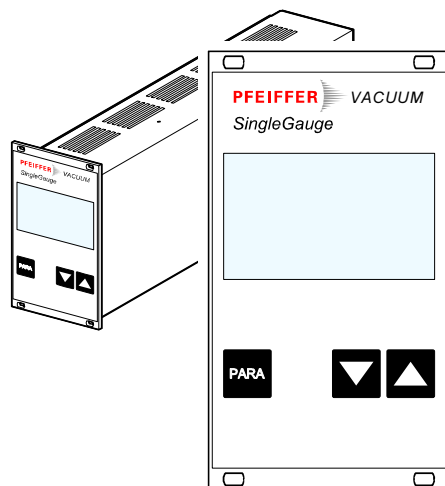


## SingleGauge™

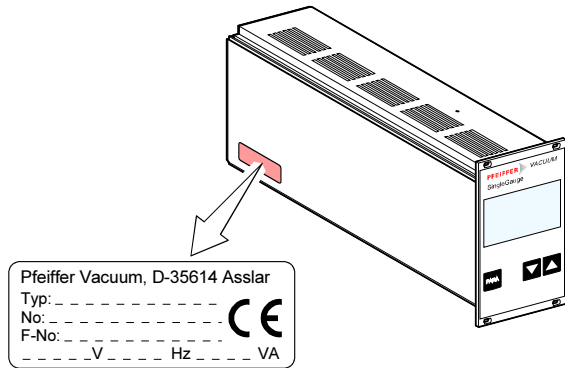
Single-Channel Measurement and  
Control Unit for Compact Gauges

TPG 261



## Product Identification

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




## Validity

This document applies to products with part number PTG28030.

The part number (No.) can be taken from the product nameplate.

This manual is based on firmware version 302-510--.

If your unit does not work as described in this document, please check that it is equipped with the above firmware version (→  58).

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

All dimensions are indicated in mm.

## Intended Use

The TPG 261 is used together with Pfeiffer Vacuum Compact Gauges (in this document referred to as gauges) for total pressure measurement. All products must be operated in accordance with their respective Operating Instructions.

## Scope of Delivery

The scope of delivery consists of following parts:

- 1 TPG 261 Single-Channel Measurement and Control Unit
- 1 Power cord
- 1 Connector for *control* connection
- 4 Collar screws and plastic sleeves
- 2 Rubber feet
- 1 Rubber bar
- 1 Operating Instructions (this document)
- 1 Betriebsanleitung



## Trademarks

SingleGauge™ Inficon AG  
FullRange™ Inficon AG

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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

Symbols for residual risks



**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.

Further symbols



The lamp/display is lit.



The lamp/display flashes.



The lamp/display is dark.



Press the key (example: PARA key).



Do not press any key.

## 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.



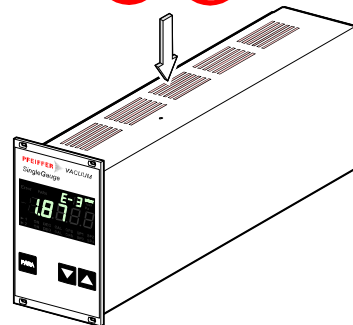
### DANGER



Caution: 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.



Communicate the safety instructions 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 not listed in the corresponding product documentation.










## 2 Technical Data

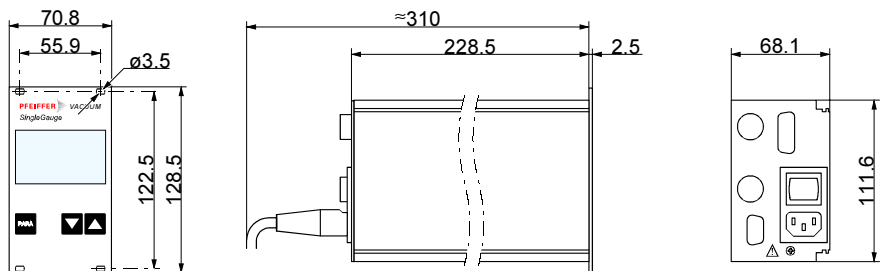
Mains specifications	Voltage	90 ... 250 VAC
	Frequency	50 ... 60 Hz
	Power consumption	≤45 W
	Overvoltage category	II
	Protection class	1
	Connection	European appliance connector IEC 320 C14 (→  19)
Ambiance	Temperature storage	–20 ... +65 °C
	operation	+ 5 ... +50 °C
	Relative humidity	≤80% up to +31 °C, decreasing to 50% at +40 °C
	Use	indoors only max. altitude 2000 m NN
	Pollution degree	II
	Protection type	IP30
Compatible gauges	Number	1
	Compatible Compact Gauges	
	Pirani	TPR 265, TPR 261
	Cold Cathode	IKR 251, IKR 261, IKR 270
	FullRange™ CC	PKR 251, PKR 261
	Process Ion	IMR 265
	FullRange™ BA	PBR 260
	Capacitance	CMR 261 ... CMR 275
	Piezo	APR 250 ... APR 267
Gauge connections	Number	1
	<i>sensor connector</i>	Amphenol C91B appliance connector, female, 6-pole (pin assignment →  20)

Gauge supply	Voltage	+24 VDC $\pm 5\%$
	Current	750 mA
	Power	18 W
	Fuse protection	900 mA with PTC element, self-resetting after turning the TPG 261 off or disconnecting the gauge. The supply conforms to the requirements of a grounded protective extra low voltage (SELV-E according to EN 61010).
Operation	Front panel	via 3 keys
	Remote control	via RS232C interface
Measurement values	Measurement range	depending on gauge ( $\rightarrow$  [2] ... [12])
	Measurement error	
	gain error	$\leq 0.01\%$ F.S.
	offset error	$\leq 0.01\%$ F.S.
	Measurement rate	50 / s
	Display rate	10 / s
	Filter time constant	
	slow	1.2 s ( $f_g = 0.13$ Hz)
	normal (nor)	400 ms ( $f_g = 0.4$ Hz)
	fast	20 ms ( $f_g = 8$ Hz)
	Measurement units	mbar, Pa, Torr
	Offset correction	for linear gauges -5 ... 110% F.S.
	Calibration factor	for logarithmic gauges 0.10 ... 9.99 for linear gauges 0.500 ... 2.000
	A/D converter	resolution 0.001% F.S.

Switching functions	Number	2
	Reaction delay	≤20 ms if switching threshold close to measurement value (for larger differences consider filter time constant)
	Adjustment range	depending on gauge (→  [2] ... [12])
	Hysteresis	≥1% F.S. for linear gauges, ≥10% of measurement value for logarithmic gauges
Switching function relays	Contact type	floating changeover contact
	Load max.	30 VAC, 30 W (ohmic) 60 VDC, 1 A, 30 W (ohmic)
	Service life	
	mechanic	5×10 <sup>7</sup> cycles
	electric	1×10 <sup>5</sup> cycles (at max. load)
	Contact positions	→  22
	Relay connector	D-Sub appliance connector, female, 15-pole
		(pin assignment →  22)
Error signal	Number	1
	Reaction time	≤20 ms
Error signal relay	Contact type	floating normally open contact
	Load max.	30 VAC, 30 W (ohmic) 60 VDC, 1 A, 30 W (ohmic)
	Service life	
	mechanic	5×10 <sup>7</sup> cycles
	electric	1×10 <sup>5</sup> cycles (at max. load)
	Contact positions	→  21
	Control connector	Amphenol C91B appliance connector, female, 7-pole (pin assignment →  21)

Gauge control	Manual	<b>Hand</b>
	via keys	
	activation/deactivation	(→  28, 49, 50)
	External	<b>Extern</b>
	via <i>control</i> connector	
	ON condition	signal $\geq 2.0$ V or input open
	OFF condition	signal $\leq 0.8$ V
	Hotstart	<b>Hot</b>
	when mains power on	(→  49)
	Self control	<b>SELF</b>
	deactivation when pressure rises	
	OFF threshold	adjustable (→  51)
	<i>Control</i> connector	Amphenol C91B appliance connector, female, 7-pole (pin assignment →  21)
Analog output	Number	1
	Voltage range	0 ... 10 VDC
	Internal resistance	660 $\Omega$
	Measuring signal vs. pressure	depending on gauge (→  [2] ... [12])
	<i>Control</i> connector	Amphenol C91B appliance connector, female, 7-pole (pin assignment →  21)
Interface	Standard	RS232C
	Protocol	ACK/NAK, ASCII with 3-character mnemonics, bi-directional data flow, 8 data bits, no parity bit, 1 stop bit
	RS232C	only TXD and RXD used
	Transmission rate	9600, 19200, 38400 baud
	RS232 connector	D-Sub appliance connector, male, 9-pole (pin assignment →  23)

## Dimensions [mm]



## Use


For incorporation into a rack or control panel or as desk-top unit.


## Weight

1.1 kg

## 3 Installation

### 3.1 Personnel







**Skilled personnel**

The unit may only be installed by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

### 3.2 Installation, Setup

The TPG 261 is suited for incorporation into a 19" rack or a control panel or for use as desk-top unit.







**DANGER**

**Caution: damaged product**  
 Putting a damaged product into operation can be extremely hazardous.  
 In case of visible damages, make sure the product is not put into operation.

#### 3.2.1 Rack Installation

The TPG 261 is designed for installation into a 19" rack chassis adapter according to DIN 41 494. For this purpose, four collar screws and plastic sleeves are supplied with it.



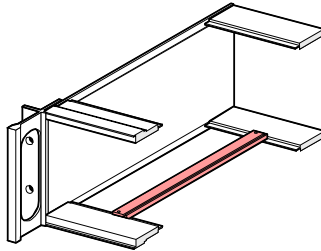


**DANGER**

**Caution: protection class of the rack**  
 If the product is installed in a rack, it is likely to lower the protection class of the rack (protection against foreign bodies and water) e.g. according to the EN 60204-1 regulations for switching cabinets.  
 Take appropriate measures for the rack to meet the specifications of the protection class.

