

SUPPLEMENTARY INFORMATION

EN

Translation of the original instructions

XPT 200 AR

DigiLine Gauge

PFEIFFER  **VACUUM**

Validity

- **Analog/Relais**

This supplementary information describes important variations to the standard product and is only valid together with its prevailing operating instructions.

Applicable documents

xPT 200 AR	Operating instructions
Operating instructions DigiLine gauges in standard version:	
CPT 200	PG 0021*
HPT 200	PG 0024*
MPT 200	PG 0025*
PPT 200	PG 0022*
RPT 200	PG 0023*
Declaration of Conformity	A component of this manual

*also available at www.pfeiffer-vacuum.com

Abbreviations

- AR:** Analog/Relay version
- BA sensor:** Bayard-Alpert sensor
- CC sensor:** Cold cathode sensor
- HV:** High vacuum sensor

Product description

Function

The (8-pole, A-coded) connector with the text "analog/relay" can be used to connect the gauge to an ActiveLine controller and to evaluate the switching contacts. The analog signal and relay contacts can also be evaluated using customer-specific circuitry.

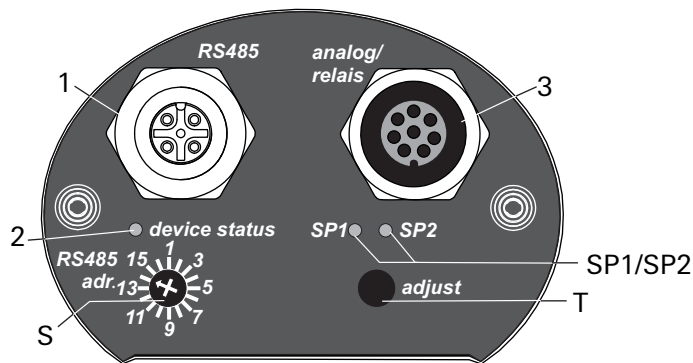


Fig. 1: Connections

- | | | | | | |
|---|--------------------------------|-----|--------------------|-----|------------------------|
| 1 | RS-485 interface | 2 | Status LED | 3 | Analog/Relay interface |
| S | RS-485 address selector switch | SP1 | Status set point 1 | SP2 | Status set point 2 |
| T | Adjusting button | | | | |

Installation

Vacuum connection

→ Establish a vacuum connection as described in the operating instructions for the standard gauge.

Configuring the connection

The analog/relay version of the DigiLine gauge allows a digital reading of pressure measurement values and provides various options for using the AR interface:

- Local pressure display with a TPG 261 or TPG 361 controller
- Mixed use of digital and analog gauges with a TPG 262, TPG 256 A or TPG 362 controller
- Pressure regulation with an RVC 300 controller in combination with a regulating valve
- Switching and safety functions through direct evaluation of switching contacts

Voltage supply

Power is supplied to the gauge either via the 5-pole RS-485 connector or the socket "analog/relay" (8-pole).

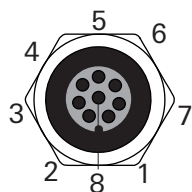


NOTICE

Damage to the product

Only connect cables when de-energized.

→ Never establish a connection using a live cable.



Pin	Assignment
1	Analog ground
2	Analog output
3	Identification
4	Relay K1
5	Relay K2
6	Relay "Common"
7	Supply voltage 24 V DC
8	Ground (GND)

