

Precision Air Pressure Sensor 8126 X81



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1.0 Description

1.1 General

This high-precision air-pressure sensor (8126 X81) is designed with a microprocessor controlled sensor working on the resonance principle. The signal output is realised by means of a serial port of RS 485 standard to be linked to a LAMBRECHT data logger SYNMET or Ser[LOG].

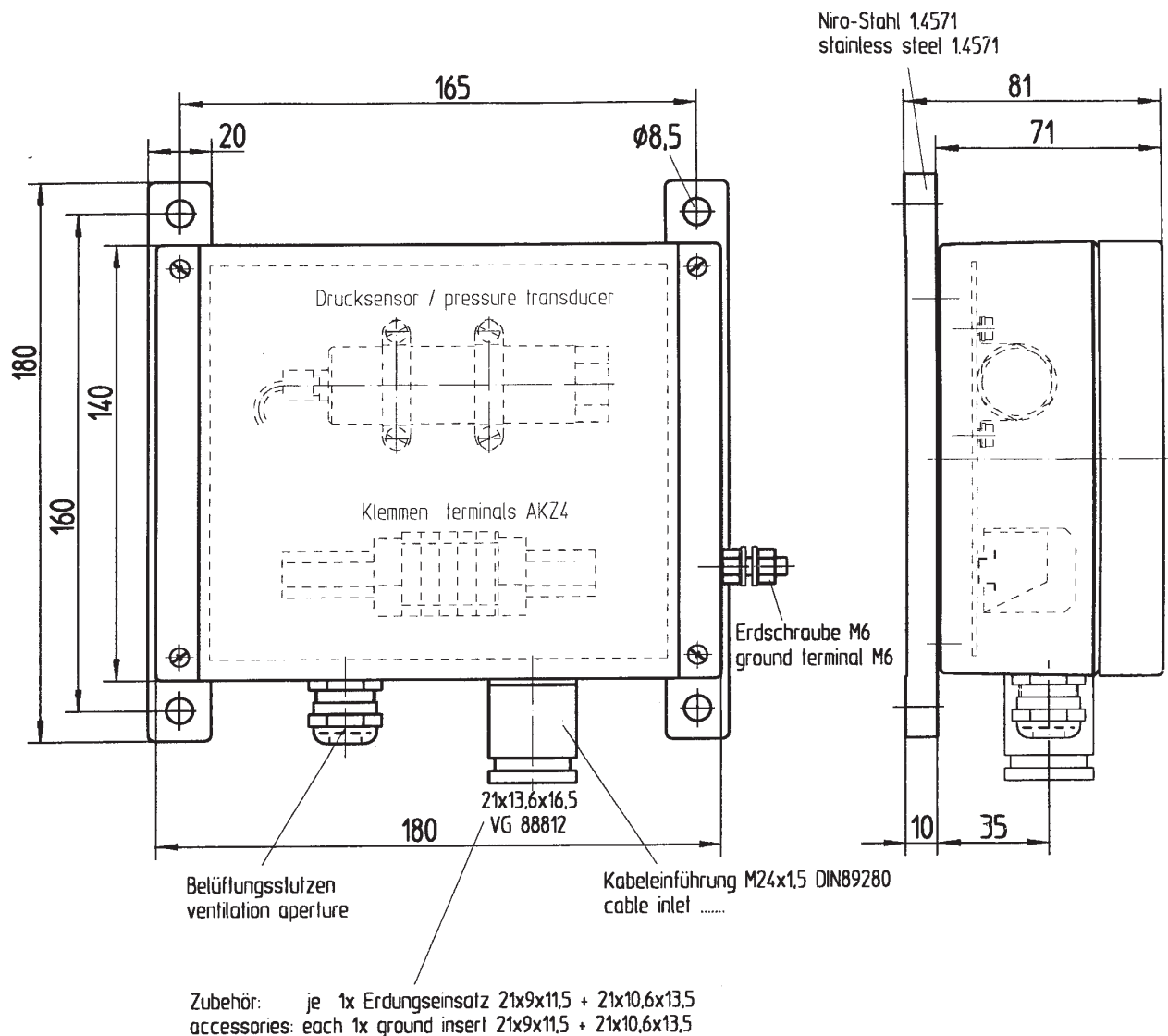
The cable entry is carried out by an incorporated cable inlet according to VG 88 812. Signal and power cables are fixed by means of screw terminals. It is constructed as a primer coated seawater resistant aluminium housing which normally is painted with a grey (RAL 7001) lacquer.

