

CHEMIST 900 RACK 1-6 SENSORI

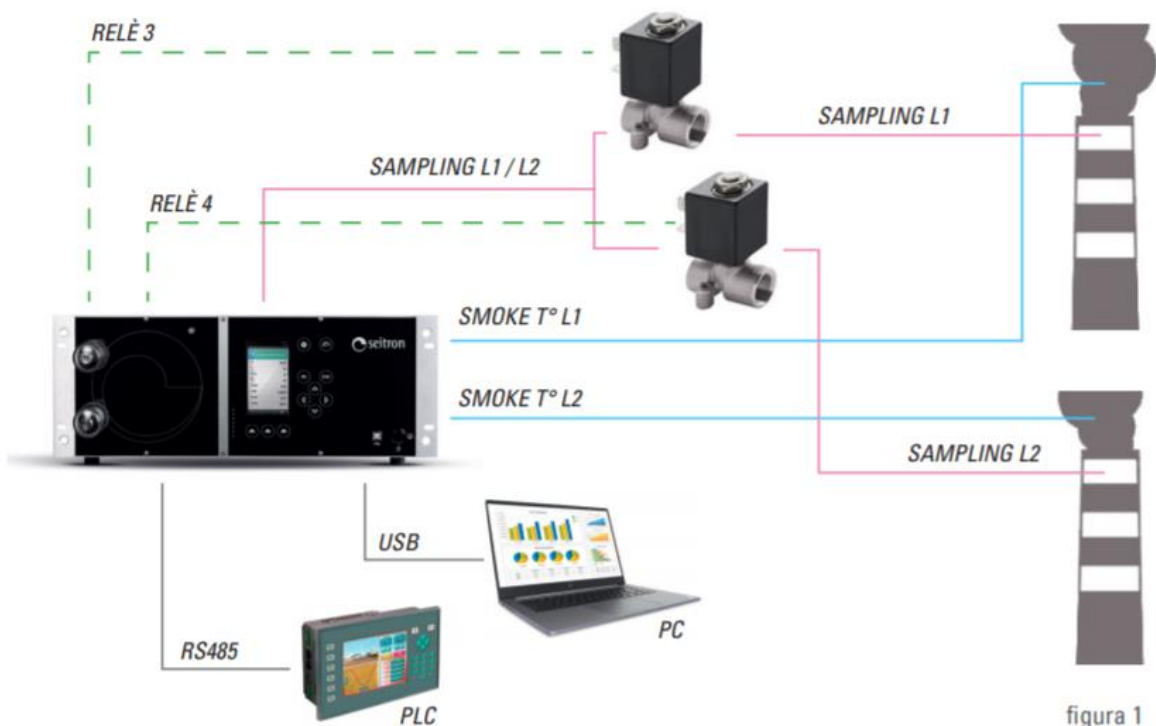
ANALIZZATORE INDUSTRIALE DI EMISSIONI



The CHEMIST 900 RACK is an industrial emissions analyzer. This device can measure emissions generated by industrial combustion or transformation processes and it analyzes different gases thanks to the NDIR and electrochemical technology.

Combustions and emissions parameters are displayed in real time on a TFT color display, on a PC Software or on a PLC that receives data via RS485 serial connection. The sensors are thermally compensated in order to avoid measurement errors that could be caused by temporary thermal variation. The distinctive feature of the Chemist 900 Rack is its rack structure that allows to use it into standard 19" cabinet or even in laboratories because it comes standard equipped with 4 rubber bumpers. The Chemist 900 Rack is designed to perform long-lasting analyses periods thanks to an automatic commutation system that allows to reset both the gas sensors and the pressure sensor used for draft measures or differential pressure measures. This, together with a Pitot tube, allows measure the smoke speed inside the evacuation duct. A relevant feature of the Chemist 900 Rack is a cooling system that causes a quick condensation of the moisture contained in the gas thus allowing the gas to reach the sensors without dissolving in water. The gases that benefit from this system are NO₂, SO₂, NH₃, H₂S. Condensation water is collected into a water tank and emptied on a timed basis by a membrane pump. The gas sample and the air used for sensors cleaning are filtered by two interchangeable dust filters. The Chemist 900 rack is equipped with a system that allows taking in gases from two different points (e.g. two stacks) and carry them into a single smoke suction line (image 1). All parameters and collected data are sent via serial communication port type RS485 and USB communication port in order to connect to the PC for the analysis reading. The user can archive and analyze the collected data with the dedicated software provided with the instrument, Chemist Smart Analysis. Files are saved with .csv extension.