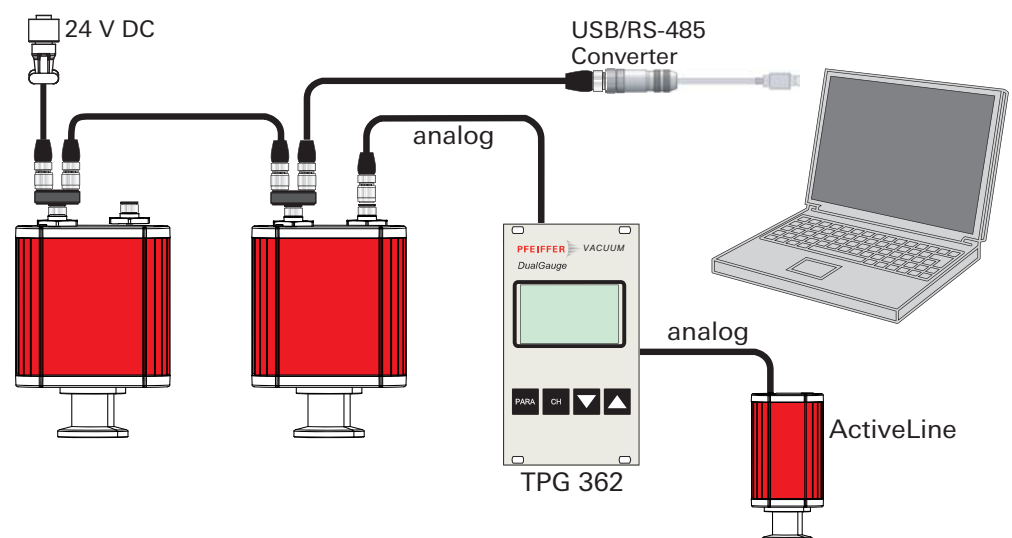


Fig. 2: Connection diagram gauge (analog/relay) - TPG 362 (analog) / RS-485 (digital)

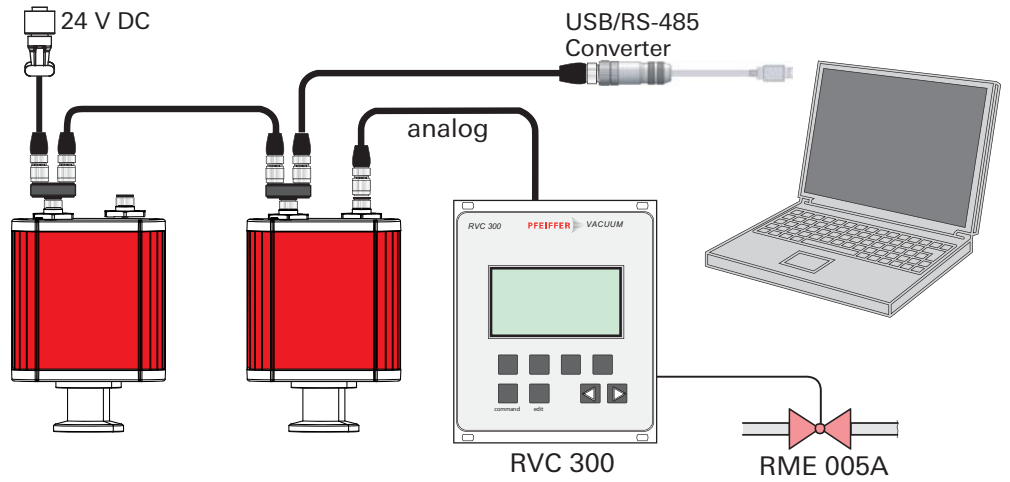


Fig. 3: Connection diagram gauge (analog/relay) - RVC 300 (analog) / RS-485 (digital)

Operation

Set points

The AR versions of the DigiLine gauges feature two pressure-controlled relay contacts that can be configured via the RS-485 interface using an external controller or a DPG 202 controller.

Status LED

Set points	Status LED	Meaning	Relay
SP1	Off	Threshold value 1 exceeded	Inactive
	On (green)	Threshold value 1 not reached	Active
SP2	Off	Threshold value 2 exceeded	Inactive
	On (green)	Threshold value 2 not reached	Active

Setting the threshold values

The two relays are controlled by the two presettable set points SP1 and SP2. The hysteresis H is fixed at 15% of the threshold values (see Fig. 4).

