PREMASGARD® 211x/212x/212x-SD

Pressure, differential pressure and volume flow measuring transducers, including connection set, compact form, adjustable, calibratable, with multi-range switching and active output

S+S REGELTECHNIK

The calibrateable compact pressure sensors of the **PREM**ASGARD® **211x / 212x / 212x-SD** series are equipped with 8 switchable measuring ranges, 2 switchable output signals (16 devices in one) and with or without optional display and are used for measuring above-atmospheric, below-atmospheric, or differential pressures and Volume flow in air. The piezo-resistive measuring element is temperature-compensated and guarantees a high degree of reliability and accuracy. These pressure transmitters have a pushbutton for manual zero point calibration and an adjustable offset. Applications of these pressure sensors are in clean room, medical and filter technology, in ventilation and air conditioning ducts, in spray booths, in large-scale catering facilities, for monitoring filters, for level measurement or for triggering frequency converters. Media measured with these pressure transducers are air (non-precipitating), or other gaseous non-aggressive, non-combustible media. The differential pressure sensor is supplied including connection set **ASD-06** (2 m connection hose, two pressure connection nipples, screws). You can find further device types under **PREM**ASGARD® **111x / 112x / 112x-SD** (I variant with 2-wire connection).

TECHNICAL DATA

Power supply:	24 V AC/DC (± 10 %)
Working resistance:	R_a (Ohm) = 25 ...450 Ohm for I variant
Load resistance:	R_L > 25 kOhm for U variant
Power consumption:	< 1 W at 24 V DC; < 2 VA at 24 V AC
Current consumption:	< 45 mA
Measuring function:	**Differential pressure, volume flow** (square root output signal)
Measuring ranges:	**multi-range switching** **with 8 switchable measuring ranges** (see table)
Output:	**switchable 0-10 V / 4...20 mA** (via DIP switches)
Electrical connection:	3-wire connection
Media temperature:	–20...+50 °C (temperature-compensated 0...+50 °C)
Pressure connection:	with connection nozzles for pressure hose Ø 6 mm
Type of pressure:	differential pressure
Medium:	clean air and other non-aggressive, non-combustible gases
Accuracy:	**Type 2110 / 2120 / 2120-SD** (100 Pa): typically ± 3 Pa at +25 °C **Type 2111 / 2121 / 2121-SD** (1000 Pa): typically ± 10 Pa at +25 °C **Type 2115 / 2125 / 2125-SD** (5000 Pa): typically ± 35 Pa at +25 °C compared to the calibrated reference device
Zero point offset:	± 10 % of final value
Above- / below-atmospheric pressure:	± 50 kPa
Long-term stability:	± 1 % per year
Signal filtering:	**switchable 1 s / 10 s** (via DIP switches)
Hysteresis:	0.3 % of final value
Media contacting parts:	Brass, Ni, Duroplast, Si, epoxy, RTV, BSG, UV silicone gel
Temperature drift values:	± 0.1 % of final value / °C
Linearity:	< ± 1 % of final value
Housing:	plastic, UV-resistant, material polyamide, 30 % glass-globe reinforced, colour traffic white (similar to RAL 9016), housing cover for display is transparent! **Type 211x / 212x**: **with quick-locking screws** (slotted/Phillips head combination) **Type 212x-SD**: **with snap-on lid**
Housing dimensions:	72 x 64 x 37.8 mm (Typ 1 / Typ 01 without display) 72 x 64 x 43.3 mm (Typ 1 / Typ 01 with display)
Cable connection:	**cable gland**, plastic (M 16 x 1.5; with strain relief, exchangeable, max. inner diameter 10.4 mm) **or** **M12 connector** according to DIN EN 61076-2-101 (optional on request)
Electrical connection:	0.14 - 1.5 mm², via terminal screws
Humidity:	< 95 % RH, non-precipitating air
Protection class:	III (according to EN 60 730)
Protection type:	**Type 211x / 212x**: **IP 67** (according to EN 60 529)* Housing tested, TÜV SÜD, Report No. 713139052 (Typ 1) **Type 212x-SD**: **IP 54** (according to EN 60 529)* Housing tested, TÜV SÜD, Report No. 713160960A (Typ 01) * Housing in the built-in state
Standards:	CE conformity, electromagnetic compatibility according to EN 61 326, EMC directive 2014 / 30 / EU
Features:	two-line **display with illumination**, cutout approx. 36 x 15 mm (W x H), to display ACTUAL pressure
ACCESSORIES	see table