SAMPLING LINE SELECTION SYSTEM

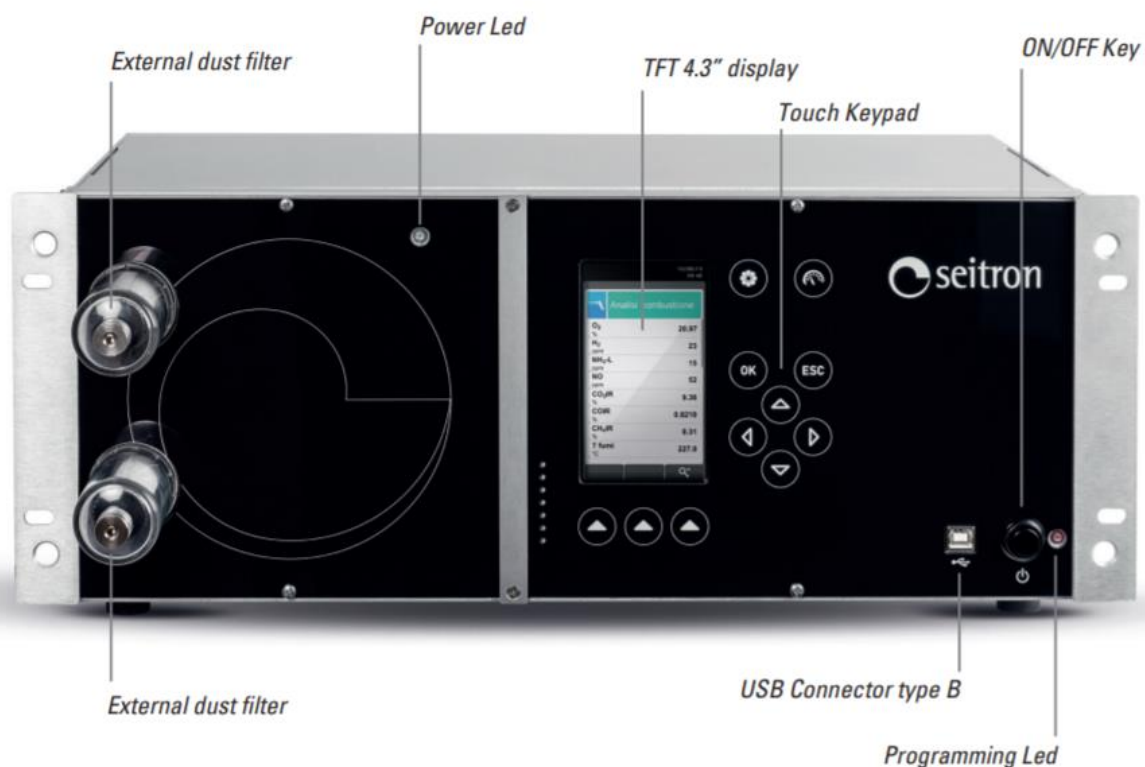


MAIN FUNCTIONS

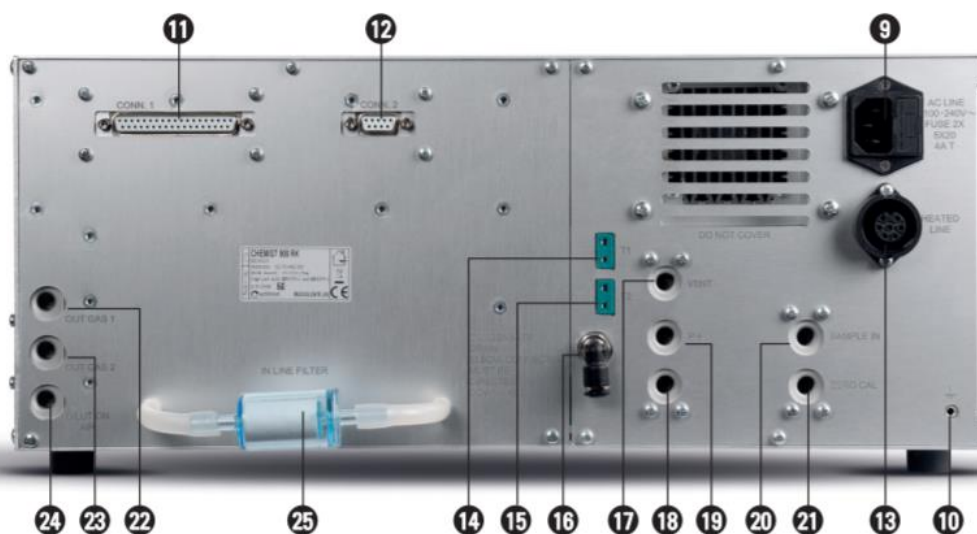
- Serial communication port type RS485 according to protocol MODBUS® RTU USB Communication
- 4 .. 20 mA isolated output
- 4 alarm relays outputs
- Heated smokes suction line (up to 6 meters) connection
- Efficiency calculations
- Condensing efficiency calculation
- PCI efficiency calculation
- PCS efficiency calculation
- 15 default fuels
- 32 settable fuels
- CO sensor protected by an automatic dilution system

MEASUREMENT

- NDIR bench (measuring up to 3 gases)
- Electrochemical gas measurement sensors (up to 3)
- Smoke temperature measurement (2 temperatures)
- Local or remote combustion air measurement
- Sensors temperature measurement through thermal compensation
- Draft in the stack with automatic autozero
- Measurement of the differential pressure
- Air speed for air or flue gas leaving the stack with the use of Pitot tube
- Suction pump flow rate measurement



BACK COVER DESCRIPTION



9. Power Supply 'AC LINE - 90 .. 264V-'

Plug IEC C14 to connect the power cable to the instrument, provided with the instrument itself. On the plug there is a fuse-holder hidden under a flap, containing 2 fuses 5x20 4A T.

10. Connection for grounding of the instrument.

11. 37 poles connector (4 outputs 4..20mA and 4 relay outputs)
Makes available for the user 4 4..20mA outputs and 4 relay outputs with potential free change over.

