

# PRESSURE SENSORS



FIRST IN SENSORS

metallux USA, Inc.

# TRUST THE X!



## Welcome to Metallux USA, Inc.


Metallux USA, Inc. is the sole distributor of products for Metallux AG in Germany. A company that is internationally renowned for its sensor products.

We are located in Western New York State in the city of Rochester on the southern shore of Lake Ontario. The City is the home of internationally-recognized academic institutions like the University of Rochester and Rochester Institute of Technology. Metallux USA, by virtue of our sole relationship status with Germany, allows us to possess a direct line of communication with the head office in Germany. This line provides customer and potential customers the ability to receive prompt and accurate answers to all of their technical inquire.


Whether you are interested in industrial joysticks, pressure sensors, linear or rotary measurement sensors, high voltage and power or brake resistor, Metallux USA Inc. is always your first choice for a successful, satisfactory and well executed solution for all your sensor applications.

 BERND H. OBERASCHER  
President Metallux USA, Inc.



 **OUR GUIDELINE:** Fair partnership will ensure a successful and lasting business relationship. We pride ourselves in individual and direct consultation resulting in an innovative product range and reliability.



 Whether standard or customised solutions, we offer a broad range of pressure sensor versions.

## PRESSURE SENSORS CPS/SPS

The CPS and SPS pressure sensors are used to measure the pressure of gaseous or liquid media. They are available in ceramic and stainless steel. A wide range of standard models ensure that you will find the perfect sensor for your application.



**CPS 1010/2010**

CPS 1010/2010  
Drawings  
Connection diagrams



**CPS 1184 (Z)**

CPS 1184/CPS 1184 Z  
Drawings  
Connection diagrams



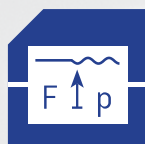
**CPS 2184 (Z)**

CPS 2184/CPS 2184 Z  
Drawings  
Connection diagrams



**SPS 1000 (Z)**

SPS 1000/SPS 1000 Z  
Drawings  
Connection diagrams



**SPS 3003 (Z)**

SPS 3003/SPS 3003 Z  
Drawings  
Connection diagrams



# PRESSURE SENSORS FROM METALLUX



- Require Custom specific solutions? This is part of our customer service. The ceramic and stainless steel materials have been selected to ensure used assure a long and trouble free service life in most media.
- Choose from a comprehensive range of sensors. Our wide selection of sensors make it easy to find the right sensor for your application.
- You can rely on chemical resistant sensors. The materials have been selected for highly safe, reliable operation. Easy assembly so that your production process is seamless applications in:
  - Hydraulics
  - Pneumatics
  - Pressure transmitters
  - Pressure switches
  - Pumps
  - Force transmitters
  - Filters
  - High-pressure cleaners

OVERVIEW		
VERSION	CPS	SPS
Page	Pages 6 – 15	Pages 16 – 23
MATERIALS		
Al2O3	x	
Stainless steel		x
SPECIAL FEATURES		
Stability <0.1% [150° 1000h]	x	
Standard temperature range –40...85°C	x	x
Very high burst pressure rating		x
Integrated pressure connection		x
Output 0.5...4.5V	x	x
APPLICATIONS		
Hydraulics		x
Pneumatics	x	
Pressure transmitters	x	x
Pressure switches	x	x
Pumps	x	x
Filters	x	
High-pressure cleaners	x	x



# PRESSURE MEASURING CELLS WITH THICK-FILM TECHNOLOGY ON A CERAMIC OR STAINLESS STEEL BASE

Perfect measuring cells for your applications



## PRESSURE TRANSMITTERS / PRESSURE SWITCHES

Ceramic pressure sensors in thick-film technology reliably record pressures in pressure transmitters and pressure switches. These highly precise and affordable sensors monitor process parameters in production processes ensuring the quality of the manufactured products.



## AUTOMOTIVE APPLICATIONS

Ceramic monolithic pressure sensors perform various tasks in automotive applications. They are used to monitor filter pressure, oil and fuel pressure and monitor the pneumatic and hydraulic brake fluid circuits in commercial and private vehicles. High reliability, precision and highly resistant against aggressive media, make this technology suitable for an ever growing range of applications.



## HYDRAULICS / REFRIGERATION EQUIPMENT

An extremely high burst pressure rating and high reliability make this SPS stainless steel sensor an attractive alternative. The monolith with screw connection eliminates the need for a seal between the sensor and the pressure connection. This also eliminates the risk of mechanical weak points, such as welding joints. With this model, it is possible to achieve even higher resistance to aggressive media.



## MEDICAL TECHNOLOGY

Some patients depend on dialysis equipment for their survival. There is zero room for error when it comes to the precision pressure sensors that monitor the system pressure. The manufacturers of dialysis systems put their trust in Metallux pressure sensors. For self-cleaning dialysis equipment, the high chemical compatibility and front-flush diaphragm on the sensors are particularly attractive features.

# CERAMIC STANDARD PRESSURE SENSOR CPS 1010/2010



Whether monitoring filters in pneumatic applications, or in use in an automobile, the monolith ceramic pressure sensors in the CPS 1010/2010 series are an affordable, yet robust choice. The ceramic material's excellent long-term stability and resistance to aggressive media are additional advantages of this pressure sensor.



## TECHNICAL SPECIFICATIONS

<b>Resistance/Tolerance</b>	10 kOhm $\pm$ 20%
<b>Output signal</b>	1.5 – 3.5 mV/V
<b>Linearity, hysteresis, reproducibility</b>	$\leq \pm 0.4\%$ FS; pNom $\leq$ 60 bar $\leq \pm 0.8\%$ FS typ.; pNom $>$ 6 bar ***
<b>Supply voltage</b>	5...30V
<b>Zero signal range</b>	-0.2...+0.2 mV/V (opt. -0.1...+0.1 mV/V)
<b>Zero signal stability</b>	$\leq \pm 0.25\%$ FS (1000h @ 125 °C) $\leq \pm 0.1\%$ FS (2.5 million pressure cycles 0...100%)
<b>Span stability</b>	$\leq \pm 0.05\%$ FS (1000h @ 125 °C) $\leq \pm 0.05\%$ FS (2.5 million pressure cycles 0...100%)
<b>Temperature error, zero point</b>	$< \pm 0.02\%$ FS/K (0...85 °C) *
<b>Temperature error, span</b>	-0.012% FS/K (0...85 °C)
<b>Electrical connectors</b>	Tinned solder pads, pins, flat flexible cable; raster size 2.54 mm (CPS 1010) or 1.27 mm (CPS 2010)
<b>Nominal/Operating/Storage temperature range</b>	-40...125 °C

<b>Material of parts that contact the media</b>	Al2O3 96% **
<b>Dimensions</b>	see dimensional drawings
<b>Pressure type</b>	Relative pressure

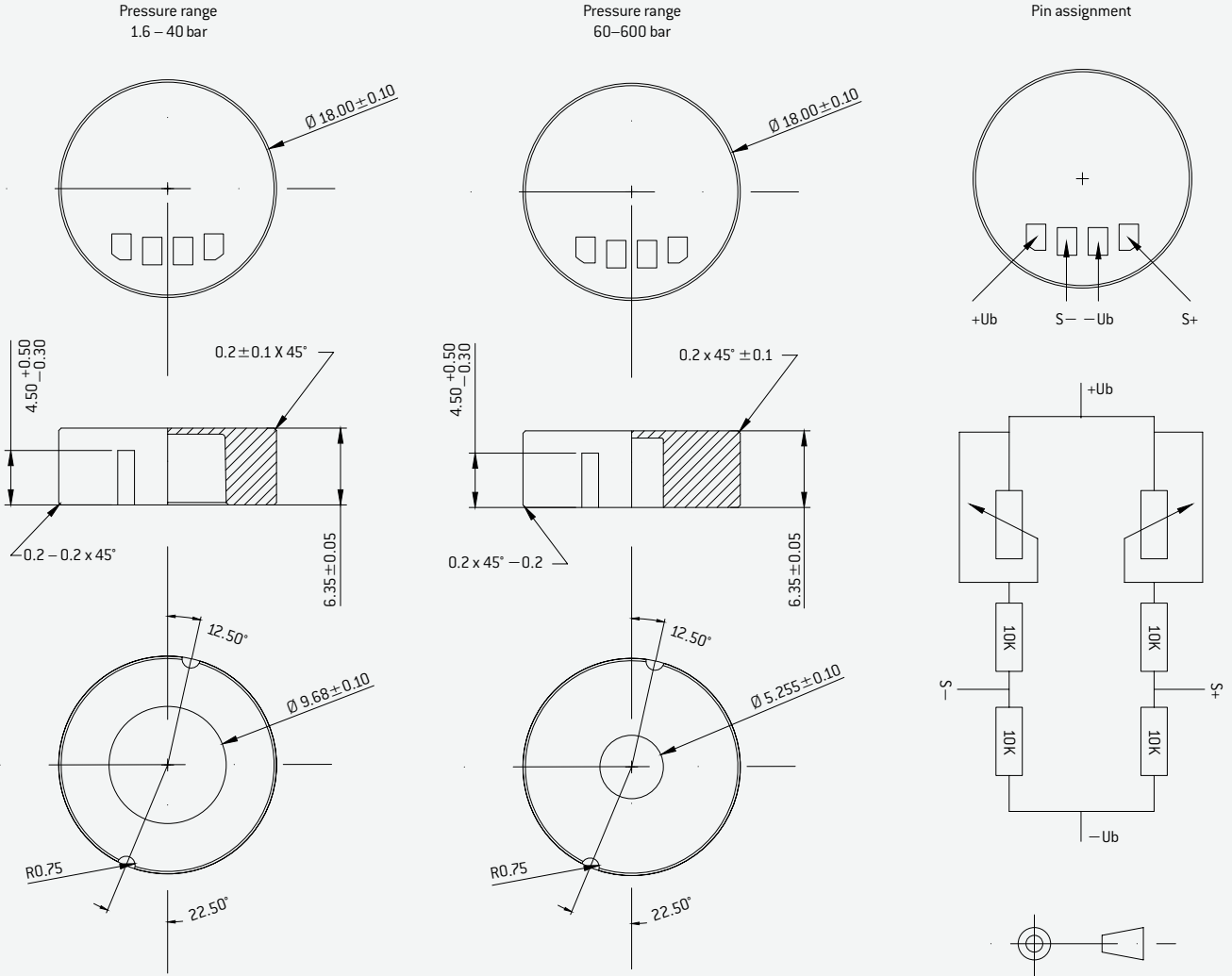
NOMINAL PRESSURE	BURST PRESSURE	VACUUM
<b>1.6...60 bar</b>	Factor 2.5	Vacuum-resistant
<b>100 bar</b>	Factor 1.75	Vacuum-resistant
<b>160 bar</b>	Factor 1.75	Vacuum-resistant
<b>250 bar</b>	Factor 1.5	Vacuum-resistant
<b>400 bar</b>	Factor 1.5	Vacuum-resistant
<b>600 bar</b>	Factor 1.5	Vacuum-resistant

Mechanical and electrical characteristics are customisable. Specifications are subject to change without notice. \* Sensor without cable \*\* Aluminium oxide offers high chemical resistance against a variety of measured media. We recommend that customers perform their own tests for new or untested applications. \*\*\* at max. setting acc. to DIN 16086

## SAMPLE ORDER

Type	Pressure range in bar	Electrical connection (acc. to drawing)
CPS 1010	100 bar	Solder pads
Other dimensions and electrical specifications on request.		

