S605

Be smart. **Measure it.**

Portable Breathing Air Quality Analyzer

ALL IN ONE
O_2, CO_2, CO, H_2O, Oil, Pressure

PLUG & PLAY
Simple connection to your system

PORTABLE DEVICE
Can be carried with one hand

HIGH PRECISION
Accurate measurements

COMPACT DESIGN
Simple and efficient handling

COMMUNICATION INTERFACE
Modbus TCP/RTU, 4G-Modem

Benefits

- All-in-one Instrument measures O_2, CO_2, CO, Dew Point and Oil Vapor simultaneously in the breathing air
- Portable and lightweight measuring device in a robust carry case
- Testing quality of breathing air according to national and international standards
- Software guided measurement makes it easy to generate reliable results and reports
- Only one gas inlet for all parameters
- Integrated data logger saves data for later analysis

Real-time breathing air quality measurements

The purity of the breathing air is vital for the operators health and safety. It is essential to have regular purity checks of the supplied air.

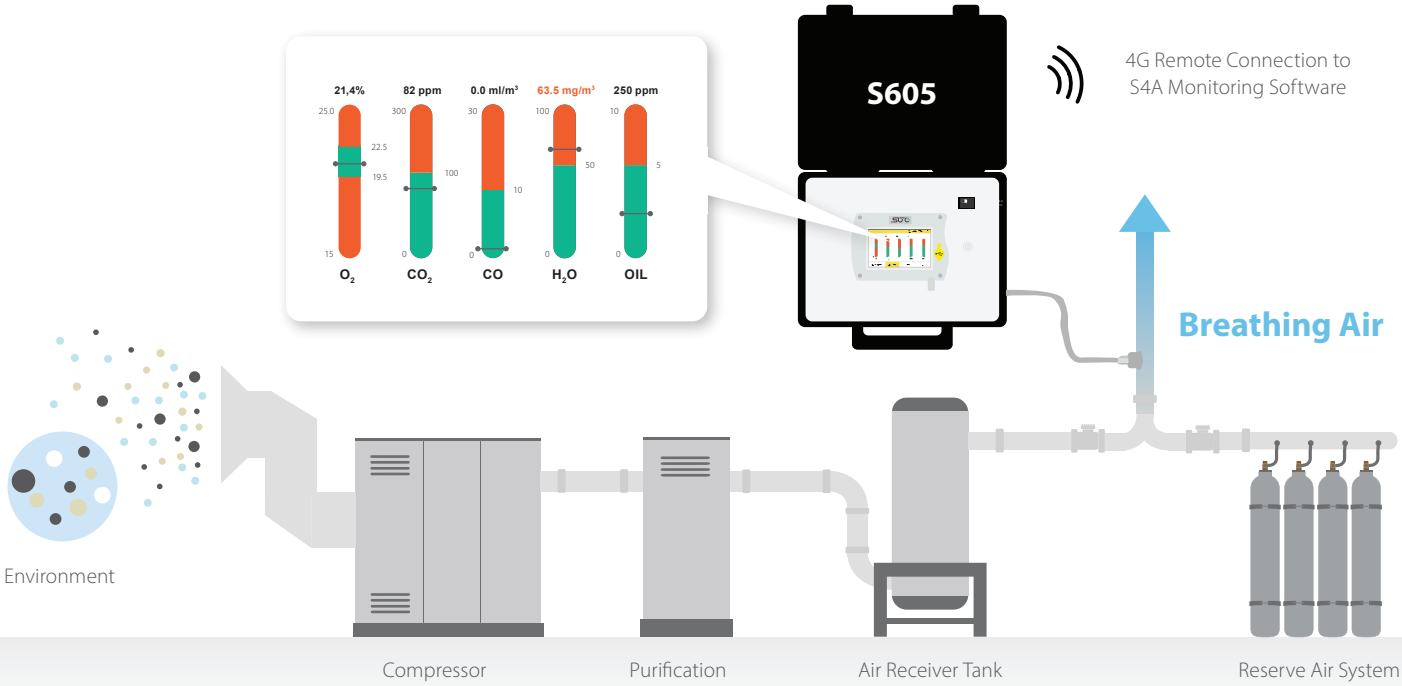
The SUTO S605 Portable Breathing Air Quality Analyzer, measures O_2, CO_2, CO, Dew Point, Oil Vapor and Pressure as defined in the breathing air purity standards and instantly shows the measured values on the touch screen display.