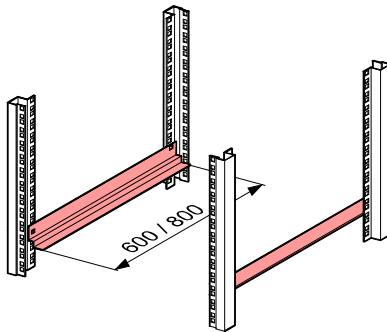
## Guide rail

In order to reduce the mechanical strain on the front panel of the TPG 261, preferably equip the rack chassis adapter with a guide rail.



## Slide rails

For safe and easy installation of heavy rack chassis adapters, preferably equip the rack frame with slide rails.

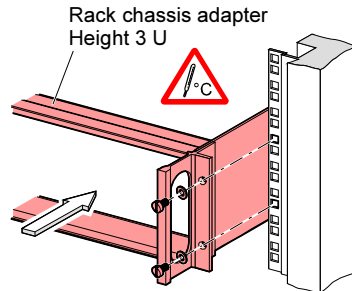


## Height 3 U rack chassis adapter

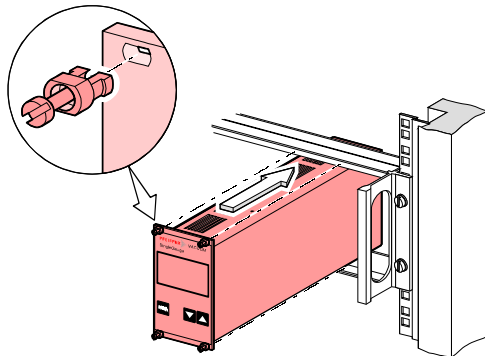
- 1 Secure the rack adapter in the rack frame.



The admissible maximum ambient temperature (→ 9) must not be exceeded neither the air circulation obstructed.



- 2 Slide the TPG 261 into the rack chassis adapter ...



... and fasten the adapter panel to the rack chassis adapter using the screws supplied with the TPG 261.



### 3.2.2 Installation in a Control Panel

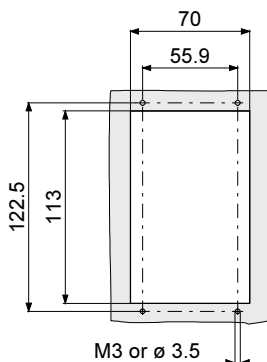


#### **DANGER**

**Caution:** protection class of the control panel  
If the product is installed in a control panel, it is likely to lower the protection class of the control panel (protection against foreign bodies and water) e.g. according to the EN 60204-1 regulations for switching cabinets.

Take appropriate measures for the control panel to meet the specifications of the protection class.

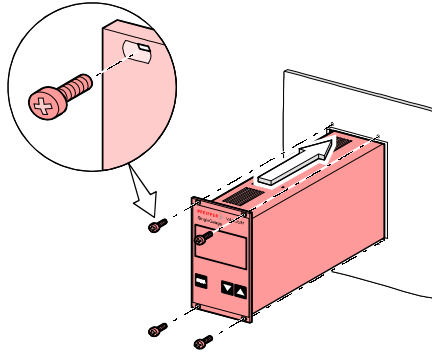
For mounting the TPG 261 into a control panel, the following cut-out is required:



The admissible maximum ambient temperature (→ 9) must not be exceeded neither the air circulation obstructed.

For reducing the mechanical strain on the front panel, preferably support the unit.

- 1 Slide the TPG 261 into the cut-out of the control panel ...

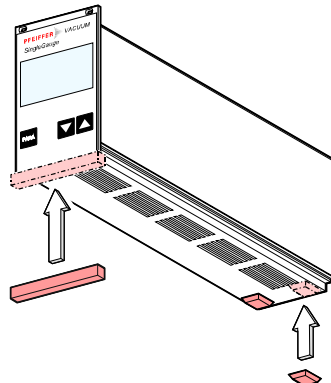


... and secure it with four M3 or equivalent screws.

### 3.2.3 Use as Desk-Top Unit

The TPG 261 is also suited for use as desk-top unit. For this purpose, two self-adhesive rubber feet as well as a slip-on rubber bar are supplied with it.

- 1 Stick the two supplied rubber feet to the rear part of the bottom plate ...



... and slip the supplied rubber bar onto the bottom edge of the front panel.



Select a location where the admissible maximum ambient temperature (→ 9) is not exceeded (e.g. due to sun irradiation).

### 3.3 Mains Power Connector



**DANGER**



Caution: line voltage

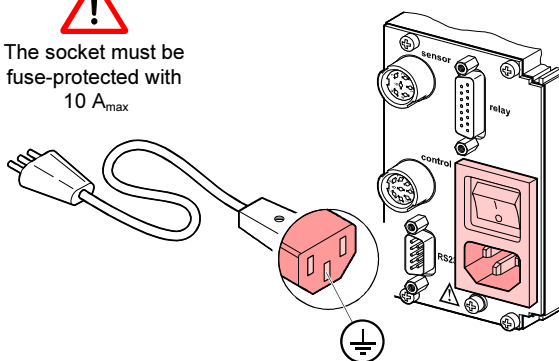
Incorrectly grounded products can be extremely hazardous in the event of a fault.

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.

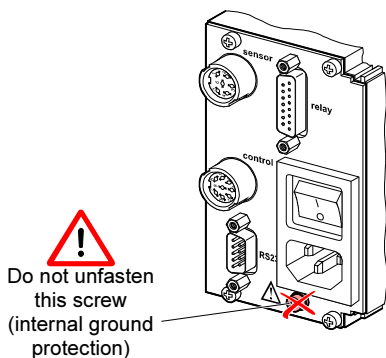
The unit is supplied with a power cord. If the mains connector is not compatible with your system, use your own, suitable cable with protective ground ( $3 \times 1.5 \text{ mm}^3$ ).



The socket must be fuse-protected with  $10 \text{ A}_{\text{max}}$



If the unit is installed in a switching cabinet, the mains voltage should be supplied and turned on via a central distributor.

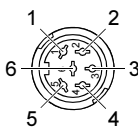


### 3.4 Gauge Connector *sensor*

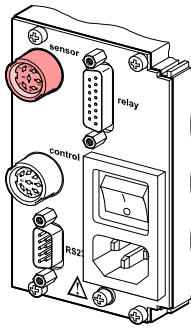


Connect the gauge to the *sensor* connector via a sensor cable set available from us (→ sales literature) or your own, screened (electro-magnetic compatibility) sensor cable. Make sure the gauge you are connecting is compatible (→ 9).

Pin assignment  
*sensor*



Pin assignment of the female 6-pole Amphenol C91B appliance connector:



Pin	Signal
1	Identification
6	Supply
2	Supply common
3	Signal input
4	Signal common
5	Screening

### 3.5 *control* Connector

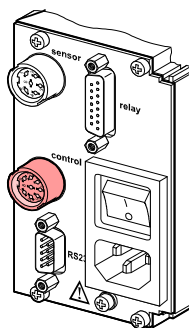
This connector allows to read the measuring signal, to evaluate the state of the floating contacts of the error relay, and to activate or deactivate the gauge (→ 47).





Connect the peripheral components to the *control* connector on the rear of the unit using your own, screened (electromagnetic compatibility) cable.

Pin assignment  
Contact positions  
*control*

Pin assignment of the female 7-pole Amphenol C91B appliance connector:



Pin	Signal
2	Analog output gauge 0 ... 10 VDC
5	Screening GND
4	Gauge on signal $\geq 2.0$ VDC or input open off signal $\leq 0.8$ VDC
1, 6	Not assigned
3	 No error
7	 Error or power supply turned off

A suitable connector is supplied with the TPG 261.

### 3.6 *relay* Connector

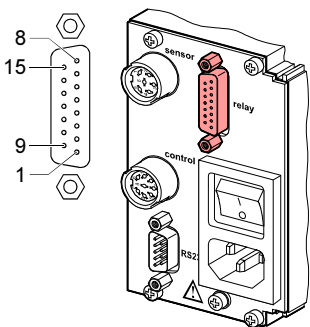
This connector allows to use the floating switching contacts for an external control system.



Connect the peripheral components to the *relay* connector on the rear of the unit using your own, screened (electromagnetic compatibility) cable.

Pin assignment  
Contact positions  
*relay*

Pin assignment of  
the female 15-pole  
D-Sub appliance  
connector:



Pin	Signal	
	Switching function 1 <b>SP1</b>	
4		Pressure below threshold
3		Pressure above threshold or power supply turned off
2		
	Switching function 2 <b>SP2</b>	
7		Pressure below threshold
6		Pressure above threshold or power supply turned off
5		
9 ... 14	Not connected	
	Supply for relays with higher switching power	
15	+24 VDC, 200 mA	
1	GND	
8	GND	

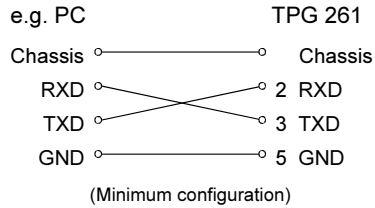
Fuse-protected at 300 mA with PTC element, self-resetting after power off or pulling the *relay* connector. Meets the requirements of a grounded protective extra low voltage (SELV-E according to EN 61010).

### 3.7 Interface Connector RS232

The RS232C interface allows for operating the TPG 261 via a HOST or terminal (→ [1]). It can also be used for updating the firmware (→ 72).

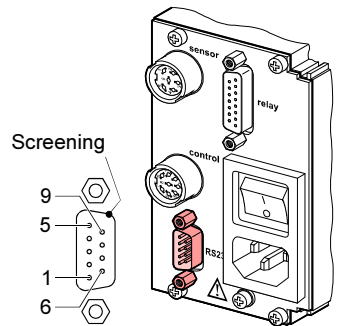


Connect the serial interface to the RS232 connector on the rear of the unit using your own, screened (electromagnetic compatibility) cable.



