

Sensonic



Sensonic 1400

CHARACTERISTIC	FEATURES	TECHNICAL DATA	SENSORS	EQUIPMENT	APPEARANCE
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Sensonic tried and tested hand-held analyser. Its small dimensions and light weight makes it very convenient for technicians that use analyser on a daily basis.

Sensonic 1400 can be equipped with up to 4 electrochemical cells. By default fitted with Li-ion battery.

Suitable for a soot test using electronically controlled gas volume.

It holds big memory capable of storing 32 measurement reports.

Manufactured according to the principles of EN50379.

An attractive alternative to other, bigger analysers.

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- Equipped with 3 or 4 electrochemical cells (typical configuration: O₂, CO, NO/NO_x, SO₂)
- Works with an external portable printer via wireless communication (IR LED)
- Built-in rechargeable Li-ion battery for up to 10 hours of operation
- Probe holder with a standard M30x1 fitting, fits all major gas probes with the K-type or S-type thermocouples
- Availability of soot measurements (with proper probe holder)
- Built-in pressure sensor for chimney draft measurements and continuous pump flow control
- Optional differential pressure sensor - for measurements of chimney draft and flow velocity (with help of Pitot tube)
- NOTE that two versions of analyser are available:
 - standard version with single pressure sensor
 - version with additional differential pressure sensor (that allows to perform measurements of gas flow velocity)
- Cooperation with digital RH and temperature probe
- Measurements of gas and ambient temperatures
- Results presented on LCD display (128 * 64) with back-lighting
- Built-in large memory for results
- Firmware for gas calibrations
- Calculations of many additional parameters



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SENSONIC 1400 GAS ANALYSER		VERSION A	VERSION B		
		SINGLE PRESSURE SENSOR	SECOND DIFFERENTIAL PRESSURE SENSOR		
Dimensions (W * H * D)		243 mm * 130 mm * 60 mm			
Dimensions with gas connectors (W * H * D)		257 mm * 130 mm * 60 mm	271 mm * 130 mm * 60 mm		
Weight (4-sensors) without accessories		615 g	635 g		
Casing material		ABS case, rubber protective boot (optional)			
Operating conditions		T: 10°C ÷ 50°C RH: 5% ÷ 90% (non-condensing)			
Storing temperature		-20°C ÷ +55°C			
Power supply		Built-in Li-ion rechargeable battery (1600 mAh)			
Operating time (fully charged battery)		Up to 16h			
Number of gas sensors		3 Or 4			
Data memory		64 measurement reports			
Display		Graphical LCD 128 * 64 with variable contrast and LED backlighting			
Printer		External thermal IR printer MCP 8850 with charger			
Gas pump		Diaphragm, max 0,6 ÷ 0,9 l/min			
Communication interface with PC computer		RS-232C			
Gas filtering		In-line filter included in the gas probe hose			
MEASUREMENTS					
Variable	Method	Range Resolution	Accuracy	Time (T ₉₀)	
T _{gas} - gas temperature	K-type thermocouple	-10 ÷ 1000°C 0,1°C	± 2°C	10 sec	
T _{gas} - gas temperature	S-type thermocouple	-10 ÷ 1000°C 0,1°C	± 2°C	10 sec	
T _{amb} - boiler intake air temperature	PT500 resistive sensor	-10 ÷ 100°C 0,1°C	± 2°C	10 sec	
Differential pressure	Silicon piezoresistive pressure sensor	-25 hPa ÷ +25 hPa 1 Pa (0,01hPa)	± 2Pa abs. or 5% rel.	10 sec	
Gas flow velocity (optional)	Indirect, with Pitot tube & second pressure sensor	1 ÷ 50 m/s 0,1 m/s	0,3 m/s abs. or 5% rel.	10 sec	
Lambda λ- excess air number	Calculated	1 ÷ 10 0,01	± 5% rel.	10 sec	
qA - stack loss	Calculated	0 ÷ 100% 0,1%	± 5% rel.	10 sec	
Eta η - combustion efficiency	Calculated	0 ÷ 120% 0,1%	± 5% rel.	10 sec	
RH- relative humidity (special probe needed)	SHT11 capacitive polymer sensor	5 ÷ 95% 1%	± 5% abs.	30 sec	