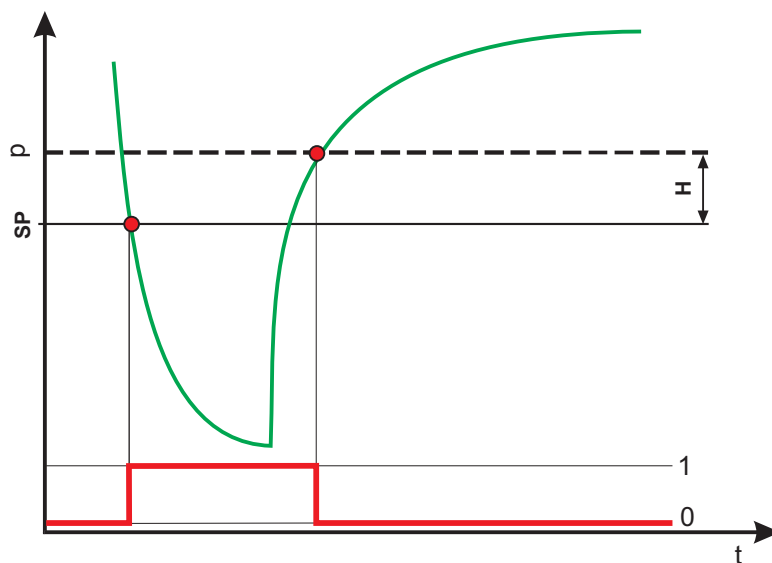


Fig. 4: Pressure and relay status curves illustrating threshold values and hysteresis

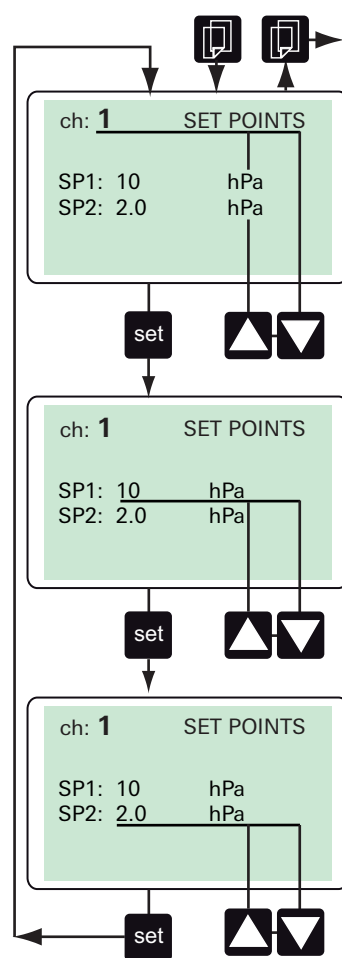
Setting the set points via RS-485

- Transmit the pressure value for set point 1 using parameter 730 in the format 10-u_expo_new.
- Transmit the pressure value for set point 2 using parameter 732 in the format 10-u_expo_new.

The pressures for the set points can also be read using the same parameters. For more information about the exchange of data, see the "Operation" chapter in the operating instructions for the standard gauge.

Setting the set points using DPG 202

When connecting an AR gauge to a DPG 202 controller, the SET POINTS menu appears between the RELAY MENU and COMMON MENU. In this menu the two set points for the connected gauge can be set.



SET POINTS

After selecting this menu using the **Menu** key, the cursor flashes at the position **ch:** (measurement channel).

- ⇒ Select the required channel number with the **Up/Down** keys.
- ⇒ Use the **set** key to apply the channel number.

The cursor jumps to the pressure value for **SP1**.

- ⇒ Select the required pressure value for **SP1** with the **Up/Down** keys.
- ⇒ Confirm with the **set** key.

The cursor jumps to the pressure value for **SP2**.

- ⇒ Select the required pressure value for **SP2** with the **Up/Down** keys.
- ⇒ Confirm with the **set** key.

Adjusting the gauge

For details of the prerequisites for adjusting the gauge, refer to the "Operation" chapter in the operating instructions for the relevant standard gauge.

- Remove the rubber plugs from the "adjust" button access hole.
- Evacuate the vacuum chamber to the pressure $p \leq 1 \cdot 10^{-5}$ hPa.
- Push the "adjust" button briefly with a small pin (screw driver, Allen key or the like).
- Vent vacuum chamber to atmospheric pressure with air or N₂; afterwards wait about 10 minutes.
- Push again the "adjust" button briefly.
- Reinsert the rubber plug.