DIMENSIONAL DRAWINGS / CONNECTOR SCHEMATIC / ELECTRICAL CONNECTORS

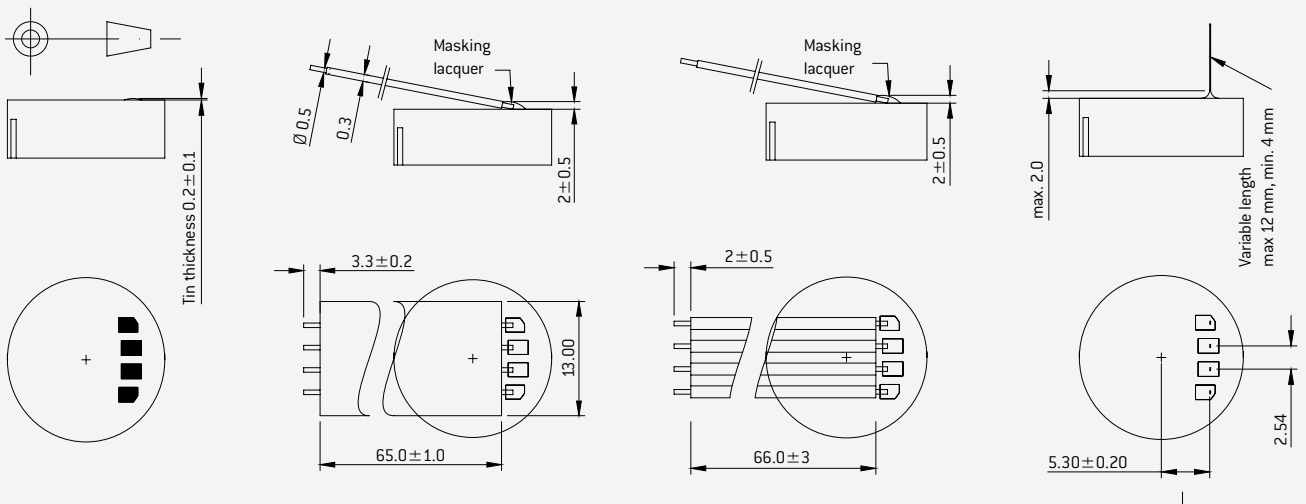


Tinned connectors  
Sn95.6 Ag3.8 Cu0.6

Flex: A04-N065-N(Nomex)  
Cover: PUR 36788-1TM

Flat flexible cable: 4 X AWG26 2.54mm  
Cover: PUR 36788-1TM

Pins: 0.5 X 0.27 tinned



# CERAMIC STANDARD PRESSURE SENSOR CPS 1184



Metallux monolithic pressure sensors are manufactured in large series and are in use in a range of applications in machinery production, the automotive industry, and ventilation and climate control equipment. The easy installation and calibration of the sensors simplifies the customer's production processes. The CPS 1184 features a compact design, high media compatibility and excellent long-term stability.



TECHNICAL SPECIFICATIONS	
Resistance/Tolerance	10 kΩhm ± 20%
Output signal	See table "Span"
Linearity, hysteresis, reproducibility	≤ ± 0.4% FS typ.; pNom ≤ 60 bar ≤ ± 0.8% FS typ.; pNom > 60 bar max < ± 1.5% FS ***
Supply voltage	5...30V
Zero signal range	-0.2...0 mV/V * (opt. -0.1...0 mV/V) *
Zero signal stability	≤ ± 0.25% FS (1000h @ 125 °C) ≤ ± 0.1% FS (2.5 million pressure cycles 0...100%)
Span stability	≤ ± 0.05% FS (1000h @ 125 °C) ≤ ± 0.05% FS (2.5 million pressure cycles 0...100%)
Temperature error, zero point	< ± 0.02% FS/K *
Temperature error, span	≤ 0.012% FS (0...85 °C)
Electrical connectors	Tinned solder pads, pins, flat flexible cable
Nominal/Operating/ Storage temperature range	- 40...125 °C *
Material of parts that contact the media	Al2O3 96% **
Dimensions	see dimensional drawings
Pressure type	Relative pressure

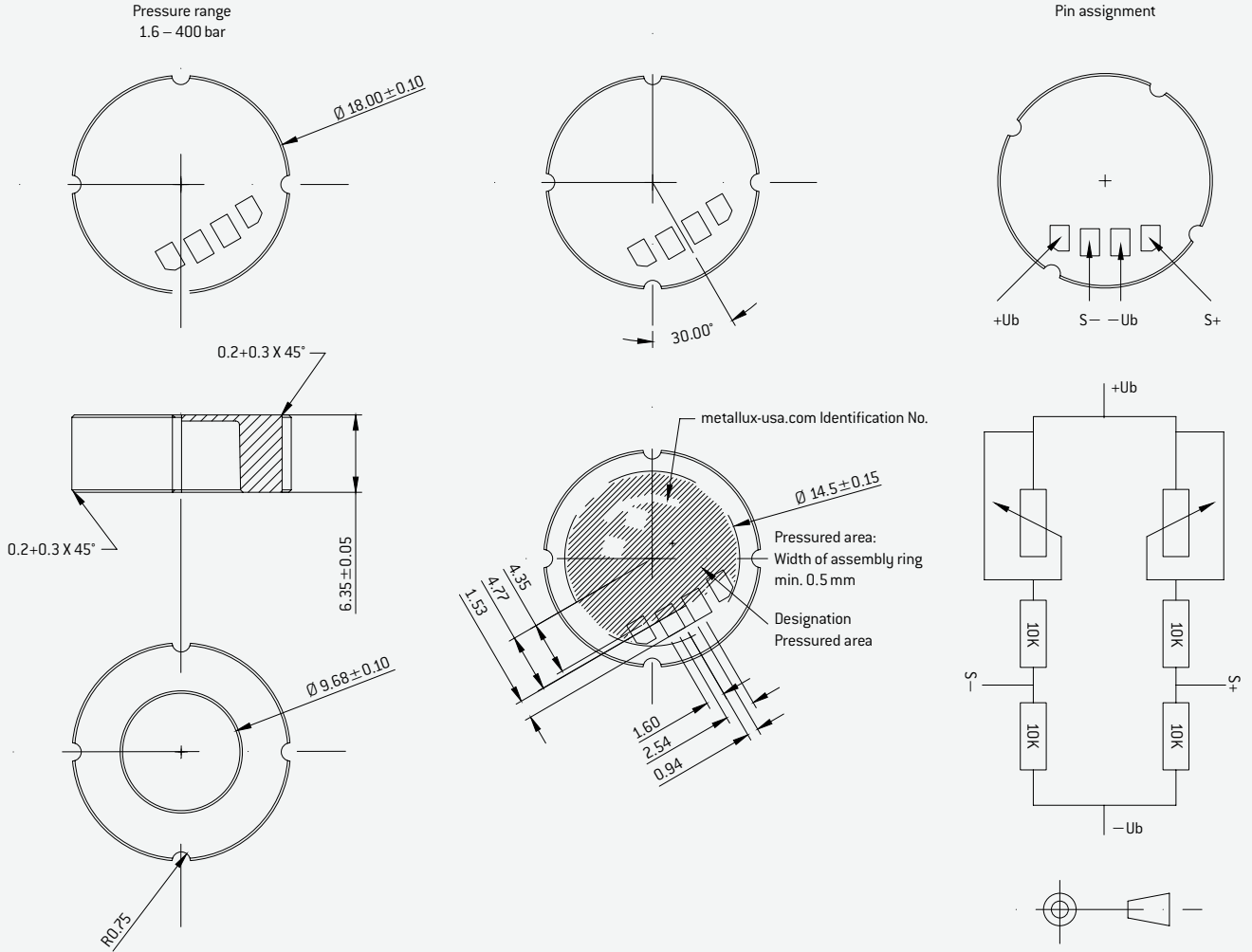
NOMINAL PRESSURE	SPAN	BURST PRESSURE	VACUUM
<b>1.6 bar</b>	1.5...2.8 mV/V	≥ 4 bar	Vacuum-resistant
<b>2.5 bar</b>	2.5...4.4 mV/V	≥ 7 bar	Vacuum-resistant
<b>4 bar</b>	1.5...2.8 mV/V	≥ 15 bar	Vacuum-resistant
<b>6 bar</b>	2.4...4.2 mV/V	≥ 15 bar	Vacuum-resistant
<b>10 bar</b>	2.7...4.0 mV/V	≥ 35 bar	Vacuum-resistant
<b>16 bar</b>	2.2...3.5 mV/V	≥ 50 bar	Vacuum-resistant
<b>25 bar</b>	3.7...5.3 mV/V	≥ 70 bar	Vacuum-resistant
<b>40 bar</b>	2.0...3.3 mV/V	≥ 150 bar	Vacuum-resistant
<b>60 bar</b>	3.2...4.8 mV/V	≥ 150 bar	Vacuum-resistant
<b>100 bar</b>	2.1...2.7 mV/V	≥ 250 bar	Vacuum-resistant
<b>160 bar</b>	1.4...2.7 mV/V	≥ 320 bar	Vacuum-resistant
<b>250 bar</b>	2.2...4.2 mV/V	≥ 450 bar	Vacuum-resistant
<b>400 bar</b>	1.4...2.9 mV/V	≥ 700 bar	Vacuum-resistant

Mechanical and electrical characteristics are customisable. Specifications are subject to change without notice. \* Sensor without cable \*\* Aluminium oxide offers high chemical resistance against a variety of measured media. We recommend that customers perform their own tests for new or untested applications. \*\*\* at max. setting acc. to DIN 16086

SAMPLE ORDER		
Type	Pressure range in bar	Electrical connection (acc. to drawing)
CPS 1184	100 bar	Solder pads
Other dimensions and electrical specifications on request.		



