S9000-RACK

CONTINUOUS EMISSIONS GAS ANALYZER (CEM)

UP TO 8 TOTAL GAS SENSORS

- Serial communication port type RS485 according to protocol MODBUS® RTU USB Communication
- 4 .. 20 mA isolated output
- Output signal: from 4 to 20mA scalable up to 10% of the measurement range of the chosen sensor. Other calibrations beyond this limit on request
- 4 alarm relays outputs
- Heated probes available up to 20 ft (6m) connection
- Efficiency calculations
- Condensing efficiency calculation
- PCI efficiency calculation
- PCS efficiency calculation
- 15 default fuels
- 32 programmable fuels
- CO sensor protected by an automatic dilution system

Up to 5 Gas Sensors
+ 3 Gas Sensors (NDIR Bench)

Continuous Emissions Analysis (CEM)

Field Replaceable Sensors

Full Color Graphic Display

PC Software included

Optional: Heated Line and Probe

Bluetooth®

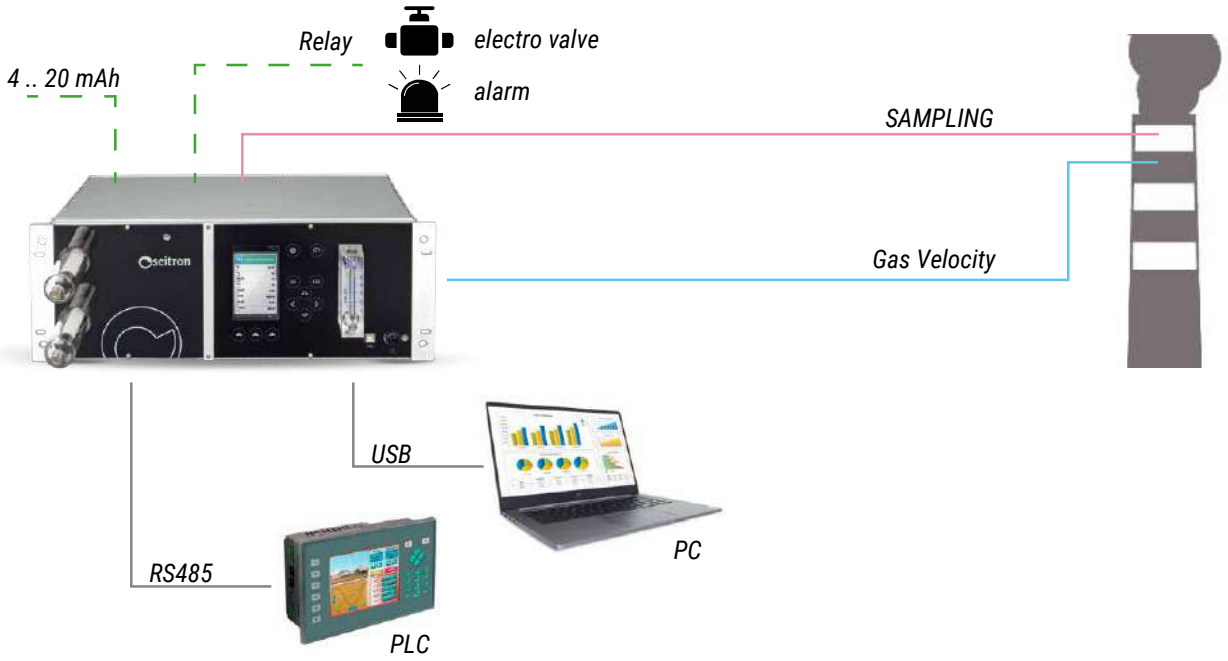
Windows Software
Seitron Smart Analysis

Windows 7 or later

Features

- up to 8 gas sensors in total
- NDIR bench (measuring up to 3 gases)
- Electrochemical gas measurement sensors (up to 5)
- Rotary Flow Meter for immediate visualization of pump flow rate
- Stack temperature measurement (2 temperatures)
- Ambient or Primary Air Source Temperature
- Thermal Compensation
- Draft in the stack with automatic autozero
- Measurement of the differential pressure
- Stack Air Velocity measurement with the use of Pitot tube
- Suction pump flow rate measurement