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Method		Range Resolution	Accuracy	Time (T₉₀)	Conformity
O₂ - OXYGEN					
Electrochemical		20,95% 0,01%	± 0,2% abs. or 5% rel.	45 sec	EN 50379; CTM-030
Electrochemical		25,00% 0,01%	± 0,2% abs. or 5% rel.	45 sec	EN 50379; CTM-030
CO - CARBON MONOXIDE					
Electrochemical		2 000 ppm 0,1 ppm	± 5 ppm abs. or 5% rel.	45 sec	EN 50379; CTM-030
Electrochemical		4 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	EN 50379; CTM-030
Electrochemical		20 000 ppm 1 ppm	± 10 ppm abs. or 5% rel.	45 sec	EN 50379; CTM-030
Electrochemical		10% 0,001 %	± 0,005% abs. or 5% rel.	45 sec	EN 50379; CTM-030
Electrochem., with H ₂ compensation		4 000 ppm 1 ppm	± 5 ppm abs. or 5% rel.	45 sec	EN 50379; CTM-030
NO - NITRIC OXIDE					
Electrochemical		2 000 ppm 0,1 ppm	± 5 ppm abs. or 5% rel.	70 sec	EN 50379; CTM-030
NO₂ - NITROGEN DIOXIDE					
Electrochemical		1 000 ppm 0,1 ppm	± 5 ppm abs. or 5% rel.	45 sec	EN 50379; CTM-030
SO₂ - SULPHUR DIOXIDE					
Electrochemical		2 000 ppm 0,1 ppm	± 5 ppm abs. or 5% rel.	45 sec	EN 50379
H₂S- HYDROGEN SULPHIDE					
Electrochemical		2 000 ppm 0,1 ppm	± 5 ppm abs. or 5% rel.	45 sec	

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STANDARD EQUIPMENT

SUPPLIED ALONG WITH THE DEVICE

- Carrying case for analyser and accessories
- Power supply (charger) for the built-in Li-ion battery with selected type of mains plug
- Comparison scale with paper filters for the soot test
- Software CD with programs and manuals
- 2,5m RS-232C communication cable with DB9 female connector

ADDITIONAL EQUIPMENT

NECESSARY FOR THE ANALYSER TO WORK

- Probe holder
Together with an exchangeable gas probe pipe the holder is a complete gas probe for extraction of gas samples. It has a single gas tube ended with quick coupler and electric cable ended with a 4-pin connector. Gas probe pipe is mounted with a M30x1 fastening. Probe holder is equipped with an in-line filter with a condensation trap (pore size of the filter inlet is 5µm). Probe holder is available in two versions:
 - heated (with a slit for a filter for soot measurement test),
 - unheated (without a possibility to perform soot test).
- Gas probe pipe
Gas probe is immersed in the gas duct and is supposed to extract the gas sample and to measure its temperature. Exchangeable probes are easily connected to probe holders (with M30x1 fastening). They have thermocouple type K (in some configurations type S) for measurement of gas temperature and a threaded fixing cone. With the probe holder is a complete gas probe. There are many probe pipes available. They differ in length and working temperature. For work efficiency it is advised to own different probe pipes to be able to adjust to the measurement place.



OPTIONAL EQUIPMENT & SPARE PARTS

- Portable printer & printer paper
Portable printer (battery operated), communicates with the analyser via wireless HP-IR interface. Allows to print measurement results instantly on the 58mm thermal paper. The printer is delivered together with 4 Ni-MH rechargeable batteries and a single roll of paper. The mains adapter for the charger can be ordered appropriately in the AU/EU/UK/US version.



ordering codes:

printer - M20-2DHP2

battery charger with EU plug - M20-2DHP1

battery charger with US plug - M20-2DHP3

battery charger with UK plug - M20-2DHP4

58mm thermal paper roll - V-THP5701

- RH and ambient temperature probe
Probe for RH and ambient temperature measurements. Not-suitable for inside stack measurements (working temperature up to 120°C).



ordering code:

Z14-SON-HUM

- Ambient temperature sensor
This ambient temperature sensor on a 3m cable is used for measurement of the boiler's inlet air.



ordering code:

