A

Operating Instructions

Air Monitoring System

Puracon Stationary PRO

Version: 04/13-D

General Information

We strongly recommend reading this manual thoroughly prior to operation and follow all the safety precautions precisely. Damage resulting from any deviation from these instructions is excluded from warranty and liability for this product. Carry out other commissioning steps only if you have fully understood the following contents.

Before commissioning and using the unit, carry out all the essential preliminary work and measures concerning legal regulations and safety. These are described on the following pages of this operation manual.

Description of marks and warning signs

The following warning signs are used in this document to identify the corresponding warning notes which require particular attention by the user. The warning signs are defined as follows:

Caution
Indicates an imminently hazardous situation which, if not avoided, could result in serious injury, physical injury or death.

Warning
Indicates a potentially hazardous situation which, if not avoided, could result in physical injury or damage to the product or environment.

Note
Indicates additional information on how to use the unit.

Scope of Delivery

This device is used for controlling of the gas humidity value during the filling process of gas tanks by compressors with a pressure up to 420 bar.

Specifications

- Aluminum sensor housing with screw joint and G¼“ inlet and outlet
- Display unit (120 x 120 x 60 mm) for wall mounting with sensor cable (length: 2 m)
- Power supply cable (length: 1.2 m) with CE plug 230/110 V AC ~ 50/60 Hz (12/24V DC versions available)
- Digital LCD display with humidity display in mg/m³ and error warnings
- Pressure compensation
- 3 monitoring LEDs, adjustable limits
- Optional 4 - 20 mA interface output
- Language can be selected in German, English, French or Spanish
- Sensor cables with 5, 10, 15 or 30 m available for surcharge
- Approved up to 350 bar
- Stainless steel sensor optional, approved up to 420 bar