Limited adjustment scope

For combination gauges, the adjustment of atmospheric pressure is limited to the Pirani sensor. For the CPT 200, a pressure of $p \leq 0.1$ hPa is sufficient for zero-point adjustment. In this case, an output signal of 0.9 V is set. When using ActiveLine controller this leads to a display of about -25 hPa (-19 Torr). An atmospheric pressure adjustment for CPT 200 is not possible.

Output characteristics of the analog signal

$p(U)$ = Pressure as a function of the output voltage

$U(p)$ = Output voltage as a function of the pressure

FS = Full scale

U = Output voltage in voltage

OR = Over range

UR = Under range

dec = Decade

Gauge	CPT 200 AR	RPT 200 AR	PPT 200 AR	HPT 200 AR	MPT 200 AR
Analog	linear	log 1 V/dec	log 1 V/dec	log 0.75 V/dec	log 0.6 V/dec
$p(U) =$	$(U-1) \cdot FS / 8$	$10^{(U-c)}$	$10^{(U-c)}$	$10^{(U-0.75)/0.75+c}$	$10^{1.667 \cdot U-d}$
$U(p) =$	$1 + 8 \cdot p / FS$	$c + \log_{10} p$	$c + \log_{10} p$	$7.75 + 0.75 \cdot (\log_{10} p - c)$	$c + 0.6 \cdot \log_{10} p$
kPa		$c = 2.5$	$c = 2.5$	$c = -1.0$	$c=7.4; d=12.33$
Pa		$c = 3.5$	$c = 3.5$	$c = 2.0$	$c=5.6; d=9.333$
hPa, mbar		$c = 5.5$	$c = 5.5$	$c = 0$	$c=6.8; d=11.33$
μ bar		$c = 2.5$	$c = 2.5$	$c = -3.0$	$c=5.0; d=8.333$
Torr		$c = 5.625$	$c = 5.625$	$c = -0.125$	$c=6.875; d=11.46$
mTorr, μ		$c = 2.625$	$c = 2.625$	$c = 2.875$	$c=5.075; d=8.458$
U_{max}	9.0 V	8.68 V	8.5 V	10.0 V	8.6 V
U_{min}	1.0 V	1.5 V	1.5 V	0.774 V	1.82 V
OR	9.8 ... 13.5 V	9.1 ... 13.5 V	-	-	-
UR	0.5...0.9 V	0.5...0.9 V	0.5...0.9 V	0.5...0.774 V	0.5...1.82 V
Error	-	-	-	-	9.5...10.5 V
Error	< 0.5	< 0.5 V	< 0.5 V	< 0.5 V	< 0.5 V

Correction factors for gas type dependent sensors

The correction factors can be written via the serial interface in the memory of the gauge; see operating instructions for the standard version of the respective gauge.

Accessories

Designation	Order number
M12 m plug 8-pole with screw terminals DigiLine AR	PT 348 107 -T
Gauge cable DigiLine xPT 200 AR to TPG 36x, 3 m	PT 348 250 -T

Technical data

Parameter	CPT 200
Interface: Connection	
Supply: power consumption	2.2 W
Identification resistor	13.2 k Ω

Parameter	RPT 200 AR
Interface: Connection	
Supply: power consumption	3.2 W
Identification resistor	3.0 k Ω

Parameter	PPT 200 AR
Interface: Connection	
Supply: power consumption	3.2 W
Identification resistor	3,0 k Ω

Parameter	HPT 200 AR
Interface: Connection	
Supply: power consumption	9.7 W
Identification resistor	17.2 k Ω

Parameter	MPT 200 AR
Interface: Connection	
Supply: power consumption	3.7 W
Identification resistor	11.1 k Ω (Pirani); 9.1 k Ω (Cold Cathode and Pirani)



Declaration of conformity

We hereby declare that the product cited below satisfies all relevant provisions according to the following **EC directives**:

- **Electromagnetic Compatibility 2014/30/EU**
- **Low Voltage 2014/35/EU**

DigiLine

CPT 200 A/R, PPT 200 A/R, RPT 200 A/R, MPT 200 A/R, HPT 200 A/R

Harmonised standards and national standards and specifications which have been applied:

EN 61326-1: 2013 Group 1 / Class B
EN 50581: 2012

Signature:

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