#### Pin assignment RS232

Pin assignment of the male 9-pole D-Sub appliance connector:



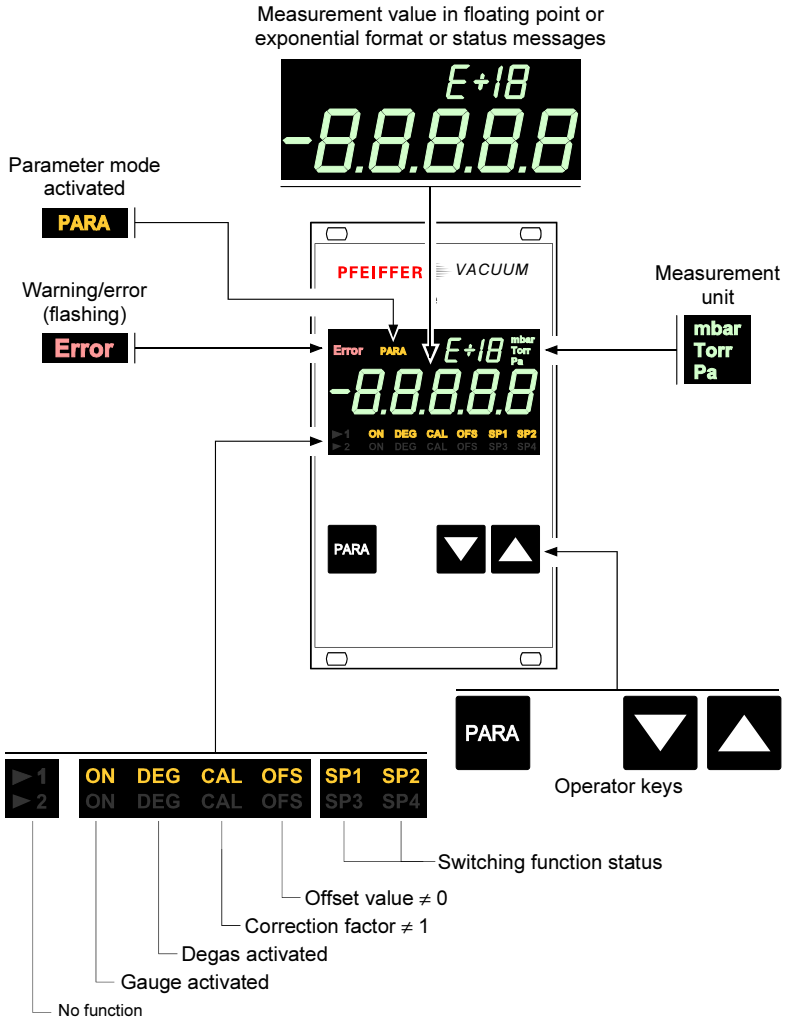
Pin	Signal
2	RXD
3	TXD
5	GND
4	DTR
7	RTS
8	CTS

Pin	Signal
1	not connected
6	not connected
9	not connected

Casing = screening

## 4 Operation

### 4.1 Front Panel





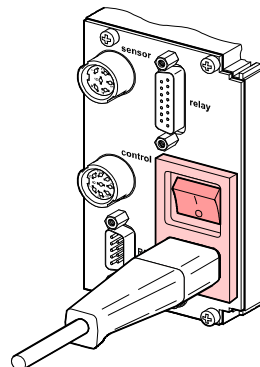
## 4.2 Turning the TPG 261 On and Off

Make sure the TPG 261 is correctly installed and the specifications in the Technical Data are met.

### Turning the TPG 261 on

The power switch is on the rear of the unit.

Turn the TPG 261 on with the power switch (or centrally, via a switched power distributor, if the unit is incorporated in a rack).



After power on, the TPG 261 ...

- automatically performs a self-test
- identifies the connected gauge
- activates the parameters that were in effect before the last power off
- switches to the Measurement mode
- adapts the parameters if required (if another gauge was previously connected).

### Turning the TPG 261 off









Turn the TPG 261 off with the power switch (or centrally, via a switched power distributor, if the unit is incorporated in a rack).



Wait at least 10 s before turning the TPG 261 on again in order for it to correctly initialize itself.

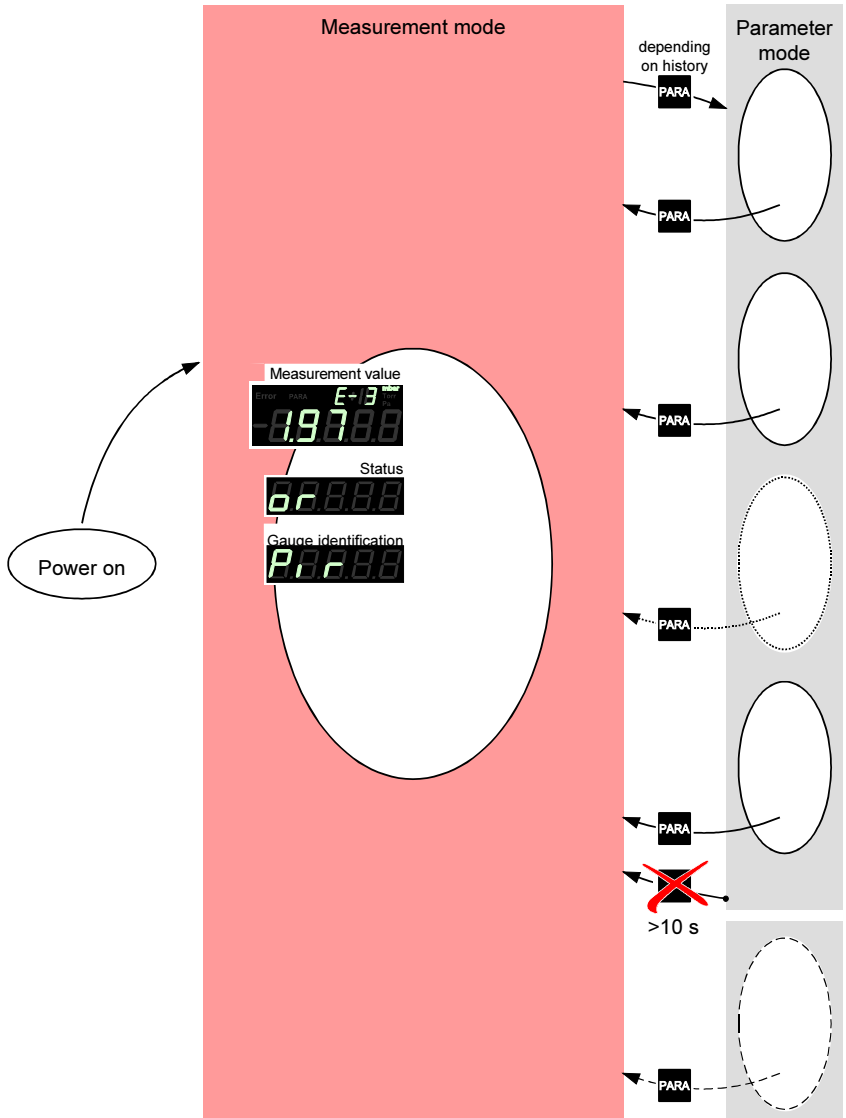
## 4.3 Operating Modes

The TPG 261 works in the following operating modes:

- **Measurement mode**  
for displaying measurement values or statuses  
(→  27)
- **Parameter mode**  
for displaying or editing parameters (→  31)
  - Switching function parameter group **SP-P**  
for entering or displaying thresholds (→  33)
  - Gauge parameter group **SEn-P**  
for entering or displaying gauge parameters  
(→  38)
  - Gauge control group **CEn-P**  
for entering or displaying gauge control parameters (→  47)
  - General parameter group **GEh-P**  
for entering or displaying general parameters  
(→  52)
  - Test program group **EEST**  
for running internal test programs (→  56)
- **Program transfer mode**  
for updating the firmware (→  72)

## 4.4 Measurement Mode

The Measurement mode is the standard operating mode of the TPG 261. Measurement values and statuses as well as the gauge identification are displayed in this mode.



## Turning the gauge on and off

Certain gauges can be turned on and off manually, if the gauge control is set to **Hand** (→ 50).

Available for:

- ☐ Pirani Gauge (TPR)
- ☒ Cold Cathode Gauge (IKR)
- ☒ FullRange™ CC Gauge (PKR)
- ☒ Process Ion Gauge (IMR)
- ☒ FullRange™ BA Gauge (PBR)
- ☐ Capacitance Gauge (CMR)
- ☐ Piezo Gauge (APR)

PARA



⇒ Press key >1 s:  
The gauge is turned off.  
**OFF** is displayed instead of the measurement value.

**ON**

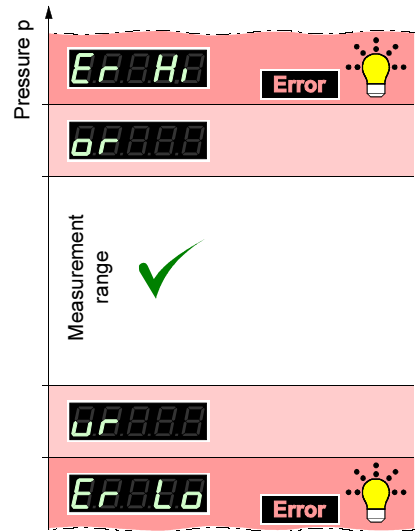


PARA



⇒ Press key >1 s:  
The gauge is turned on. A status message may be displayed instead of the measurement value.