The robust design, quick sensor response times, and a user-friendly user interface ensures reliable and quick measurements, resulting in maximum protection for the people using air for breathing applications.

It is smarter, faster and more convenient than the traditional methods.

Monitoring of all breathing air parameters

O_2 Oxygen	CO Carbon Monoxide
CO_2 Carbon Dioxide	H_2O Humidity
According to all relevant national and international standards	OIL Oil Residues



7 in 1 Measurement Device

Oxygen Measurement
For safety reasons, it is recommended to measure the oxygen level in the breathing air. The optical oxygen sensor monitors the O_2 content and indicates deviations from the standard concentration.

Carbon Dioxide Measurement
The intake air may also be exposed to increased concentration of carbon dioxide. Filter material used in compressed air can adsorb, but also release CO_2. The gas is measured by the NDIR sensor to avoid extreme concentrations above 1000 ppm.

Carbon Monoxide Measurement
The compressor intake air may be contaminated with CO due to nearby combustion engines or heating systems. Carbon monoxide is a toxic and life-threatening gas which will be monitored accurately by an electrochemical sensor.

Humidity Measurement
High humidity can cause corrosion and in severe cases lead to bursting air containers. In cold environment, it can freeze and block the air supply. The integrated dew point sensor is crucial to check the proper water removal of the dryers and filters.

Oil Vapor Measurement
Atmospheric oil vapor contained in industrial air environment can get into the system through the compressor intake. Compressed into the breathing air, the oil contaminants can cause health issues. The state-of-the-art sensor technology detects the oil contaminants immediately.

Pressure Measurement
The pressure sensor provides additional pressure data about the compressed air system using state of the art sensor technology.

Integrated Data Logger
The integrated data logger records all channels in parallel for later analysis. The 5'' touchscreen allows you to interact with the device on site. There is no need for a PC to manage the device.

Applications

Operators of breathing air systems are required to fill respiratory air in line with international standards such as EN 12021 or CFR 1910.134(d). Potential hazards due to impurities in the breathing air can have consequences which endanger health or which are even life-threatening.

Regular checks with the Breathing Air Quality Analyzer S605 is an indispensable part for a safe operation.

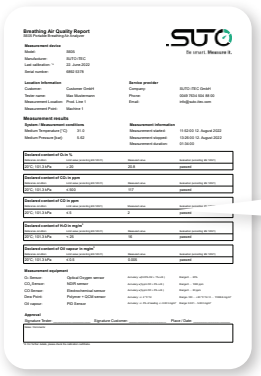
Remote Connection

By connecting a 4G/LTE modem to the designated USB port, S605 can be monitored remotely through S4A software.

Create Breathing Air Quality Reports

The S605 enables users to create powerful PDF reports directly on site. Customer related data as well as service provider details can be entered on-screen, making it even easier to perform audits and to create meaningful reports.

PDF reports can be created from any recordings on the device and are copied on the fly to a connected USB drive for direct print-outs.



Measurement results

System / Measurement conditions		Measurement information	
Medium Temperature [°C]:	31.0	Measurement started:	11:52:00 12. August 2022
Medium Pressure [bar]:	5.62	Measurement stopped:	13:26:00 12. August 2022
		Measurement duration:	01:34:00

Declared content of O_2 in %

Reference condition	Limit value (according EN 12021)	Measured value	Evaluation (according EN 12021)
20°C; 101.3 kPa	≥ 20	20.8	passed

Declared content of CO_2 in ppm

Reference condition	Limit value (according EN 12021)	Measured value	Evaluation (according EN 12021)
20°C; 101.3 kPa	≤ 500	117	passed