PREMASGARD® **211x**
Pressure connectors **on the top side**, with quick-locking screws (IP 67)



PREMASGARD® **212x**
Pressure connectors **on the bottom side**, with quick-locking screws (IP 67)



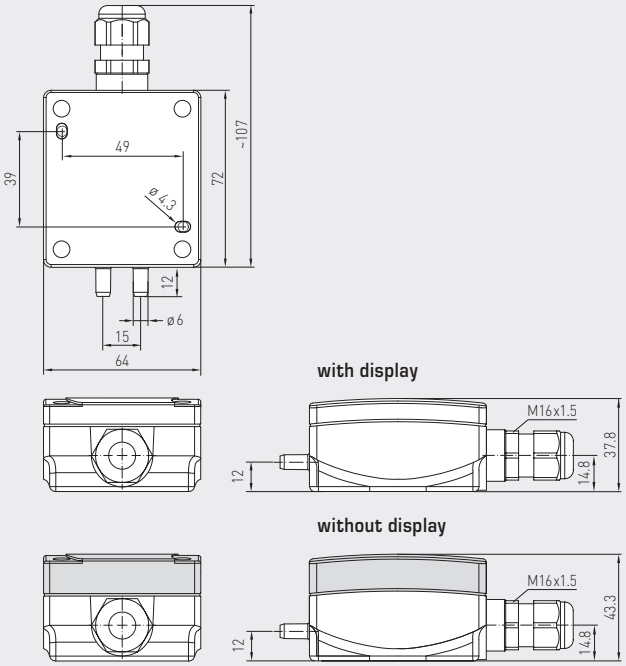
PREMASGARD® **212x-SD**
Pressure connectors **on the bottom side**, with snap-on lid (IP 54)



Pressure, differential pressure and volume flow measuring transducers, including connection set, compact form, adjustable, calibratable, with multi-range switching and active output