SAMPLING LINE SELECTION SYSTEM

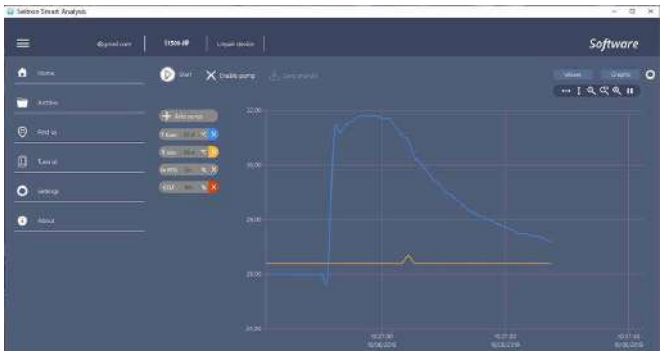


S9000-RACK FEATURES

Windows Software
Seitron Smart Analysis

Windows 7 or later

- Data Storage
- Remote display of real-time analysis from the analyzer
- Display and/or export and stored data
- Analyzer configuration



- Serial communication port type RS485 according to protocol MODBUS RTU USB communication
- Customizable Gas Sensor/probe configurations for any Industrial application:
  O2, CO Low, CO High, NOx, Low NOx, SO2, Low SO2, H2S, CO2, High CO, H2 and now with NH3!)
- Built In Thermoelectric Chiller with Auto Condensate Drain
- Heated Lines/Probes

S9000-RACK 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
Internal Sampling 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	32°F .. 113°F (+0°C .. + 45°C)
Storage temperature	-4°F .. 122°F (-20°C .. + 50°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 0.25” (6mm) 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

Standard Equipment

Code	Description
WFUS5X20004R	4A 5x20 delayed fuse
WFILA0001	Filtering cartridge for gas line and autozero line
WFILX0016	Particulate filter grade 7 for IR bench protection
WCAV0048	USB-A / USB-B adapter cable
AACCV01	Power cable
AACCV06	US power cable and plug
AASW17	S9000 Smart Analysis PC Software

- Emissions Measurements - Up to 8 total Gas Sensors
- Optional NDIR Sensor Bench – Includes CO2, High CO, & CxHy Hydrocarbons (3 sensors)
- Thermoelectric Chiller with Automatic Condensate Drain
- Serial communication port type RS485 according to protocol MODBUS® RTU USB Communication
- 4 .. 20 mA isolated output (4 configurable channels – active loop)
- Four alarm relays outputs SPDT, AC/DC 24V 1A.
- Data saved via Modbus® on PC
- Real-Time Data Logging Software
- Stack and Ambient Air Temperature Measurements
- Differential Pressure Measurement
- Stack Gas Velocity Measurement (with optional pitot tube)

Included: filters, power cable, calibration certificate, Seitron Smart Analysis PC software and mobile App

ORDERING CODE:

Model #	Description
S9000-RACK-A-B-C	Standard S9000-RACK Kit Configuration

Example:
S9000-RACK-IR-OCNL-12H = O2, Standard CO, Low Range NO, IR Bench (CO2, CxHy & High CO), with 12" Heated Line & Probe

TABLE A (NDIR Bench Options)

IR*	CO2 NDIR Sensor (0-50%), CxHy NDIR Sensor (0-100,000ppm), and High CO NDIR Sensor (0-50%)
O	No IR Bench Included

*** IR Bench includes as 3 gas sensors.**

TABLE B (Gas Sensor Options **)

O	O2 Sensor (0 .. 25.0% vol)
C	Standard CO Sensor w/ H2 Compensation (0-8000 ppm)
CL	LOW-Range CO Sensor (0-1000 ppm)
CM	MID-Range CO Sensor (0-20,000 ppm)
CH	HIGH-Range CO Sensor (0-100,000 ppm)
N	Standard NO/NOx Sensor (0-5000 ppm)
NL	LOW NO/NOx Sensor (0-500 ppm)
D	Standard NO2 Sensor (0-1000 ppm)
DL	LOW NO2 Sensor (0-500 ppm)
S	Standard SO2 Sensor (0-5000 ppm)
SL	LOW SO2 Sensor (0-500 ppm)
H	Standard H2S Sensor (0-5000 ppm)
HL	LOW H2S Sensor (0-500 ppm)
G	H2 Sensor (0-2000 ppm)
C	Standard CxHy Sensor (0-5 %)
A	Standard Ammonia (NH3) Sensor (0-500 ppm)

