



USER MANUAL

8126 X81

Precision Air Pressure Sensor



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1. Safety instructions

This system is designed according to the state-of-the-art accepted safety regulations. However, please note the following rules:

- Before putting into operation please read all respective manuals!
- Please observe all internal and state-specific guidelines and/or rules for the prevention of accidents. If necessary ask your responsible safety representative.
- Use the system only as described in the manual.
- Always have the manual at hand at the installation site.
- Use the system within the specified operating condition. Eliminate influences, which might impair the safety.
- Prevent the ingress of unwanted liquids into the devices.

2. Warranty

Please note the loss of warranty and non-liability by unauthorized manipulation of the system. You need a written permission of the 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 (e.g. false polarity) etc.
4. Damages which are caused by using the device beyond the specified operation conditions.

3. Description

3.1. General

The highly precise air pressure sensor 8126 X81 features a microprocessor-controlled sensor operating on the resonance principle. The signal is output via a serial RS 485 interface, which can be connected to the LAMBRECHT meteo data logger Ser[LOG].

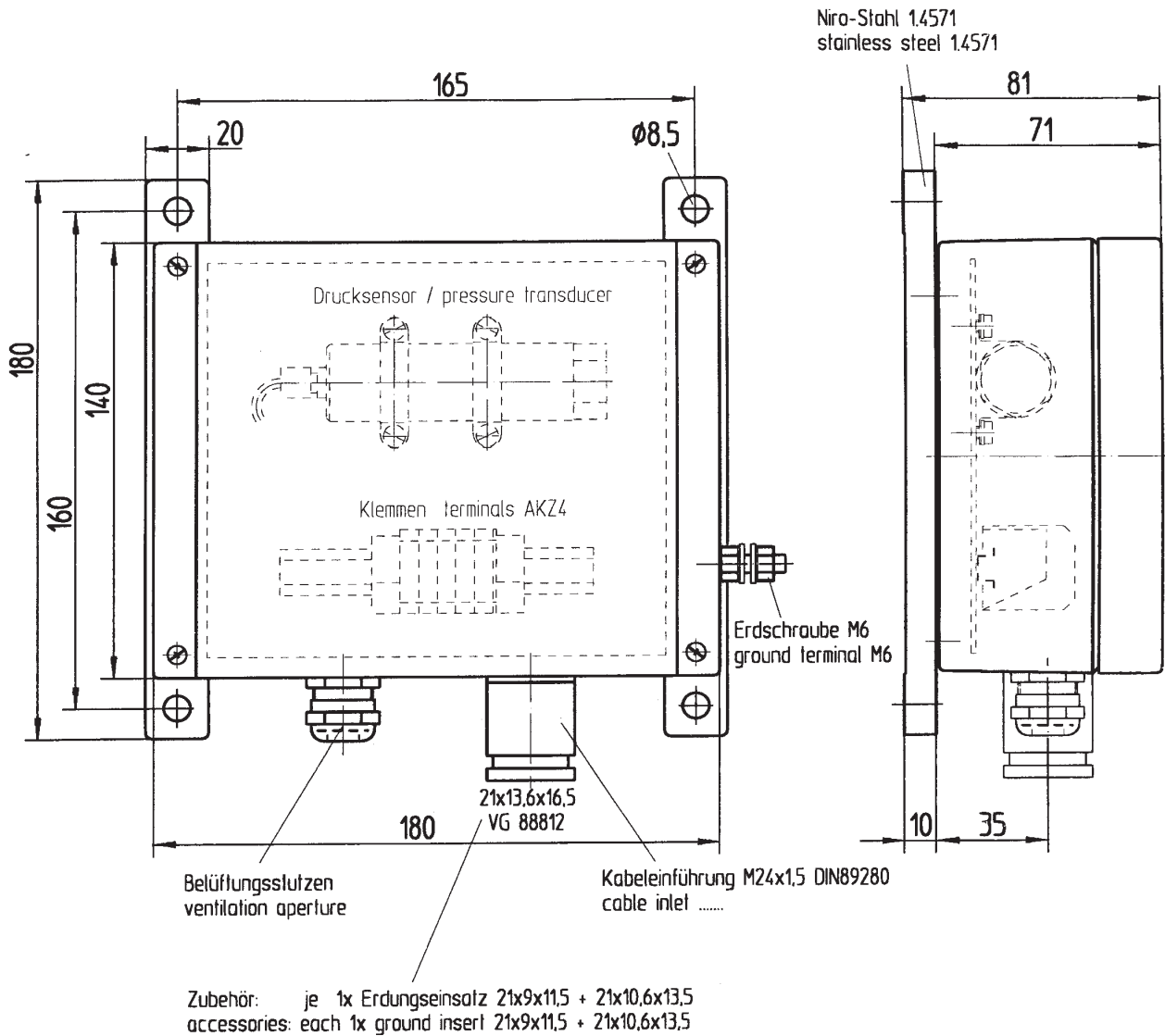
The integrated cable entry complies with VG 88 812. The signal and power supply cables are secured using screw terminals. The distribution box is designed as a primed, seawater-resistant aluminum housing, which is typically coated in gray (RAL 7001).