Dimensional drawing

PREMASGARD® 211x

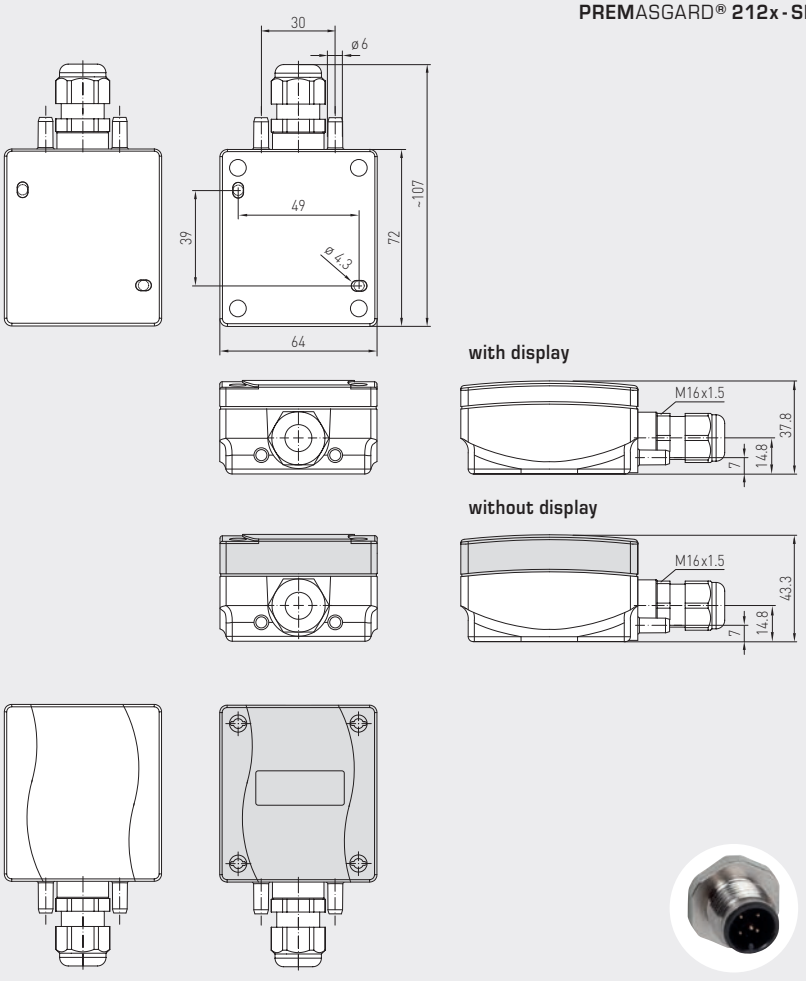


PREMASGARD® 211x
Pressure connectors
on the top side,
with display,
with quick-locking screws
(IP 67)



Dimensional drawing

PREMASGARD® 212x
PREMASGARD® 212x-SD



PREMASGARD® 212x
Pressure connectors
on the bottom side,
with display,
with quick-locking screws
(IP 67)



PREMASGARD® 212x-SD
Pressure connectors
on the bottom side,
with display,
with snap-on lid
(IP 54)

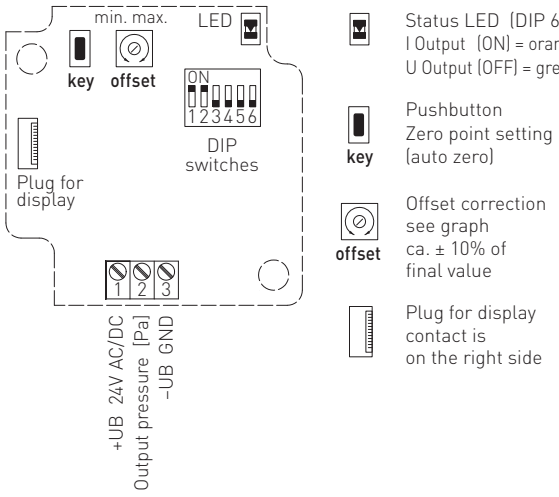


PREMASGARD® 211x/212x/212x-SD

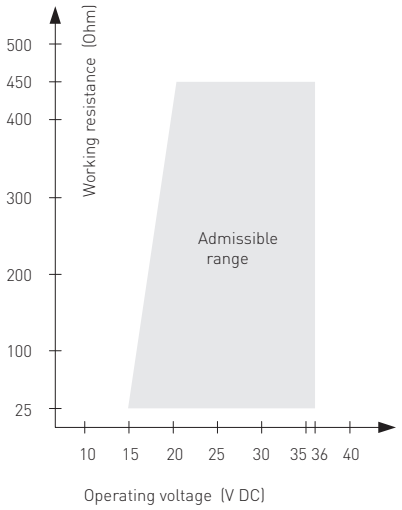
Pressure, differential pressure and volume flow measuring transducers, including connection set, compact form, adjustable, calibratable, with multi-range switching and active output

S+S REGELTECHNIK

Schematic diagram — **PREMASGARD® 211x / PREMASGARD® 212x / PREMASGARD® 212x-SD**



Load resistance diagram 4...20 mA — **PREMASGARD® 211x / PREMASGARD® 212x / PREMASGARD® 212x-SD**



Pressure range (selectable) – max. measuring range (default) is depending to the type of device						**DIP 1**	**DIP 2**
0...50 Pa	0...100 Pa	0...1000 Pa	–50...+50 Pa	–100...+100 Pa	–1000...+1000 Pa	OFF	OFF
–	0...300 Pa	0...2000 Pa	–	–300...+300 Pa	–2000...+2000 Pa	**ON**	OFF
–	0...500 Pa	0...3000 Pa	–	–500...+500 Pa	–3000...+3000 Pa	OFF	**ON**
0...100 Pa	**0...1000 Pa**	**0...5000 Pa**	**–100...+100 Pa**	**–1000...+1000 Pa**	**–5000...+5000 Pa**	**ON**	**ON**