Available versions

- 230 V AC / 110 V AC
- 12 V DC
- 24 V DC
- Eex with ATEX certification

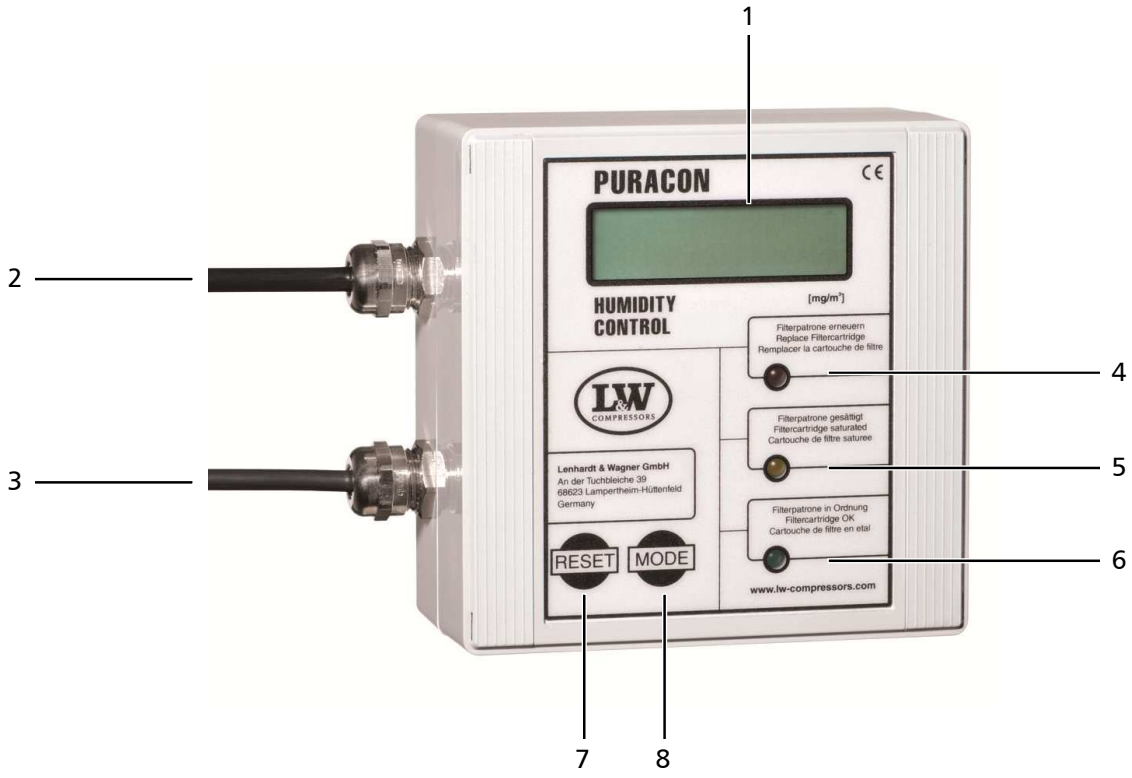
Technical Data

Technical Data	Display Unit
Dimensions L x W x H [mm]:	120 x 120 x 60
Installation dimensions L x W x H [mm]:	180 x 120 x 60
Weight [kg]:	approx. 0.8
Power supply:	240VAC 6VA 50Hz
Protection Class:	IP64
Relay switching capacity:	max. 40V / 2A
Ambient Temperature [°C]:	+5 to +40

Technical Data	Sensor
Gas:	Compressed Air
Dimensions L x W x H [mm]:	90 x 60 x 50
Installation dimensions L x W x H [mm]:	90 x 60 x 150
Weight / basic material:	Stainless Steel 1.4301 1200g / max. pressure 420 bar Aluminium AlMgSi1 450g / max. pressure 350 bar
Sensor temperature range [°C]:	+5 to +40
Gas temperature range [°C]:	+5 to +50°
Cover screw:	M8 x 30 Steel 10.9 ISO7380 or DIN912 for 420bar M8 x 30 Stainless Steel A2 ISO7380 or DIN912 to 350bar
Filter:	50 µm
Protection Class:	IP64
Typ:	RSE-2000_Standard

Unit Assembly - Display unit

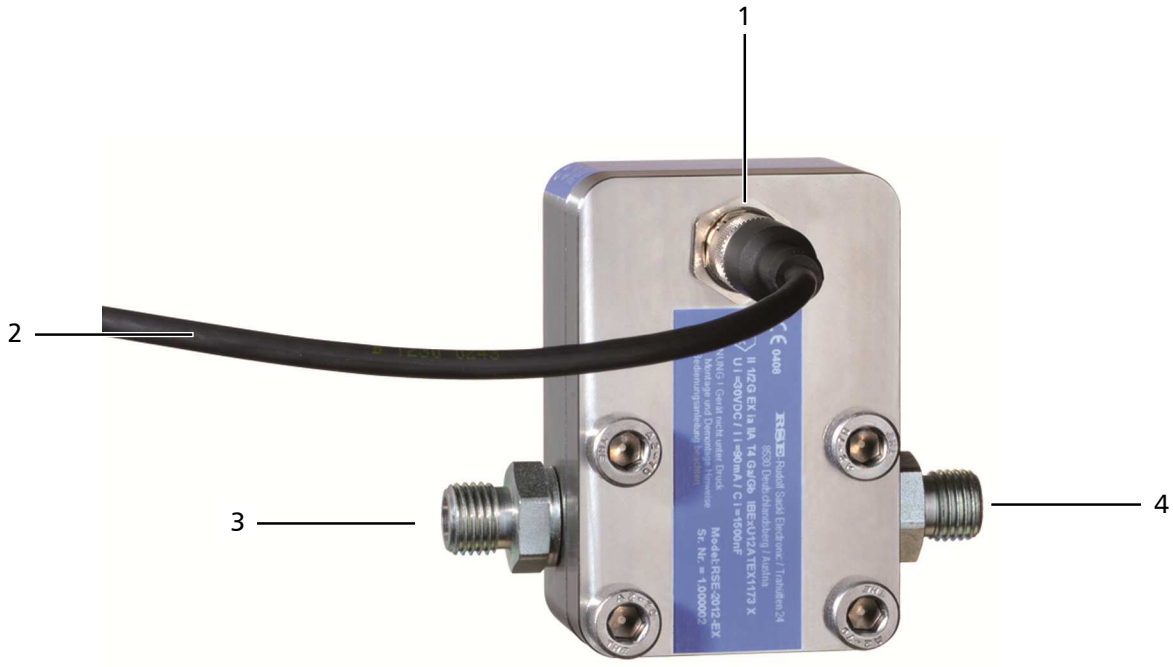
The display unit consists of a housing with an LCD display, 3 quick reference LED´s, a mains power cable. The power supply cable is for use with a standard 230 V socket with earth. Optionally the system can works with 12 or 24 VDC. The LCD display shows the present moisture level in mg/m³ and/or self-test and alarm messages.



