OPERATING INSTRUCTIONS

EN

Translation of the Original

GAUGE/IO

Functional module

PFEIFFER VACUUM

Dear customer,

Thank you for choosing a Pfeiffer Vacuum product. Your new Pfeiffer Vacuum accessory should support you in your individual application with full performance and without malfunctions. The name Pfeiffer Vacuum stands for high-quality vacuum technology, a comprehensive and complete range of top-quality products and first-class service. With this expertise, we have acquired a multitude of skills contributing to an efficient and secure implementation of our product.

Knowing that our product must not interfere with your actual work, we are convinced that our product offers you the solution that supports you in the effective and trouble-free execution of your individual application.

Please read these operating instructions before putting your product into operation for the first time. If you have any questions or suggestions, please feel free to contact info@pfeiffer-vacuum.de.

Further operating instructions from Pfeiffer Vacuum can be found in the Download Center on our website.

Disclaimer of liability

These operating instructions describe all models and variants of your product. Note that your product may not be equipped with all features described in this document. Pfeiffer Vacuum constantly adapts its products to the latest state of the art without prior notice. Please take into account that online operating instructions can deviate from the printed operating instructions supplied with your product.

Furthermore, Pfeiffer Vacuum assumes no responsibility or liability for damage resulting from the use of the product that contradicts its proper use or is explicitly defined as foreseeable misuse.

Copyright

This document is the intellectual property of Pfeiffer Vacuum and all contents of this document are protected by copyright. They may not be copied, altered, reproduced or published without the prior written permission of Pfeiffer Vacuum.

We reserve the right to make changes to the technical data and information in this document.

Table of contents

List of tables

List of figures

1 About this manual

IMPORTANT
Read carefully before use.
Keep the manual for future consultation.

1.1 Validity

This operating instructions is a customer document of Pfeiffer Vacuum. The operating instructions describe the functions of the named product and provide the most important information for the safe use of the device. The description is written in accordance with the valid directives. The information in this operating instructions refers to the product's current development status. The document shall remain valid provided that the customer does not make any changes to the product.

1.1.1 Applicable documents

OmniControl Display Control Unit	Number
OmniControl operating instructions	PT 0670 BN

You can find this document in the Pfeiffer Vacuum Download Center.

1.2 Target group

These operating instructions are aimed at all persons performing the following activities on the product:

- Transportation
- Setup (Installation)
- Usage and operation
- Decommissioning
- Maintenance and cleaning
- Storage or disposal

The work described in this document is only permitted to be performed by persons with the appropriate technical qualifications (expert personnel) or who have received the relevant training from Pfeiffer Vacuum.

1.3 Conventions

1.3.1 Instructions in the text

Usage instructions in the document follow a general structure that is complete in itself. The required action is indicated by an individual step or multi-part action steps.

Individual action step

A horizontal, solid triangle indicates the only step in an action.

► This is an individual action step.

Sequence of multi-part action steps

The numerical list indicates an action with multiple necessary steps.

1. Step 1
2. Step 2
3. ...

1.3.2 Pictographs

Pictographs used in the document indicate useful information.

Note

Tip

1.3.3 Abbreviations

Abbreviation	Meaning in this document
AC	Alternating Current voltage
APR	Piezo gauge
AR	Analog output with two switch-points
CCT	Capacitive gauge
CMR	Capacitive gauge
CPT	Piezo-resistive gauge
DC	Direct Current voltage
HPT	Pirani/Bayard-Alpert gauge
IKR	Cold cathode gauge
IMR	Hot cathode gauge
IO	Input Output (in out)
LED	Light emitting diode
MPT	Pirani/Cold cathode combination
PBR	Pirani/Bayard-Alpert gauge
PCR	Pirani/capacitive gauge
PE	Protective earth (earthed conductor)
PKR	Pirani/cold cathode transmitter
PPT	Pirani transmitter
PTC	Component with defined temperature dependency (positive temperature coefficient thermistor)
[P:xxx]	Electronic drive unit control parameters. Printed in bold as a three-digit number in square brackets. Frequently displayed in conjunction with a short description. Example: **[P:312]** software version
RPT	Piezo/Pirani combination
T	Temperature (in °C)
TPR	Pirani gauge

Tbl. 1: Abbreviations used in this document

2 Safety

2.1 General safety information

The following 4 risk levels and 1 information level are taken into account in this document.

⚠ DANGER

Immediately pending danger

Indicates an immediately pending danger that will result in death or serious injury if not observed.