To fulfil the strong EMC/EMI requirements the housing is equipped with conductive rubber sealing and metallic cable inlets according to VG 88 812. To meet the shock and vibration requirements the housing is furnished with reinforced brackets made of stainless steel.

1.3 Function

The RS 485 output signals of the precision air-pressure sensor (8126 DPS) are linked to the LAMBRECHT interface system SYNMET-NAV for further evaluation and supply to other systems. Due to the excellent accuracy of $\pm 0.01\%$ full scale the sensor can be used for aviation purposes. In order to enable the outer air its necessary access to the incorporated pressure probe the housing is equipped with a filtering inlet located on the underside.

1.2 Dimensional drawing



1.4 Interface Specification

After a few seconds the power has been applied the transducer starts automatically sending measuring values. The pressure transducer continuously transmits data every second.

Interface: RS485

The communications settings are:

Baud rate: 9600
Parity: N (none)
Character length: 8
Stop bits: 1
No handshaking
Format: ASCII text

The pressure value is send as floating point number in ASCII format. The floating point pressure value is followed by a space character and the unit "hPa"

Every transmitted measuring value ends with 2 termination characters <CR><LF>.

Example:

1018.82 hPa<CR><LF>

in hex-code:

31 30 31 38 2E 38 32 20 68 50 61 0D 0A

(<CR>= carriage return = 0x0D)

(<LF>= line feed = 0x0A)

Power supply: 11...28 VDC

Current typ. 16 mA max.32 mA

Interface: RS485

Failure message

In case of failure the transducer sends error messages.

The error message starts with "!" followed by a three-digit number.

Every transmitted error message ends with 2 termination characters <CR><LF>.

Example:

!020<CR><LF>

in hex-code:

21 30 32 30 0D 0A

2.0 Putting into operation

2.1 Choice of installation place

As a barometer needs a free access to the ambient outer air it has to be installed outdoors without influence of pressure oscillations caused by movements of the vessel. Therefore the sensitive barometer should be installed on a place which is located at a wind protected place. In general the housing is splash-water tight when mounted correctly. Therefore the air inlet of the housing has to show downwards in order to prevent the penetration of sea and rain water.

As barometric pressure values world-wide are based on measurements above sea level the altitude of the barometer should be noted for later compensations. Otherwise wrong measurements of approximately 1 hPa per 8 m height have to be considered.

In case of the instrument has to be installed indoors due to special requirements a pressure link to the outer atmosphere has to be carried out by means of a flexible rubber pipe or a similar material. Otherwise overpressure cause by air-conditioners will falsify the measurements.

2.2 Mounting

The mounting must be carried out on a flat surface with four stainless steel hexagonal screws of the size M8.

2.3 Electrical connection

The electrical connection (drawing see right site) must be carried out in the external junction box according to the wiring diagram of the entire system. Important note: To prevent electrical hazards for installation staff and damages due to short circuits, it is absolutely necessary to switch off the main power supply of the system until the installation is finished.

Attention: wrong connection may cause a destruction of this and other connected components !

2.4 Cable entries

The common signal and power cable will be linked inside the housing by means of a cable gland according to VG standards. The selection of the right cable inlet will be carried out according to the project specific bloc diagram respectively the wiring diagram. The corresponding positions are clearly illustrated in the discussed drawings. As only one item is present a special identification procedure is not required.

For various outer diameters of the installation cables different sized cable cones will be delivered together with the item.

2.5 Setting into operation

After having finished the electrical and mechanical installation work of this item as mentioned in this manual and other related instructions the wiring should be checked once again before switching on the mains for the whole measuring system.

No further operating handling is required.

When the power is turned on, the sensor automatically starts sending data. After a settling time of approx. 20 sec the sensor provides specification-compliant measured values.