No.	Designation
1	LCD display
2	Connection cable
3	Sensor cable
4	Red - replace filter cartridge
5	Yellow - filter cartridge saturated
6	Red - filter cartridge OK
7	RESET - Button
8	MODE- Button

Unit Assembly - Sensor

The sensor housing contains the highly sensitive sensor that monitors the moisture content. The housing should be mounted in the high pressure pipeline.



No.	Designation
1	Connection sensor cable
2	Sensor cable
3	Pipe connection
4	Pipe connection

SAFETY PRECAUTIONS

Intended Use

Only use the unit in perfect condition for its intended purpose, safety and intended use and observe the operating instructions! In particular disorders that may affect safety have to be eliminated immediately!

Use the unit exclusively for the determined medium (see "Technical Data"). Any other use that is not specified is not authorized. The manufacturer/supplier shall not be liable for any damages resulting from such use. Such risk lies entirely with the user. Authorization for use is also under the condition that the instruction manual is complied with and inspection and maintenance requirements are enforced.

No change and modification to the unit can be made without the written agreement of the manufacturer. The manufacturer is not liable for damage to persons or property resulting from unauthorised modifications.

Operators

Target groups in these instructions;

Operators

Operators are persons who are authorized and briefed for the use of the compressor.

Qualified personnel

Qualified personnel are persons who are entitled to repair, service, modify and maintain the system.

Warning
Only trained personnel are permitted to work on the unit!

Warning
Work on the electrical equipment on / with the machine / unit may only be carried out by qualified electricians.

Strictly follow the instruction for use

Any use of the device requires full understanding and strict observation of this instruction. The device is only to be used for purposes specified here. Also pay attention to the specific instructions for the use of compressors, filling stations and to the corresponding statutory requirements and standards.

Maintenance

The device must be inspected regularly (examination of actual condition), calibration and adjustment (compare with true values) and maintenance by competent personnel to maintain the specified condition.

Liability for proper function or damage

The liability for the proper function of this device is irrevocably transferred to the owner or operator to the extent that the device has been serviced or repaired by personnel not employed or authorized by Lenhardt & Wagner or when the device was used in a manner not conforming to its intended use.

Lenhardt & Wagner and its distribution partners cannot be held responsible for damage caused by non-compliance with the recommendations given above. The warranty and liability provision of the terms of sale and delivery of Lenhardt & Wagner and its distribution partners are likewise not modified by the recommendation given above.