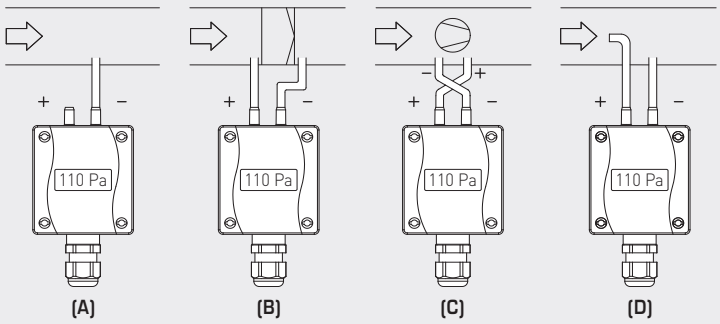
Output characteristic line (Mode selectable)	**DIP 4**
Linear (default) (for pressure detection)	OFF
Square root extracting (to determine the volume flow)	**ON**

Measuring range mode (Mode selectable)	**DIP 3**
Unidirectional (0 ...+MR) (default)	OFF
Bidirectional (–MR ...+MR)	**ON**

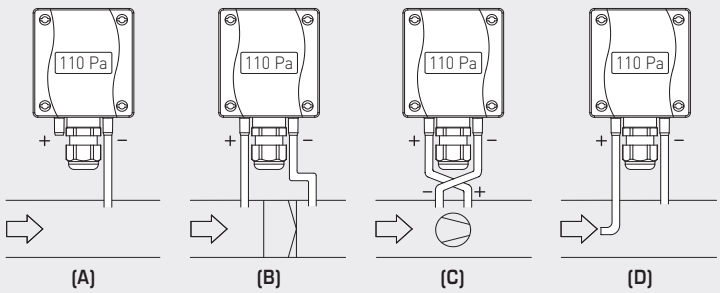
Measurement signal filtering (Time interval selectable)	**DIP 5**
10 s (default)	OFF
1 s	**ON**

Output (selectable)	**DIP 6**
Voltage 0-10 V (default)	OFF
Current 4... 20 mA	**ON**

Mounting diagram — **PREMASGARD® 211x**



Mounting diagram — **PREMASGARD® 212x / 212x-SD**



TYPES OF MONITORING:

Pressure connections at the pressure switch are marked with
P1 (+) for higher pressure and
P2 (–) for lower pressure.

(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

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

V = Volume flow
k = K factor
Δp = Differential pressure [Pa]

Pressure, differential pressure and volume flow measuring transducers, including connection set, compact form, adjustable, calibratable, with multi-range switching and active output

PREMASGARD® **211x**
Pressure connectors
on the top side,
with display



PREMASGARD® **212x**
Pressure connectors
on the bottom side,
with display



WS-04
Weather and sun protection hood
(optional)



Conversion table for pressure values:

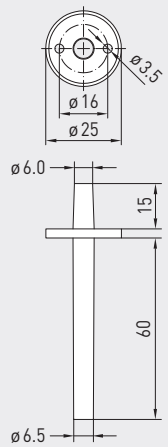
Unit =	bar	mbar	Pa	kPa	mWS
1 Pa	0.00001 bar	0.01 mbar	1 Pa	0.001 kPa	0.000101971 mWS
1 kPa	0.01 bar	10 mbar	1000 Pa	1 kPa	0.101971 mWS
1 bar	1 bar	1000 mbar	100000 Pa	100 kPa	10.1971 mWS
1 mbar	0.001 bar	1 mbar	100 Pa	0.1 kPa	0.0101971 mWS
1 mWS	0.0980665 bar	98.0665 mbar	9806.65 Pa	9.80665 kPa	1 mWS

PREMASGARD® 211x/212x/212x-SD

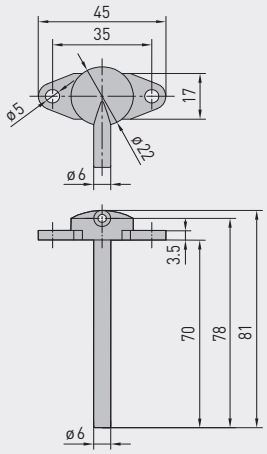
Pressure, differential pressure and volume flow measuring transducers, including connection set, compact form, adjustable, calibratable, with multi-range switching and active output