## Displaying the gauge identification



⇒ Press keys >0.5 s:  
The type of the connected gauge is automatically identified and displayed for 4 s:

Pirani Gauge  
(TPR 265, TPR 261)

PP288

Cold Cathode Gauge  
(IKR 251, IKR 261)

PE988

Cold Cathode Gauge  
(IKR 270)

PE118

FullRange™ CC Gauge  
(PKR 251, PKR 261)

CG988

Process Ion Gauge  
(IMR 265)

PI886

FullRange™ BA Gauge  
(PBR 260)

PI882

Capacitance Gauge  
(CMR 261 ... CMR 275)

CA888

Piezo Gauge  
(APR 250 ... APR 267)

NOSEN

No gauge connected  
(no SEnsor)

Connected gauge cannot be  
identified (no identifier)

NO888

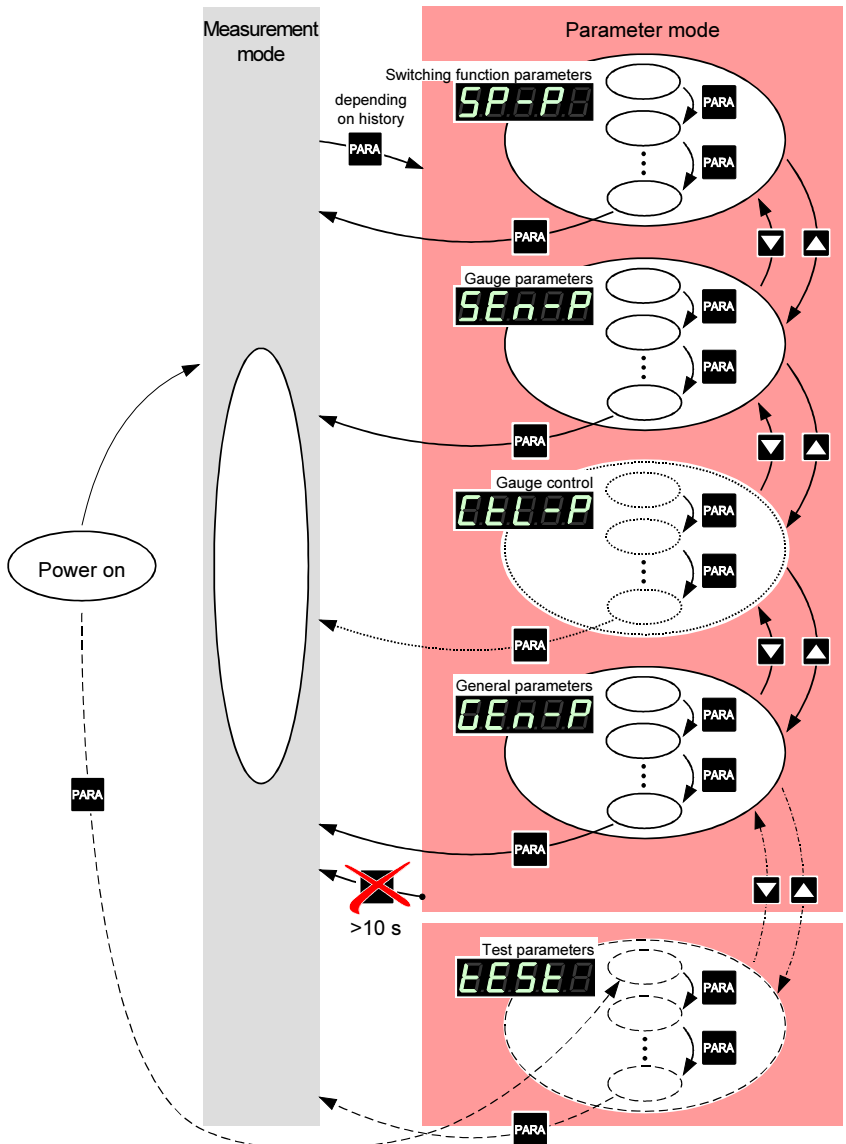
## Getting to the Parameter mode



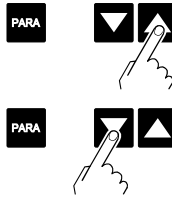
→ 31






## 4.5 Parameter Mode

The Parameter mode is used for displaying, editing and entering parameter values as well as for testing the TPG 261. For ease of operation, the parameters are divided into groups.



Selecting a parameter group



⇒ Switching function parameters →  33  
 Gauge parameters →  38  
 Gauge control →  47  
 General parameters  
 →  52  
 Test parameters  
 →  56

Selecting a parameter in a parameter group



Editing a parameter in a parameters group

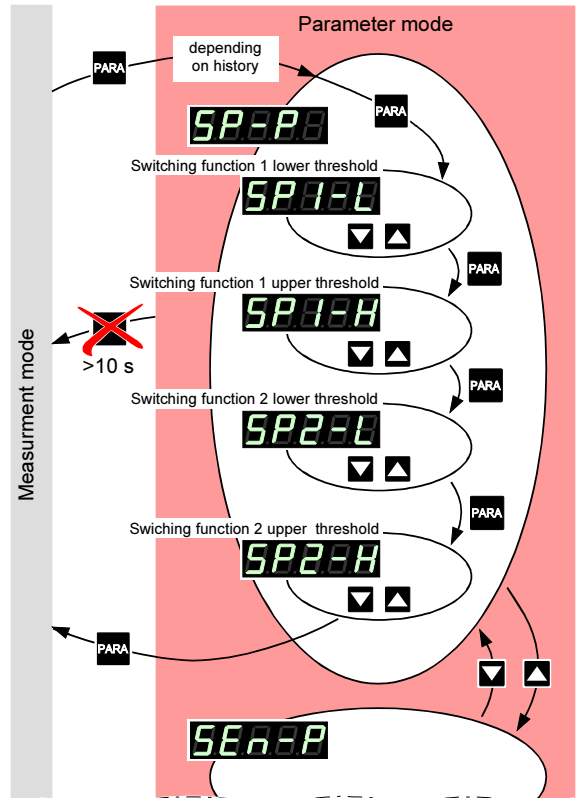
Modifications of parameters come into effect immediately and are stored automatically. Exceptions are mentioned under the corresponding parameters.



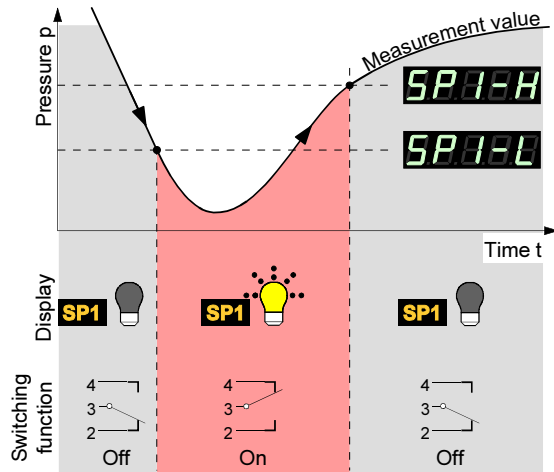
#### 4.5.1 Switching Function Parameters



The switching function parameter group (setpoint parameters) is used for displaying, entering and editing threshold values of the two switching functions.



The TPG 261 has two switching functions with two adjustable thresholds each. The status of the switching function is displayed on the front panel (→ 24, 21) and can be evaluated via the floating contacts at the *relay* connector.



Selecting a parameter



⇒ The name of the parameter,

e.g.: **SP1-H**

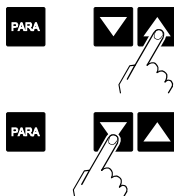
Switching function 1  
lower setpoint

is displayed as long as the key is pressed or at least for 1.5 s.

Afterwards, the currently valid threshold value is displayed.



## Editing the threshold value



⇒ Press key <1 s:  
The value is increased/  
decreased by 1 increment.

Press key >1 s:  
The value is increased/  
decreased continuously.

## Limits of the lower switching thresholds

**SP** 










e.g.: 

### Value

The lower switching threshold (Setpoint low) defines the pressure at which the switching function is activated when the pressure is dropping.

⇒ Gauge dependent (→ table).

If another gauge type is connected, the TPG 261 automatically adjusts the switching threshold if required.

	lower threshold limit 	upper threshold limit 
	$5 \times 10^{-4}$	1000
	$1 \times 10^{-9}$	$1 \times 10^{-2}$
	$1 \times 10^{-11}$	$1 \times 10^{-2}$
	$1 \times 10^{-9}$	1000
	$1 \times 10^{-6}$	1000
	$5 \times 10^{-10}$	1000
	F.S. / 1000	F.S.

all values in mbar, CAL=1












The minimum hysteresis between the upper and lower switching threshold is at least 10% of the lower threshold or 1% of the set full scale value. If the value of the minimum hysteresis drops below these values, the upper threshold is automatically adjusted to a minimum hysteresis. This prevents unstable states.