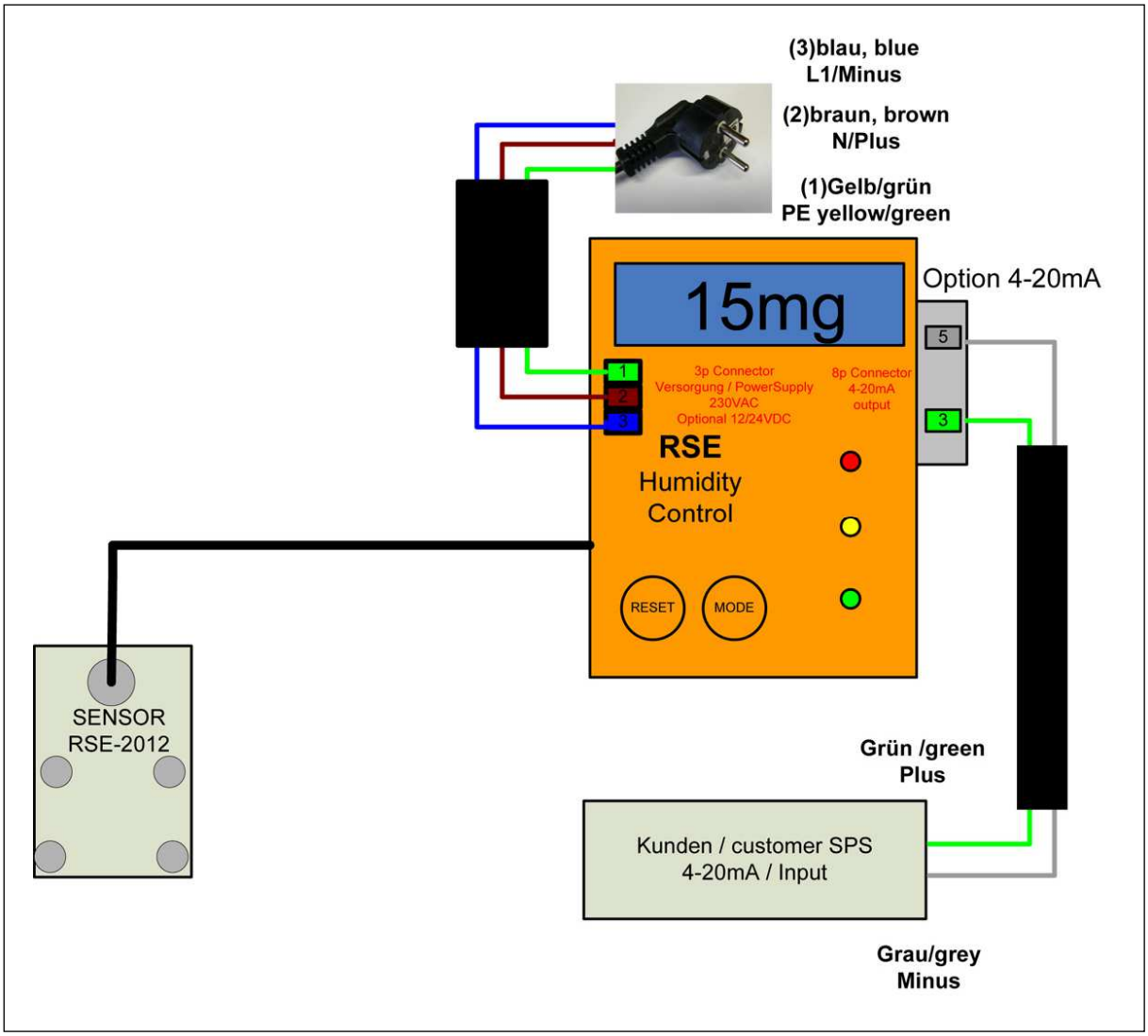
Safety regulations

Inspections according to legal and local obligatory regulations regarding accident prevention are carried out by the manufacturer or by authorised expert personnel. No guarantees whatsoever are valid for damage caused or favoured by the non-consideration of these directions for use.

