PREMASGARD® 814x - Modbus

**Multifunctional duct sensors and measuring transducers
for humidity, temperature, pressure, differential pressure and volume flow,
incl. mounting flange and connection set,
calibratable, with Modbus connection**

S+S REGELTECHNIK

Maintenance-free microprocessor-controlled **PREM**ASGARD® **814x - Modbus** (Series) with Modbus connection, in an impact-resistant plastic housing with quick-locking screws, optionally with / without display, with a plastic sinter filter (exchangeable), to exactly detect the relative humidity (0...100% r.H.) and the temperature (−35...+80 °C) in ducts and to measure the differential pressure (max. −7000...7000 Pa) in air. Incl. mounting flange and connection set **ASD-06** (2m connecting hose, two pressure port nipples, screws).

The pressure sensor is applied to measure positive, negative or differential pressure in clean air and gaseous media. It is used in the clean room, medical and filter technology, ventilation and air conditioning ducts, spray booths, large-scale catering facilities, for filter monitoring and level measurement or for triggering frequency converters.

A long-term stable, **digital humidity and temperature sensor** and a **pressure sensor** with piezoresistive measuring element guarantee exact measurement results. These measurands are used to internally calculate the following parameters that can be retrieved via Modbus: temperature [°C], relative humidity [% r. H.], dew point [°C], absolute humidity [g/m³], mixture ratio [g/kg], enthalpy [kJ/kg] (ignoring atmospheric air pressure), differential pressure [Pa], volume flow [m³/h], air density [kg/m³].

Innovative Modbus sensor with galvanically separated RS485-Modbus-interface, selectable bus termination resistance, DIP switch for setting the bus parameters and bus address in current-free state, LEDs for telegram status display, two separate push-in terminals and large three-line display (illuminated; with customised programming in the 7-segment and dot-matrix range). The sensor is factory-calibrated; an environmental precision adjustment by an expert is possible.

PREMASGARD® **814x - Modbus**
with plastic sinter filter
(standard)

TECHNICAL DATA

Power supply:	24 V AC (± 20 %) and 15...36 V DC
Power consumption:	< 4.8 W / 24 V DC typical; < 6.8 VA / 24 V AC typical; peak current 200 mA
Data points:	differential pressure [Pa], temperature [°C], relative humidity [% r.h.], dew point [°C], absolute humidity [g / m³], mixing ratio [g / kg], enthalpy [kJ / kg], volume flow [m³/h], air density [kg / m³]
HUMIDITY	
Sensors:	**digital humidity sensor with integrated temperature sensor,** low hysteresis, high long-term stability
Sensor protection:	**plastic** sinter filter, Ø 16 mm, L = 35 mm, exchangeable (optional **metal** sinter filter, Ø 16 mm, L = 32 mm)
Measuring range, humidity:	0...100 % r. H.
Operating range, humidity:	0...95 % r. H. (without dew formation)
Deviation in humidity:	typically **± 2.0** % (20...80 % r. H.) at +25 °C, otherwise ± 3.0 %
TEMPERATURE	
Measuring range, temperature:	−35...+80 °C
Deviation in temperature:	typically ± 0.2 K at +25 °C
PRESSURE	
Type of pressure:	differential pressure
Pressure connection:	with metal **connection nozzles** for pressure hose Ø 6 mm (optional on request with **quick** connect for PVC fabric pressure hose Ø 6 mm)
Measuring range, pressure:	**−500... +500 Pa** or **−7000...+7000 Pa** depending on the type of device, see table
Accuracy, pressure:	**Type 8148** (500 Pa): typically ± 3 Pa at +25 °C **Type 8147** (7000 Pa): typically ± 35 Pa at +25 °C compared to the calibrated reference device
Above- / below-pressure:	max. ± 50 kPa
Zero point offset:	± 10 % of final value
Medium:	clean air and non-aggressive, non-combustible gases
Media contacting parts:	Brass, Ni, thermoset plastic, Si, epoxy, RTV, BSG, UV silicone gel
Media temperature:	−20...+50 °C (temperature-compensated 0...+50 °C)
Hysteresis:	0.3 % of final value
Linearity:	< ± 1 % of final value
Temp. drift values:	± 0.1 % / °C
Long-term stability:	± 1 % per year

