

**Pressure measuring transducers / switches / monitors for volume flow,
differential pressure, filter monitoring and liquid level detection**

S+S REGELTECHNIK

The electronic **PREMASREG® 761x-VA** pressure sensor and switch is equipped with measuring functions for volume flow, differential pressure, filter monitoring and liquid level detection based on pressure measurement in clean air. The devices with a housing made from **stainless steel V4A**, with cable gland or M12 connector according to DIN EN 61076-2-101 and pressure port using quick connect (pipe fitting optional) are fitted with one switching output, one continuous output and a backlit display for setting the switching point and displaying the ACTUAL values. The piezoresistive measuring element guarantees a high degree of reliability and accuracy.

This pressure sensor is used in clean room, medical and filter technology, in ventilation and air conditioning ducts, in spray booths, in large-scale catering facilities, for filter monitoring and level measurement or for triggering frequency converters. The medium measured is air (non-precipitating), or other gaseous, non-aggressive, non-combustible media.

It has a manual zero point pushbutton and an offset potentiometer for final value correction. Parameter entry is menu-based and is easy to perform using three buttons with the help of the display. The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

TECHNICAL DATA

Power supply:	24 V AC / DC ($\pm 10\%$) and 15...36 V DC
Load resistance:	$R_L > 5 \text{ k}\Omega$
Power consumption:	$< 1.5 \text{ VA} / 24 \text{ V DC}$, $< 2.8 \text{ VA} / 24 \text{ V AC}$
Measuring function:	Volume flow, differential pressure, filter monitoring, fill level (adjustable)
Measuring ranges:	10...100% (adjustable)
Type of pressure:	differential pressure
Pressure port:	with quick connect made from stainless steel for PVC / fabric pressure hose $\varnothing 6 \text{ mm}$ (external diameter) optionally with pipe fitting made from stainless steel V2A (1.4305) for pressure lines $\varnothing 6 \text{ mm}$
Medium:	clean air and non-aggressive, non-combustible gases
Media temperature:	$-20...+50 \text{ }^\circ\text{C}$
Accuracy:	Type 7161 (1000 Pa): typically $\pm 5 \text{ Pa}$ Type 7165 (5000 Pa): typically $\pm 25 \text{ Pa}$ compared to the calibrated reference device
Sum of linearity+hysteresis:	$< \pm 1\%$ of final value (pressure)
Temp. drift values:	$\pm 0.1\%$ / $^\circ\text{C}$
Positive / negative pressure:	max. $\pm 10000 \text{ Pa}$
Signal hysteresis:	$\pm 1\%$ of final value (pressure) 10 Pa / 50 Pa
Signal filtering:	switchable 1 s / 10 s (via DIP switches) and small value suppression $< 1\%$
Output:	0-10 V 1 changeover contact (24V), 1 A ohmic load
Connection type:	3-wire connection
Electrical connection:	0.14-1.5 mm ² , via plug-in screw terminal
Cable connection:	cable gland, stainless steel V2A (1.4305) (M20 x 1.5; with strain relief, exchangeable, inner diameter 6-12 mm) or M12 connector (male, 12-pin, A-code) according to DIN EN 61076-2-101
Housing:	stainless steel V4A (1.4571), with non-distortion cover bolting, impact-resistant, high EMI shielding, corrosion, temperature, weather- and UV-resistant
Housing dimensions:	143 x 97 x 61 mm (Tyr2E)
Air humidity:	$< 95\%$ RH, non-precipitating air
Protection class:	III (according to EN 60730)
Protection type:	IP 65 (according to EN 60529) in the built-in state Housing tested, TÜV SÜD, Report No. 713160960B (Skadi2)
Standards:	CE conformity according to EMC Directive 2014/30/EU, according to EN 61326-1, according to EN 61326-2-3
Equipment:	display with illumination , three-line, cutout approx. 70 x 40 mm (W x H), for displaying the volume flow, differential pressure, contamination degree or level and for setting the switchpoint, K factor, measuring range limits and other settings
K factor:	1 to 3000 (adjustable)
Units:	m³/s, m³/min, m³/h, l/s, l/min, l/h, %, cm (adjustable)
Max. value displayed:	999999
ACCESSORIES	(see table)