S+S REGELTECHNIK

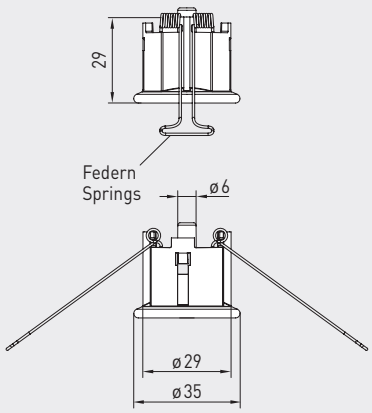
Dimensional drawing **ASD-06**



Dimensional drawing **ASD-07**



Dimensional drawing **DAL-01**



ASD-06
Connection set



ASD-07
Connection nipple



DAL-01
Pressure outlet



ACCESSORIES		Item No.
ASD-06	**Connection set (included in the scope of delivery),** consisting of 2 connection nipples (straight) made of ABS, 2 m PVC hose (soft, UV-resistant) and 4 screws	7100-0060-3000-000
ASD-07	**2 connection nipples** (at 90 degree angle) made of plastic, ABS	7100-0060-7000-000
DAL-01	**Pressure outlet** for ceiling or in-wall installation (e.g. in clean rooms)	7300-0060-3000-001
WS-04	**Weather and sun protection hood**, 130 x 180 x 135 mm, stainless steel **V2A** (1.4301)	7100-0040-7000-000
	For further information, see last chapter Accessories!	

PREMASGARD® 212x-SD	Pressure, differential pressure and volume flow measuring transducers, *Standard* (Pressure connectors on the bottom side)			
Pressure range (Ranges adjustable)	**Type / WG01B** (3-wire connection)	**Output** (switchable)	**Display**	**Item No.** (with snap-on lid)
max. – 1000...+ 1000 Pa	**PREMASGARD® 2121-SD**			**IP 54**
0... 100 Pa / – 100...+ 100 Pa 0... 300 Pa / – 300...+ 300 Pa 0... 500 Pa / – 500...+ 500 Pa 0...1000 Pa / –1000...+1000 Pa	PREMASGARD 2121-SD	0-10 V / 4...20 mA		1301-11B7-0010-000
	PREMASGARD 2121-SD **LCD**	0-10 V / 4...20 mA	■	1301-11B7-2010-000
max. – 5000...+ 5000 Pa	**PREMASGARD® 2125-SD**			**IP 54**
0...1000 Pa / – 1000...+ 1000 Pa 0...2000 Pa / – 2000...+ 2000 Pa 0...3000 Pa / – 3000...+ 3000 Pa 0...5000 Pa / – 5000...+ 5000 Pa	PREMASGARD 2125-SD	0-10 V / 4...20 mA		1301-11B7-0050-000
	PREMASGARD 2125-SD **LCD**	0-10 V / 4...20 mA	■	1301-11B7-2050-000
max. – 100...+ 100 Pa	**PREMASGARD® 2120-SD**			**IP 54**
0... 50 Pa / – 50...+ 50 Pa 0... 100 Pa / – 100...+ 100 Pa	PREMASGARD 2120-SD	0-10 V / 4...20 mA		1301-11B7-0110-000
	PREMASGARD 2120-SD **LCD**	0-10 V / 4...20 mA	■	1301-11B7-2110-000
Multi-range switching:	The **pressure ranges** depend on the device type and can be set via DIP switches.			
Output:	**0-10 V or 4...20 mA** (selectable via DIP switches)			
Optional:	Cable connection with **M12 connector** according to DIN EN 61076-2-101 (on request)			

Pressure, differential pressure and volume flow measuring transducers, including connection set, compact form, adjustable, calibratable, with multi-range switching and active output

PREMASGARD® **211x**
Pressure connectors **on the top side**, with/without display, with quick-locking screws (IP 67)

PREMASGARD® **212x**
Pressure connectors **on the bottom side**, with/without display, with quick-locking screws (IP 67)

PREMASGARD® **212x-SD**
Pressure connectors **on the bottom side**, with/without display, with snap-on lid (IP 54)