► Instructions to avoid the danger situation

⚠ WARNING

Potential pending danger

Indicates a pending danger that could result in death or serious injury if not observed.

► Instructions to avoid the danger situation

⚠ CAUTION

Potential pending danger

Indicates a pending danger that could result in minor injuries if not observed.

► Instructions to avoid the danger situation

NOTICE

Danger of damage to property

Is used to highlight actions that are not associated with personal injury.

► Instructions to avoid damage to property

Notes, tips or examples indicate important information about the product or about this document.

2.2 Safety instructions

All safety instructions in this document are based on the results of the risk assessment carried out in accordance with Low Voltage Directive 2014/35/EU. Where applicable, all life cycle phases of the product were taken into account.

Risks during operation

⚠ WARNING

Danger to life due to incorrect operation

The OmniControl and its options are not designed as safety-related controllers. Manual misuse of the OmniControl or options, or automatically executed programming of the OmniControl's auto control function may result in damage relating to materials, the environment, health, or life.

► Only use the OmniControl, options, or auto control function to control functions that will not cause damage.

► To ensure correct settings, ensure that the operating instructions are available to qualified personnel and operators.

2.3 Safety precautions

Duty to provide information on potential dangers

The product holder or user is obliged to make all operating personnel aware of dangers posed by this product.

Every person who is involved in the installation, operation or maintenance of the product must read, understand and adhere to the safety-related parts of this document.

Infringement of conformity due to modifications to the product

The Declaration of Conformity from the manufacturer is no longer valid if the operator changes the original product or installs additional equipment.

- Following the installation into a system, the operator is required to check and re-evaluate the conformity of the overall system in the context of the relevant European Directives, before commissioning that system.

General safety precautions when handling the product

- ► Use only power supply packs that comply with the applicable safety regulations.
- ► Observe all applicable safety and accident prevention regulations.
- ► Check that all safety measures are observed at regular intervals.
- ► Recommendation: Establish a secure connection to the grounded conductor (PE); protection class I or Ⅲ.
- ► Never disconnect plug connections during operation.
- ► Keep lines and cables away from hot surfaces (> 70 °C).
- ► Do not carry out your own conversions or modifications on the unit.
- ► Observe the unit protection degree prior to installation or operation in other environments.

2.4 Proper use

Connection of Pfeiffer Vacuum gauges for pressure measurement.

2.5 Foreseeable improper use

Improper use of the product invalidates all warranty and liability claims. Any use that is counter to the purpose of the product, whether intentional or unintentional, is regarded as improper use; in particular:

- Unauthorized installation, removal, conversion, or replacement

2.6 Personnel qualification

The work described in this document may only be carried out by persons who have appropriate professional qualifications and the necessary experience or who have completed the necessary training as provided by Pfeiffer Vacuum.

Training people

1. Train the technical personnel on the product.
2. Only let personnel to be trained work with and on the product when under the supervision of trained personnel.
3. Only allow trained technical personnel to work with the product.
4. Before starting work, make sure that the commissioned personnel have read and understood these operating instructions and all applicable documents, in particular the safety, maintenance and repair information.

3 Product description

3.1 Scope of delivery

- Gauge/IO option, included in control unit's scope of delivery

3.2 Gauge/IO option

The option designated “gauge/IO” is intended for the connection of a Pfeiffer Vacuum pressure gauge, as well as various digital and analog inputs, outputs, and relays.

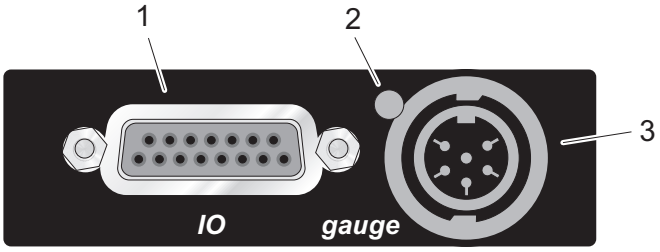

Fig. 1: Gauge/IO option

1 15-pin D-sub connector (IO)
2 LED at gauge socket
3 Gauge socket

	Pin	Assignment	Description
	1	ID/ctrl	Identification and control input (e.g., DeGas)
	2	GND for pin 6	Ground for voltage supply
	3	Signal input 0 - 10 VDC	
	4	Signal ground	
	5	Device shield	
	6	V+ Gauge supply +24 VDC/1 A	Gauge voltage supply Fused e.g. with PTC element at 1.5 A, self-resetting