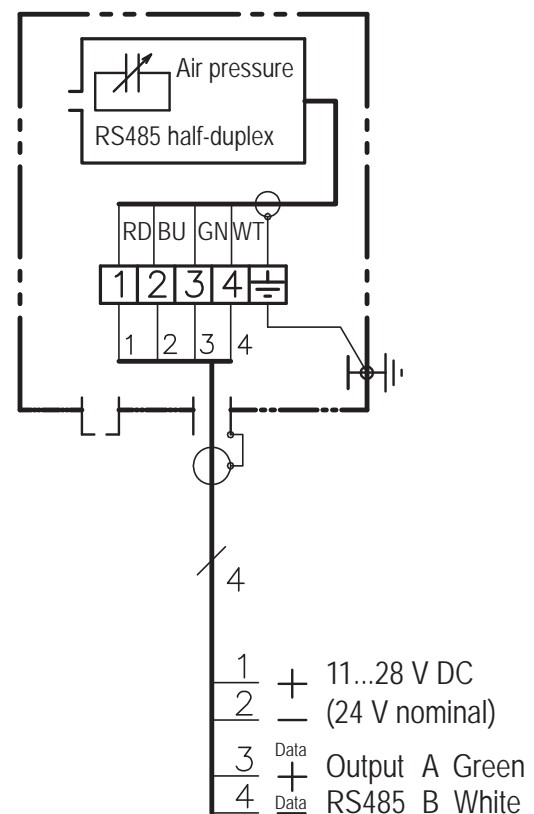
2.6 Performance check

Readings of barometric values can be obtained from the connected pressure indicators or from external indicator consoles. As suitable performance check the read data can be compared with these of other stations in the neighbourhood. We recommend to ask a bureau of the local weather service which should be located in harbours for precise data.



To be able to compare data all pressure values must be related to the sea level.

Electrical connection



3.0 Service and maintenance

3.1 Periodical works

Apart from periodical visual checks for outer damages of the housing, water-tightness and the fixing of the mounting screws no further work is necessary.

3.2 Change of spare parts

All spare parts listed here can be replaced with regular tools such as wrenches, screw drivers etc.

3.3 Spare parts drawing

Please see chapter 1.3 for illustration.

3.4 Spare parts list

No.	Description	PPU	Order.-No.
-	Complete barometer type 08126, grey colour (RAL 7001)	-	00.08126.481 002
1	Screw terminal AKZ 4 KrG	4	65.28030.020 100
2	Cover APKrG	1	65.28020.020 200
3	Designation label (1 to 4)	4	65.28030.020 700
4	End angle EWK1	2	65.28030.020 800
5	Ground insert 21 x 13.6 x 16.5 mm	1	35.88812.220 004
6	Ground insert 21 x 10.6 x 13.5 mm	1	35.88812.220 003
7	Ground insert 21 x 9 x 11.5 mm	1	35.88881.220 002
8	Pressure sensor 8100	1	63.06010.061 000

3.5 Ordering of spares

In case of spares as mentioned here are required for replacements or to be put on stock the following information are required to forward the right spare parts to the customer:

- name of item and type number
- ordering number/parts number
- required quantity
- related component or name of higher assembly
- type of vessel and country of origin
- reference number of LAMBRECHT wiring diagram designated with the bold letters SKF.... or SWF.... and a 3 or 4-digits running number.

A detailed inquiry containing these information will be appreciated by us for the safe identification of the required item(s) and to prevent wrong deliveries. Above mentioned data can be obtained from the designation label and from the spares list of this system component.

4.0 Setting out of operation

4.1 Storage

The sensor should be stored in a clean and dust-free area between -40 and +85 °C (not condensing) in a cardboard box or similar container.

4.2 Dispatching

For dispatching we recommend to use a regular cardboard box and packing material like polystyrene to avoid damages during transport.

5.0 Warranty

Please note the loss of warranty and non-liability by unauthorised manipulation of the system. You need a written permission from LAMBRECHT meteo GmbH for changes of system components. These activities must be operated by a qualified technician.

The warranty does not cover:

1. Mechanical damages caused by external impacts (e. g. icefall, rockfall, vandalism).
2. Impacts or damages caused by over-voltages or electromagnetic fields which are beyond the standards and specifications in the technical data.
3. Damages caused by improper handling, e. g. by wrong tools, incorrect installation, incorrect electrical installation (false polarity) etc.
4. Damages which are caused by using the device beyond the specified operation conditions.

6.0 Technical data

Cable inlet:	according to VG 88 812
Measuring range:	35...2000 hPa
Precision:	0.01 % FS
Accuracy:	± 0.0144 % FS
Long term stability:	± 100 ppm per year
Temperature range:	-45...+85 °C during operation
Power supply:	11...28 V DC (24 V nominal)
Current consumption:	typically 16.5 mA · max. 32 mA
Colour:	grey (RAL 7001) · other colours on request
Protection class:	IP 65 according to DIN 40 050
Dimensions:	see technical drawing
Weight:	approx. 2.0 kg

Additional specifications:

Sensor: High precision resonant pressure transducer
Interface: RS 485 (no bus function)
Update rate: 1 Hz



Quality System certified by DQS according to
DIN EN ISO 9001:2008 Reg. No. 003748 QM08

Subject to change without notice.

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