PREMASGARD® **211x**	Pressure, differential pressure and volume flow measuring transducers, *Premium* (Pressure connectors on the top side)			
Pressure range (Ranges adjustable)	**Type / WG01** (3-wire connection)	**Output** (switchable)	**Display**	**Item No.** (with quick-locking screws)
max. – 1000...+ 1000 Pa	**PREM**ASGARD® **2111**			**IP 67**
0... 100 Pa / – 100...+ 100 Pa 0... 300 Pa / – 300...+ 300 Pa 0... 500 Pa / – 500...+ 500 Pa 0... 1000 Pa / – 1000...+ 1000 Pa	PREMASGARD 2111	0-10 V / 4...20 mA		1301-1197-0010-000
	PREMASGARD 2111 **LCD**	0-10 V / 4...20 mA	■	1301-1197-2010-000
max. – 5000...+ 5000 Pa	**PREM**ASGARD® **2115**			**IP 67**
0...1000 Pa / – 1000...+ 1000 Pa 0...2000 Pa / – 2000...+ 2000 Pa 0...3000 Pa / – 3000...+ 3000 Pa 0...5000 Pa / – 5000...+ 5000 Pa	PREMASGARD 2115	0-10 V / 4...20 mA		1301-1197-0050-000
	PREMASGARD 2115 **LCD**	0-10 V / 4...20 mA	■	1301-1197-2050-000
max. – 100...+ 100 Pa	**PREM**ASGARD® **2110**			**IP 67**
0... 50 Pa / – 50...+ 50 Pa 0... 100 Pa / – 100...+ 100 Pa	PREMASGARD 2110	0-10 V / 4...20 mA		1301-1197-0110-000
	PREMASGARD 2110 **LCD**	0-10 V / 4...20 mA	■	1301-1197-2110-000
Multi-range switching:	The **pressure ranges** depend on the device type and can be set via DIP switches.			
Output:	**0-10 V or 4...20 mA** (selectable via DIP switches)			
Optional:	Cable connection with **M12 connector** according to DIN EN 61076-2-101 (on request)			

PREMASGARD® **212x**	Pressure, differential pressure and volume flow measuring transducers, *Premium* (Pressure connectors on the bottom side)			
Pressure range (Ranges adjustable)	**Type / WG01** (3-wire connection)	**Output** (switchable)	**Display**	**Item No.** (with quick-locking screws)
max. – 1000...+ 1000 Pa	**PREM**ASGARD® **2121**			**IP 67**
0... 100 Pa / – 100...+ 100 Pa 0... 300 Pa / – 300...+ 300 Pa 0... 500 Pa / – 500...+ 500 Pa 0... 1000 Pa / – 1000...+ 1000 Pa	PREMASGARD 2121	0-10 V / 4...20 mA		1301-11A7-0010-000
	PREMASGARD 2121 **LCD**	0-10 V / 4...20 mA	■	1301-11A7-2010-000
max. – 5000...+ 5000 Pa	**PREM**ASGARD® **2125**			**IP 67**
0...1000 Pa / – 1000...+ 1000 Pa 0...2000 Pa / – 2000...+ 2000 Pa 0...3000 Pa / – 3000...+ 3000 Pa 0...5000 Pa / – 5000...+ 5000 Pa	PREMASGARD 2125	0-10 V / 4...20 mA		1301-11A7-0050-000
	PREMASGARD 2125 **LCD**	0-10 V / 4...20 mA	■	1301-11A7-2050-000
max. – 100...+ 100 Pa	**PREM**ASGARD® **2120**			**IP 67**
0... 50 Pa / – 50...+ 50 Pa 0... 100 Pa / – 100...+ 100 Pa	PREMASGARD 2120	0-10 V / 4...20 mA		1301-11A7-0110-000
	PREMASGARD 2120 **LCD**	0-10 V / 4...20 mA	■	1301-11A7-2110-000
Multi-range switching:	The **pressure ranges** depend on the device type and can be set via DIP switches.			
Output:	**0-10 V or 4...20 mA** (selectable via DIP switches)			
Optional:	Cable connection with **M12 connector** according to DIN EN 61076-2-101 (on request)			