication mode	Half-duplex
Bus operation	2 devices (recipient, transmitter)



The transmission parameters of the control system (PC, PLC) must agree with the above transmission parameters.



Waiting time between sending and receiving a string must be ≥50 ms.

Communication

Only ASCII characters can be transmitted. Each data transmission is terminated with <CR><LF>. For data transmission to the RVC 300, no blanks (SPACE) are admitted. All characters have to be upper case. Since there is no time limit between the individual signs, manual operation via the interface is possible.

The following place holders are used for describing the format of entries or inquiries:

x	for a number 0 … 9 or a space used instead of a leading 0
s	for a sign +/– (Positive numbers are entered/output without sign. Only the negative sign – has to be entered/is output. The sign directly precedes the number, i.e. possible spaces precede the sign.)
h	for a hex number 0 … F
<Unit>	for selected measurement unit of pressure: mbar, Pa, Torr
<Sensor type>	for selected pressure sensor type (e.g. TPR 261), → 66.

The following symbols are used in examples of entries or responses:

_ (underline)	for a space
–	for a negative sign (Positive numbers are entered/output without sign. Only the negative sign – has to be entered/is output. The sign directly precedes the number, i.e. possible spaces precede the sign.)

PC, PLC



Make sure the instructions are entered correctly. If an incorrect instruction is entered, the reply is ERROR INPUT or a false value.

With a hyper terminal program you can easily test the connection between the PC and RVC 300. Upon entering the command <VER?>, the reply <VER=3.1x> is displayed.

If there is no reply, this could be due to:

- incorrect connection between PC and RVC 300, → 20
- incorrect interface setting in the RVC 300, → 41
- incorrect transmission parameter setting in the control system, see above
- communication code not in ASCII characters

9.1 Nominal Values (Setpoints)

The nominal values (setpoints) remain stored in the memory when the RVC 300 is turned off.

Pressure control

	Command	Response
Entry	PRS=x.xxEsxx	PRS=x.xxEsxx<Unit>
	PRS=xxxxx	PRS=xxxxxmV
Examples	PRS=1.00E+03	PRS=1.00E+03mbar
	PRS=09999	PRS=_9999mV
Inquiry	PRS?	PRS=x.xxEsxx<Unit>
		PRS=xxxxxmV
Examples	PRS?	PRS=1.00E+03mbar
	PRS?	PRS=_9999mV

Gas flow adjustment

	Command	Response
Entry	FLO=x.xxEsxx [1]	FLO=x.xxEsxx<Unit>l/s
	FLO=xxxxx [2]	FLO=xxxxxmV
	FLO=xxx.x [3]	FLO=xxx.x%
Examples	FLO=5.00E–06	FLO=5.00E–06mbarl/s
	FLO=00320	FLO=__320mV
	FLO=012.5	FLO=_12.5%
Inquiry	FLO?	FLO=x.xxEsxx<Unit>l/s
		FLO=xxxxxmV
		FLO=xxx.x%
Examples	FLO?	FLO=5.00E–06mbarl/s
	FLO?	FLO=__320mV
	FLO?	FLO=_12.5%

[1] Only for EVR 116 / RME 005.
[2] Only for AO 2.
[3] Only for RME 005 A.

Closing the valve

	Command	Response
Entry EVR 116 (depending on the pressure unit)	FLO=4.99E-06 [1]	FLO=4.99E-06mbarl/s
	FLO=4.99E-04 [2]	FLO=4.99E-04Pal/s
	FLO=3.74E-06 [3]	FLO=3.74E-06Torrl/s
Entry RME 005 (depending on the pressure unit)	FLO=9.99E-06 [1]	FLO=9.99E-06mbarl/s
	FLO=9.99E-04 [2]	FLO=9.99E-04Pal/s
	FLO=7.49E-06 [3]	FLO=7.49E-06Torrl/s
Entry RME 005 A	FLO=000.0	FLO=_ _0.0%
Entry AO2	FLO=00000	FLO=_ _ _ _0mV

[1] Entry for mbar
[2] Entry for Pa
[3] Entry for Torr



In the display appears <closed>.

