

# HYDRA-Dry Ultra High Purity Pressure Transducer Model HD

WIKA Data Sheet SP 99.22

## Applications

- Semiconductor industry
- UHP-liquid chemicals distribution

## Special features

- Patented double diaphragm
- Completely dry: non-metallic ceramic sensor; no fill fluid
- Perfluoroalkoxy (PFA) wetted parts
- Transducer is 270° rotatable even after installation
- Ingress protection IP 67
- Optional: Model HYDRA-Indicator as panel mount or integrated indicator

## Description

### HYDRA-line

Our pressure measuring instruments of the HYDRA-line product family have been developed in co-operation with well-known customers in the semiconductor industry. The complete product concept has been adapted to the special requirements of the process equipment and UHP chemicals distribution system sectors.

The HYDRA-Dry pressure transducer offers high accuracy and reliability, ultra clean wetted parts and surfaces.

There is no fill fluid which avoids possible process contamination.

Furthermore, the production of all wetted parts, cleaning assembly, calibration and packaging takes place in a class 100 cleanroom.

### Double safety

The patented HYDRA double diaphragm system enables a safe and reliable separation of the pressure sensor from the process medium. Simultaneously diffusing process media such as HF or HCl vapours are given off to the environment to avoid any falsification of the measuring result or the destruction of the sensor element.



HYDRA-line Model HD, transducer 4 ... 20 mA, 2-wire system and dead-end 1/2" flare process connection



HYDRA-line Model HD, transducer 4 ... 20 mA, 2-wire system, with integrated digital display (HYDRA-Indicator) and in-line 1/2" flare process connection

The offer for sale of this product does not infer or imply chemical compatibility with specific applications. Some applications of this product can and will cause diffusion of chemicals through the diaphragm materials.

## Specifications

## Model HS, HYDRA-Dry

Pressure ranges	bar	0 ... 2.5	0 ... 4	0 ... 6
	psi	0 ... 30	0 ... 60	0 ... 100
	kPa	0 ... 250	0 ... 400	0 ... 600
Overpressure safety of sensor	bar	40 <sup>1)</sup>		
Pressure-reference		Relative pressure, not suitable for vacuum		
Process connection		in-line 3/8" flare, 1/2" flare, 3/4" flare, 1" flare, 1 1/4" flare		
		dead-end 1/4" flare, 3/8" flare, 1/2" flare		
		dead-end 1/4" NPT female		
Accuracy	% of span	≤ 0.5		
Material				
■ Wetted parts		PFA or TFM (modified PTFE), no transfer-fluid		
■ Other non-wetted parts		PVDF, EPDM, FPM/FKM		
■ Cable		FEP jacketed		
Permissible temperature range				
■ Process	°C	+5 ... +60 (+41 ... +140 °F)		
■ Ambient	°C	+5 ... +60 (+41 ... +140 °F)		
■ Storage	°C	-20 ... +60 (-4 ... +140 °F)		
Electrical connection		Flying lead with 5m cable (zero/span not adjustable)		
Power supply $U_B$	VDC	$12 < U_B \leq 30$ (18 ... 30 V with HYDRA-Indicator)		
Signal output	mA	4 ... 20, 2-wire system		
Maximum load $R_A$		$R_A \leq (U_B - 12 \text{ V}) / 0.027 \text{ A}$ with $R_A$ in $\Omega$ und $U_B$ in V ( $R_A \leq (U_B - 18 \text{ V}) / 0.027 \text{ A}$ with HYDRA-Indicator)		
Stability per year	% of span	≤ 0.25 (at reference conditions)		
Temperature-coefficients	% of span/10K	≤ 0.25 (from 5 °C to 60 °C)		
Ingress protection per IEC 60 529 / EN 60 529		IP 67		

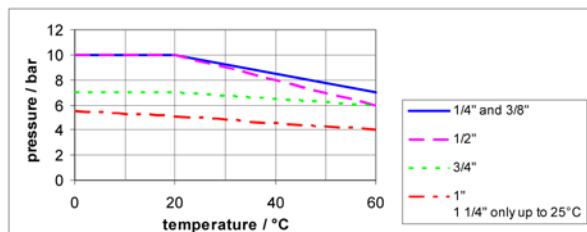
1) Limited by maximum pressure rating of the process connection see diagram below