12. Serial connector RS485

Serial communication port type RS485 according to MODBUS® RTU protocol.

13. 'HEATED LINE' Connector

Plug for the heated line connection.

14. 'T1' Connector

Tc-K connector to plug in the male connector Tc-K of the probe for the measure of the smoke temperature.

15. 'T2' Connector

Tc-K connector to plug in the male connector Tc-K of the combustion air probe.

16. Condensation water drain

17. 'VENT' Connector - Female connector M5

Air vent used by the pressure sensor to perform the self-zeroing. If the instrument is installed on a rack or in pressurized environments, the air vent must be moved remotely at room temperature.

18. Pneumatic connector 'P-' - female connection 1/8 GAS BSPP.

Negative input (P-) to be used for the draft measurement.

19. Pneumatic connector 'P+' - female connection 1/8 GAS BSPP.

Positive input (P+) to be used for the measurement of the pressure in general.

20. Pneumatic connector 'SAMPLE IN' - female connection 1/8 GAS BSPP.

Input for the connection of the gas sampling probe.

21. Pneumatic connector 'ZERO CAL' - female connection 1/8 GAS BSPP.

Input for the line connection to the remote air vent in order to perform the self-zeroing. If the instrument is placed in a closed and polluted environment, it is possible to move the instrument air vent in a room with clean air using the 'ZERO CAL' connector

22. Connector 'OUT GAS 1' - female connection 1/8 GAS BSPP.

Analyzed gas remote output.