DIMENSIONAL DRAWINGS / CONNECTOR SCHEMATIC / ELECTRICAL CONNECTORS

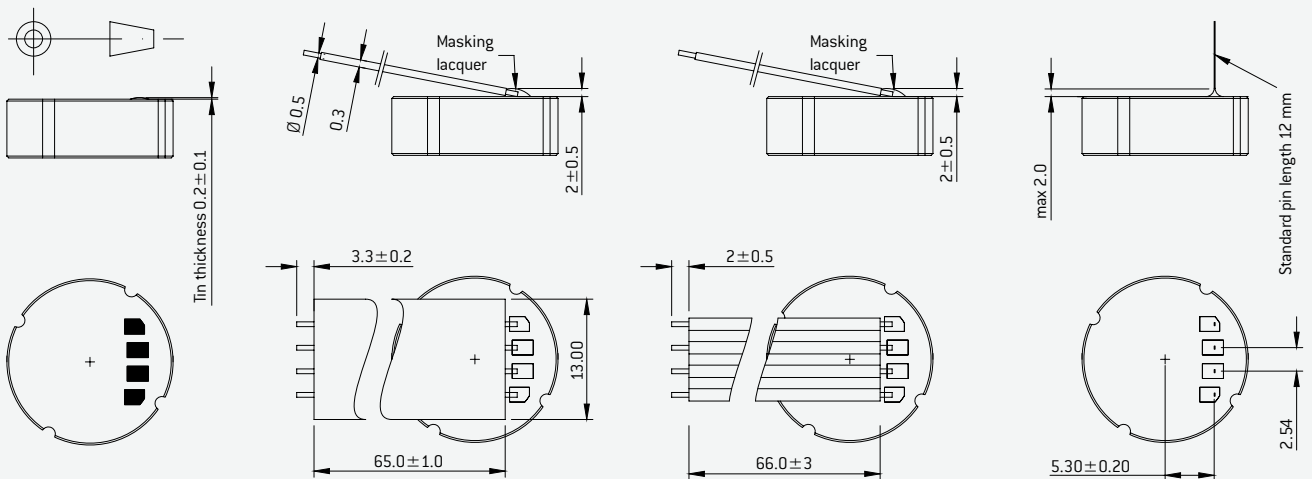


Tinned connectors  
Sn95.6 Ag3.8 Cu0.6

Flex: B04-N025-A(Nomex)  
Cover: PUR 36788-1TM

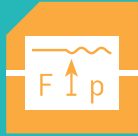
Flat flexible cable: 4 X AWG26 2.54mm  
Cover: PUR 36788-1TM

Pins: 0.5 X 0.27 tinned



# CERAMIC STANDARD PRESSURE SENSOR CPS 1184 Z

with output amplifier



The ceramic pressure sensors in the CPS 1184 Z series are integrated with an amplifier and are supplied calibrated to an output signal of 0.5 V to 4.5 V. The excellent long-term stability and high resistance against a wide range of media are additional features of this sensor series.



TECHNICAL SPECIFICATIONS	
Supply voltage (stabilised)	5 V ( $\pm 0.5$ V)
Output signal (ratiometric)	0.5...4.5 V
Calibration error	$\pm 0.5\%$ FS
Measurement error due to mech. stress	$< 0.5\%$ FS (typ.)
Total error (sum of non-linearity, hysteresis, non-reproducibility)	pNom $> 60$ bar; typ. $< \pm 0.4\%$ FS; max. $< \pm 1.5\%$ FS ***
Temperature error, zero point	$< \pm 0.02\%$ FS/K
Temperature error, span	$- 0.012\%$ FS/K
Response time	$< 2$ ms
Change in zero signal 1000h@125°C	$< / = \pm 0.3\%$ FS
Power consumption	$< 2.5$ mA
Output load resistance	1...5 k $\Omega$ m
Load capacity	$< 0.05$ $\mu$ F
Nominal/Operating/Storage temperature range	$- 40...125$ °C
Electrical connectors	Solder pads
Pressure type	Relative pressure

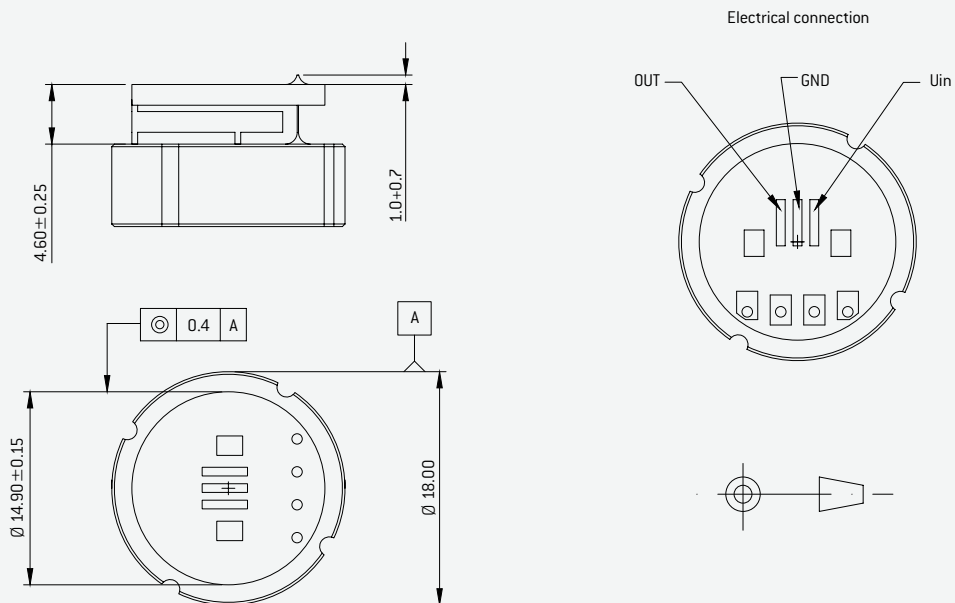
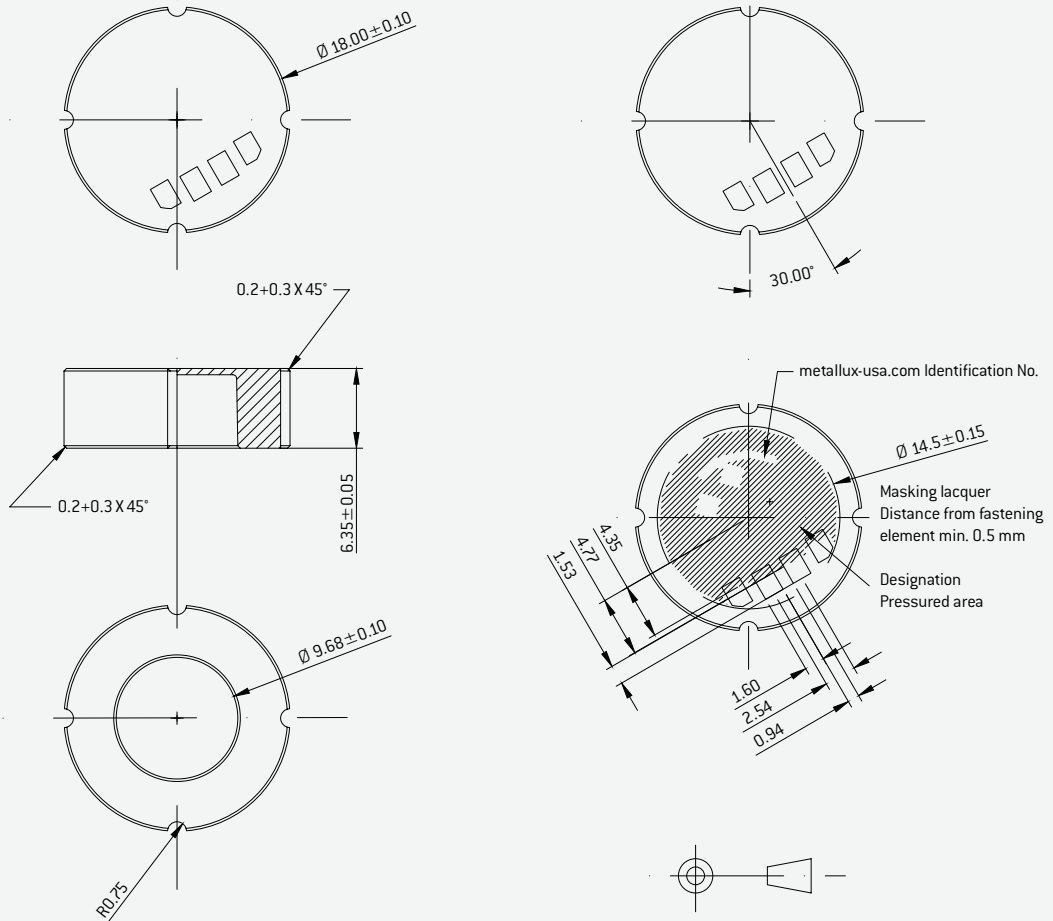
NOMINAL PRESSURE	SPAN	BURST PRESSURE	VACUUM
1.6 bar	0.5...4.5 V	$\geq 4$ bar	Vacuum-resistant
2.5 bar	0.5...4.5 V	$\geq 7$ bar	Vacuum-resistant
4 bar	0.5...4.5 V	$\geq 15$ bar	Vacuum-resistant
6 bar	0.5...4.5 V	$\geq 15$ bar	Vacuum-resistant
10 bar	0.5...4.5 V	$\geq 35$ bar	Vacuum-resistant
16 bar	0.5...4.5 V	$\geq 50$ bar	Vacuum-resistant
25 bar	0.5...4.5 V	$\geq 70$ bar	Vacuum-resistant
40/50 bar	0.5...4.5 V	$\geq 150$ bar	Vacuum-resistant
100 bar	0.5...4.5 V	$\geq 250$ bar	Vacuum-resistant
160 bar	0.5...4.5 V	$\geq 320$ bar	Vacuum-resistant
250 bar	0.5...4.5 V	$\geq 450$ bar	Vacuum-resistant
400 bar	0.5...4.5 V	$\geq 700$ bar	Vacuum-resistant

Mechanical and electrical characteristics are customisable. Specifications are subject to change without notice. \* Sensor without cable \*\* Aluminium oxide offers high chemical resistance against a variety of measured media. We recommend that customers perform their own tests for new or untested applications. \*\*\* at max. setting acc. to DIN 16086

SAMPLE ORDER		
Type	Pressure range in bar	Electrical connection (acc. to drawing)
CPS 1184 Z	100 bar	Solder pads
Other dimensions and electrical specifications on request.		