Declared content of CO in ppm

Reference condition	Limit value (according EN 12021)	Measured value	Evaluation (according EN 12021)
20°C; 101.3 kPa	≤ 5	2	passed

Declared content of H_2O in mg/m³

Reference condition	Limit value (according EN 12021)	Measured value	Evaluation (according EN 12021)
20°C; 101.3 kPa	< 25	16	passed

Declared content of Oil vapour in mg/m³

Reference condition	Limit value (according EN 12021)	Measured value	Evaluation (according EN 12021)
20°C; 101.3 kPa	≤ 0.5	0.005	passed

Measurement equipment

Relevant standards for breathing air

Relevant standards including BS EN 12021, DEF STAN 68-284, OSHA, CSA and BS 8478 require adherence to specific limits of constituents in breathing air. Here some examples of the required for industrial breathing air:

Contaminant	Europe	China	USA	Canada
Standard	EN 12021	GB/T 31975-2015	CFR	CSA
O_2	**20 -22** %	**19.5 - 23.5** %	**19.5 - 23.5** %	**20 – 22** %
CO_2	**500** ppm	**≤ 1000** mL/m^3	**1,000** ppm	**500** ml/m^3
CO	**5** ppm	**≤ 10** mL/m^3	**10** ppm	**5** ml/m^3
H_2O	PDP: **< -11 °C** 1) H_2O: <35 mg/m^3 2) H_2O: <25 mg/m^3	ADP: **≤ -45.6 °C**	---	---
VOC (Oil Vapor)	**0.5** mg/m^3	**≤ 5.0** mg/m^3 (Oil mist and particle)	**5** mg/m^3	**1** mg/m^3
Odor	No	No	No	No

Dimensions

Due to the small dimensions of the robust and light carry case, the S605 can be easily transported anywhere.

Why is breathing air quality testing important?

- It protects the health, safety and well-being of your employees and people who are on your premises.
- It ensures that your compressor, products and personnel are protected from airborne volatile organic compounds (VOCs) as well
- It ensures that your business complies with national and international regulatory standards for breathing air quality.
- It ensures that your compressed air and work environment have safe levels of oxygen, lubricants, oil, odor, taste, carbon dioxide, carbon monoxide and water.

Technical Data

Measurement

Oxygen O_2	
Accuracy	± 1 % of reading ± 0.05 %
Measuring range	0 ... 25 %
Resolution	0.1 %
Sensor	Optical oxygen senor
Sensor lifetime	> 5 years
Carbon Dioxide CO_2	
Accuracy	± 1 % of reading ± 25 ppm
Measuring range	0 ... 1000 ppm
Resolution	1 ppm
Sensor	NDIR sensor
Sensor lifetime	> 5 years
Carbon Monoxide CO	
Accuracy	± 5 % of reading ± 1 ppm
Measuring range	0 ... 20 ppm
Resolution	0.1 ppm
Sensor	Electrochemical sensor
Sensor lifetime	2 years
Humidity H_2O	
Accuracy	± 1 °C Td (0 ... 20 °C Td) ± 2 °C Td (-70 ... 0 °C Td) ± 3 °C Td (-100 ... -70 °C Td)
Measuring range	-100 ... +20 °C Td / 0 ... 17458.6 mg/m³
Resolution	0.1 °C Td
Sensor	QCM + Polymer
Sensor lifetime	> 10 years
Oil Vapor (only for P560 0605)	
Accuracy	5 % of reading ± 0.003 mg/m³
Measuring range	0.001 ... 5.000 mg/m³ (Based on 1000 hPa(a), 20 °C, 0 % relative humidity)
Resolution	0.001 mg/m³
Sensor	Photo ionization detector
UV lamp lifetime	6,000 working hours or 1 year, whichever comes first
Oil Mist and Particle (only for P560 1605)	
Accuracy	15 % of reading ± 0.1 mg/m³
Measuring range	0.0 ... 10.0 mg/m³ (Based on 1000 hPa(a), 20 °C, 0 % relative humidity)
Resolution	0.1 mg/m³
Sensor	Oil mist and particle sensor
Sensor lifetime	> 5 years
Pressure	
Accuracy	0.5 % FS
Measuring range	0 ... 16 bar(g)
Resolution	0.01 bar
Sensor	Piezo resistive pressure sensor