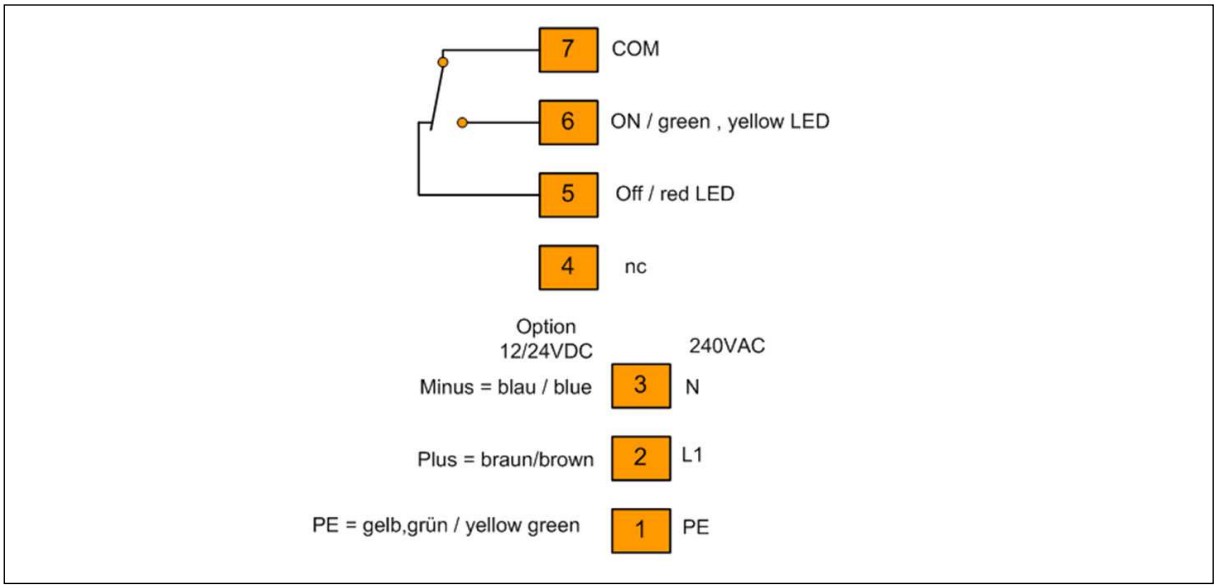
INSTALLATION

A

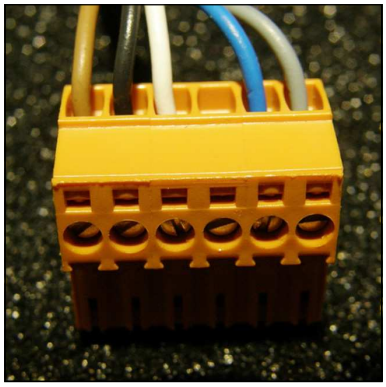
Connection plan



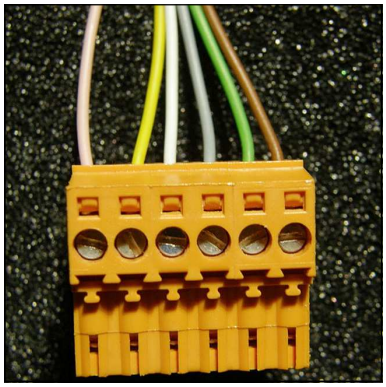
Connection plan display unit



1. PE Earth green/ yellow cable
2. L1 240V AC or +12 / +24V (optional)
3. Neutral or ground (optional) for 12 / 24V
4. Free
5. Relay (OFF) Motor off (red LED)
6. Relay (ON) Motor on (green and orange LED)
7. Relay (COM) common contact



Sensor cable 5-pole



Sensor cable 8-pole

Mechanical installation

Danger
Before any work will be carried out, isolate the power supply to prevent injury and reduce the pressure in the pipes to atmospheric pressure. The installation of a non-return value in the outlet of the sensor housing towards the filling panel may only be carried out by a qualified technician.

For installation observe the following:

- We recommend using G1/4“ Ermeto connections.
- Before mounting the housing, tighten the screws again (Fig. 2).
  Attention: Screw depth max. 4 mm!
- Mount the sensor tightly at a place with low vibration. Mount the sensor at least by two M8 mounting screws.
  An installation only by gas lines is not allowed!