9.2 Operating Mode

As soon as the operating mode has been selected, the RVC 300 starts controlling to the nominal value (setpoint) defined for the corresponding operating mode. Therefore, before starting operation in the selected mode, check that the corresponding nominal value setting is correct. MOD=W means that the controller stops at the current position.

Pressure control

	Command	Response
Entry	MOD=P MOD=PRESS [1)]	MOD=PRESS
Inquiry	MOD?	MOD=PRESS

1) Alternative input.

Gas flow adjustment

	Command	Response
Entry	MOD=F MOD=FLOW [1)]	MOD=FLOW
Inquiry	MOD?	MOD=FLOW

1) Alternative input.

Stopping the controller

	Command	Response
Entry	MOD=W MOD=WAIT [1)]	MOD=WAIT
Inquiry	MOD?	MOD=WAIT

1) Alternative input.

9.3 Key Interlock

The keys of the RVC 300 can be locked via the interface.



When the RVC 300 is turned on, the keys are automatically enabled.

Locking the keys

	Command	Response
Entry	TAS=D TAS=DISABLE [1)]	TAS=DISABLE
Inquiry	TAS?	TAS=DISABLE

1) Alternative input.

Enabling the keys

	Command	Response
Entry	TAS=E TAS=ENABLE [1)]	TAS=ENABLE
Inquiry	TAS?	TAS=ENABLE

1) Alternative input.

9.4 Firmware Version

	Command	Response
Inquiry	VER?	VER=3.1x

9.5 Actual Value

	Command	Response
Inquiry	PRI?	PRI=nx.xxEsxx<Unit> [1)]
		PRI=nxxxxxmV
Examples	PRI?	If «PRI-Status: on»: PRI=1.05E+02mbar
		If «PRI-Status: off»: PRI=1.05E+02mbar
	PRI?	PRI=_1234mV

1) "n" is only transmitted or suppressed with pressure unit (mbar, Pa, Torr). If mV is set, the underline symbol "_" is transmitted.

- n = _ ⇒ in limits (ok)
- n = < ⇒ underrange
- n = > ⇒ overrange
- n = O ⇒ off
- n = E ⇒ error

9.6 Measurement Unit

	Command	Response
Inquiry	UNT?	UNT=mbar
	UNT?	UNT=Pa
	UNT?	UNT=torr
	UNT?	UNT=mV

9.7 Language

	Command	Response
Inquiry	LNG?	LNG=DEUTSCH
	LNG?	LNG=ENGLISH

9.8 Pressure Sensor

	Command	Response
Inquiry	RTP?	RTP=<Sensor type>
Examples	RTP?	RTP=TPR_2XX
	RTP?	RTP=0–10V lin

9.9 Valve

In response to the valve type inquiry, a corresponding identifier number is output.

Valve type

	Command	Response	Meaning
Inquiry	VEN?	VEN=xx	
Example	VEN?	VEN=_0	EVR 116 STD
		VEN=80	EVR 116 INV
		VEN=_1	RME 005 STD
		VEN=81	RME 005 INV
		VEN=_2	AO 2 STD
		VEN=82	AO 2 INV
		VEN=_3	RME 005 A STD
		VEN=83	RME 005 A INV

EVR 116

The EVR 116 has an interface which can be used for polling the valve position, temperature, status, and version (→ 🕮 [1]).

Position

	Command	Response
Inquiry	VAP?	VAP=hhhh
Example	VAP?	VAP=1a00

Temperature

	Command	Response
Inquiry	VAT?	VAT=hhh
Example	VAT?	VAT=0BC

Status

	Command	Response
Inquiry	VAS?	VAS=hhh
Example	VAS?	VAS=007

Version

	Command	Response
Inquiry	VAV?	VAV=xxx
Example	VAV?	VAV=115

9.10 Controller Parameters

The following parameter settings are only effective in the Pressure control mode.