**** If you selected IR Bench, you can choose up to 3 gas.**
If you DON'T select IR Bench, you can choose up to 5 gases.

TABLE C - Probe Options

12	12" (300mm) Probe, 1112F (600C) max, with 10' (3m)
30	30" (750mm) Probe, 1470F (800C) max, with 10' (3m) Dual Hose (AASF35)
40	40" (1000mm) Probe, 1470F (800C) max, with 10' (3m) Dual Hose (AASF36)
12H	12" (300mm) Probe, 1112F (600C) max, with 10' (3m) HEATED Hose and HEATED Probe Head (AASR03)
40H	40" (1m) Probe, 2190F (1200C) max, with 10' (3m) HEATED Hose and HEATED Probe Head (AASR04)

OPTIONAL - Accessories and Consumable Parts

AARC10	Non-Fading Paper Roll (pack of 10)
AAFS02	Sintered Filter with Support for probe
AAFS01	Replacement Inox filter for AASF02
AATTA03	36" (900mm) Pitot Tube for Gas Velocity Measurements
AACEX02S	10' (3m) Dual Hose Extension
WFILA0001	Particulate Filter (Internal)
WFILX0016	Particulate Filter (External)
AAFA04	Anti-Dust filter (2pcs), only with NH3 installed
AASP01	Heat Protection Shield for probes
AACSA04	4" (100mm) Auxiliary Temperature Probe w/ 10ft (3m) hose

Sensors for S9000 & S9000-RACK

Measurement Ranges And Accuracies

MEASUREMENT	GAS SENSOR	MEASUREMENT RANGE	RESOLUTION	ACCURANCY
O2	Electrochemical sensor	0 .. 25.0% vol	0.1% vol	±0.2% vol
CO with H2 compensation	Electrochemical sensor	0 .. 8000 ppm	1 ppm	±10 ppm 0 .. 200 ppm ±5% measured value 201 .. 2000 ppm ±10% measured value 2001 .. 8000 ppm
CO with active dilution	Electrochemical sensor	0 .. 100000 ppm	100 ppm	±20% measured value
CO Low range with H2 compensation	Electrochemical sensor	0 .. 1000.0 ppm	0.1 ppm	±2 ppm 0 .. 40.0 ppm ±5% measured value 40.1 .. 1000.0 ppm
CO Low range with active dilution	Electrochemical sensor	6.250 ppm	10 ppm	±20% measured value
CO	Electrochemical sensor	0 .. 20000 ppm	1 ppm	±100 ppm 0 .. 2000 ppm ±5% measured value 2001 .. 4000 ppm ±10% measured value 4001 .. 20000 ppm
CO with dilution	Electrochemical sensor	0 .. 250000 ppm	100 ppm	±20% measured value
CO	Electrochemical sensor	0 .. 100000 ppm	100 ppm	±0.02% vol o ±5% m.v. 0 .. 2.00 % ±5% measured value 2.01 .. 10.00 %
NH3	Electrochemical sensor	0 .. 5000 ppm	0.1 ppm	±10 ppm 0 .. 100 ppm ±10% measured value 101 .. 500.0 ppm
NO	Electrochemical sensor	0 .. 5000 ppm	1 ppm	±5 ppm 0 .. 100 ppm ±5% measured value 101 .. 5000 ppm
NO Low range	Electrochemical sensor	0 .. 500.0 ppm	0.1 ppm	±2 ppm 0 .. 40.0 ppm ±5% measured value 40.1 .. 500.0 ppm
NOx	Electrochemical sensor			
SO2	Electrochemical sensor	0 .. 5000 ppm	1 ppm	±5 ppm 0 .. 100 ppm ±5% measured value 101 .. 5000 ppm
SO2 Low range	Electrochemical sensor	0 .. 500.0 ppm	0.1 ppm	±2 ppm 0 .. 40.0 ppm ±5% measured value 40.1 .. 500.0 ppm
NO2	Electrochemical sensor	0 .. 1000 ppm	1 ppm	±5 ppm 0 .. 100 ppm ±5% measured value 101 .. 1000 ppm
NO2 Low range	Electrochemical sensor	0 .. 500.0 ppm	0.1 ppm	±2 ppm 0 .. 40.0 ppm ±5% measured value 40.1 .. 500.0 ppm
CxHy	Electrochemical sensor	0 .. 5.00% vol	0.01% vol	±0.25% vol
H2	Electrochemical sensor	0 .. 2000 ppm	1 ppm	±10 ppm 0 .. 100 ppm ±10% 100 .. 2000 ppm