Fig. 1 - G1/4“ Ermeto connection

Fig. 2 - Retighten cover screws

Fig. 3 - Rear sided opening M8

Display unit

- Remove the two plastic blinds (Fig. 1) and unscrew the four screws to remove the cover.
- Disconnect all plugs from the printed board.
- Mount rear cover to the backing plate by 4 screws.
- Reconnect the plug to the printed board.

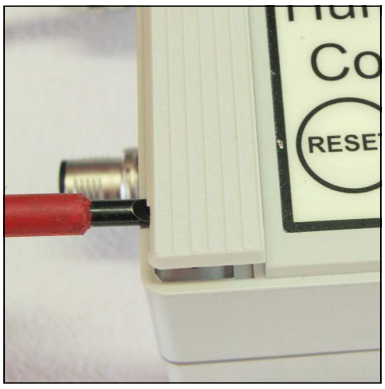


Fig. 1 - Remove plastic cover

Fig. 2 - Remove plug

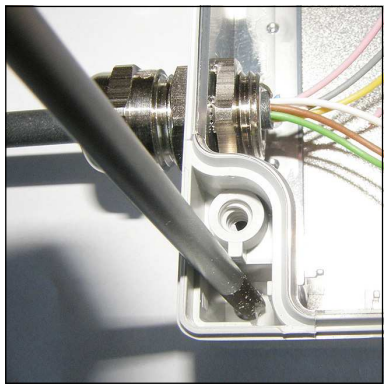


Fig. 3 - Tighten rear cover

Electrical connection

- Connect sensor cable (Fig. 1)
  Attention: The gas lines must be connected to earth.
- Connect power supply: 240 VAC - connect the plug to socket.
- 12/ 24 VDC
  Connect open cable ends to the DC power supply
  Blue = negative, Brown = positive, Yellow and Green = ground

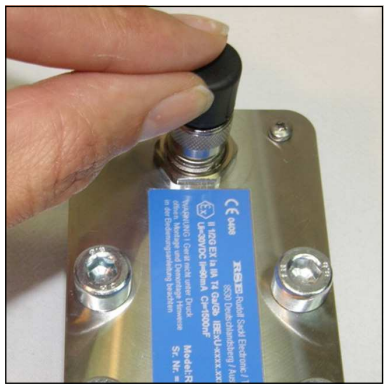


Fig. 1 - Connect sensor cable

4 - 20 mA output (optional)

Grey = negative, Green = positive

Current = 4 - 20 mA

Max. output voltage = 4,8V

Load resistor max. 240 R galvanically isolated 0.3137mA / (mg/m³)

4 mA = 0 mg/m³ humidity

7,13 mA = 10 mg/m³ humidity

20 mA = 51 mg/m³ humidity

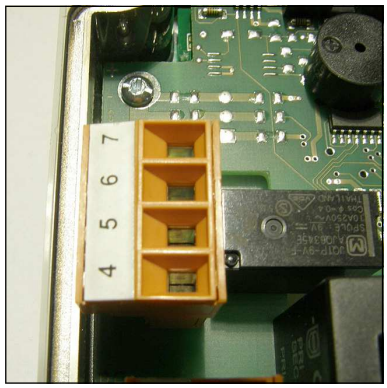
Long cables (longer than 10 m) should be shielded and the shield must be connected to earth. We recommend also a surge

Connect cable (4 - 20 mA) to the control unit

Compressor shutdown (optional)

If the humidity value is too high (red LED) the compressor will be switched off.

WARNING! Maximum switch voltage and current 40VAC/DC - 2A.