### Considerations for use:

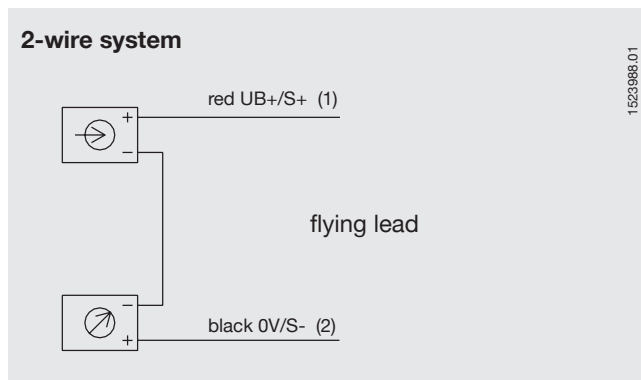
This transmitter can be rotated a full 360° by hand. No tools required.

The transmitter can not be removed or the central PVDF nut loosened from the housing as this may cause the fill fluid to leak destroying the measuring unit.

### Pressure-temperature rating

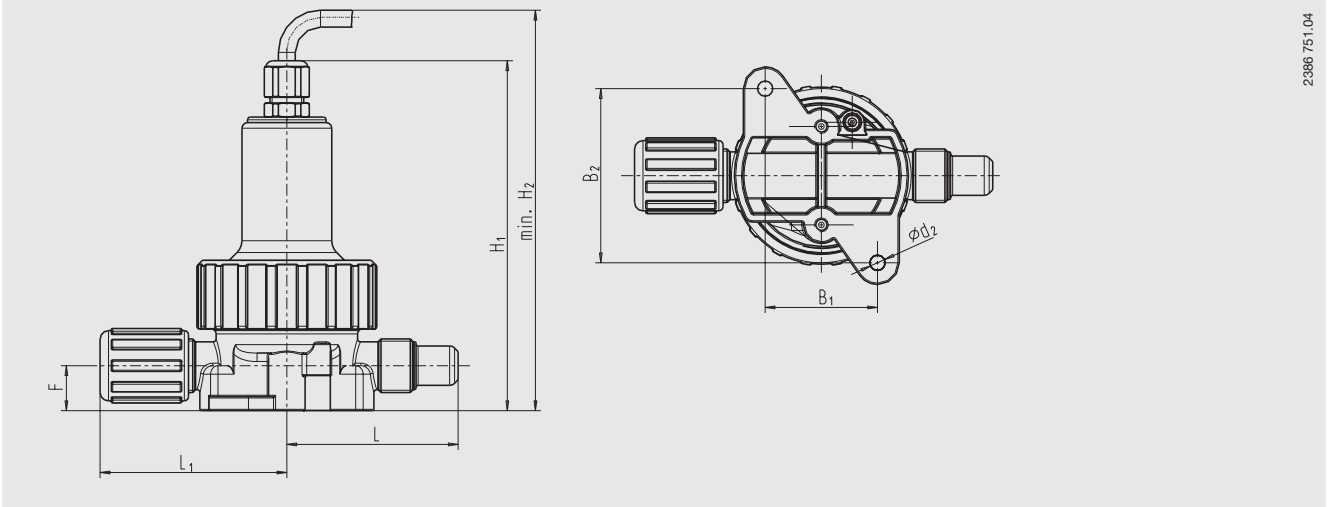


### Wiring details



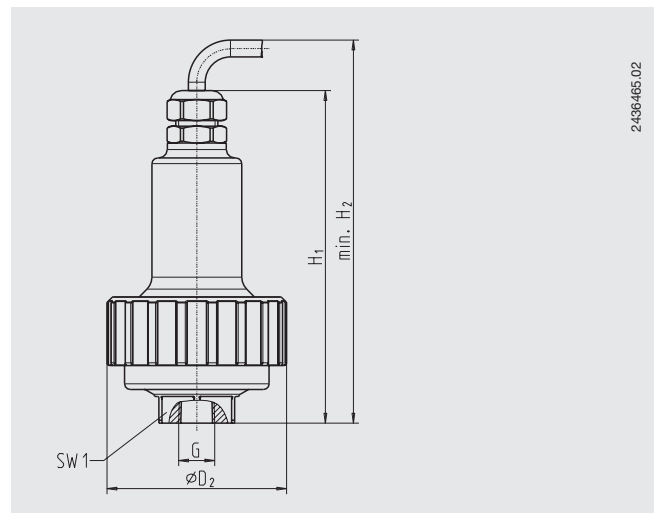
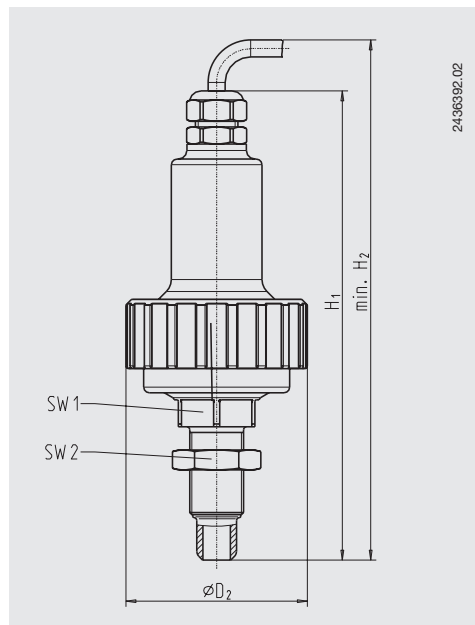
## Dimensions in mm

### HYDRA-line, Model HD, in-line flare process connection



Process connection	Dimensions in mm							
	H <sub>1</sub>	H <sub>2</sub>	L	L <sub>1</sub>	F	B <sub>1</sub>	B <sub>2</sub>	Ød <sub>2</sub>
In-line 3/8" flare	130	155	118	127	16	40	62	5.5
In-line 1/2" flare	130	155	122	133	16	40	62	5.5
In-line 3/4" flare	135	160	122	133	19	40	62	5.5
In-line 1" flare	160	185	165	179	25	56	78	6.5
In-line 1 1/4" flare	160	185	224	238	25	56	78	6.5

### HYDRA-line, Model HD, dead-end process connection



Process connection	Dimensions in mm				
	H <sub>1</sub>	H <sub>2</sub>	SW1	SW2	Ød <sub>2</sub>
Dead-end 1/4" flare	161 ± 2	min. 179	27	11/16"	64
Dead-end 3/8" flare	161 ± 2	min. 179	27	15/16"	64
Dead-end 1/2" flare	164 ± 2	min. 182	27	17/16"	64
Dead-end 1/4 NPT female	117 ± 2	min. 135	27	-	64

# HYDRA digital indicator with switch points HYDRA-Indicator

## Dynamic

The digital indicator Model HYDRA-Indicator offers a unique solution for a local display of the process pressure at the transducer Model HYDRA-Dry. With this HYDRA-Indicator, which has been specially designed for the UHP market, a signal and freely adjustable switch points can be transmitted simultaneously. Its scale can be fully adjusted directly on site without master instrument.

Unit (psi, bar, kPa, MPa and kg/cm<sup>2</sup>), decimal point, display range, zero point and switch points can be adjusted via the control keys.

## Comfortable

Power is directly supplied by the 4 ... 20 mA-loop, i.e. no extra power supply is required.