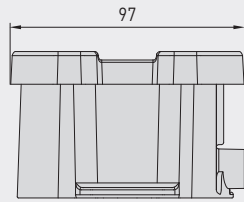
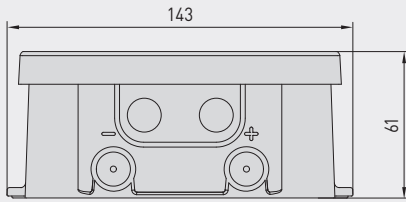
Pressure port for
PVC / fabric pressure hose
(as standard)





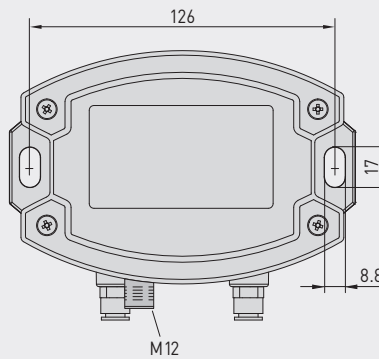
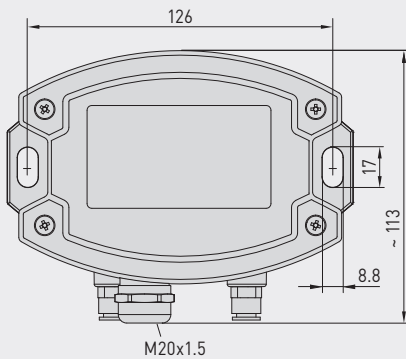
Dimensional drawing [mm]

PREMASREG® 716x-VA



Housing with cable gland equipped as standard with quick connect for pressure hoses

Housing with M12 connector equipped as standard with quick connect for pressure hoses



Pressure port for PVC / fabric pressure hose (as standard)



M12 connector (male)

PREMASREG® 716x-VA with cable gland and display



PREMASREG® 716x-VAQ with M12 connector and display

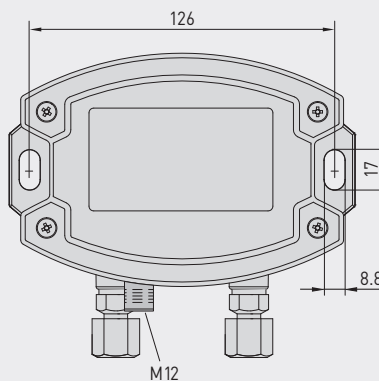
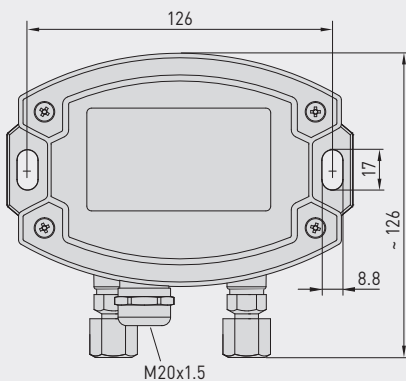


Dimensional drawing [mm]

PREMASREG® 716x-VA

Housing with cable gland optional on request with pipe fitting for pressure lines

Housing with M12 connector optional on request with pipe fitting for pressure lines