DIMENSIONAL DRAWINGS / CONNECTOR SCHEMATIC / ELECTRICAL CONNECTORS

Pressure range  
1.6 – 400 bar



# CERAMIC STANDARD PRESSURE SENSOR CPS 2184



The CPS 2184 sensors with front-flush diaphragm seal are suitable for measurement of relative as well as absolute pressures. The flush-front diaphragm makes for easy cleaning, an important requirement for sensors used in the medical and food industry. The sensors are also available with diaphragms consisting of 99.6% aluminium oxide.

The sensors are also available with diaphragms with 99.6% aluminium oxide, for applications with extremely aggressive media.



## TECHNICAL SPECIFICATIONS

<b>Resistance/Tolerance</b>	10 kOhm $\pm$ 20%
<b>Output signal</b>	See table "Span"
<b>Linearity, hysteresis, reproducibility</b>	$\leq \pm 0.4\%$ FS ***
<b>Supply voltage</b>	5...30V
<b>Zero point offset</b>	-0.2 ... 0 mV/V *
<b>Stability of offset</b>	$< \pm 0.25\%$ FS after 1000 h @ 125 °C
<b>Temperature error, zero point</b>	$\leq \pm 0.02\%$ FS/K (R) (0...85 °C) $\leq \pm 0.03\%$ FS/K (A, SG) (0...85 °C)
<b>Temperature error, span</b>	-0.012% FS/K (0...85 °C)
<b>Nominal/Operating/Storage temperature range</b>	-40...125 °C
<b>Electrical connectors</b>	Tinned solder pads, pin 12mm
<b>Pressure type</b>	Relative pressure, absolute pressure, sealed gauge

0.5 bar: only relative pressure  
 1 bar... 50 bar: Relative pressure (R), absolute pressure (A) and sealed gauge (SG) possible  
 100 bar ... 600 bar: only sealed gauge

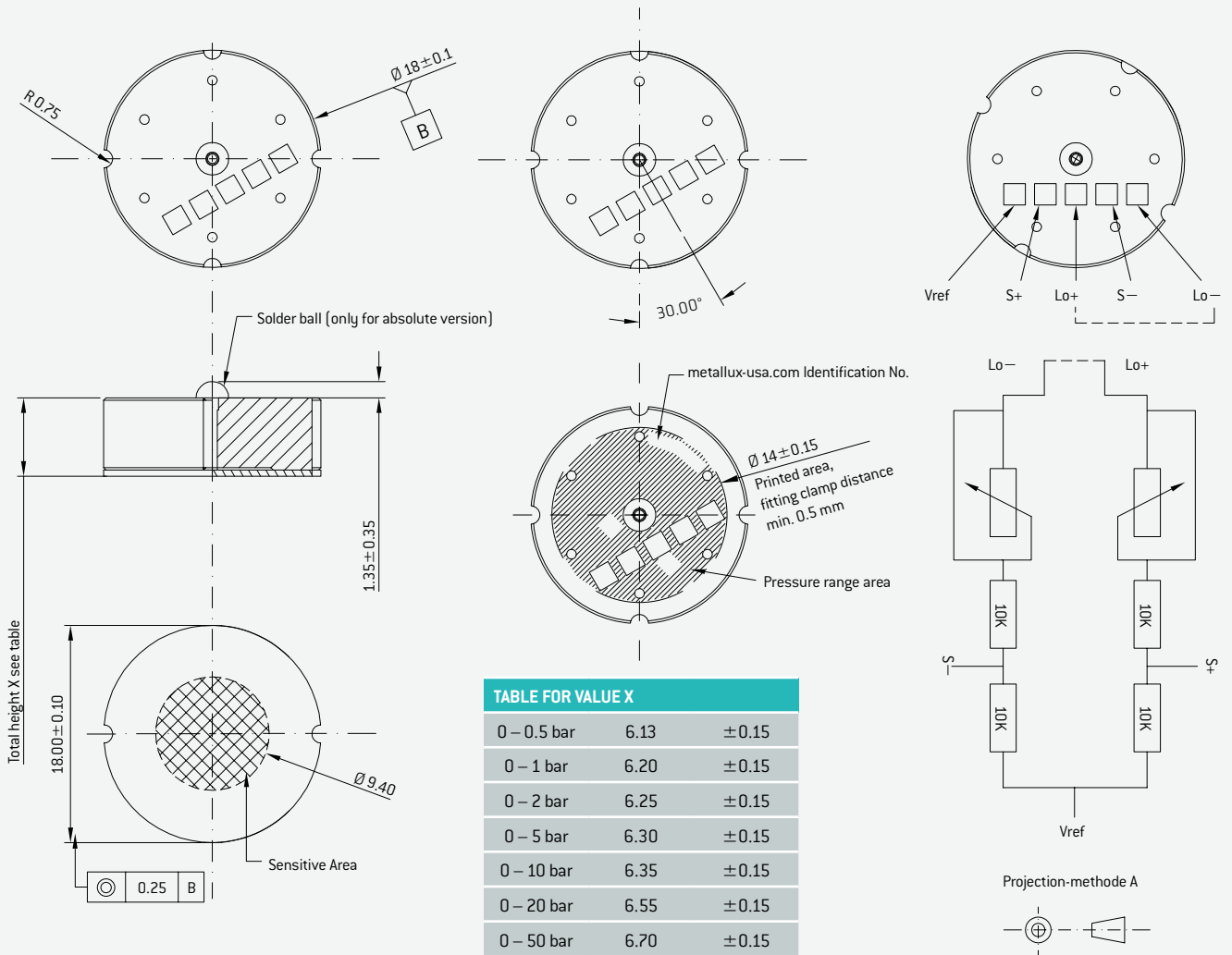
NOMINAL PRESSURE	HEIGHT X	BURST PRESSURE	SPAN	PERMISSIBLE UNDERPRESSURE
<b>0.5 bar</b>	6.13 mm	$\geq 2$ bar	1.5...2.4 mV/V	-0.15 bar
<b>1 bar</b>	6.20 mm	$\geq 4$ bar	2.2...3.5 mV/V	-0.20 bar
<b>2 bar</b>	6.25 mm	$\geq 5$ bar	2.0...4.0 mV/V	-0.40 bar
<b>5 bar</b>	6.30 mm	$\geq 12$ bar	2.4...4.5 mV/V	-0.80 bar
<b>10 bar</b>	6.35 mm	$\geq 25$ bar	3.6...6.0 mV/V	Vacuum-resistant
<b>20 bar</b>	6.55 mm	$\geq 50$ bar	2.4...4.0 mV/V	Vacuum-resistant
<b>50 bar</b>	6.70 mm	$\geq 120$ bar	3.8...6.0 mV/V	Vacuum-resistant
<b>100 bar</b>	6.70 mm	$\geq 250$ bar	3.0...4.8 mV/V	Vacuum-resistant
<b>200 bar</b>	7.05 mm	$\geq 500$ bar	2.5...4.0 mV/V	Vacuum-resistant
<b>400 bar</b>	7.35 mm	$\geq 650$ bar	3.0...4.6 mV/V	Vacuum-resistant
<b>600 bar</b>	7.55 mm	$\geq 880$ bar	3.0...4.6 mV/V	Vacuum-resistant

Mechanical and electrical characteristics are customisable. Specifications are subject to change without notice. \* Sensor without cable \*\* Aluminium oxide offers high chemical resistance against a variety of measured media. We recommend that customers perform their own tests for new or untested applications. \*\*\* at max. setting acc. to DIN 16086

## SAMPLE ORDER

Type	Pressure range in bar	Pressure type	Electrical connection (acc. to drawing)
CPS 2184	100 bar	A/R/SG	Solder pads
Other materials, dimensions and electrical specifications on request.			

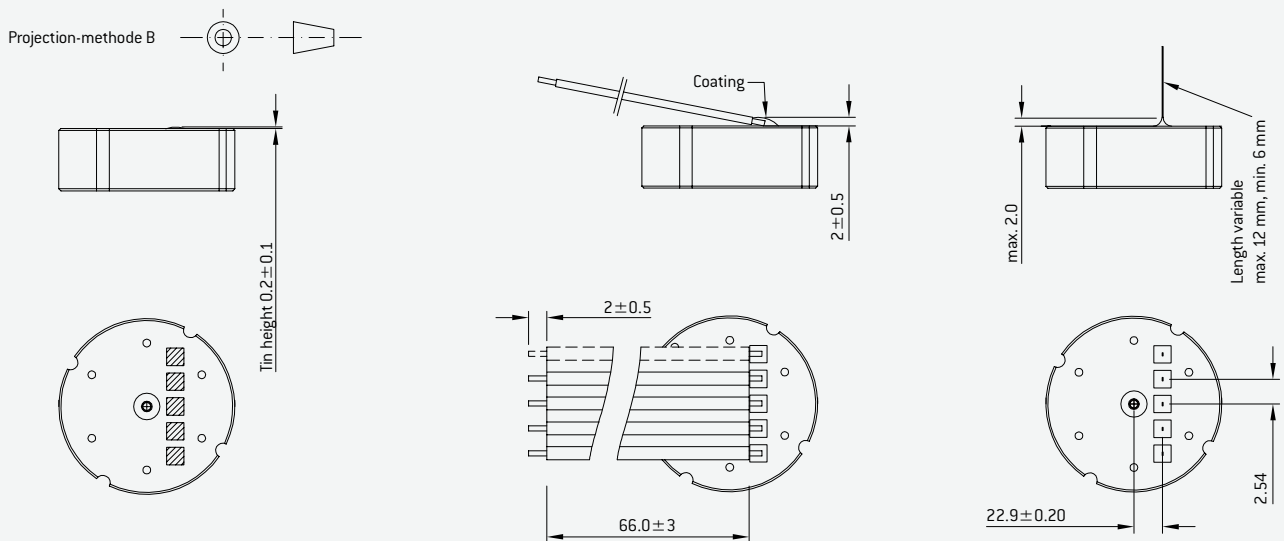
DIMENSIONAL DRAWINGS / CONNECTOR SCHEMATIC / ELECTRICAL CONNECTORS



Tinned connectors: Sn95, 6 Ag3, 8Cu0.6

Flat flexible cable: 4 x AWG26 2.54 mm, cover: PUR 36788-1TM

Pins: 0.5 x 0.27 tinned



# CERAMIC STANDARD PRESSURE SENSOR CPS 2184 Z



Customers in the food, pharmaceutical and chemical industry rely on the flush mounted sensors of the series CPS 2184Z with integrated amplifier. The sensors are calibrated to an output signal of 0.5V to 4.5V.