Limits of the upper switching thresholds



e.g.:

Value
The upper switching threshold (Setpoint high) defines the pressure at which the switching function is deactivated when the pressure is rising.
⇒ Gauge dependent (→ table).
If another gauge type is connected, the TPG 261 automatically adjusts the threshold if required.

	lower threshold limit 	upper threshold limit 
	+10% lower threshold	1000
	+10% lower threshold	$1 \times 10^{-2}$
	+10% lower threshold	$1 \times 10^{-2}$
	+10% lower threshold	1000
	+10% lower threshold	1000
	+10% lower threshold	1000
	+1% measurement range (F.S.)	F.S.

all values in mbar, CAL=1

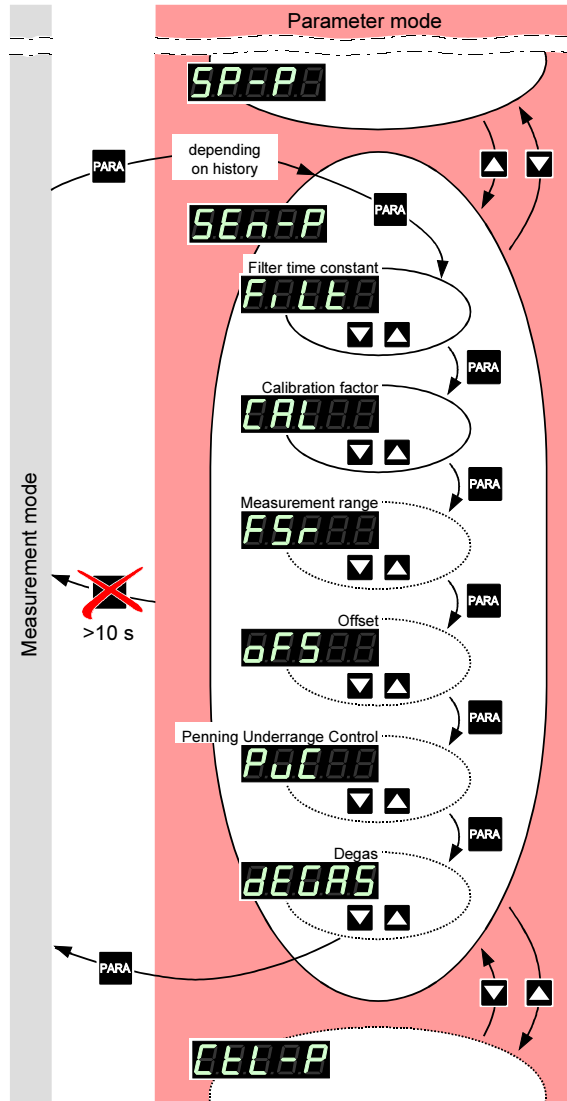


The minimum hysteresis between the upper and lower switching threshold is at least 10% of the lower threshold or 1% of the set full scale value. This prevents unstable states.

## 4.5.2 Gauge Parameters



The Gauge parameter group (**sensor parameters**) is used for displaying, entering and editing parameters of the connected gauge.



## Selecting a parameter



⇒ The name of the parameter,

e.g.: 









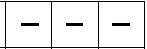














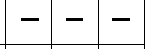




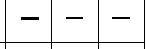




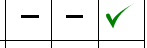


Filter time constant

is displayed as long as the key is pressed or at least for 1.5 s.

Afterwards, the currently valid parameter value is displayed.

Some parameters are not available for all gauges and thus not always displayed.

→  39 41 42 43 44 46


						
Available for						
	✓	✓	—	—	—	—
						
	✓	✓	—	—	✓	—
						
	✓	✓	—	—	✓	—
						
	✓	✓*)	—	—	—	—
						
	✓	✓*)	—	—	—	✓
						
	✓	✓	✓	✓	—	—

\*) depending on pressure

## Measurement value filter

The measurement value filter permits a better evaluation of unstable or disturbed measuring signals.



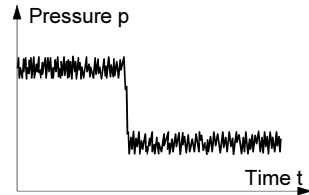
The measurement value filter does not affect the analog output (→  21).

Value

Fast

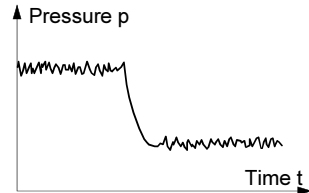
Fast

⇒ Fast:  
The TPG 261 responds quickly to fluctuations of the measurement value. As a result, it will respond faster to interference in measured values.



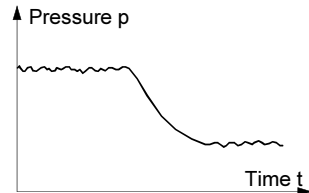
Normal

⇒ Normal:  
Good relationship between response and sensitivity of the display and the switching functions to changes in the measured values.

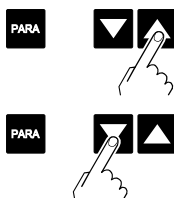


Slow

⇒ Slow:  
The TPG 261 does not respond to small changes in measured values. As a result, it will respond more slowly to changes in the measured values.







⇒ The value is increased/  
decreased by the defined  
increments.

## Calibration factor




The calibration factor allows the measured value to be calibrated for other gases than N<sub>2</sub> (→ characteristic curves in [2 ... 10]).

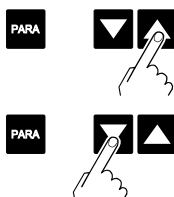
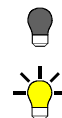
Available for:

- ☒ Pirani Gauge (TPR)
- ☒ Cold Cathode Gauge (IKR)
- ☒ FullRange™ CC Gauge (PKR)
- ☒ Process Ion Gauge <sup>\*)</sup> (IMR)
- ☒ FullRange™ BA Gauge <sup>\*\*)</sup> (PBR)
- ☒ Capacitance Gauge (CMR)
- ☒ Piezo Gauge (APR)

<sup>\*)</sup> only for pressures  $<1 \times 10^{-2}$  mbar.

<sup>\*\*) only for pressures  $<1 \times 10^{-1}$  mbar.</sup>

	Value
 e.g.:  e.g.: 	<div style="text-align: right;"><b>CAL</b></div> <p>⇒ No correction</p> <p>⇒ Measurement value corrected by a factor of 0.10 ... 9.99 (logarithmic gauges). Measurement value corrected by a factor of 0.500 ... 2.000 (linear gauges).</p>



⇒ Press key <1 s:  
The value is increased/  
decreased by 1 increment.




Press key >1 s:  
The value is increased/  
decreased continuously.

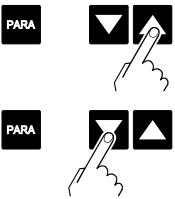
**Measurement range  
(F.S.) of linear  
gauges**

For linear gauges, the full scale (F.S.) value has to be defined according to the connected gauge type. For logarithmic gauges it is automatically recognized.

Available for:

- ☐ Pirani Gauge (TPR)
- ☐ Cold Cathode Gauge (IKR)
- ☐ FullRange™ CC Gauge (PKR)
- ☐ Process Ion Gauge (IMR)
- ☐ FullRange™ BA Gauge (PBR)
- ☒ Capacitance Gauge (CMR)
- ☒ Piezo Gauge (APR)

	Value
 e.g.: 	⇒ 0.01 mbar 0.1 mbar 1 mbar 10 mbar 100 mbar 1000 mbar 2 bar 5 bar 10 bar 50 bar Conversion table → Appendix  70



⇒ The value is increased/  
decreased by the defined  
increments.

## Offset correction










The offset value is displayed and readjusted according to the actual measurement value (in the range of -5 ... +110% of the set full scale value).

Available for:

- ☐ Pirani Gauge (TPR)
- ☐ Cold Cathode Gauge (IKR)
- ☐ FullRange™ CC Gauge (PKR)
- ☐ Process Ion Gauge (IMR)
- ☐ FullRange™ BA Gauge (PBR)
- ☒ Capacitance Gauge (CMR)
- ☒ Piezo Gauge (APR)

The offset correction affects:

- ☒ the displayed measurement value
- ☐ the displayed threshold value of the switching functions
- ☐ the analog output at the *control* connector (→ 21)

	Value
	<b>OFS</b>
	⇒ Offset correction deactivated 
e.g.: 	⇒ Offset correction activated 
 	⇒ Press key >1.5 s: The offset value is readjusted. The actual measurement value is accepted as new offset value.
 	⇒ Reset the offset value.

When the offset correction is activated, the saved offset value is subtracted from the actual measurement value. This allows measuring relative to a reference pressure.



When the zero of the gauge is readjusted, the offset correction must be deactivated.

## Underrange control

Behavior in the event of an underrange with Cold Cathode Gauges (Penning underrange control).

Available for:

- ☐ Pirani Gauge (TPR)
- ☒ Cold Cathode Gauge (IKR)
- ☐ FullRange™ CC Gauge (PKR)
- ☐ Process Ion Gauge (IMR)
- ☐ FullRange™ BA Gauge (PBR)
- ☐ Capacitance Gauge (CMR)
- ☐ Piezo Gauge (APR)

There is a number of possible causes of an underrange:

- the pressure in the vacuum system is lower than the measurement range
- the measurement element has not ignited (yet)
- the discharge has failed
- a defect has occurred






### Caution



Caution: relay is switching

An underrange can lead to unintended reactions of the connected control system.

Prevent false control signals and messages by disconnecting the sensor and control cables.

	Value
	
	⇒ Underrange state is interpreted as admissible measurement value. <b>0FF000</b> is displayed. The switching function remains ON.
	⇒ Underrange state is interpreted as inadmissible measurement value. <b>0n0000</b> is displayed. The switching function changes to OFF.



⇒ Activate/deactivate the underrange control.



If chances are that the pressure in the vacuum system drops below the measurement range of the gauge, it is advisable to select **0FF000**.






If **0n0000** is selected, the evaluation of the switching function is suppressed for approx. 10 seconds when the gauge is turned on and each time after an underrange has occurred. During this time, the switching function remains OFF.

## Degas

Contamination deposits on the electrode system of hot cathode gauges may cause instabilities of the measurement values. The Degas function allows to clean the electrode system.