To meet the strict EMC/EMI requirements, the housing, in accordance with VG 88 812, features conductive rubber seals and metal cable entries. To comply with shock and vibration requirements, the housing is equipped with reinforced stainless steel brackets.

3.2. Function

The RS 485 output signals of the air pressure sensor 8126 X81 are forwarded for further analysis and transmission to other systems, such as the Ser[LOG] data logger. Thanks to its outstanding accuracy of $\pm 0.01\%$ (FS) over the entire measurement range, the sensor can also be used in aviation. To ensure that air has the necessary access to the pressure sensor, a filter inlet is located at the bottom of the housing.

3.3. Dimensional drawing



3.4. Interface specification

After the power supply is established, the sensor automatically starts transmitting measurement values within a few seconds. The data is sent by the sensor at one-second intervals.

Interface: RS485

COMMUNICATION PARAMETERS:

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

The air pressure value is transmitted as a floating-point number with two decimal places in ASCII format. It is followed by a space and the unit "hPa".

Each transmitted measurement value ends with the two 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 consumption: Typically 16 mA, max. 32 mA

Interface: RS485

ERROR MESSAGE

In the event of an error, the sensor sends error messages. The error message starts with "!" followed by a three-digit number. Each transmitted error message ends with the two termination characters <CR><LF>.

Example:

!020<CR><LF>

In hex code:

21 30 32 30 0D 0A

4. Setup and startup

4.1. Selection of the installation site

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.

4.2. Mounting

The housing must be mounted on a flat surface using four M8 stainless steel hexagon head screws.

4.3. Electrical connection

The electrical connection (see drawing) in the external distribution box is made according to the circuit diagram of the overall system.

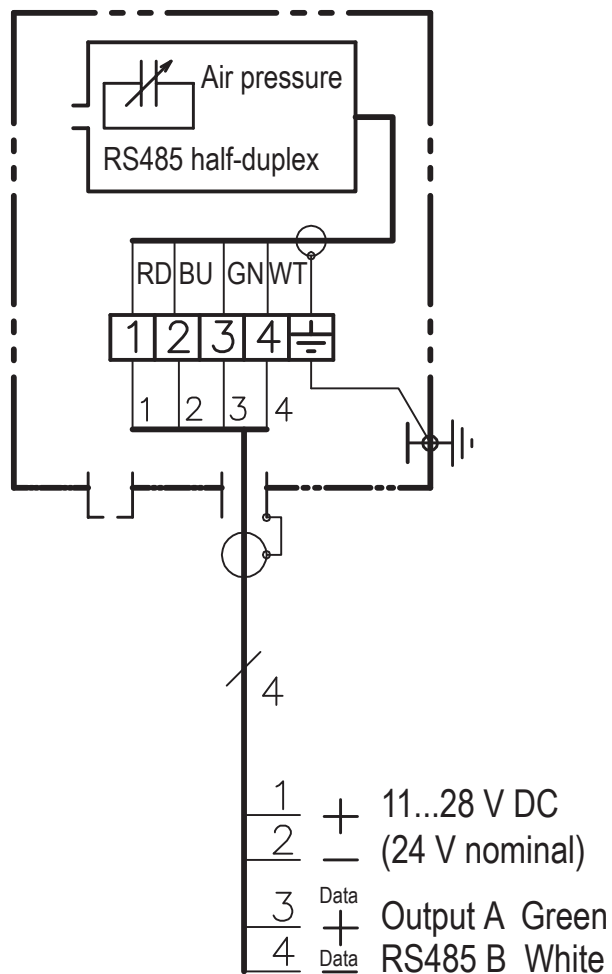


Important note: To prevent the risk of electric shock to installation personnel and damage due to short circuits, the main power supply must be switched off until the installation is complete!