Signal / Interface & Supply

Fieldbus	
Protocol	Modbus/RTU (RS485) Modbus/TCP (Ethernet)
Update rate	1 / sec.
Power supply	
Voltage supply	20 VDC, 45 W max. Battery
Current consumption	2.2 A
Mains supply adapter (AC/DC)	
Input:	100 ... 240 VAC, 50/60 Hz, 1.8 A
Output:	20 VDC, 3.25 A, 65 W max.
Interface	
USB	USB Micro with OTG support
4G/LTE USB	USB Port for 4G/LTE Modem

General data

Configuration	
Others	Device comes pre-configured Configuration can be done via on-screen touch
Display	
Integrated	5" color touch screen
Data Logger	
Storage	Up to 30 million measurement values
Report	Integrated report generator for PDF export
Material	
Process connection	6 mm quick connector
Housing	PC, Al alloy
Miscellaneous	
Electrical connection	M12, USB-C, RJ45
Protection class	IP54
Water Inlet	6 mm connector
Dimensions	470 x 365 x 181 mm
Weight	11 kg
Approvals	
EMC	FCC, CE
Operating conditions	
Measuring Medium	Compressed breathing air
Sample Flow Rate	6 LPM@4 MPa(g), depends on input pressure
Sample rate	1 sample/sec
Medium temperature	0 ... + 50 °C
Medium humidity	Medium humidity < 40 % rH, no condensation
Inlet Pressure	0.4 ... 1.5 MPa(g), External pressure reducer allow up to 35 MPa process pressure
Ambient temperature	0 ... +50 °C
Ambient humidity	0 ... 90 % rH
Storage temperature	-10 ... +50 °C
Transport temperature	-10 ... +50 °C

Ordering

Please use the following tables to assist in placing your order with our sales staff.

S605 Portable Breathing Air Quality Analyzer

Order No.	Description
P560 0605	S605-I Portable Breathing Air Quality Analyzer, touch screen interface, data logger, guided measurement, PDF report generator (with oil vapor sensor refer to Europe, USA, Canada standards) *
P560 1605	S605-C Portable Breathing Air Quality Analyzer, touch screen interface, data logger, guided measurement, PDF report generator (with oil mist and particle sensor refer to China standards)*
A1670	USB 4G dongle, including S4A software

* Including:
- Hand carry case with handle and shoulder belt
- USB OTG memory stick
- Purge filter for pre-measurement (test kit)
- Power adapter with USB type-C connector and cable included 60 W 20 V/3.25 A
- Connection hose 1.5 m, one end quick coupling, one end compressed air coupling
- M12 connector
- Filling bottle
- Certificate of calibration
- Operation and instruction manual

S605 Accessories

Order No.	Description
A604 0001	Zero filter for oil vapor/oil mist and dew point sensor
A604 0004	Pressure reducer, inlet pressure 0-30 MPa, outlet pressure 0.6 MPa, incl. transport case

S605 Service and Calibration

Order No.	Description
R200 0605	S605 General service and re-calibration • General inspection of the unit • Replacement of tubes and fittings • Cleaning of components • Calibration O_2, CO_2, CO, dew point sensor and oil vapor • Assembly and test of unit • Calibration Certificate
Exchange units	
R205 0605	S605 Exchange - Complete unit
R205 0620	CO exchange sensor unit S605/S606
R205 0621	CO_2 exchange sensor unit S605/S606
R205 0622	O_2 exchange sensor unit S605/S606
R205 0623	Oil mist and particle sensor exchange unit S605/S606
R205 0624	Oil vapor sensor exchange unit S605/S606
R205 0625	Dew Point sensor exchange unit S605/S606