Available for:

- ☐ Pirani Gauge (TPR)
- ☐ Cold Cathode Gauge (IKR)
- ☐ FullRange™ CC Gauge (PKR)
- ☐ Process Ion Gauge (IMR)
- ☒ FullRange™ BA Gauge (PBR)
- ☐ Capacitance Gauge (CMR)
- ☐ Piezo Gauge (APR)

	Value
  	<div style="text-align: right;"><b>DEG</b></div> <p>⇒ Normal operation.</p> <p>⇒ Degas: The electron collection grid is heated to <math>\approx 700\text{ }^{\circ}\text{C}</math> by electron bombardment and the electrode system is thus cleaned.</p>
	<p>⇒ Start degas. Duration of the Degas function 3 min. (can be aborted).</p>
	<p>⇒ Abort degas.</p>

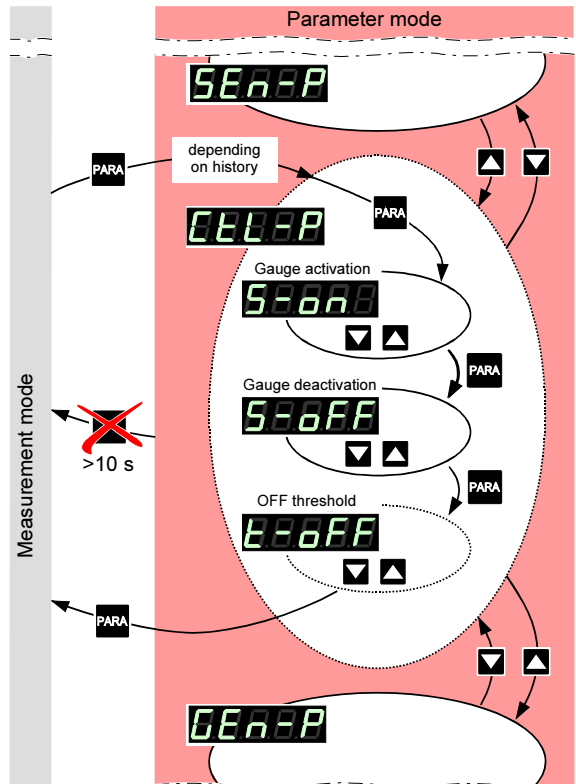
### 4.5.3 Gauge Control



The Gauge control group (control parameters) is used for displaying, entering and editing parameters which define the activation/deactivation of the connected gauge.



If the connected gauge cannot be controlled (→ 49), this group is not available.



## Selecting a parameter



⇒ The name of the parameter,

e.g.: **5-0nB**

Gauge activation

is displayed as long as the key is pressed or at least for 1.5 s.

Afterwards, the currently valid parameter value is displayed.

Some parameters are not available for all gauges and thus not always displayed.

→ 49 50 51

	<b>5-0nB</b>	<b>5-0FF</b>	<b>E-0FF</b>
Available for	<b>PnB</b>	—	—
	<b>PE9</b>	✓	✓
	<b>PE11</b>	✓	✓
	<b>Co9</b>	✓	—
	<b>10n6</b>	✓	—
	<b>10n12</b>	✓	—
	<b>LnB</b>	—	—









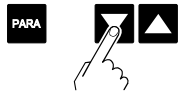


## Gauge activation

Certain gauges can be activated by different means.

The following gauges can be controlled:

- ☐ Pirani Gauge (TPR)
- ☒ Cold Cathode Gauge (IKR)
- ☒ FullRange™ CC Gauge (PKR)
- ☒ Process Ion Gauge (IMR)
- ☒ FullRange™ BA Gauge (PBR)
- ☐ Capacitance Gauge (CMR)
- ☐ Piezo Gauge (APR)

	Value
   	<p>⇒ Manual activation: The gauge can be activated by pressing the  key.</p> <p>⇒ External activation: The gauge is activated by an input signal fed via the <i>control</i> connector (→  21).</p> <p>⇒ Hotstart: The gauge is automatically activated when the TPG 261 is turned on. Measurement is thus automatically resumed after a power failure. Gauge deactivation →  50.</p>
 	<p>⇒ Increase/decrease the value by the defined increments.</p>






# Gauge deactivation

Certain gauges can be deactivated by different means.

The following gauges can be controlled:

- ☐ Pirani Gauge (TPR)
- ☒ Cold Cathode Gauge (IKR)
- ☒ FullRange™ CC Gauge \*) (PKRx)
- ☒ Process Ion Gauge \*) (IMR)
- ☒ FullRange™ BA Gauge \*) (PBR)
- ☐ Capacitance Gauge (CMRx)
- ☐ Piezo Gauge (APR)

\*) except for self control

	Value
	
	⇒ Manual deactivation: The gauge is deactivated by pressing the  key.
	⇒ External deactivation: The gauge is deactivated by an input signal fed via the control connector (→ 21).
<p>Additionally for Cold Cathode Gauge:</p> 	⇒ Self control: The gauge deactivates itself when the pressure rises (→ 51).

PARA



⇒ Increase/decrease the value by the defined increments.

PARA

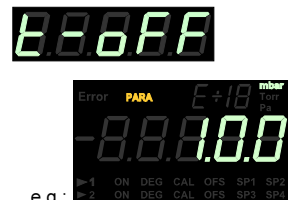


OFF threshold

Definition of the OFF threshold for the gauge to be de-activated by itself (self control).

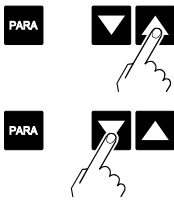
Available for:

- ☐ Pirani Gauge (TPR)
- ☒ Cold Cathode Gauge (IKRx)
- ☐ FullRange™ CC Gauge (PKR)
- ☐ Process Ion Gauge (IMR)
- ☐ FullRange™ BA Gauge (PBR)
- ☐ Capacitance Gauge (CMR)
- ☐ Piezo Gauge (APR)

	Adjustment range
	→ table below

	TPR	PKR IMR PBR	CMR, APR F.S.=1
IKR	10 <sup>-3</sup> ... 10 <sup>-2</sup>	10 <sup>-5</sup> ... 10 <sup>-2</sup>	10 <sup>-3</sup> ... 10 <sup>-2</sup>

all values in mbar, CAL=1

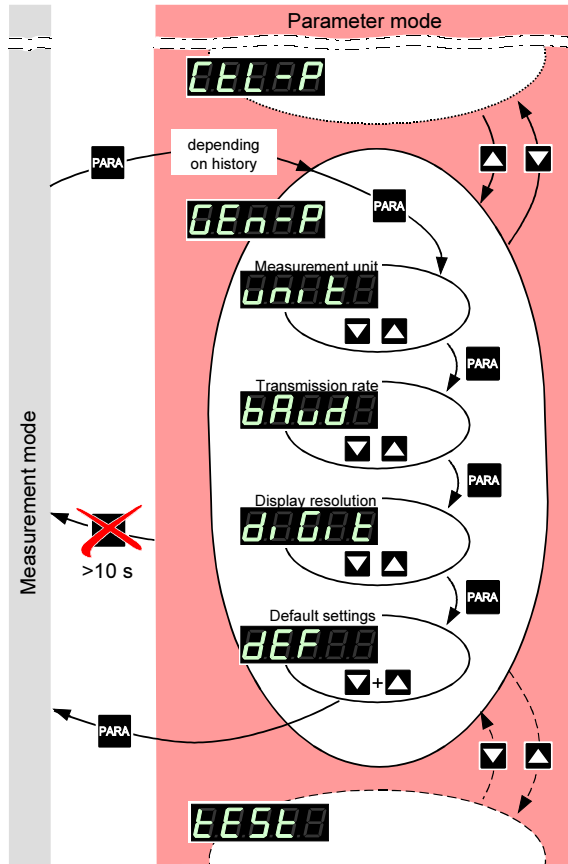


- ⇒ Press key <1 s:  
The value is increased/  
decreased by 1 increment.
- Press key >1 s:  
The value is increased/  
decreased continuously.

#### 4.5.4 General Parameters



The General parameter group (**general parameters**) is used for displaying, entering and editing generally applicable system parameters.



## Selecting a parameter



⇒ The name of the parameter

e.g.: 

Measurement unit


is displayed as long as the key is pressed or at least for 1.5 s.









Afterwards, the currently valid parameter value is displayed.

The parameters are available for all gauge types and thus always displayed.

Available for

all gauges

→  54 54 55 55


			
			










## Editing a parameter





⇒ Increase/decrease the value by the defined increments.



Measurement unit      Unit of measured values, thresholds etc. See Appendix (→  70) for conversion.








	Value
	
	⇒ mbar/bar 
	⇒ Torr (only available if Torr lock is not activated i.e. Torr is not suppressed →  59) 
	⇒ Pascal 

Transmission rate      Transmission rate of the RS232C interface.

	Value
	
e.g.: 	⇒ 9600 baud 19200 baud 38400 baud

## Display resolution

Display resolution of measured values.




	Value
	
	⇒ Display <ul style="list-style-type: none"> <li>• rounded to one decimal digit</li> <li>• or two integrals</li> </ul>  
	⇒ Display <ul style="list-style-type: none"> <li>• rounded to two decimal digits</li> <li>• or three integrals</li> </ul>  

## Default settings

All user parameter settings are replaced by the factory settings.



Loading of the default parameter settings is irreversible.

	Value
	
	<div>  </div> ⇒ The default values are loaded (→ 71).

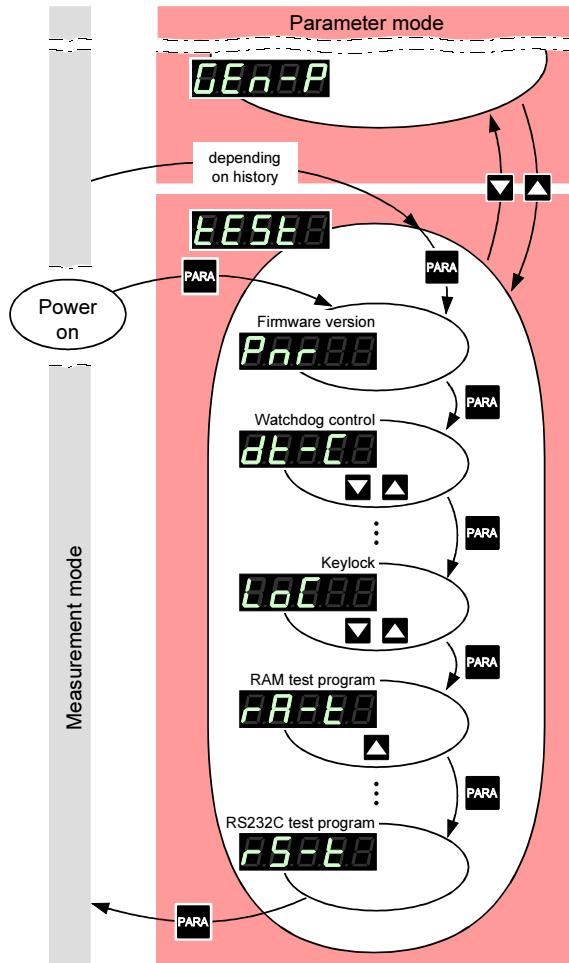
## 4.5.5 Test Parameters



The Test parameter group is used for displaying the firmware version, entering and editing special parameter values, and for running test programs.