Tbl. 2: Terminal assignment of the gauge socket

	Pin	Assignment	Description
	1	GND	Ground for pin 9 - 15
	2	R1nc	Relay 1 closed without current 60 VDC/0,5 A (resistive load), 30 VAC, 1 A (resistive load)
	3	R1com	Relay 1 common
	4	R1no	Relay 1 open without current
	5	R2nc	Relay 2 closed without current
	6	R2com	Relay 2 common
	7	R2no	Relay 2 open without current
	8	GND	Ground for pin 9 - 15
	9	AI	Analog input: 0 - 10 VDC
	10	DI1	Digital input 1: GND/V+
	11	DI2	Digital input 2: GND/V+
	12	AO	Analog output: 0 - 10 VDC, min. 10 kOhm
	13	DO1	Digital output 1: GND: out, +24 V: in, max. 50 mA
	14	DO2	Digital output 2: GND: out, +24 V: in, max. 50 mA
	15	V+	Supply voltage (nom. +24 V), max. 200 mA

Tbl. 3: Terminal assignment of the IO bushing

3.3 Gauge interface

3.3.1 Connect gauges

With a gauge/IO option, the connecting socket designated “gauge” is used to connect a Pfeiffer Vacuum gauge.

Gauges	Display [P:738]	Selection required	Rated input < 5 W
TPR 280, TPR 281	TPR 28x	×	×
PCR 280	PCR 280	×	×
TPR 270	TPR 270	×	×
TPR 271	TPR 271	×	×
RPT 200 AR	RPT 200 AR	×	×
PPT 200 AR	PPT 200 AR	×	×
IKR 251, IKR 261	IKR 2x1	×	×
IKR 360, IKR 361	IKR 36x	×	×
IKR 270	IKR 270		×
PKR 251, PKR 261	PKR 2x1 (CC) / PKR 2x1 (Pi)	×	×
PKR 360, PKR 361	PKR 36x (CC) / PKR 36x (Pi)	×	×
MPT 200 AR	MPT 200 AR	×	×
CMR 361, CMR 362, CMR 363, CMR 364, CMR 365, CMR 371, CMR 372, CMR 373, CMR 374, CMR 375	CMR 3xx	×	× CMR 37x only
APR 250, APR 260, APR 262, APR 265, APR 266, APR 267	APR 2xx	×	×
CPT 200 AR	CPT 200 AR		×
CCT 371 AR, CCT 372 AR, CCT 373 AR, CCT 374 AR, CCT 375 AR	CCT 37x AR		
CCT 361 AR, CCT 362 AR, CCT 363 AR, CCT 364 AR, CCT 365 AR	CCT 36x AR		×
IMR 265	IMR 265		
PBR 260	PBR 260		
HPT 200 AR	HPT 200 AR		

Tbl. 4: Pfeiffer Vacuum gauges available for connection to the gauge interface

Connect gauges

1. Refer to the relevant operating instructions for device-specific connection restrictions.
2. As required, connect a gauge to the “gauge” interface.
3. Use a suitable connection cable from the Pfeiffer Vacuum accessories range.
4. If needed, set parameter [P:738] to change display name of gauge.

3.3.2 Operating mode display via LED

LEDs indicate important operating states. A differentiated error and warning display is possible in case of operations with the Pfeiffer Vacuum display and control panel.

The gauge interface has its own LED operating mode display.

LED status	Display	Meaning
Off	———	No gauge detected
Green illuminated		Sensor for low pressure active, value OK

LED status	Display	Meaning
Green flashing		With multi-sensor gauges only: Sensor for high pressure active, value OK
Flashing green/yellow		DeGas active
Illuminated yellow		Below/above measuring range
Red illuminated		Error

Tbl. 5: Behavior and meaning of the LED of the gauge socket

4 Operation with the OmniControl

⚠ WARNING

Danger to life due to incorrect operation

The OmniControl and its options are not designed as safety-related controllers. Manual misuse of the OmniControl or options, or automatically executed programming of the OmniControl's auto control function may result in damage relating to materials, the environment, health, or life.

- ► Only use the OmniControl, options, or auto control function to control functions that will not cause damage.
- ► To ensure correct settings, ensure that the operating instructions are available to qualified personnel and operators.