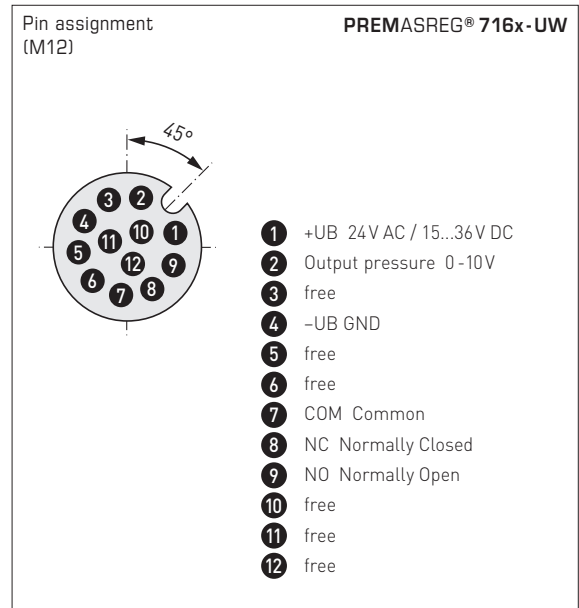
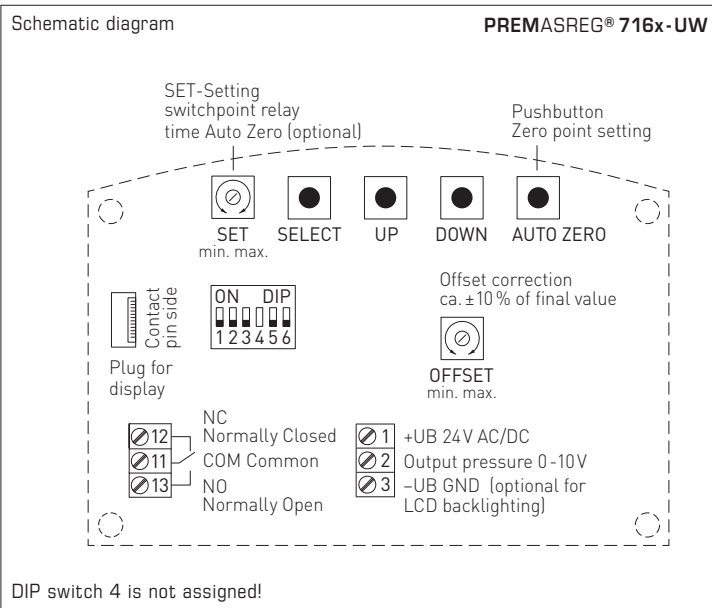
Pressure port for pressure lines / pipes (optional)



M12 connector (male)

Pressure port for pressure lines / pipes (optional)





Measuring range mode (Mode selectable)	DIP 1
Unidirectional (0...+MR) (default)	OFF
Bidirectional (-MR...+MR)	ON


Small value suppression (measured values < 1% of end value (pressure) = 0)	DIP 2
Deactivated (default)	OFF
Active	ON

Relay (Function adjustable)	DIP 3
Deactivated (default)	OFF
Active (display shows switching point)	ON

Measurement signal filtering (Time interval selectable)	DIP 5
10 s (default)	OFF
1 s	ON

Service mode (display adjustable)	DIP 6
Standard (according to configuration) (default)	OFF
Service (differential pressure in Pa)	ON


PREMASREG® 716x
Function types



Volumetric flow rate

$$V = k \cdot \sqrt{\Delta p}$$

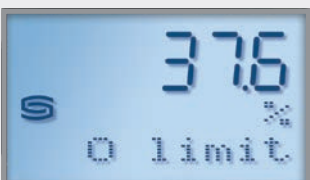
V = Volume flow in m³/h
k = K factor 1...3000
Δp = Differential pressure in Pa



Differential pressure

$$\Delta p = p_+ - p_-$$

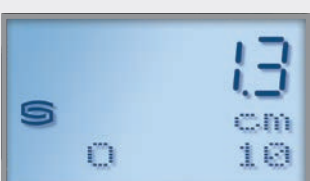
Δp = Differential pressure in Pa
p₊ = higher pressure
p₋ = lower pressure



Filter contamination

$$S = 100\% \cdot \Delta p \div p_{Filter}$$

S = Contamination degree in %
Δp = Differential pressure in Pa
p_{Filter} = differential pressure filter replacement in Pa



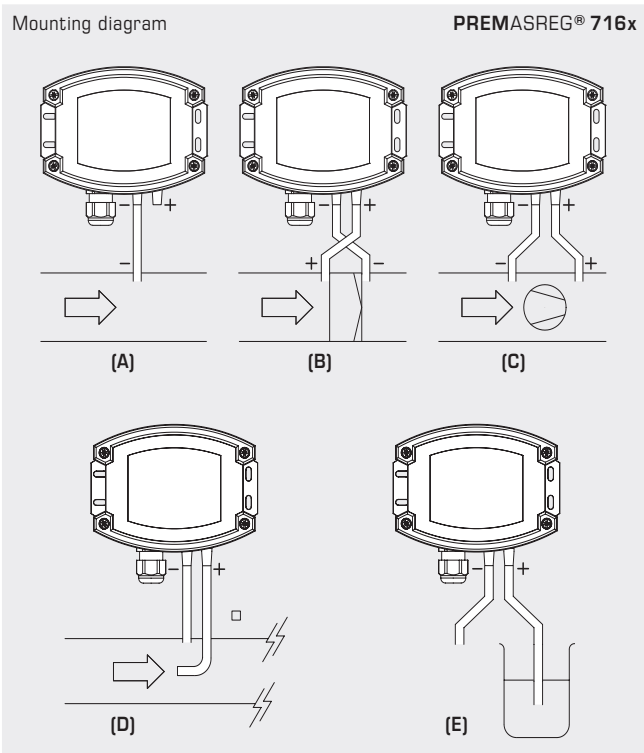
Level display

$$h = \Delta p \div (\rho \cdot g)$$

h = Fill level height in cm
Δp = Differential pressure in Pa
ρ = Density 700...1300 in kg/m³
g = 9.81 m/s²