This group is only available if the **PARA** key was pressed while the TPG 261 was turned on.





Selecting a parameter



⇒ The name of the parameter

e.g.: **PAR**

Firmware version

is displayed.

The parameters are available for all gauge types and thus always displayed.

→	58	59	59	59
Available for all gauges				

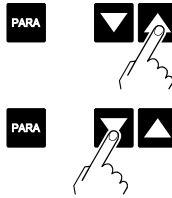
The name of the parameter is displayed as long as the key is pressed or at least for 1.5 s.

The firmware version is continuously displayed.

→	60	60	61	61	62	62	63	64
Available for all gauges								

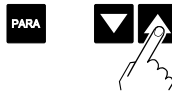
The name of the test program is displayed until it is started.

## Editing a parameter



⇒ Increase/decrease the value by the defined increments.




## Starting the test program



⇒ Start test program.

## Firmware version




The firmware version (program version) is displayed.

	Version
	⇒ The two parts of the firmware number are displayed alternately.
	
	

The last character indicates the modification index (-, A ... Z). Please mention this index when contacting Pfeiffer Vacuum in the event of a problem.




## Watchdog control

Behavior of the system control (watchdog) in the event of an error.

	Setting
	
	⇒ The system automatically acknowledges error messages of the watchdog after 2 s.
	⇒ Error messages of the watchdog have to be acknowledged by the operator.




## Torr lock

The measurement unit **Torr** can be suppressed in the corresponding parameter setting **UNIT** (→ 54).

	Setting
	
	⇒ Measurement unit <b>Torr</b> available.
	⇒ Measurement unit <b>Torr</b> not available.





## Keylock

The entry lock function prevents inadvertent entries in the Parameter mode and thus malfunctions.

	Setting
	
	⇒ Entry lock function disabled.
	⇒ Entry lock function enabled. <b>000000</b> is displayed when the user attempts to edit a setting in the Parameter mode.





## RAM test

Test of the main memory.

	Test sequence
	The test runs automatically one time:
	⇒ Test in process (very briefly).
	⇒ Test finished, no error found.
	⇒ Test finished, error(s) found. The <b>Error</b> lamp flashes.  If the error message persists after several test sequences have been run, please contact your local Pfeiffer Vacuum service center.





## EPROM test

Test of the program memory.

	Test sequence
	The test runs automatically one time:
	⇒ Test in process
	⇒ Test finished, no error found. After the test, a four-digit checksum (hexadecimal format) is displayed.
	⇒ Test finished, error(s) found. After the test, a four-digit checksum (hexadecimal format) is displayed. The <b>Error</b> lamp flashes.  If the error message persists after several test sequences have been run, please contact your local Pfeiffer Vacuum service center.




## EEPROM test

Test of the parameter memory.

	Test sequence
	The test runs automatically one time:
	⇒ Test in process (very briefly).
	⇒ Test finished, no error found.
	⇒ Test finished, error(s) found. The <b>Error</b> lamp flashes.
	If the error message persists after several test sequences have been run, please contact your local Pfeiffer Vacuum service center.

## Display test

Test of the display.


	Test sequence
	The test runs automatically one time <sup>*)</sup> :
	⇒ First, all display elements are lit at the same time, ...
	⇒ ... and then, each element is lit individually.

<sup>\*)</sup>




⇒ Stop the test sequence and activate one element after another by pressing the key once per element.

## A/D converter test 0


Test of channel 0 of the analog/digital converter (with a reference voltage at the signal input of the *sensor* connector (→  20)).



If the signal input is open, the TPG 261 displays a default value that may easily fluctuate because of the high sensitivity of the open measurement circuit.

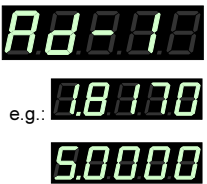
	Test sequence
	⇒ Measuring signal in Volt.

## A/D converter test 1

Test of channel 1 of the analog/digital converter (with a reference voltage at the signal input of the *sensor* connector (→  20)).





If the signal input is open, the TPG 261 displays a default value that may easily fluctuate because of the high sensitivity of the open measurement circuit.

	Test sequence
	⇒ Gauge identification voltage.
	⇒ No gauge connected.

## I/O test

Test of the relays of the TPG 261. The program tests their switching function.


**Caution**











Caution: The relays switch irrespective of the pressure









Starting a test program may cause unwanted effects in connected control systems.

Disconnect all sensor and control system lines to ensure that no control commands or messages are triggered by mistake.

The relays switch on and off cyclically. The switching operations are indicated optically and can be heard.

The contacts of the switching functions 1 ... 4 are connected to the *relay* connector (→  22), the contacts of the error relay to the *control* connector (→  21) on the rear of the housing. Check their function with an ohm-meter.


	Test sequence
	The test runs automatically one time:
	⇒ All relays deactivated
	⇒ Switching function relay 1
	
	⇒ Switching function relay 2
	
:	⇒ No function


	⇒ No function
	
	⇒ Gauge relay
	
	⇒ No function
	
	⇒ Error relay
	

### RS232C test

Test of the RS232C interface. The TPG 261 repeats each sign transmitted by the communicating HOST.



The data transferred from/to the TPG 261 can be displayed by the computer only (→  [1]).

	Test sequence
	The test runs automatically.

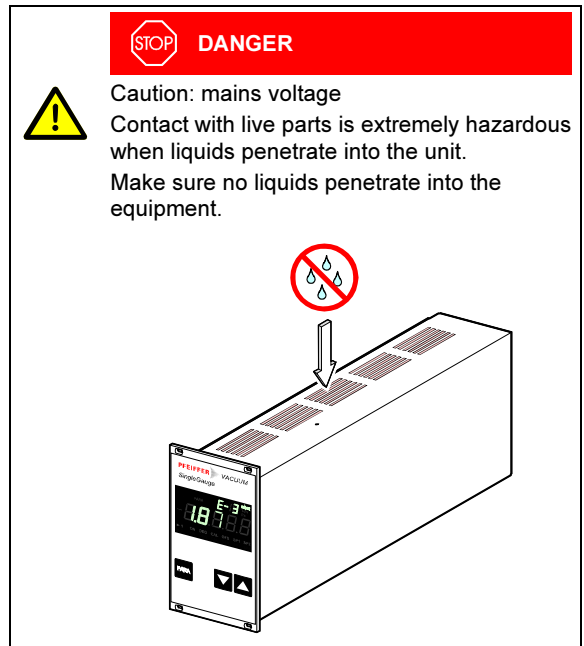


## 5 Maintenance

The product requires no maintenance.


### Cleaning the TPG 261

For cleaning the outside of the TPG 261, a slightly moist cloth will usually do. Do not use any aggressive or scouring cleaning agents.
























## 6 Troubleshooting

### Signalization of errors

**Error**  and the error relay opens (→ 21).

### Error messages

	Possible cause and remedy/ acknowledgement
	<p>Interruption or instability in sensor line or connector (Sensor error).</p> <p>⇒ Acknowledge with the  key. If the problem persists,  or  is displayed.</p>
	<p>Possible cause and remedy/ acknowledgement</p> <p>The TPG 261 has been turned on too fast after power off.</p> <p>⇒ Acknowledge with the  key. If the watchdog is set to , the TPG 261 acknowledges the message automatically after 2 s (→ 59).</p>
	<p>The watchdog has tripped because of a severe electric disturbance or an operating system error.</p> <p>⇒ Acknowledge with the  key. If the watchdog is set to , the TPG 261 acknowledges the message automatically after 2 s (→ 59).</p>
	<p>Possible cause and remedy/ acknowledgement</p> <p>Main memory (RAM) error.</p> <p>⇒ Acknowledge with the  key.</p>

	Possible cause and remedy/ acknowledgement
	Program memory (EPROM) error. ⇒ Acknowledge with the  key.
	Possible cause and remedy/ acknowledgement
	Parameter memory (EEPROM) error. ⇒ Acknowledge with the  key.
	Possible cause and remedy/ acknowledgement
	Display driver error. ⇒ Acknowledge with the  key.
	Possible cause and remedy/ acknowledgement
	A/D converter error. ⇒ Acknowledge with the  key.
	Possible cause and remedy/ acknowledgement
	Operating system (Task Fail) error. ⇒ Acknowledge with the  key.

## Technical support



If the problem persists after the message has been acknowledged for several times and/or the gauge has been exchanged, please contact your local Pfeiffer Vacuum service center.

## 7 Repair

Return defective products to your nearest Pfeiffer Vacuum service center for repair.

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

## 8 Storage




### Caution



Caution: electronic component

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

Store the product in an antistatic bag or container. Observe the corresponding specifications in the technical data (→  9).