Attention: Incorrect connection can damage these and other connected components!

4.4. Wiring diagram



4.5. Cable entries

The common signal and power cable will be linked inside the housing by means of a cable gland according to VG standards.

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

4.6. 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 seconds the sensor provides specification-compliant measured values.

4.7. Functional test

The barometric values can be read on connected pressure indicators or external display consoles. A comparison of the readings with those of neighboring stations is sufficient to check the function. We recommend asking the local weather service for the exact dates.



In order to be able to compare the data, all pressure values must be related to sea level.

5. Service and maintenance

5.1. Regular checks

Apart from regular visual inspections of the housing for damage, waterproofing, and the fastening of the mounting screws, no further work is required.

5.2. Replacing spare parts

All spare parts listed here can be replaced using normal tools such as wrenches, screwdrivers etc.

5.3. Spare parts drawing

An illustration can be found under “Dimensional drawing”.

5.4. Spare parts list

No.	Description	Pcs/U	Id No.
-	Barometer type 8126 X81; color grey (RAL 7001)	-	00.08126.481002
1	Screw terminal AKZ 4 KrG	4	65.28030.020100
2	Cover APKrG	1	65.28030.020200
3	Designation label (1 to 4)	4	65.28030.020700
4	End angle EWK1	2	65.28030.020800
5	Ground insert 21x13.6x16.5 mm	1	35.88812.220004
6	Ground insert 21x10.6x13.5 mm	1	35.88812.220003
7	Ground insert 21x9x11.5 mm	1	35.88812.220002
8	Pressure sensor 8100	1	63.06010.061000

5.5. Ordering spare parts

If you require any of the spare parts mentioned here for replacement or if you wish to keep these parts in stock, please provide us with the following information so that we can send you the correct spare parts:

- Name and type number of the device
- ID number
- Quantity required
- Respective component or designation of the higher-level assembly
- For ships: Type of vessel and country of origin
- Reference number of the LAMBRECHT circuit diagram, which is identified by the letters SKF.... or SWF...., and a three- or four-digit consecutive number.

Detailed inquiries containing this information help us to determine the exact items required and prevent incorrect deliveries. The above data can be found on the identification plate and in the spare parts list for this system component.

6. Setting the device out of operation

6.1. Storage

The air pressure sensor must be stored in a clean and dust-free room at temperatures between -40 and +85 °C (non-condensing) in a cardboard box or similar packaging.

6.2. Dispatch

For shipping, we recommend using a suitable box and appropriate padding material to prevent transport damage.

7. Disposal

LAMBRECHT meteo GmbH is listed and registered at the Stiftung Elektro-Altgeräte Register ear under:

WEEE-Reg.-Nr. DE 45445814

In the category of monitoring and control instruments, device type: "Monitoring and control instruments for exclusively commercial use".

Within the EU



The device has to be disposed according to the European Directives 2002/96/EC and 2003/108/EC (Waste Electrical and Electronic Equipment). Do not dispose the old device in the household waste! For an environmentally friendly recycling and disposal of your old device, contact a certified disposal company for electronic waste.

Outside the EU

Please follow the regulations in your country regarding the appropriate disposal of waste electronic equipment.

8. Technical data

8126 X61 Precision Air Pressure Sensor	
Id No.	00.08126.481002
Cable inlet	According to VG 88 812
Measuring range	3750...1150 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 VDC (24 V nominal)
Current consumption	Typically 16.5 mA; max. 32 mA
Color	Grey (RAL 7001); other colors on request
Protection class	IP 65 according to DIN 40 050
Dimensions	See dimensional drawing
Weight	Approx. 2.0 kg
Additional data	
Sensor	High-precision resonant pressure transducer
Interface	RS 485 (no bus function)
Update rate	1 Hz