The control process can be optimized by entering the controller parameter settings via the interface. By defining and transmitting the optimum parameter setting for each nominal value (setpoint), very fast and dynamic processes can be designed.

Selecting the controller type

For deciding which controller type is best suited to your control task and information on the controller parameter settings → 🗎 46.

Auto controller

For Auto (proportional/integral controller), select RAS=1 … 99 (1 = slow, 99 = fast).

	Command	Response
Entry	RAS=xx	RAS=xx
Example	RAS=05	RAS=05 (Auto)

	Command	Response
Inquiry	RAS?	RAS=05

PID controller

For the PID (proportional/integral/derivative) controller, select RAS=0 and proceed to the Gain Kp, Reset time Tn and Derivative time Tv settings.

	Command	Response
Entry	RAS=xx	RAS=xx
Example	RAS=_0	RAS=_0 (PID)

	Command	Response
Inquiry	RAS?	RAS=_0

Gain Kp

Select a gain setting between 0.1 and 100.0.

	Command	Response
Entry	RSP=xxx.x	RSP=xxx.x
Example	RSP=020.0	RSP=_20.0

	Command	Response
Inquiry	RSP?	RSP=xxx.x
Example	RSP?	RSP=_20.0

Reset time Tn

Select a reset time between 0.0 and 3600.0 s.

	Command	Response
Entry	RSI=xxxx.x	RSI=xxxx.x
Example	RSI=0030.3	RSI=__30.0

	Command	Response
Inquiry	RSI?	RSI=xxxx.x
Example	RSI?	RSI=__30.0

Derivative time Tv

Select a derivative time between 0.0 and 3600.0 s.

	Command	Response
Entry	RSD=xxxx.x	RSD=xxxx.x
Example	RSD=0021.2	RSD=__21.2

	Command	Response
Inquiry	RSD?	RSD=xxxx.x
Example	RSD?	RSD=__21.2

Auto reset

Set the Automatic reset function to ON or OFF. Auto reset function → 30.

	Command	Response
Inquiry	RAR?	RAR=x
Examples	RAR?	RAR=0
Deactivation	RAR=0	RAR=0
Activation	RAR=1	RAR=1

The following parameter settings cannot be modified. They can only be inquired for service purposes.

Deviation

	Command	Response
Inquiry	RVA?	RVA=sxxxxx
Example	RVA?	RVA=__-320

P component

	Command	Response
Inquiry	RVP?	RVP=sxxxxx
Example	RVP?	RVP=_4200

I component

	Command	Response
Inquiry	RVI?	RVI=sxxxxx
Example	RVI?	RVI=-20000

D component

	Command	Response
Inquiry	RVD?	RVD=sxxxxxx
Examples	RVD?	RVD=_____4

Manipulating variable

	Command	Response
Inquiry	RVO?	RVO=sxxxxxx
Example	RVO?	RVO=__4200

9.11 Digital Inputs/Outputs

Digital inputs

The hexadecimal number representing the digital input must be converted into a binary number. The first digit from the right indicates the status of DI 1, the last one the status of DI 8.

DIN=$23_h \rightarrow 00100011_b$

Binary number	0	0	1	0	0	0	1	1
Digital input	DI 8	DI 7	DI 6	DI 5	DI 4	DI 3	DI 2	DI 1

	Command	Response
Inquiry	DIN?	DIN=hh
Example	DIN?	DIN=23

Degas

	Command	Response
Inquiry	DEG?	DEG=x
Example	DEG?	DEG=0

	Command	Response
Deactivation	DEG=0	DEG=0
Activation	DEG=1	DEG=1

Emission

	Command	Response
Inquiry	EMI?	EMI=X
Examples	EMI?	EMI=0 (deactivated)
	EMI?	EMI=1 (activated)

	Command	Response
Deactivation	EMI=0	EMI=0
Activation	EMI=1	EMI=1

Digital outputs

The hexadecimal number representing the digital output must be converted into a binary number. The first digit from the right indicates the status of DO 1, the last one the status of DO 8.