PREMASREG® 716x-VAQ
with display,
hinged



TYPES OF MONITORING:

- (A) Below-atmospheric pressure:**
P1 (+) is not connected, but open to the atmosphere
P2 (-) connected to inside of duct
 - (B) Filter:**
P1 (+) connected upstream of filter
P2 (-) connected downstream of filter
 - (C) Ventilator:**
P1 (+) connected downstream of ventilator
P2 (-) connected upstream of ventilator
 - (D) Volume flow:**
P1 (+) dynamic pressure, Connected in flow direction
P2 (-) static pressure, Connected free of dynamic pressure components
 - (E) Level:**
P1 (+) Connection submerged in medium
P2 (-) Connection is open to the atmosphere
- Pressure connections at the pressure switch are marked with P1 (+) for higher pressure and P2 (-) for lower pressure.

Conversion table for pressure values:

Unit =	bar	mbar	Pa	kPa	mWS
1 Pa	0,00001 bar	0,01 mbar	1 Pa	0,001 kPa	0,000101971 mWS
1 kPa	0,01 bar	10 mbar	1000 Pa	1 kPa	0,101971 mWS
1 bar	1 bar	1000 mbar	100000 Pa	100 kPa	10,1971 mWS
1 mbar	0,001 bar	1 mbar	100 Pa	0,1 kPa	0,0101971 mWS
1 mWS	0,0980665 bar	98,0665 mbar	9806,65 Pa	9,80665 kPa	1 mWS

PREMASREG® 716x-VAQ
with M12 connector



Measuring Range		Type / WG02I	Output	Display	Item No.	Price
<p>PREMASREG® 716x-VAQ Pressure measuring transducers / switches / monitors for volume flow, differential pressure, filter monitoring and liquid level detection, <i>ID</i> Stainless steel housing with M12 connector</p>						
<p>Pressure / Volume Flow ● = Q</p>						
0...1000 Pa		Type 7161				
k = 3000	94800 m³/h	PREMASREG 7161-UW VAQ LCD	0-10V 1x Changeover contact	● ■	2004-6192-4100-021	803,70 €
0...5000 Pa		Type 7165				
k = 3000	212100 m³/h	PREMASREG 7165-UW VAQ LCD	0-10V 1x Changeover contact	● ■	2004-6192-4100-031	803,70 €
Housing variant "Q":		Cable connection with M12 connector (male, 12-pin , A-code)				
Multi-range switching:		The pressure ranges depend on the device type and can be set via DIP switches.				
Extra charge:		with optional pipe fitting made from stainless steel V2A for pressure lines Ø 6 mm				41,94 €

ACCESSORIES

xx-M12 Special accessories for M12 connector

For further information, see chapter Accessories!



PREMASREG® 716x-VA with cable gland



PREMASREG® 716x-VA		Pressure measuring transducers / switches / monitors for volume flow, differential pressure, filter monitoring and liquid level detection, ID				
Measuring Range Pressure / Volume Flow		Type / WG02I	Output	Display	Item No.	Price
0...1000 Pa		Type 7161				
k = 3000	94800 m³/h	PREMASREG 7161-UW VA LCD	0-10V 1x Changeover contact	■	2004-6192-4200-021	765,16 €
0...5000 Pa		Type 7165				
k = 3000	212100 m³/h	PREMASREG 7165-UW VA LCD	0-10V 1x Changeover contact	■	2004-6192-4200-031	765,16 €
Housing variant:		Cable connection with cable gland made from stainless steel V2A (1.4305)				
Multi-range switching:		The pressure ranges depend on the device type and can be set via DIP switches.				
Extra charge:		with optional pipe fitting made from stainless steel V2A for pressure lines Ø 6 mm				41,94 €



Pressure port for PVC / fabric pressure hose (as standard)



Pressure port for pressure lines / pipes (optional)