OPERATION

Important operation instructions

- Each contamination and humidity values higher than 60 mg/m³ can influence the measurement or/and damage the sensor. Ensure a clean pipe line system.
- Before mounting, the pipes must be cleaned from contamination to avoid damage of the sensor. Every contamination can reduce the measured values or damage the sensor. Each excessive pressure and temperature changes can produce condensate.
- Humidity values higher than 60 mg/m³ can reduce the sensor lifetime.
- High pressure and temperature changes provoke high humidity fluctuation. Too high system humidity tends to condensate.
- Consistent measurement or sensor protection from condensation as follows:
  - ensure permanently a sensor minimum pressure of about 70% of the filling pressure
  - avoid gas flow returning into the pipe system
  - do not exceed the maximum humidity value of 25mg/m³ (orange LED) according to EN12021 (2012)
  - prevent the sensor from frequent, abrupt pressure changes..

Legal regulation and filling authorization

- The water content of the gas supplied by the compressor for filling gas cylinder should not exceed 25 mg/m³. The owner of the compressor and the person in charge of filling are responsible for ensuring that this limit is not exceeded. Gas may only be filled by person listed as authorized persons in the compressor check book.
- WARNING! Correct humidity values are only possible during gas flow and with a working pressure from 200 to 300 bar. For other pressure ranges or for better accuracy see "Adjustment pressure range"

Start

During commissioning of the display unit, all LEDs light up and the display indicates the software version and the humidity value.

- Red - replace filter cartridge
- Yellow - filter cartridge saturated
- Green - filter cartridge OK

Note
After longer standstill of the compressor or after filter change, the yellow or red LED may be illuminated and the digital display may indicate a humidity value higher than 25 mg/m³. This is caused by the remaining humidity in the pipes or by the delayed effect of new filters.

Dry unit - only necessary with the option "Compressor- shutdown"

Only necessary for installations with auto shutdown of the compressor when the red LED is illuminated.

During drying, the compressor operation will be released for 20 minutes regardless of the humidity value.

A humidity value higher than 25 mg/m³ will be measured in the pipe system after longer standstill or after a filter change. To rinse the system without auto shutdown of the compressor, carry out the drying process.

Drying process as follows:

MODE - Push and hold the MODE button for about 2 seconds

Menu settings

Menu settings change as follows

- Push RESET button
- Hold MODE button until beep
- Release the MODE button after the beep

Note
The different menus will be displayed briefly.
If the desired menu was skipped, repeat the process.

The following settings will be displayed automatically one after another:

Language German	Language Select language: English / French / Spanish / German
engine on !! minute 0	Dry unit! Activate automatic operation. The compressor will release for xx minutes for drying system after start.
cal 4-20mA !! Humidity [mg] xx	Adjustment 4 - 20 mA current source
pressure press. [bar] xxx	Adjustment pressure range / Increases measurement accuracy!

When the selected menu is displayed

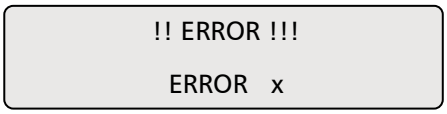
- Hold MODE button.

The desired settings will be displayed automatically one after another by pushing and holding the MODE button.

- Release MODE button when desired setting is displayed.

ERROR MESSAGES

Error display



Error messages treatment as follows:

- Restart the unit by pushing the RESET button.
- If the error message remains displayed, see following error code table:

Code	Cause	Remedy
ERROR 1	Humidity sensor defective. Defective or contaminated sensor	check cables and sensor
ERROR 2	Humidity values outside normal parameters	check cable connections
ERROR 3	not used	
ERROR 4	Data memory lost, electronic system defective	back to manufacturer
ERROR 5	Sensor cable broken	check cable connections
ERROR 6	not used	
ERROR 7	not used	
ERROR 8	not used	
ERROR 9	not used	
ERROR 10	Voltage outside normal parameters	check power supply
ERROR 11	Internal power supply defective	back to manufacturer
ERROR 12	Voltage outside normal parameters	check power supply
ERROR 13	Voltage outside normal parameters	check power supply

MAINTENANCE AND SERVICE

Maintenance Work

Carry out service and maintenance work exclusively when the compressor is stopped and depressurized. The unit should be leak-checked regularly. Leaks can be preferably localised by using a leak detector spray (if necessary, brush pipes with soapy water).