Characteristic for this series is an excellent long term stability and its suitability to operate in a harsh environment.



## TECHNICAL SPECIFICATIONS

<b>Supply voltage (stabilised)</b>	5V ( $\pm 0.5$ V)
<b>Output signal (ratiometric)</b>	0.5...4.5V
<b>Calibration error</b>	$\pm 0.5\%$ FS
<b>Measurement error due to mech. stress</b>	$< 0.5\%$ FS (typ.)
<b>Total error</b>	$\leq \pm 0.4\%$ FS ***
<b>Temperature error, zero point</b>	$< \pm 0.02\%$ FS/K ( $< \pm 0.03\%$ FS/K for SG and A) *
<b>Temperature error, span</b>	$-0.012\%$ FS/K
<b>Response time</b>	$< 2$ ms
<b>Change in zero signal 1000h@125°C</b>	$< / = \pm 0.3\%$ FS
<b>Power consumption</b>	$< 2.5$ mA
<b>Output load resistance</b>	1...5 kOhm
<b>Load capacity</b>	$< 0.05$ $\mu$ F
<b>Nominal/Operating/Storage temperature range</b>	$-40...125^\circ\text{C}$
<b>Electrical connectors</b>	Solder pads
<b>Pressure type</b>	Relative pressure, absolute pressure, sealed gauge

NOMINAL PRESSURE	HEIGHT X	BURST PRESSURE	SPAN	PERMISSIBLE UNDERPRESSURE
<b>0.5 bar</b>	6.13 mm	$\geq 2$ bar	0.5 – 4.5V	–0.15 bar
<b>1 bar</b>	6.20 mm	$\geq 4$ bar	0.5 – 4.5V	–0.20 bar
<b>2 bar</b>	6.25 mm	$\geq 5$ bar	0.5 – 4.5V	–0.40 bar
<b>5 bar</b>	6.30 mm	$\geq 12$ bar	0.5 – 4.5V	–0.80 bar
<b>10 bar</b>	6.35 mm	$\geq 25$ bar	0.5 – 4.5V	Vacuum-resistant
<b>20 bar</b>	6.55 mm	$\geq 50$ bar	0.5 – 4.5V	Vacuum-resistant
<b>50 bar</b>	6.70 mm	$\geq 120$ bar	0.5 – 4.5V	Vacuum-resistant
<b>100 bar</b>	6.70 mm	$\geq 250$ bar	0.5 – 4.5V	Vacuum-resistant
<b>200 bar</b>	7.05 mm	$\geq 500$ bar	0.5 – 4.5V	Vacuum-resistant
<b>400 bar</b>	7.35 mm	$\geq 650$ bar	0.5 – 4.5V	Vacuum-resistant
<b>600 bar</b>	7.55 mm	$\geq 880$ bar	0.5 – 4.5V	Vacuum-resistant

0.5 bar: only relative pressure  
 1 bar... 50 bar: Relative pressure (R), absolute pressure (A) and sealed gauge (SG) possible  
 100 bar... 600 bar: only sealed gauge

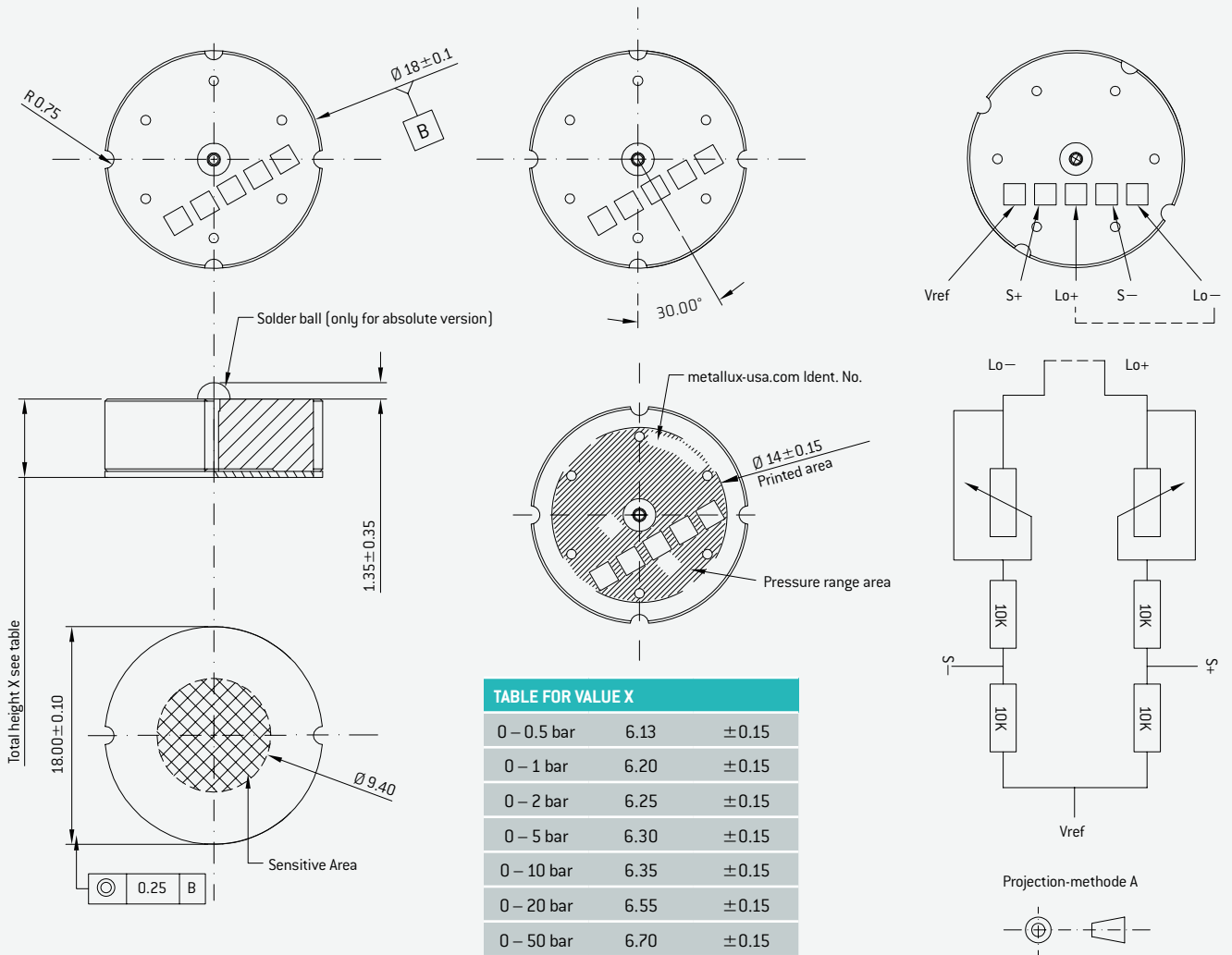
Mechanical and electrical characteristics are customisable. Specifications are subject to change without notice. \* Sensor without cable \*\* Aluminium oxide offers high chemical resistance against a variety of measured media. We recommend that customers perform their own tests for new or untested applications. \*\*\* at max. setting acc. to DIN 16086

## SAMPLE ORDER

Type	Pressure range in bar	Pressure type	Electrical connection (acc. to drawing)
CPS 2184 Z	100 bar	SG	Solder pads

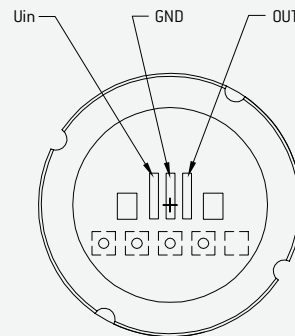
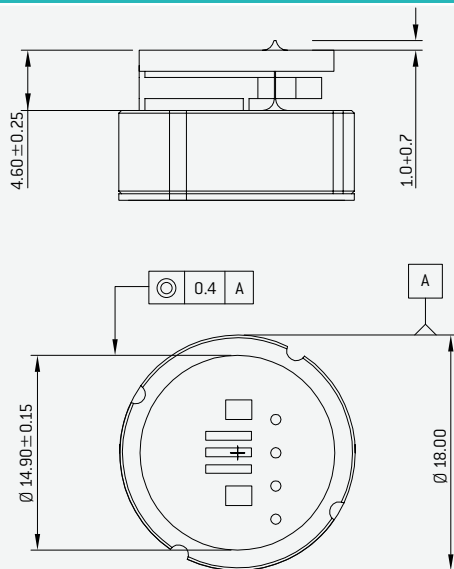
Other materials, dimensions and electrical specifications on request.

DIMENSIONAL DRAWINGS / CONNECTOR SCHEMATIC / ELECTRICAL CONNECTORS



Signal conditioning board

Electrical connection



# STAINLESS STEEL STANDARD PRESSURE SENSOR SPS 1000



The stainless steel pressure sensors of the SPS 1000 series excel particularly through good overload and burst pressure characteristics. Even in cases of pressure peaks, the monolithic pressure sensors offer outstanding safety features.

Operating in an aggressive media does not influence their superb performance.