## Practical

The seven millimetre high, red LED display is easy to read. In order to be able to adapt the HYDRA-Indicator to the application, it is available in two different versions:

- HYDRA-Indicator panel mount
- HYDRA-Indicator integrated in transducer HYDRA-Dry for display direct at the measuring instrument

## Electrical connection

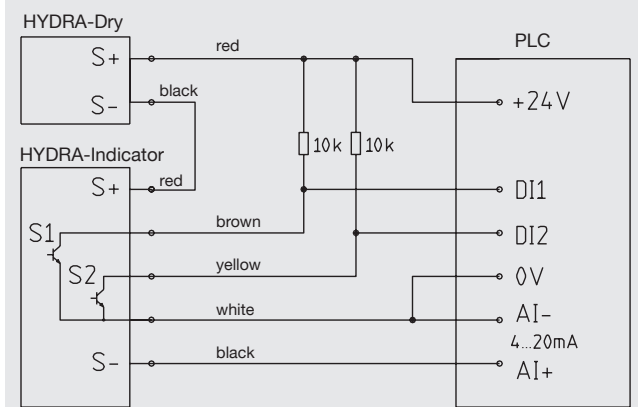
### Flying leads

	red	Power supply +UB, S+
	black	Power supply 0V, S-
	white	Switch ground (potential-free)
	brown	Switch out1
	yellow	Switch out2

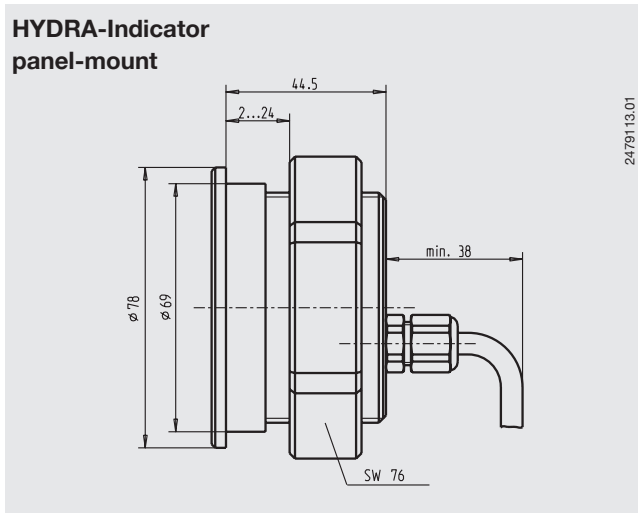
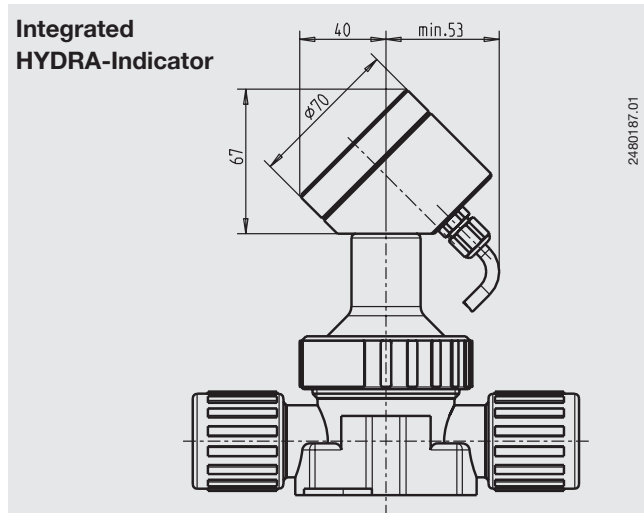


Fig. left: HYDRA-line Model HD, with integrated digital display (HYDRA-Indicator)  
Fig. right: HYDRA-Indicator separate for panel mount