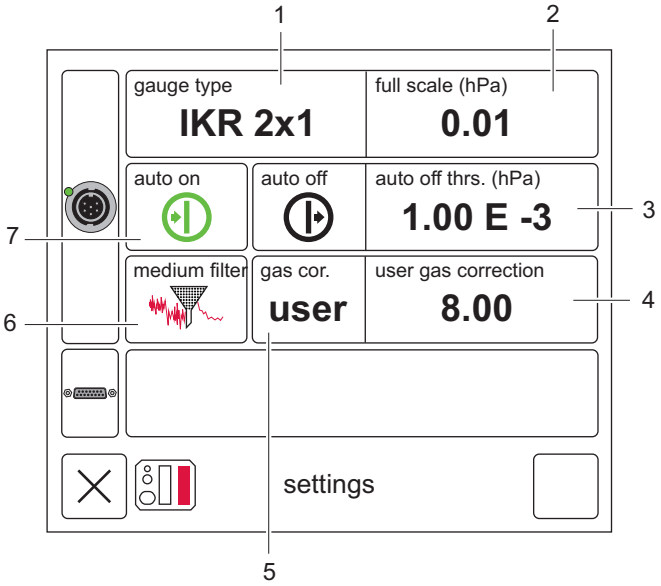

Fig. 2: Example gauge device settings

1 Connected gauge (gauge type)
2 Full scale value (full scale)
3 Automatic cutoff (auto off/auto off thrs.)
4 User gas correction
5 Gas correction selection (gas cor.)
6 Filter selection (filter)
7 Automatic activation (auto on)

Configure gauge device settings

- ► Select the gauge type when using multiple supported gauges with the same image resistance (if supported by the gauge).
- ► Select the exact full scale value (full scale) when using multiple supported gauges with the same image resistance but different full scale values (if supported by the gauge).
- ► Configure the automatic cutoff (auto off/auto off thrs.) for the gauge when an adjustable pressure value is exceeded (if supported by the gauge).
- ► Select a gauge-specific gas type (gas cor.), e.g., user, Ar, H2, He, Kr, N2, Ne, Xe.
- ► Enter the correction factor (user gas correction) for the gauge measurement values if "user" is selected.
- ► Select a filter to smooth the pressure measurement value, e.g., no filter, fast, medium, slow.
- ► Select automatic activation (auto on) for the gauge (if supported by the gauge).

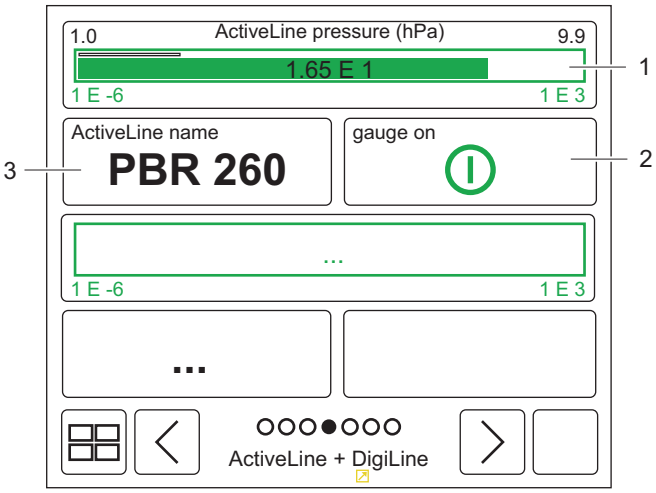

Fig. 3: Example data view with gauge

1 Gauge pressure
2 Switch gauge on/off
3 Name of gauge

Configure data view

► Configure the appearance of the data view with the data and functions of a connected gauge.

VACUUM SOLUTIONS FROM A SINGLE SOURCE

Pfeiffer Vacuum stands for innovative and custom vacuum solutions worldwide, technological perfection, competent advice and reliable service.

COMPLETE RANGE OF PRODUCTS

From a single component to complex systems:
We are the only supplier of vacuum technology that provides a complete product portfolio.

COMPETENCE IN THEORY AND PRACTICE

Benefit from our know-how and our portfolio of training opportunities!
We support you with your plant layout and provide first-class on-site service worldwide.

ed. A - Date 2012 - P/N:PT0687BEN

Are you looking for a perfect vacuum solution? Please contact us

Pfeiffer Vacuum GmbH
Headquarters • Germany
T +49 6441 802-0
info@pfeiffer-vacuum.de

www.pfeiffer-vacuum.com

PFEIFFER VACUUM