## TECHNICAL SPECIFICATIONS

<b>Resistance/Tolerance</b>	10 kOhm $\pm$ 20%
<b>Output span signal</b>	See table "Span"
<b>Maximum current I<sub>max</sub></b>	4 mA
<b>Linearity, hysteresis, reproducibility (depends on pressure range)**</b>	$\leq \pm 0.5...1.5\%$ FS
<b>Supply voltage</b>	5...30 V
<b>Zero point offset</b>	-0.5...0 mV/V
<b>Stability of zero point (1000h @ 125°C)</b>	$\leq 0.4\%$ FS
<b>Insulation resistance</b>	100 MOhm at 500 VDC, 25 °C, 75% rel. humidity
<b>Temperature error, zero point (TK 0 0...85°C)</b>	$\leq \pm 0.03\%$ FS/K
<b>Temperature error, span (TK S 0 - 85°C)</b>	$\leq \pm 0.03\%$ FS/K typ. ( $\leq \pm 0.05\%$ FS/K max.)
<b>Nominal/Operating/Storage temperature range</b>	-40...125 °C
<b>Electrical connectors</b>	Tinned solder pads, flat flexible cable
<b>Pressure type</b>	Relative pressure

NOMINAL PRESSURE	SPAN	OVERLOAD PRESSURE	BURST PRESSURE	VACUUM
<b>10 bar</b>	1.5...3.5 mV/V	20 bar	> 50 bar	Vacuum-resistant
<b>25 bar</b>	1.5...3.5 mV/V	50 bar	> 125 bar	Vacuum-resistant
<b>40 bar</b>	1.5...3.5 mV/V	80 bar	> 200 bar	Vacuum-resistant
<b>60 bar</b>	1.5...3.5 mV/V	120 bar	> 300 bar	Vacuum-resistant
<b>100 bar</b>	1.5...3.5 mV/V	200 bar	> 500 bar	Vacuum-resistant
<b>160 bar</b>	1.5...3.5 mV/V	320 bar	> 650 bar	Vacuum-resistant
<b>250 bar</b>	1.5...3.5 mV/V	500 bar	> 750 bar	Vacuum-resistant
<b>400 bar</b>	1.5...3.5 mV/V	800 bar	> 1200 bar	Vacuum-resistant
<b>600 bar</b>	1.5...3.5 mV/V	1200 bar	> 1800 bar	Vacuum-resistant
<b>1000 bar</b>	1.5...3.5 mV/V	2000 bar	> 2500 bar	Vacuum-resistant

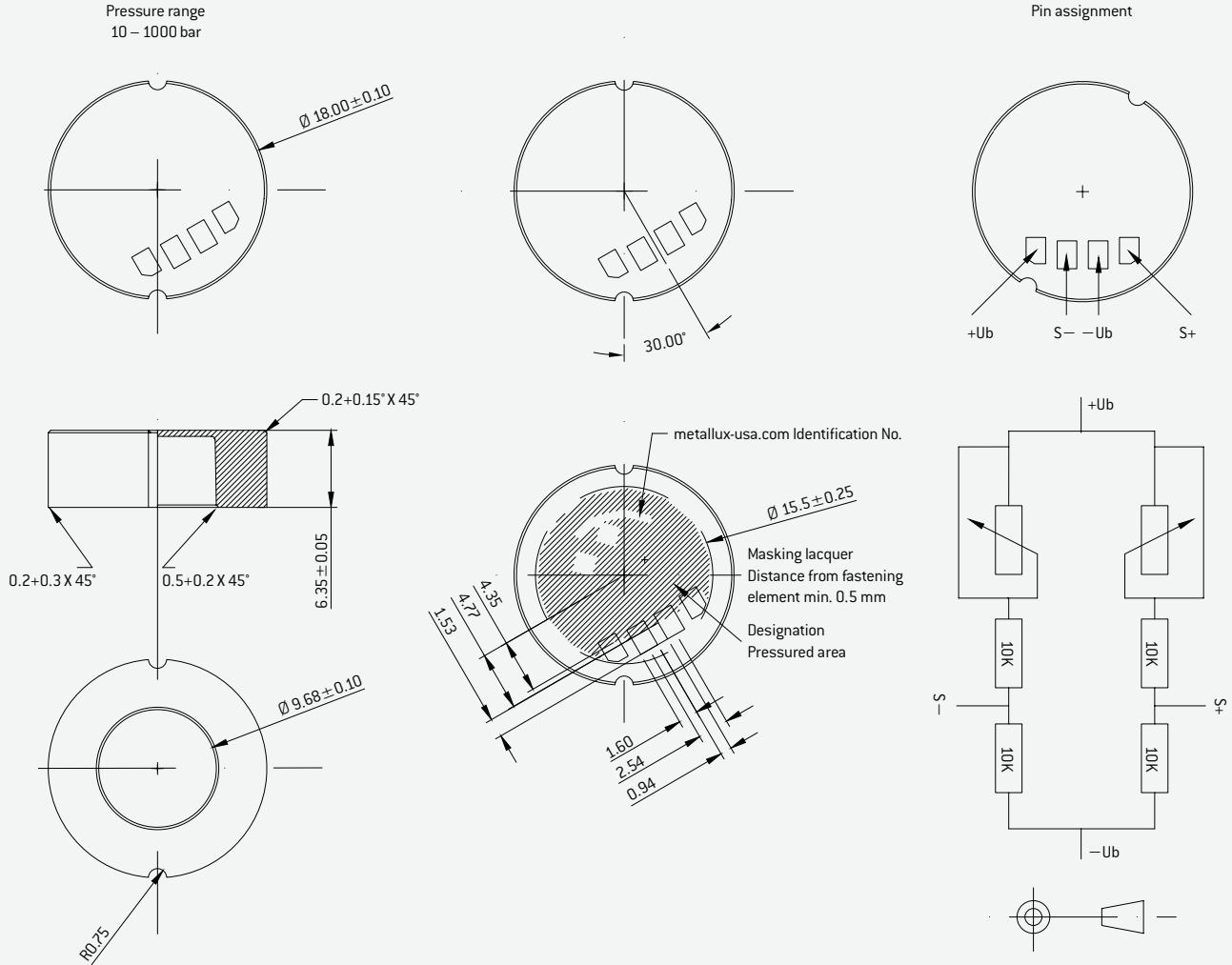
Mechanical and electrical characteristics are customisable. Specifications are subject to change without notice.

## SAMPLE ORDER

Type	Pressure range in bar	Electrical connection (acc. to drawing)
SPS 1000	100 bar	Solder pads
Other dimensions and electrical specifications on request.		



DIMENSIONAL DRAWINGS / CONNECTOR SCHEMATIC / ELECTRICAL CONNECTORS

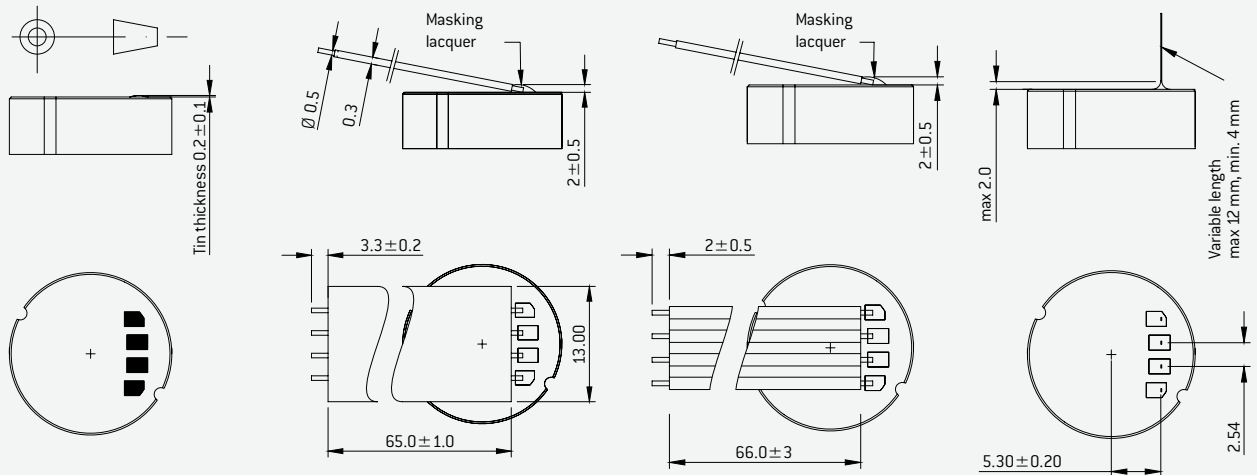


Tinned connectors:  
Sn95.6 Ag3.8 Cu0.6

Flex: A04-N065-N(Nomex)  
Cover: PUR 36788-1TM

Flat flexible cable: 4 X AWG26 2.54mm  
Cover: PUR 36788-1TM

Pins: 0.5 X 0.27 tinned



# STAINLESS STEEL STANDARD PRESSURE SENSOR SPS 1000 Z



Monolithic sensors in stainless steel provide high overload capacity and provide an output signal of 0.5V to 4.5V. The SPS 1000 Z amplifier makes it easy to further process the sensor signal.

As with the SPS 1000, an important feature of this sensor is its above average chemical resistance and an excellent long term stability.



## TECHNICAL SPECIFICATIONS

Supply voltage $U_s$	$5V \pm 0.5V$
Output span signal	0.5...4.5V
Calibration error	$\pm 0.5\%$ FS
Measuring error due to mechanical tension	$< 0.5\%$ FS (typ.)
Linearity, hysteresis, reproducibility (depends on pressure range)**	$\leq \pm 0.4...1.5\%$ FS
Stability of zero point (1000h @ 125°C)	$\leq \pm 0.3\%$ FS
Insulation resistance	100 MΩhm at 500 VDC, 25 °C, 75% rel. humidity
Temperature error, zero point (TK 0 0...85°C)	$\leq \pm 0.04\%$ FS/K
Temperature error, span (TK S 0 – 85°C)	$\leq \pm 0.03\%$ FS/K typ. ( $\leq \pm 0.05\%$ FS/K max.)
Power consumption	$\leq 2.5$ mA
Response time (10...90% of the measuring range)	$< 2$ msec.
Switching delay	$< 250$ msec.
Output load resistance	1...5 kΩhm

Load capacity	$< 0.05 \mu F$
Nominal/Operating/Storage temperature range	$-40...125$ °C
Electrical connectors	Solder pads
Pressure type	Relative pressure