### Example for connection programmable logic controller (PLC)



## Dimensions in mm



**Technical data**
**HYDRA-Indicator**

Display		
■ Design		7-Segment-red LED, height 7 mm, 4-digit
■ Range		-999 ... 6000
■ Accuracy	% of span	≤ 0.5 ±1 digit
Scaling adjustment		Menu-driven programming via external control keys Adjustable measuring range einstellbar Adjustable decimal point Programmable pressure units: bar, psi, kg/cm <sup>2</sup> , MPa, kPa Zero point freely adjustable within a range of ±10 % of the span
Signal input	mA	4 ... 20, 2-wire (supplied by the current loop, 6 V voltage load)
Signal output		Analogue signal is directly looped through
Max. permissible input	mA / VDC	±40 (short duration only)
CE-conformity		89/336/EWG interference emission and interference compatibility see EN 61 326
Switch points		Individually adjustable via external control keys
■ Number		2 x NPN Open-Collector galvanically isolated
■ Function		Make contact, break contact
■ Adjustment		Freely adjustable within a range of 1 ... 99 % of the span
■ Temperature error		< 0.1% / 10 K
■ Accuracy	% of span	≤ 0.5 ±1 digit
■ Max. switching current	mA	300
■ Display of switch status		LED
■ Response time	ms	< 15
■ Hysteresis	%	0.5 (fixed)
Power supply $U_B$	VDC	16 ... 30
Influence of power supply		< 0.1% / 10 V
Permissible temperature range		
■ Ambient	°C	- 30 ... +85
■ Storage	°C	- 30 ... +85
■ Compensated	°C	- 20 ... +80
Temperature error	% of span	< 0.1/10K
Vibration resistance	g	5 at 10 ... 2000 Hz
Shock resistance	g	100
Electrical connection		Flying lead with 5 m cable
Ingress protection per IEC 60 529 / EN 60 529		IP 67
Wiring protection		Protected against polarity crossing + $U_B$ /0V
Materials		
■ Case		PP and PFA
■ Cable		Coated with PTFE
Installation		Panel mount Ø 69.5 mm or mounted on pressure transducer HYDRA-Dry

{ } Items in curved brackets { } are optional extras for additional price.

## Ordering information code for pressure system HYDRA-line, Model HD

Field No.	Code	Features
		<b>Unit</b>
	<b>B</b>	bar
	<b>P</b>	psi
	<b>A</b>	kPa
1	<input type="checkbox"/>	<b>?</b> other <i>please state as additional text</i>
		<b>Range</b>
	<b>BF</b>	0 bar ... 2.5 bar    0 psi ... 30 psi    0 kPa ... 250 kPa
	<b>BG</b>	0 bar ... 4 bar    0 psi ... 60 psi    0 kPa ... 400 kPa
	<b>BH</b>	0 bar ... 6 bar    0 psi ... 100 psi    0 kPa ... 600 kPa
2	<input type="checkbox"/>	<b>??</b> other <i>please state as additional text</i>
		<b>Electrical connection</b>
3	<input type="checkbox"/>	<b>H</b> 5 m flying leads with free ends (IP 67, FEP jacketed)
		<b>Digital display</b>
	<b>Z</b>	without
	<b>2</b>	integrated, 4-digit LED (HYDRA-Indicator)
4	<input type="checkbox"/>	<b>3</b> separate for panel mount, 4-digit LED (HYDRA-Indicator)
		<b>Process connection</b>
	<b>06</b>	in-line 3/8 " flare
	<b>08</b>	in-line 1/2 " flare
	<b>12</b>	in-line 3/4 " flare
	<b>16</b>	in-line 1 " flare
	<b>20</b>	in-line 1 1/4 " flare
	<b>38</b>	dead-end 1/4 " flare
	<b>40</b>	dead-end 3/8 " flare
	<b>42</b>	dead-end 1/2 " flare
5	<input type="checkbox"/>	<b>50</b> dead-end 1/4 NPT female
		<b>Flare nut</b>
	<b>77</b>	PFA <i>only for flare connections, not for NPT</i>
	<b>75</b>	PVDF <i>only for flare connections, not for NPT</i>
6	<input type="checkbox"/>	<b>ZZ</b> without <i>only with NPT connections</i>
		<b>Additional order info</b>
	<b>YES</b>	<b>NO</b>
7	<input type="checkbox"/>	<b>1</b> <b>Z</b> additional text <i>Please state as clearly understandable text!</i>

### Order code:

		1	2	3	4	5	6	7	
<b>HD</b>	-	<input type="text"/>	<input type="text"/>	<b>H</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>	-	<input type="text"/>

Optional designs on request

### Additional text:

---



---

Modifications may take place and materials specified may be replaced by others without prior notice. Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.