DOT=$08_h \rightarrow 00001000_b$

Binary number	0	0	0	0	1	0	0	0
Digital output	DO 8	DO 7	DO 6	DO 5	DO 4	DO 3	DO 2	DO 1

	Command	Response
Inquiry	DOT?	DOT=hh
Example	DOT?	DOT=08

10 Maintenance

The RVC 300 requires no maintenance.

Cleaning the RVC 300

DANGER

DANGER: mains voltage

Touching live parts is hazardous.

Disconnect the product from the mains.

Outside

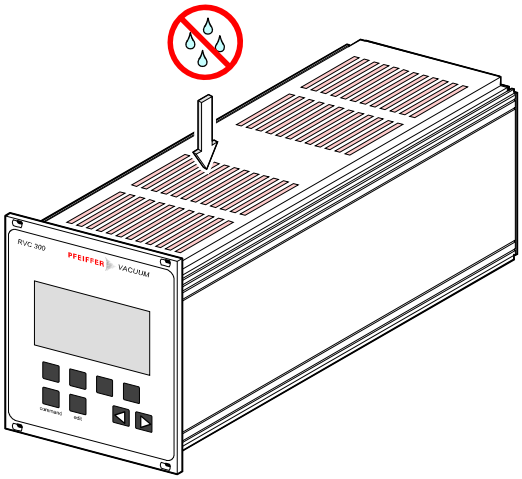
For cleaning the outside of the RVC 300, a slightly damp cloth normally suffices. Do not use any aggressive or scouring cleaning agents.

DANGER

DANGER: mains voltage

Contact with live parts is extremely hazardous when liquids penetrate into the unit.

Make sure no liquids penetrate into the equipment.



Inside

If the unit is installed in a very dusty environment, the dust must be removed from the inside of the unit in regular intervals.

Carefully blow out the dust with dry compressed air.

DANGER

DANGER: cleaning with compressed air

Flying particles can cause eye injuries.

Wear protective glasses.

11 Repair

We recommend returning the product to your local Pfeiffer Vacuum service center for repair.

Pfeiffer Vacuum assumes no liability and the warranty becomes null and void if any repair work is carried out by the end-user or third parties.

12 Returning the Product

When returning the RVC 300 for repair work, put it in a tight and impact resistant package.

13 Accessories

When ordering accessories, always indicate:

- all information on the product nameplate
- description and ordering number according to the accessories list

Control valve

Type		Ordering number
EVR 116		PF I39 931
RME 005		PF I39 932
RME 005 A	10 sccm	PF I13 936
	50 sccm	PF I13 935
	100 sccm	PF I13 934
	500 sccm	PF I13 933
	1000 sccm	PF I13 932
	5000 sccm	PF I13 931

Connection cable
RVC 300 – control valve

Type	Length	Ordering number
EVR 116	3 m	PT 583 115-T
	5 m	PT 583 116-T
	10 m	PT 583 117-T
	15 m	PT 583 118-T
	20 m	PT 583 119-T
RME 005 RME 005 A	3 m	PT 250 003-T
	5 m	PT 250 005-T
	10 m	PT 250 010-T
	15 m	PT 250 015-T
	20 m	PT 250 020-T
	25 m	PT 250 025-T

Sensor cable

Type	Length	Ordering number
Sensor cable (DIN 6), 6 conductors (suitable for all Pfeiffer Vacuum sensors)	3 m	PT 448 250-T
	6 m	PT 448 251-T
	10 m	PT 448 252-T
	15 m	PT 448 253-T
	20 m	PT 448 254-T
	25 m	PT 448 255-T
	30 m	PT 448 256-T

Other lengths on request.

14 Storage

Caution

Caution: electronic component

Inappropriate storage (static electricity, humidity etc.) can damage electronic components.

Store product in antistatic bag or container. Observe the corresponding specifications in section "Technical Data" (→ 🗎 10).

15 Disposal

WARNING



WARNING: substances detrimental to the environment

Products or parts thereof (mechanical and electric components, operating fluids etc.) can be detrimental to the environment.