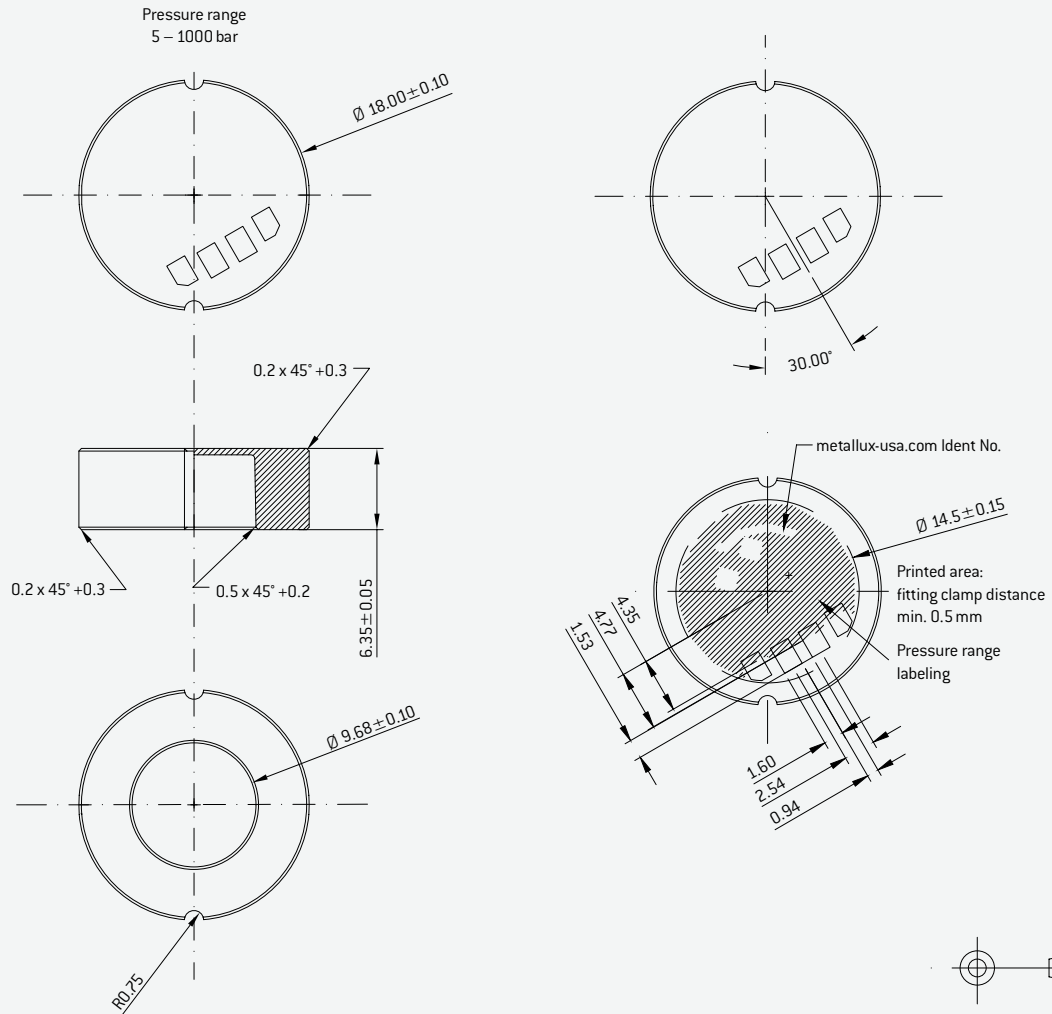
NOMINAL PRESSURE	OUTPUT SIGNAL	OVERLOAD PRESSURE	BURST PRESSURE	VACUUM
10 bar	0.5...4.5V	20 bar	$> 50$ bar	Vacuum-resistant
25 bar	0.5...4.5V	50 bar	$> 125$ bar	Vacuum-resistant
40 bar	0.5...4.5V	80 bar	$> 200$ bar	Vacuum-resistant
60 bar	0.5...4.5V	120 bar	$> 300$ bar	Vacuum-resistant
100 bar	0.5...4.5V	200 bar	$> 500$ bar	Vacuum-resistant
160 bar	0.5...4.5V	320 bar	$> 650$ bar	Vacuum-resistant
250 bar	0.5...4.5V	500 bar	$> 750$ bar	Vacuum-resistant
400 bar	0.5...4.5V	800 bar	$> 1200$ bar	Vacuum-resistant
600 bar	0.5...4.5V	1200 bar	$> 1800$ bar	Vacuum-resistant
1000 bar	0.5...4.5V	2000 bar	$> 2500$ bar	Vacuum-resistant

Mechanical and electrical characteristics are customisable. Specifications are subject to change without notice.

## SAMPLE ORDER

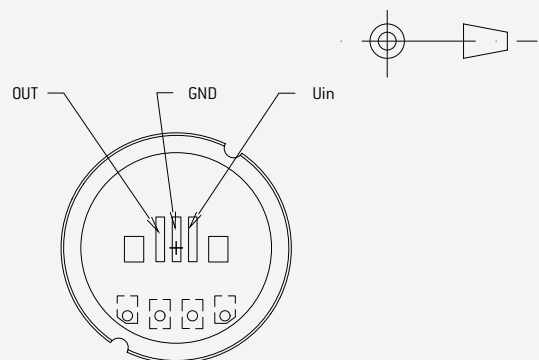
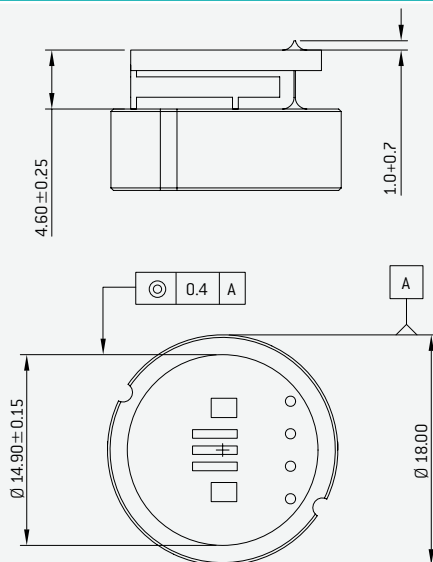
Type	Pressure range in bar	Electrical connection (acc. to drawing)
SPS 1000Z	100 bar	Solder pads
Other dimensions and electrical specifications on request.		

DIMENSIONAL DRAWINGS / CONNECTOR SCHEMATIC / ELECTRICAL CONNECTORS

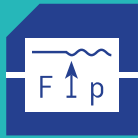


Signal conditioning board

Electrical connection



# STAINLESS STEEL STANDARD PRESSURE SENSOR SPS 3003



The SPS 3003 series of stainless steel pressure sensors with integrated pressure connector provides reliable operation in applications with aggressive media. There is no need for a seal between the sensor measuring cell and pressure connection. The high overload capacity and very high burst pressure rating are additional advantages of this sensor. In the case of an error or undefined peaks in pressure, the medium remains in the system



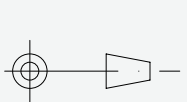
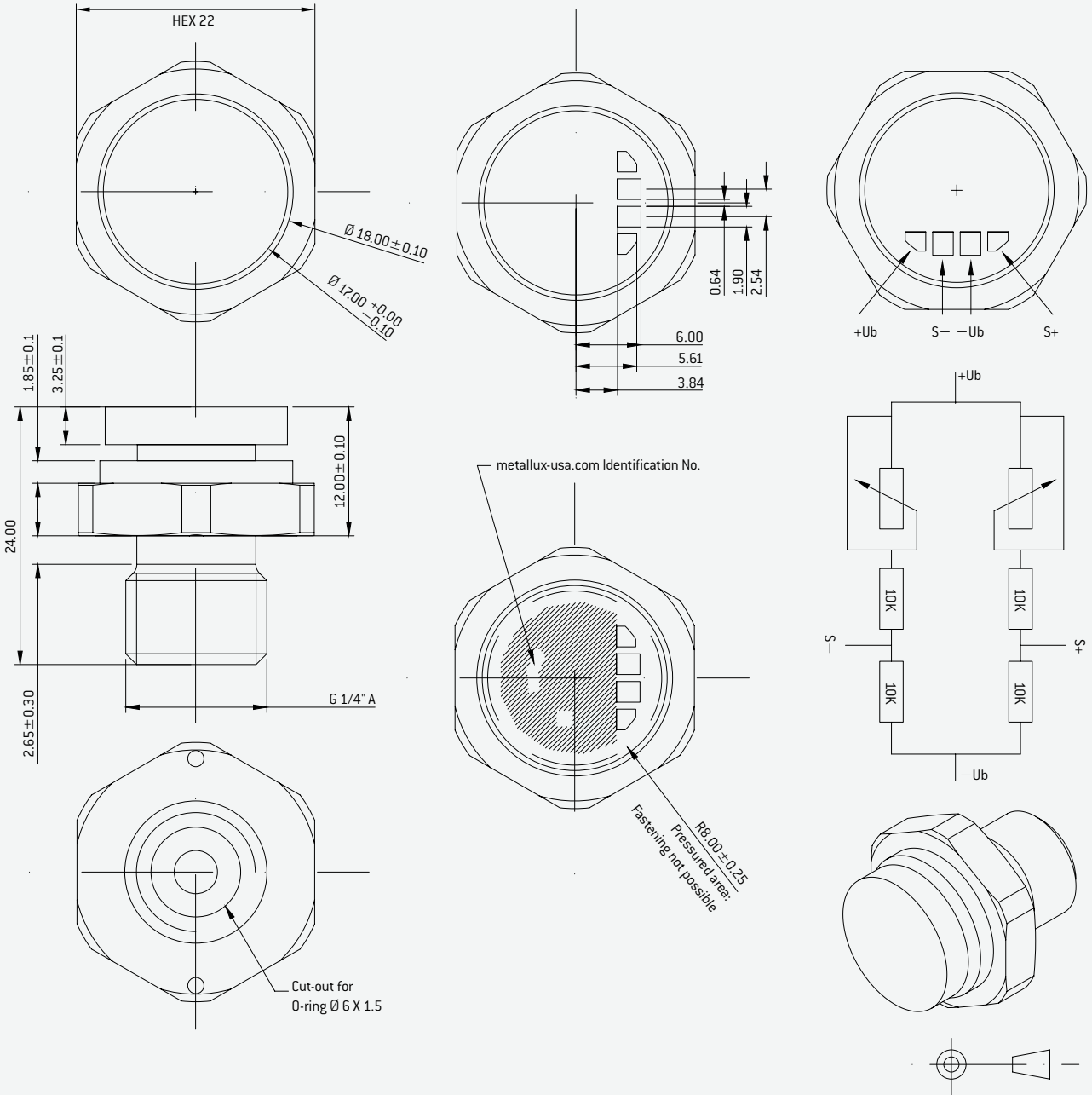
TECHNICAL SPECIFICATIONS	
Resistance/Tolerance	10 kOhm $\pm$ 20%
Output span signal	1.5...3.5 mV/V
Maximum current I <sub>max</sub> .	4 mA
Linearity, hysteresis, reproducibility (depends on pressure range)	$\leq \pm 0.4...1.5\%$ FS ***
Supply voltage	5...30 V
Zero point offset	-0.5...0 mV/V
Stability of zero point (1000h @ 125°C)	$\leq 0.4\%$ FS
Insulation resistance	100 MOhm at 500 VDC, 25°C, 75% rel. humidity
Temperature error, zero point (TK 0 0...85°C)	$\leq \pm 0.03\%$ FS/K
Temperature error, span (TK S 0 - 85°C)	$\leq \pm 0.03\%$ FS/K typ. ( $\leq \pm 0.05\%$ FS/K max.)
Nominal/Operating/Storage temperature range	-40...125°C
Electrical connectors	Tinned solder pads
Pressure type	Relative pressure