Display screen (cyclic/static) **Modbus Tyr 2**

Pressure

Temperature

Humidity

Volume flow rate

Programmable display screen **Modbus Tyr 2**

itsensor
industrial technology webstore
www.itsensor.it   info@itsensor.it

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S+S REGELTECHNIK

Dimensional drawing   PREMASGARD® 814x - Modbus
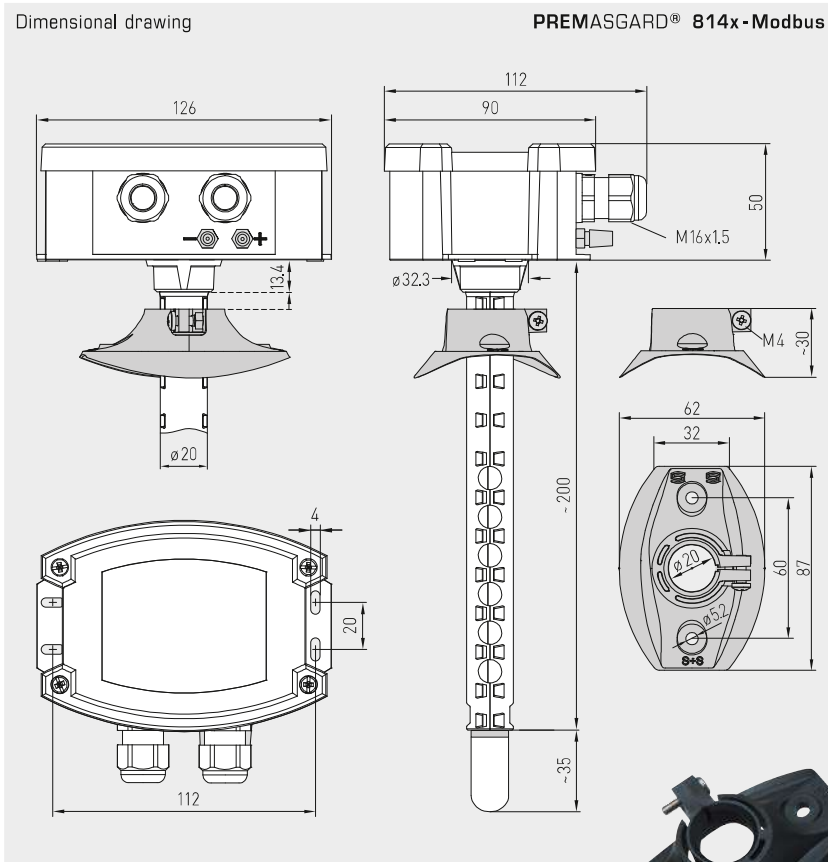
PREMASGARD® 814x - Modbus
with display and
plastic sinter filter
(standard)

Device version
with **M12 connector**
(optional on request)

MFT-20-K
Mounting flange,
plastic

| TECHNICAL DATA	(continued)
Bus protocol:	Modbus (RTU mode), address range 0...**247** adjustable
Signal filtering:	4 s / 32 s at temperature / humidity 0 s / 1 s / 10 s at pressure
Ambient temperature:	−30...+70 °C
Electrical connection:	0.2 - 1.5 mm², via push-in terminal
Housing:	plastic, UV-stabilised, material polyamide, 30 % glass-globe reinforced, with quick-locking screws (slotted / Phillips head combination), colour traffic white (similar to RAL 9016), housing cover for display is transparent!
Housing dimensions:	126 x 90 x 50 mm (Tyr 2)
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)
Protective tube:	**PLEUROFORM**™, material: polyamide (PA6), with torsion protection, v_{max} = 30 m/s (air), Ø 20 mm, (on request, optional stainless steel **V2A** (1.4301), Ø 16 mm) with plastic sinter filter: NL = 235 mm (optional with metal sinter filter: NL = 227 mm)
Process connection:	via mounting flange made of plastic (included in the scope of delivery)
Protection class:	III (according to EN 60 730)
Protection type:	IP 65 (according to EN 60 529) housing only! (PLEUROFORM IP 30)
Standards:	CE-conformity, electromagnetic compatibility according to EN 61 326, EMC Directive 2014 / 30 / EU
Optional:	three-line **display with illumination**, programmable, cut-out approx. 70 x 40 mm (W x H), for display actual humidity, actual temperature and ACTUAL pressure (cyclic) or a selectable parameter (static) or an individually programmable display value (The Modbus interface allows the display to be individually configured in the 7-segment area and in the dot-matrix area.)
ACCESSORIES	see table
ASD-06	**Connection set** (nipple straight) – (included in the scope of delivery)
MFT-20 K	**Mounting flange** plastic (included in the scope of delivery)