## 9 Disposal



### WARNING



Caution: 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

Non-electronic components

Electronic components

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

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

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

## Appendix

### A: Conversion Tables

#### Weights

	<b>kg</b>	<b>lb</b>	<b>slug</b>	<b>oz</b>
<b>kg</b>	1	2.205	$68.522 \times 10^{-3}$	35.274
<b>lb</b>	0.454	1	$31.081 \times 10^{-3}$	16
<b>slug</b>	14.594	32.174	1	514.785
<b>oz</b>	$28.349 \times 10^{-3}$	$62.5 \times 10^{-3}$	$1.943 \times 10^{-3}$	1

#### Pressures

	<b>N/m<sup>2</sup>, Pa</b>	<b>bar</b>	<b>mbar</b>	<b>Torr</b>	<b>at</b>
<b>N/m<sup>2</sup>, Pa</b>	1	$10 \times 10^{-6}$	$10 \times 10^{-3}$	$7.5 \times 10^{-3}$	$9.869 \times 10^{-6}$
<b>bar</b>	$100 \times 10^3$	1	$10^3$	750.062	0.987
<b>mbar</b>	100	$10^{-3}$	1	$750.062 \times 10^{-3}$	$0.987 \times 10^{-3}$
<b>Torr</b>	133.322	$1.333 \times 10^{-3}$	1.333	1	$1.316 \times 10^{-3}$
<b>at</b>	$101.325 \times 10^3$	1.013	$1.013 \times 10^3$	760	1

#### Pressure units used in the vacuum technology

	<b>mbar</b>	<b>Pascal</b>	<b>Torr</b>	<b>mmWs</b>	<b>psi</b>
<b>mbar</b>	1	100	$750.062 \times 10^{-3}$	10.2	$14.504 \times 10^{-3}$
<b>Pascal</b>	$10 \times 10^{-3}$	1	$7.5 \times 10^{-3}$	0.102	$0.145 \times 10^{-3}$
<b>Torr</b>	1.333	133.322	1	13.595	$19.337 \times 10^{-3}$
<b>mmWs</b>	$9.81 \times 10^{-2}$	9.81	$7.356 \times 10^{-2}$	1	$1.422 \times 10^{-3}$
<b>psi</b>	68.948	$6.895 \times 10^3$	51.715	703	1


#### Linear measures















	<b>mm</b>	<b>m</b>	<b>inch</b>	<b>ft</b>
<b>mm</b>	1	$10^{-3}$	$39.37 \times 10^{-3}$	$3.281 \times 10^{-3}$
<b>m</b>	$10^3$	1	39.37	3.281
<b>inch</b>	25.4	$25.4 \times 10^{-3}$	1	$8.333 \times 10^{-2}$
<b>ft</b>	304.8	0.305	12	1

#### Temperature

	<b>Kelvin</b>	<b>Celsius</b>	<b>Fahrenheit</b>
<b>Kelvin</b>	1	$^{\circ}\text{C} + 273.15$	$(^{\circ}\text{F} + 459.67) \times 5/9$
<b>Celsius</b>	K-273.15	1	$5/9 \times ^{\circ}\text{F} - 17.778$
<b>Fahrenheit</b>	$9/5 \times \text{K} - 459.67$	$9/5 \times (^{\circ}\text{C} + 17.778)$	1

## B: Default Settings

The following values are activated when the default settings are loaded (→  55):


	Default	User	
	$1 \times 10^{-11}$ mbar		
	$9 \times 10^{-11}$ mbar		
	normal		
	1.00 (log) 1.000 (lin)		
	1000 mbar		
	off $0 \times 10^{-2}$ mbar		
	off		
	mbar		
	9600		
	2 Digit		
	Hand		
	Auto		
	off		
	off		

## C: Firmware Update



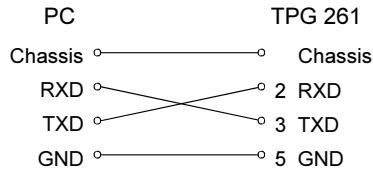
If your TPG 261 firmware needs updating, e.g. for implementing a new gauge type, please contact your local Pfeiffer Vacuum service center.

### User parameters

Most of the settings you may have defined in the Parameter and Test mode will not be affected by a firmware update. To be sure, note your parameter settings before upgrading the firmware (→  71).

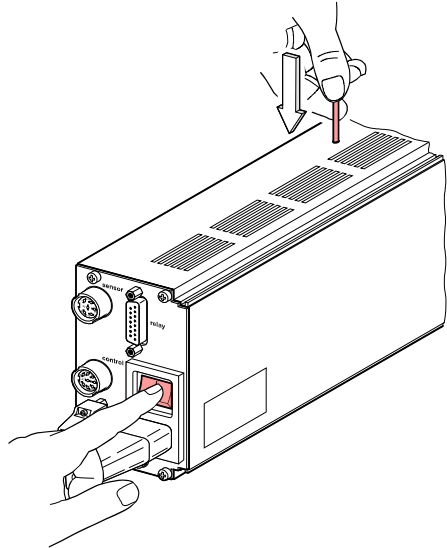
### Preparing the TPG 261 for a program transfer

- 1** Turn the TPG 261 off.
- 2** Connect the TPG 261 with the serial COM1 (COM2) interface of your PC via a 9-pole D-Sub extension cable (the firmware of the TPG 261 cannot be loaded from a Mac).





- 3 With a pin ( $\varnothing < 2$  mm), depress the switch on the top of the unit, under the housing, and turn the TPG 261 on.



After power on, the display remains dark.

## Program transfer

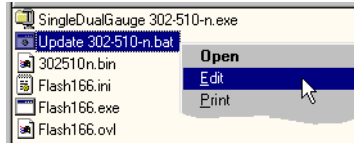
In the following instructions, the index -n is used instead of the actual index.

- 1 Unpack the self extracting file  
SingleDualGauge 302-510-n.exe.



**2** If you have not connected the TPG 261 to the COM1 interface:

- Open the batch file Update 302-510-n.bat ...

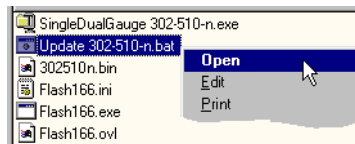


- ... edit the interface ...

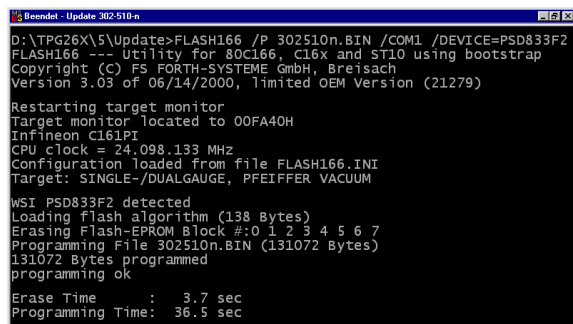


- ... and save the new setting.

**3** Start batch file Update 302-510-n.bat .



⇒ The new firmware is transmitted to the TPG 261.




Starting the TPG 261  
with the updated firm-  
ware

If the program transfer was successful, quit the Update  
mode by turning the TPG 261 off.















Wait at least 10 s before turning the TPG 261  
on again in order for it to correctly initialize it-  
self.



The TPG 261 is now ready for operation. To be  
sure, check that the current parameter settings are  
identical with the previously defined settings  
(→  71).

## D: Literature

-  [1] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
Communication Protocol  
SingleGauge™  
Single-Channel Measurement and  
Control Unit TPG 261  
BG 805 198 BE  
Pfeiffer Vacuum GmbH, D-35614 Asslar,  
Deutschland
-  [2] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
Operating Instructions  
Compact Pirani Gauge TPR 265  
BG 805 177 BE  
Pfeiffer Vacuum GmbH, D-35614 Asslar,  
Deutschland
-  [3] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
Instruction Sheet  
Compact Pirani Gauge TPR 261  
BG 805 105 BE  
Pfeiffer Vacuum GmbH, D-35614 Asslar,  
Deutschland
-  [4] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
Instruction Sheet  
Compact Cold Cathode Gauge IKR 251  
BG 805 110 BN  
Pfeiffer Vacuum GmbH, D-35614 Asslar,  
Deutschland
-  [5] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
Instruction Sheet  
Compact Cold Cathode Gauge IKR 261  
BG 805 113 BN  
Pfeiffer Vacuum GmbH, D-35614 Asslar,  
Deutschland
-  [6] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
Instruction Sheet  
Compact Cold Cathode Gauge IKR 270  
BG 805 115 BE / A  
Pfeiffer Vacuum GmbH, D-35614 Asslar,  
Deutschland
-  [7] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
Instruction Sheet  
Compact FullRange™ Gauge PKR 251  
BG 805 119 BN  
Pfeiffer Vacuum GmbH, D-35614 Asslar,  
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-  [8] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
 Instruction Sheet  
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 Pfeiffer Vacuum GmbH, D–35614 Asslar,  
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-  [9] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
 Instruction Sheet  
 Compact Process Ion Gauge IMR 265  
 BG 805 132 BE  
 Pfeiffer Vacuum GmbH, D–35614 Asslar,  
 Deutschland
-  [10] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
 Instruction Sheet  
 Compact FullRange™ BA Gauge PBR 260  
 BG 805 131 BE  
 Pfeiffer Vacuum GmbH, D–35614 Asslar,  
 Deutschland
-  [11] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
 Instruction Sheet  
 Compact Capacitance Gauge  
 CMR 261 ... CMR275  
 BG 805 133 BE  
 Pfeiffer Vacuum GmbH, D–35614 Asslar,  
 Deutschland
-  [12] [www.pfeiffer-vacuum.de](http://www.pfeiffer-vacuum.de)  
 Instruction Sheet  
 Compact Piezo Gauge APR 250 ... APR 267  
 BG 805 127 BN  
 Pfeiffer Vacuum GmbH, D–35614 Asslar,  
 Deutschland

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## 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 73/23/EEC and the Directive relating to electromagnetic compatibility 89/336/EEC.

Product

**SingleGauge™**  
Single-Channel Measurement and  
Control Unit for Compact Gauges  
TPG 261

Part number

PTG28030

Standards

Harmonized and international/national standards and specifications:

- EN 61010-1 (Safety requirements for electrical equipment for measurement, control and laboratory use)
- EN 50081-1 (Electromagnetic compatibility generic emission standard)
- EN 50082-2 (Electromagnetic compatibility generic immunity standard)

Signature

Pfeiffer Vacuum GmbH, Asslar  
9 May 2001



Wolfgang Dondorf  
Managing director



## Notes

## Notes

## Notes



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bg805195bd a

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