Dispose of such substances in accordance with the relevant local regulations.

Separating the components

After disassembling the product, separate its components according to the following criteria:

Contaminated components

Contaminated components (radioactive, toxic, caustic or biological hazard etc.) must be decontaminated in accordance with the relevant national regulations, separated according to their materials, and disposed of.

Other components

Such components must be separated according to their materials and recycled.

Appendix

A: Implemented Pressure Sensors

The following Pfeiffer Vacuum pressure sensors can be directly connected to the RVC 300 by means of a sensor cable. The pressure readings of these sensors are displayed in mbar, Torr, or Pa. Pin assignment and further details → 🗎 16, 34 and 🕮 [4] … [17].

Pfeiffer Vacuum pressure sensors

Sensor	Type [1]	Connector	Min [2]	Max [2]	Pressure sensor [1]
lin.	APR 1000	X2-DIN, 6-pin	1.00E+00	1.10E+03	APR 250, APR 260
	CMR 1000 CMR 100 CMR 10 CMR 1 CMR 0.1		1.00E+00 1.00E−01 1.00E−02 1.00E−03 1.00E−04	1.33E+03 1.33E+02 1.33E+01 1.33E+00 1.33E−01	CMR 261 … 264, CMR 271 … 275, CMR 361 … 365, CMR 371 … 375
	0−10V lin	X2-DIN, 6-pin	0...+10000 [3]		other linear pressure sensors [4]
log.	IKR 2XX	X2-DIN, 6-pin	2.00E−9	1.00E−02	IKR 251, IKR 261
	IMR 2XX		1.00E−6	1.00E−03	IMR 265
	PBR 2XX		5.01E−10	1.08E+03	PBR 260 [5]
	PCR 2XX		5.00E−04	1.50E+03	PCR 260
	PKR 2XX		5.01E−09	1.00E−03	PKR 251, PKR 261
	TPR 2XX		5.00E−04	1.00E+03	TPR 261, TPR 265, TPR 280, TPR 281

[1] As the products of Pfeiffer Vacuum are subject to continual development, new pressure sensors may have been implemented in your RVC 300.

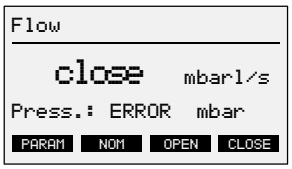
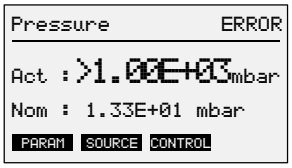
[2] In [mbar]. Editing the measurement unit setting → 🗎 27.

[3] In [mV].

[4] The 0-10 V lin setting can be used for controlling appropriate linear sensors other than the implemented ones (→ 🗎 34).

[5] The degas function of the PBR 260 is not supported by the RVC 300.

B: Troubleshooting

	Error	Possible cause	Remedy
Sensor error	 The valve closes (operating mode <Pressure> only).	Sensor cable defective or not correctly connected	Check the sensor cable / replace it
		Wrong cable	
		Sensor defective	Check the sensor (→ Operating Instructions of the sensor)
		Wrong sensor configured	Configure the sensor (→ 🗎 36)
		Sensor signal in error range	→ Operating Instructions of the sensor
	 No influence to the valve position.	Receptacles (X4) defective	Check the controller / replace it
Valve error (EVR 116 only)		Valve cable defective or not correctly connected	Check the valve cable / replace it
		Valve defective	Check the valve (→ Operating Instructions of the valve)
		Wrong valve connected	Connect EVR 116
		Receptacle (X9) defective	Check the controller / replace it

C: Conversion Tables

Pressure

	Pa (N/m^2)	mbar	Torr (mm Hg)
Pa	1	1.00E–02	7.50E–03
mbar	100	1	0.75
Torr	1.33E+02	1.33	1

Flow

	Pa m^3/s	mbar l/s	Torr l/s
Pa m^3/s	1	10	7.5
mbar l/s	0.1	1	0.75
Torr l/s	0.133	1.33	1