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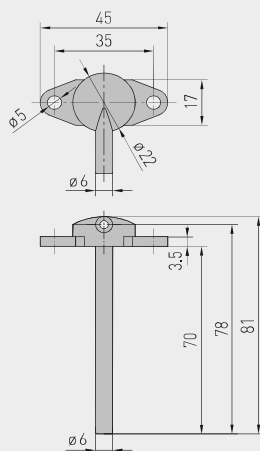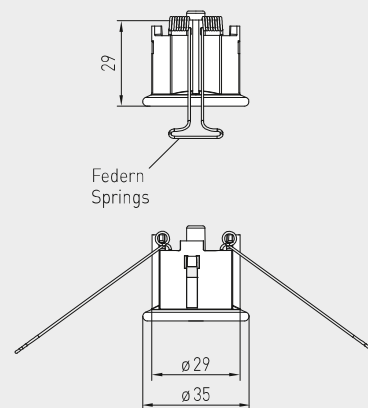calibratable, with Modbus connection

S+S REGELTECHNIK

Dimensional drawing **ASD-06** Connection set
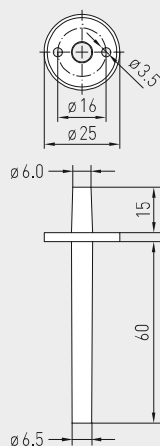
Dimensional drawing **ASD-07** Connection nipple

Dimensional drawing **DAL-01** Pressure outlet

ø 3.5
ø 16
ø 25
ø 6.0
15
60
ø 6.5

45
35
17
ø 5
ø 22
ø 6
3.5
70
78
81
ø 6

29
Federn
Springs
ø 29
ø 35

ASD-06
Connection set

ASD-07
Connection nipple

DAL-01
Pressure outlet

Mounting diagram   PREMASGARD® 814x - Modbus

3570 Pa   3570 Pa   3570 Pa   3570 Pa

− +   − +   − +   − +
−   + −   − +   − +

(A)   (B)   (C)   (D)
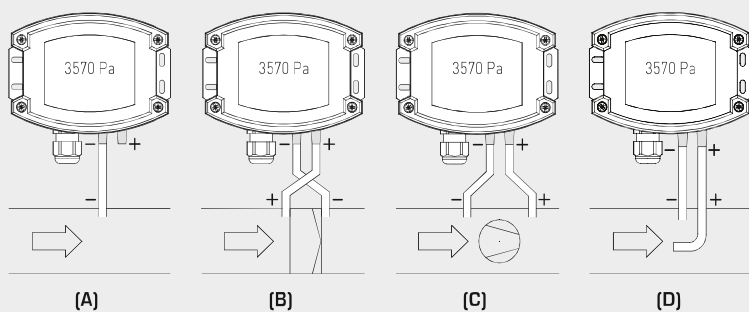
TYPES OF MONITORING:
Pressure connections at the pressure switch
are marked with
P1 (+) for higher pressure and
P2 (−) for lower pressure.

(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

Conversion table for pressure values:

Unit =	bar	mbar	Pa	kPa	mH$_2$O
1 Pa	0.00001 bar	0.01 mbar	1 Pa	0.001 kPa	0.000101971 mH$_2$O
1 kPa	0.01 bar	10 mbar	1000 Pa	1 kPa	0.101971 mH$_2$O
1 bar	1 bar	1000 mbar	100000 Pa	100 kPa	10.1971 mH$_2$O
1 mbar	0.001 bar	1 mbar	100 Pa	0.1 kPa	0.0101971 mH$_2$O
1 mH$_2$O	0.0980665 bar	98.0665 mbar	9806.65 Pa	9.80665 kPa	1 mH$_2$O

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Schematic diagram   **PREM**ASGARD® **814x - Modbus**