NOMINAL PRESSURE	SPAN	OVERLOAD PRESSURE	BURST PRESSURE	VACUUM
10 bar	1.5...3.5 mV/V	20 bar	> 50 bar	Vacuum-resistant
25 bar	1.5...3.5 mV/V	50 bar	> 125 bar	Vacuum-resistant
40 bar	1.5...3.5 mV/V	80 bar	> 200 bar	Vacuum-resistant
60 bar	1.5...3.5 mV/V	120 bar	> 300 bar	Vacuum-resistant
100 bar	1.5...3.5 mV/V	200 bar	> 500 bar	Vacuum-resistant
160 bar	1.5...3.5 mV/V	320 bar	> 650 bar	Vacuum-resistant
250 bar	1.5...3.5 mV/V	500 bar	> 750 bar	Vacuum-resistant
400 bar	1.5...3.5 mV/V	800 bar	> 1200 bar	Vacuum-resistant
600 bar	1.5...3.5 mV/V	1200 bar	> 1800 bar	Vacuum-resistant
1000 bar	1.5...3.5 mV/V	2000 bar	> 2500 bar	Vacuum-resistant

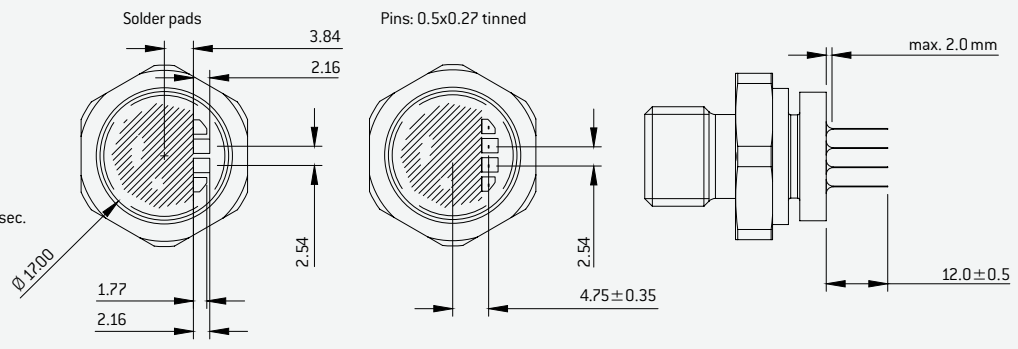
Mechanical and electrical characteristics are customisable. Specifications are subject to change without notice. \*\*\* at max. setting acc. to DIN 16086

SAMPLE ORDER		
Type	Pressure range in bar	Electrical connection [acc. to drawing]
SPS 3003	100 bar	Solder pads
Other dimensions and electrical specifications on request.		

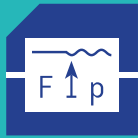
DIMENSIONAL DRAWINGS / CONNECTOR SCHEMATIC / ELECTRICAL CONNECTORS



2 X soldering possible with lead-free Sn96Ag 3.5 Cu0.5  
 max. soldering temperature: 350°C  
 Preheating: 140°C Soldering time: < 3.5 sec.



# STAINLESS STEEL STANDARD PRESSURE SENSOR SPS 3003 Z



The SPS 3003 Z series unites a stainless steel pressure sensor with an integrated pressure connection and an amplifier circuit. The 0.5V...4.5V output is proportional to the applied pressure. No seal is required between the sensor and pressure connection, which makes the sensor particularly resistant to aggressive media. Its high burst pressure rating also makes it ideal for hydraulic applications.



## TECHNICAL SPECIFICATIONS

Supply voltage $U_s$	$5V \pm 0.5V$
Output span signal	0.5...4.5V
Calibration error	$\pm 0.5\%$ FS
Measuring error due to mechanical tension	$< 0.5\%$ FS (typ.)
Linearity, hysteresis, reproducibility (depends on pressure range) **	$\leq \pm 0.4...1.5\%$ FS
Stability of zero point (1000h @ 125°C)	$\leq 0.4\%$ FS
Insulation resistance	100 MΩ at 500VDC, 25°C, 75% rel. humidity
Temperature error, zero point (TK 0 0...85°C)	$\leq \pm 0.04\%$ FS/K
Temperature error, span (TK S 0 – 85°C)	$\leq \pm 0.03\%$ FS/K typ. ( $\leq \pm 0.05\%$ FS/K max.)
Power consumption	$\leq 2.5$ mA
Response time (10...90% of the measuring range)	$< 2$ msec.
Switching delay	$< 250$ msec.
Output load resistance	1...5 kΩ
Load capacity	$< 0.05 \mu F$

Nominal/Operating/Storage temperature range	–40...125°C		
Electrical connectors	Tinned solder pads		
Pressure type	Relative pressure		
NOMINAL PRESSURE	OVERLOAD PRESSURE	BURST PRESSURE	VACUUM
10 bar	$> 20$ bar	$> 50$ bar	Vacuum-resistant
25 bar	$> 50$ bar	$> 125$ bar	Vacuum-resistant
40 bar	$> 80$ bar	$> 200$ bar	Vacuum-resistant
60 bar	$> 120$ bar	$> 300$ bar	Vacuum-resistant
100 bar	$> 200$ bar	$> 500$ bar	Vacuum-resistant
160 bar	$> 320$ bar	$> 650$ bar	Vacuum-resistant
250 bar	$> 500$ bar	$> 750$ bar	Vacuum-resistant
400 bar	$> 800$ bar	$> 1200$ bar	Vacuum-resistant
600 bar	$> 1200$ bar	$> 1800$ bar	Vacuum-resistant
1000 bar	$> 2000$ bar	$> 2500$ bar	Vacuum-resistant

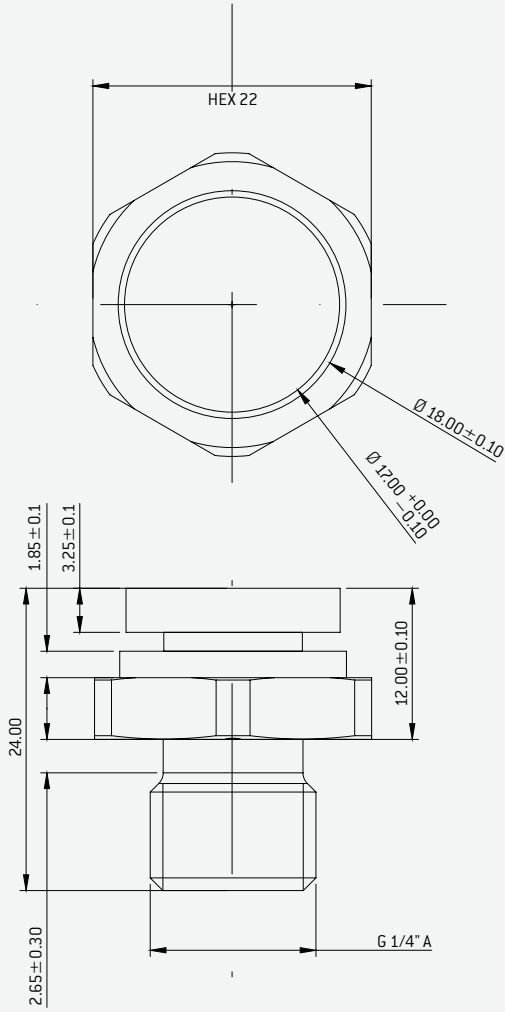
Mechanical and electrical characteristics are customisable. Specifications are subject to change without notice.

## SAMPLE ORDER

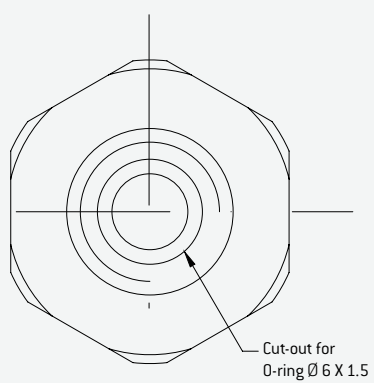
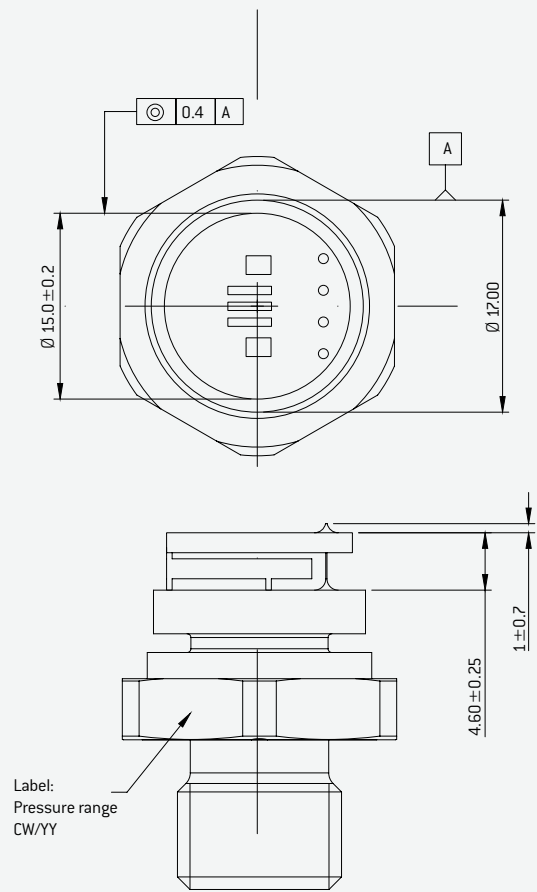
Type	Pressure range in bar	Electrical connection (acc. to drawing)
SPS 3003 Z	100 bar	Solder pads
Other dimensions and electrical specifications on request.		

DIMENSIONAL DRAWINGS / CONNECTOR SCHEMATIC / ELECTRICAL CONNECTORS

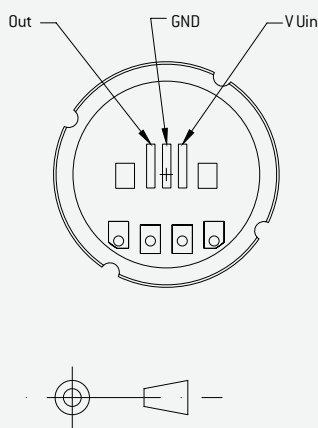
SPS 3003  
Base element



SPS 3003 ZMD  
Circuit board



Pin assignment on amplifier board



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