We urgently recommend that all maintenance, repair and installation work must only be carried out by trained personnel. This is necessary because all maintenance work can not be explained exactly and detailed in this manual.

Only use authentic spare parts for service work.

Danger
Components under pressure, such as the hose ends, can quickly come loose when manipulated and can cause potentially fatal injuries due to the pressure surge.
Any work on system parts may only be performed in a pressure-compensated state.

Warning
The use of accessories that have not been tested can lead to death or serious injury or damage to the unit. Only use authentic spare parts for service work.

Warning
Carry out maintenance or service work when the unit is switched off and protected against unexpected restart.

Carry out the following maintenance work every 12 months

Maintenance type	Quantity	Order. No.
Visual control for contamination or damage of the sinter filter. Change the sinter filter and the O-ring if necessary.	1	007318
Sensor check	-	-

Sensor maintenance / check

Danger
Do not open when the gas lines are pressurized!

Sensor maintenance / check as follows:

- Loosen cover screws, do not extract.
- Lift cover at least 1 cm and blow through the gap.
- The humidity value should increase fast up to at least 50 mg/m³. If the humidity value should not increase, return sensor, display unit and cables to the manufacturer for check / repair / calibration!
- Place cover
- Place and mount screws crosswise

The sensor maintenance / check is now completed.

Loosen cover screws, do not extract

Return to manufacturer

Please return sensor, display unit, all cables as well as a short error description to the manufacturer. A free software update and a cleaning will be carried out during check / repair / calibration.

Note
For return delivery to manufacturer ensure sufficient sensor protection.

Note
With the perfect-fit adapter (P/N: 007323), the system can still be used even after removal of the sensor.

Check sinter filter / replacement of the seal

Danger
Do not open when the gas lines are pressurized!

Warning
Do not touch or contaminate the sensor. Each contamination can influence the measurement or/and damage the sensor.

Sinter filter or seal check as follows:

- Switch unit off.
- Loosen and extract cover screws 4 x M8.
- Remove sensor housing top an place it on a clean surface. Attention: Do not touch or contaminate the sensor.
- Unscrew the sinter filter out of the sensor housing and check it (visual inspection). Replace a damaged or contaminated sinter filter immediately (seal kit Puracon: 007318).
- Replace the seal.
- Place sensor housing top and tighten cover screws.

The sinter filter or seal check is now completed.

Fig. 1 - Loosen cover screws

Fig. 2 - Sensor housing top and bottom

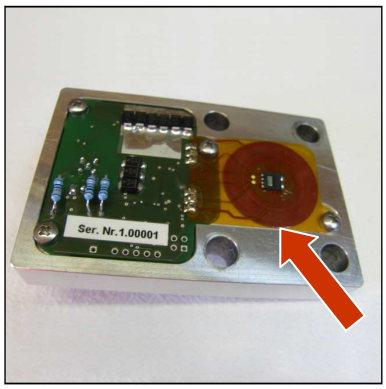


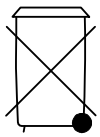
Fig. 3 - Sensor

Fig. 4 - Rear cover, seal and sinter filter

Disposal

The product must be disposed in accordance with national waste disposal regulations and by an appropriate waste disposal company.

Electric and electronic components



EU-wide regulations for the disposal of electric and electronic appliances which have been defined in the EU Directive 2002/96/EC and in national laws are effective from August 2005 and apply to this device.

Common household appliances can be disposed by using special collecting and recycling facilities. However, as this device has not been registered for household usage, it must not be disposed of through these means.

The device can be returned to L&W. Please do not hesitate to contact us if you have any further questions on this issue.