23. Connector 'OUT GAS 2' - female connection 1/8 GAS BSPP.

Analyzed gas remote output.

24. Connector 'DILUTION AIR' - female connection 1/8 GAS BSPP.

Remote air vent for CO dilution.

25. Dust filter for NDIR (infrared) bench protection

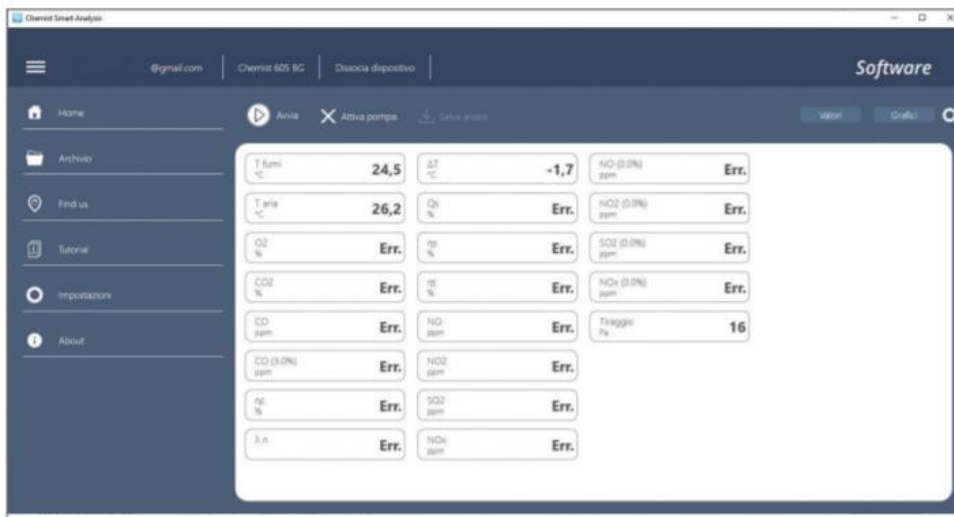
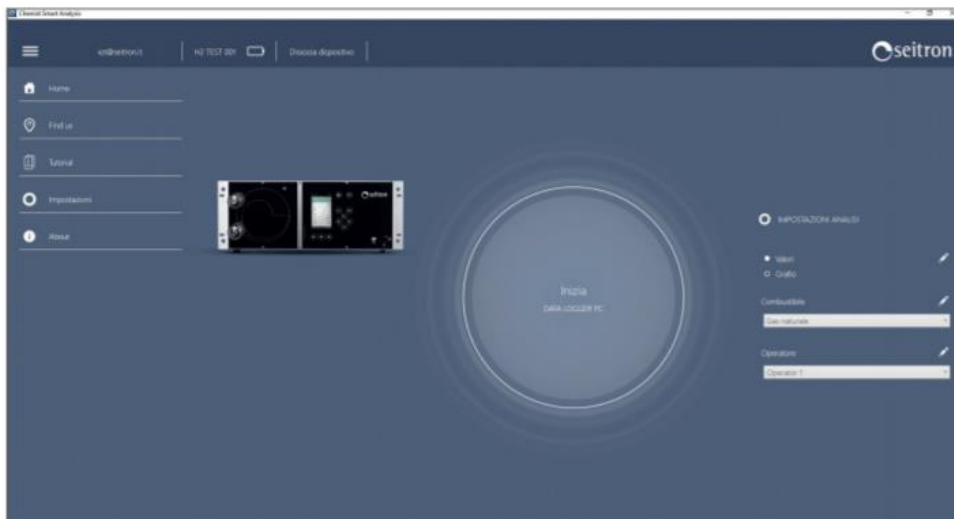
Chemist Smart Analysis

Dedicated PC Software that allows:

- Manual analysis
- Periodic data logger parameters set up (autozero time, autozero range, stand-by time, sampling range, number of analysis cycles, start and end date of the analysis)
- Pump control
- Graphical or numerical visualisation of the parameters
- Alarms visualisation
- Instrument parameters set up
- Fuels set up
- Alarms set up
- 4-20mA channels set up
- Operator data set up
- CSV files data storing