H2S	Electrochemical sensor	0 .. 500.0 ppm	0.1 ppm	±5 ppm 0 .. 100.0 ppm ±5% measured value 100.1 .. 500.0 ppm
H2S	Electrochemical sensor	0 .. 5,000 ppm	0.1 ppm 1 ppm	±5 ppm 0 .. 100.0 ppm ±5% measured value 100.1 .. 500.0 ppm ±10% measured value 501 .. 5000 ppm
CO2	Calculated	0 .. 99.9% vol	0.1% vol	
CO2	NDIR sensor	0 .. 1000.0% vol	0.01% vol	±1% Vol 0.00 .. 10.00 % ±2% Full-scale 10.01 .. 50.00 %
CO2 0-50% *	NDIR bench	0 .. 50.0% vol	0.1% vol	+/- 0,3% Vol 0,00 .. 8,00% Vol +/- 5% vm 8,01% .. 40,00% Vol +/-10% vm 40,01% .. 50,00% Vol
CO 0..50% *	NDIR bench	vol 500.000 ppm	100 ppm	0-2500 ppm : +/- 50 ppm 1 ppm 2501 -100000 ppm : +/- 3% vm 10ppm 100001 -250000 ppm : +/- 5% vm 10ppm
HC * referred to methane	NDIR bench	0-1.000.000 ppm (100%Vol)	1 ppm	+/- 50ppm 0 .. 200 ppm +/- 2% vm 201 .. 50000 ppm +/- 3 % vm 50001 .. 1000000ppm
HC * referred to propane	NDIR bench	0 .. 100000 ppm	1 ppm	+/- 10ppm 0 .. 300 ppm +/- 3% vm 301 .. 4000 ppm +/-5% vm 4001 .. 30000 ppm
Air temperature	TcK sensor	-4 .. 248 °F (-20.0 .. 120.0°C)	32.2°F (0.1 °C)	-30 .. +34 °F (±1°C)
Flue gas temperature	TcK sensor	-4 .. 2282 °F (-20.0 .. 120.0°C)	32.2°F (0.1 °C)	-30 .. +34 °F (±1°C) 32 .. 212 °F (0 .. 100 °C) ±1% measured value 214 .. 2282 °F (101 .. 1250°C)
Auxiliary sensor temperature	PT100	-4 .. 392 °F (-20.0 .. 200.0°C)	32.2°F (0.1 °C)	-31 .. +33 °F (±0.5°C)
Pressure (draft and differential)	Piezoelectric sensor	-4 .. 80 inH2O	0.004 inH2O	±1% measured value -4 .. -0.81 inH2O ±0.008 inH2O -0.8 .. +0.8 inH2O ±1% measured value +0.81 .. +80 inH2O
Temperature Differential	Calculated	32 .. 2282°F (0 .. 1250.0 °C)	32.2°F (0.1 °C)	
Excess Air	Calculated	0 .. 850%	1%	
Stack heat losses	Calculated	0.0 .. 100.0%	0.1%	
Efficiency	Calculated	0.0 .. 100.0%	0.1%	
Efficiency (condensation)	Calculated	0.0 .. 120.0%	0.1%	

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