Z12-SENS-TEMP

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• Anchor cone for PT500 ambient temperature sensor	This cone allows fitting the temperature sensor into holes with different diameter.		ordering code: Z14-CONE-PT500		
• Magnetic holder for PT500 sensor	This magnetic holder allows to safely hang the sensor on a metal surface.		ordering code: Z14-MAGN-PT500		
• Pitot tube	Pitot tube is an accessory that allows to perform measurement of the flow velocity of the gas stream. The measurement is performed indirectly – Pitot tube is connected to analyser's differential pressure sensor. Analyser recalculates the differential pressure on the Pitot tube's outlets to velocity. A few lengths of tubes are available. Pitot tube has 2m gas tubings to connect it with the analyser.		ordering codes: pitot tube 800mm - Z00-PITOT-8002 pitot tube 500mm - Z00-PITOT-5002		
• RS232C to USB converter	2.5m cable that allows to connect the analyser (its RS232C port) with USB port in PC computer (especially valuable when PC is not equipped with COM port).		ordering code: Z12-USB-ADAP		
• Bluetooth communication module	Module connected to the analyser's RS232C port, allows to communicate with PC computer over Bluetooth protocol.		ordering code: Z12-BLUE-TOOTH		
• Leatherette casing	Soft casing (for the analyser alone) made from leatherette, protects the analyser during transport.		ordering code: Z14-ETU11		
• Rubber protector	Special rubber protector for the analyser's casing. Protects the analyser against hits and blows. Shoulder strap eases carrying the analyser.		ordering code: Z14-RUBBER-001		
• Pressure kit	Pressure kit allows to perform leakage test of the pneumatic / gas installations. Requires differential pressure sensor to operate.		ordering code: Z02-LEAK-TEST-KIT		
• Li-ion rechargeable battery	Rechargeable Li-ion battery, 3,6V, 1600mAh (or better).		ordering code: Z14-BAT-CHARGER_02		
• In-line filter	In-line filter for Sensonic 1400 and Sensonic 1400 probe holders.		ordering code: Z14-FILTER-INLINE		
• In-line filter insert 12mm/5µm and 12mm/20µm	Filter insert for all the types of in-line filters.		ordering codes: 5µm insert - V-FELM082 20µm insert - V-FELM252		

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FRONT PANEL

VERSION WITH A SINGLE PRESSURE SENSOR

VERSION WITH AN ADDITIONAL

DIFFERENTIAL PRESSURE SENSOR

128X64 MONOCHROMATIC
LCD DISPLAY
WITH BACK-LIGHT

ON BUTTON /
FUNCTION KEY

INSTANT
PRINTOUT KEY

7 NAVIGATION AND
FUNCTION KEYS

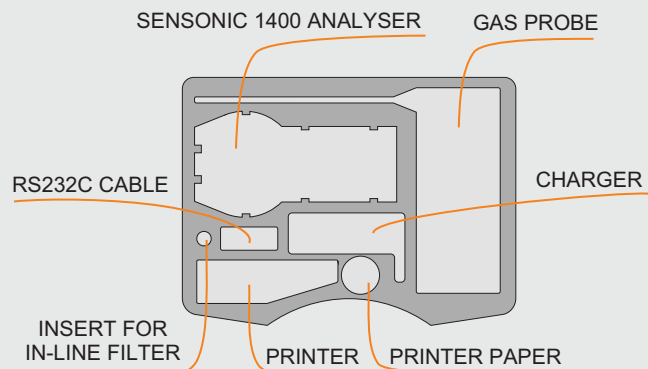
POWER OFF
BUTTON

DIFFERENTIAL
PRESSURE INLETS



ANALYSER'S CARRYING CASE

PU FOAM INSERT TO THE CASE



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CHARACTERISTIC FEATURES TECHNICAL DATA SENSORS EQUIPMENT APPEARANCE

EXAMPLE PRINTSCREEN

```
1 Action
HOLD - ※
Pressure test
Soot test
Ambient CO test
Leakage test
Esc      OK      ++
```

```
1 1/3 Triple
19.53 | 20.48 | %O2
0.89  | 0.30  | %CO2
1      | 0       | ppmCO
---   | ---    | ppmNOx
Esc    1-2-3  ++
```

```
2 Action
▶ Set pressure to zero
Calibrate O2 for 20.95%
Esc      OK      ++
```

```
21.00
19.96
%
O2
-34.5
19.60
Esc      Options
```

EXAMPLE SCREENSHOT FROM THE PC PROGRAM

Analyzer printouts defining

User defined strings

0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

Operator

Printout preview

Print Out 1 | Print Out 2 | Print Out 3 | Print Out 4

```
1 -----#1-----
Sensonic 1400
=====
1 Report:      1-2-3 #0000
01-01-01      12:57
Light oil      1
Averaging time: 2 min
5 Client nr:   00001
Operator:
=====
O2             5.12 %
CO2            10.04 %
10 CO          163.2 ppm
NO             163.2 ppm
NOx            78.8 ppm
TOX ---
=====
15 CO in mg    204 mg/Nm3
-----
```

Line: 1 Code: 42

Results

[Dropdown]

Special lines

Report: 1-2-3 #0000

User defined strings

[Dropdown]

Separating lines

[Dropdown]

No line

Empty line

Remove line

Insert line

Send to analyzer

Open file...

Save

Default

Close

Print partial results

Fast printer