Windows Software
Chemist Smart Analysis



Technical Features

Power supply	90 .. 264 Vac
Power absorption at 230 V	100 VA
Display	TFT 4.3", 272 x 480 pixels graphic color with backlight
PC Communication port	USB Connector type A
Connectivity	USB-RS485 MODBUS RTU
Autozero	Automatic autozero cycle with the probe inserted in the chimney
Suction pump	2,2 l/min head at the stack up to 300 hPa.
Line Filters	Replaceable cartridge, 95% efficiency with 20um particles
Sample treatment	Peltier cooling system with automatic emptying of the condensation water
Size	19" /4 HE / 400 mm
Operation temperature	+0°C + 45°C
Stock temperature	-20°C + 60°C
Alarm relay	4 x SPDT AC/DC 24 V 1A
Protection fuses	2 x 4A 5 x 20 T
Analog Outputs	4 x 4-20 mA max resistance load 1 KOhm
Gas 1, Gas 2 Output Connector	1/8 BSPP
Gas Input Connector	1/8 BSPP
Pressure P1, P2 Input Connector	1/8 BSPP
Condensate drainage Output Connector	1 /8 BSPP - fast connection tube 6 mm diameter
Air Connector	1/8 BSPP
Compliant with European Standards	EN 50270, EN 50379-1 ed EN 50379-2
Compliant with USA Standard	CTM030 and CTM034

Smokes Probes

Code	Description
AA SF31	180 mm flue gas sampling probe with 3 mt cable. Working temperature range: 400°C.
AA SF32	300 mm flue gas sampling probe with 3 mt cable. Working temperature range: 600°C
AA SF35	750 mm flue gas sampling probe with 3 mt cable. Working temperature range: 800°C
AA SF36	1000 mm flue gas sampling probe with 3 mt cable. Working temperature range: 1200°C

Standard Equipment

Code	Description
WFUS5X20004R	4A 5x20 delayed fuse
WFILA0001	Filtering cartridge for gas line and autozero line
WFILX0016	Dust filter grade 7 for IR bench protection
WCAV0048	USB-A / USB-B adapter cable
AACCV04	European power cable and plug
AACCV01	Power cable and plug type schuko
AACCV06	US power cable and plug
AASW17	Software PC Chemist Smart Analysis

Measured Gases

Gas	Sensor	Range	Resolution	Response Time (t 90)
CH4	NDIR	0 .. 50000 ppm	1 ppm	< 10 sec
CO	NDIR	0 .. 2500 ppm	1 ppm	< 10 sec
CO	NDIR	0 .. 15% Vol	0,01%	< 10 sec
CO2	NDIR	0 .. 50 % Vol	0,1 % Vol	< 10 sec
HC	NDIR	0 .. 30000 ppm	1 ppm	< 10 sec
CO	EC	0 .. 8000 ppm	1 ppm	< 50 sec
CO	EC	0 .. 500.0 ppm	0,1 ppm	< 50 sec
H2	EC	0 .. 500.0 ppm	0,1 ppm	< 90 sec
H2S	EC	0 .. 5000 ppm	0,1 ppm	< 50 sec
H2S	EC	0 .. 500.0 ppm	0,1 ppm	< 50 sec
NH3	EC	0 .. 500.0 ppm	0,1 ppm	< 90 sec
NO	EC	0 .. 5000 ppm	1 ppm	< 50 sec
NO	EC	0 .. 500.0 ppm	0,1 ppm	< 50 sec
NO2	EC	0 .. 1000 ppm	1 ppm	< 50 sec
NO2	EC	0 .. 500.0 ppm	0,1 ppm	< 50 sec
O2	EC	0 .. 25 % Vol	0,1 % Vol	< 20 sec
SO2	EC	0 .. 5000 ppm	1 ppm	< 50 sec
SO2	EC	0 .. 500.0 ppm	0,1 ppm	< 50 sec

Note: *: The NDIR bench always measures the 3 gases CO, CO2, HC (ref. to methane CH4) or HC (ref. to propane C3H8)

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