PREMASGARD® 814x - Modbus
with display

Plug for display

auto zero

mode B   mode A

ON   DIP B   ON   DIP A
1 2 3 4 5 6   1 2 3 4 5 6 7 8

offset

Pa r.H. °C

4 □ B   B □ 8
3 □ A   A □ 7
2 □ GND   GND □ 6
1 □ U+   U+ □ 5

shield   shield

DIP A: Bus address   LED (internal status)
DIP B: Bus parameters   Reset button
(Baud rate, parity...)
Offset correction
Telegram indicator
Reception (LED green)   Shielding
Error (LED red)
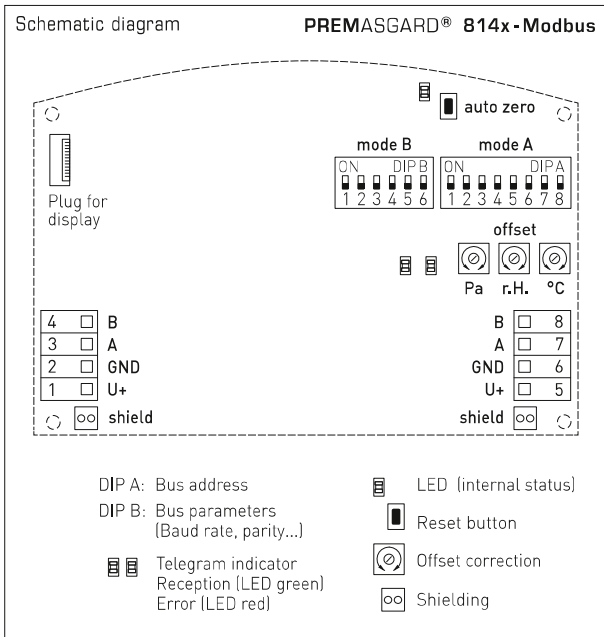
SF-K
Plastic sinter filter
(standard)

SF-M
Metal sinter filter
(optional)

stainless steel protective tube
(optional on request)

PREMASGARD® 814x - Modbus — Multifunctional duct sensor
for humidity, temperature, pressure, differential pressure and volume flow rate, *Deluxe*

Type / WG02	Measuring ranges			Output	Item no.
	Pressure	Humidity	Temperature	Display	
PREMASGARD® **8148 - Modbus**	**– 500...+ 500 Pa**				
PREMASGARD 8148-M	–500...+500 Pa	0...100% r.H.	–35...+80°C	Modbus	1301-8144-0910-20V
PREMASGARD 8148-M LCD	–500...+500 Pa	0...100% r.H.	–35...+80°C	Modbus ■	1301-8144-4910-20V
	Equipped as standard with automatic zero point calibration				
PREMASGARD® **8147 - Modbus**	**– 7000...+ 7000 Pa**				
PREMASGARD 8147-M	–7000...+7000 Pa	0...100% r.H.	–35...+80°C	Modbus	1301-8144-0950-200
PREMASGARD 8147-M LCD	–7000...+7000 Pa	0...100% r.H.	–35...+80°C	Modbus ■	1301-8144-4950-200
Extra charge:	**with optional automatic zero point calibration** (please specify in your order)				
Optional:	Cable connection with **M12 connector** according to DIN EN 61076-2-101				on request

ACCESSORIES		
KA2 -Modbus	**Communication adapter** (USB/RS485) for system connection	1906-1200-0000-100
LA -Modbus	**Line termination device** (with terminating resistor) as an active bus termination	1906-1300-0000-100
ASD-06	**Connection set (included in the scope of delivery)** consisting of 2 connection nipples (straight) made of ABS, 2 m PVC hose, soft, and 4 tapping screws	7100-0060-3000-000
ASD-07	**2 connection nipples** (at 90° angle) made of ABS	7100-0060-7000-000
DAL-01	**Pressure outlet** for ceiling or in-wall installation (e.g. in clean rooms)	7300-0060-3000-001
SF-M	**Metal** sinter filter, Ø 16 mm, L = 32 mm, exchangeable, stainless steel **V4A** (1.4404)	7000-0050-2200-100
MFT-20-K	**Mounting flange**, plastic (included in the scope of delivery)	7000-0031-0000-000
	For further information see last chapter!	