Dimensions

	cm	inch	ft
cm	1	0.394	0.033
inch	2.54	1	0.083
ft	30.48	12	1

Temperature conversion

	K	°C	°F
K	1	K–273.15	9/5 K–459.67
°C	°C+273.15	1	9/5 °C+32
°F	5/9 (°F+459.67)	5/9 (°F–32)	1

°C	-40	-20	0	20	40	60	80	100
°F	-40	4	32	68	104	140	176	212

D: Literature

[1] www.pfeiffer-vacuum.net
Operating Instructions
Control Valve EVR 116
BP 5056 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[2] www.pfeiffer-vacuum.net
Operating Instructions
Control Valve RME 005
BP 5057 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[3] www.pfeiffer-vacuum.net
Operating Instructions
Control Valve RME 005 A
BP 5059 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[4] www.pfeiffer-vacuum.net
Operating Instructions
Compact Pirani Gauge TPR 261
BG 5105 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[5] www.pfeiffer-vacuum.net
Operating Instructions
Compact Pirani Gauge TPR 265
BG 5104 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[6] www.pfeiffer-vacuum.net
Operating Instructions
Compact Pirani Gauge TPR 280, TPR 281
BG 5178 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[7] www.pfeiffer-vacuum.net
Operating Instructions
Compact Cold Cathode Gauge IKR 251
BG 5110 BN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[8] www.pfeiffer-vacuum.net
Operating Instructions
Compact Cold Cathode Gauge IKR 261
BG 5113 BN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[9] www.pfeiffer-vacuum.net
Operating Instructions
Compact FullRange™ Gauge PKR 251
BG 5119 BN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[10] www.pfeiffer-vacuum.net
Operating Instructions
Compact FullRange™ Gauge PKR 261
BG 5122 BN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[11] www.pfeiffer-vacuum.net
Operating Instructions
Compact Piezo Gauge APR 250, APR 260,
APR 262, APR 265, APR 266, APR 267
BG 5035 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[12] www.pfeiffer-vacuum.net
Operating Instructions
Compact Capacitance Gauge CMR 261, CMR 262, CMR 263,
CMR 264, CMR 271, CMR 272, CMR 273, CMR 274, CMR 275
BG 5161 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[13] www.pfeiffer-vacuum.net
Operating Instructions
Compact Capacitance Gauge CMR 361 … CMR 365
BG 5136 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[14] www.pfeiffer-vacuum.net
Operating Instructions
Compact Capacitance Gauge CMR 371 … CMR 375
BG 5138 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[15] www.pfeiffer-vacuum.net
Operating Instructions
Compact Process Ion Gauge IMR 265
BG 5132 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[16] www.pfeiffer-vacuum.net
Operating Instructions
Compact Pirani Capacitance Gauge PCR 260
BG 5180 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

[17] www.pfeiffer-vacuum.net
Operating Instructions
Compact FullRange™ BA Gauge PBR 260
BG 5171 BEN
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

EC Declaration of Conformity

We, Pfeiffer Vacuum, hereby declare that the equipment mentioned below complies with the provisions of the Directive relating to electrical equipment designed for use within certain voltage limits 2006/95/EC and the Directive relating to electromagnetic compatibility 2004/108/EC.

Product

Pressure Controller

RVC 300

Standards

Harmonized and international/national standards and specifications:

- EN 61000-3-2:2006 (EMC: limits for harmonic current emissions)
- EN 61000-3-3:1995 + A1:2001 + A2:2005
  (EMC: limitation of voltage changes, voltage fluctuations and flicker)
- EN 61000-6-2:2005 (EMC: generic immunity standard)
- EN 61000-6-3:2007 (EMC: generic emission standard)
- EN 61010-1:2001 (Safety requirements for electrical equipment for measurement, control and laboratory use)

Manufacturer / Signatures

Pfeiffer Vacuum GmbH, Berliner Straße 43, D–35614 Asslar

30 July 2010

Manfred Bender
Managing director

30 July 2010

Dr. Matthias Wiemer
Managing director

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