

Hand-held Flue Gas Analyser GA-12

Standard equipment

Measurement of gas concentrations

- Standard version with two gas sensors: O₂, CO
- Optional gas sensor NO
- CO ambient measurement with a resolution of 1 ppm (standard)
- CO ambient measurement with a resolution of 0.1 ppm (option)

Measurement of other parameters

- Measurement of gas and ambient temperatures
- Pressure, draft and differential pressure measurements with 0.1 Pa resolution
- Flow velocity measurement
- Relative humidity measurement probe - optional

Calculation

- CO₂ concentration
- Calculation of all relevant combustion parameters

Processing and presentation of measuring data

- All results shown on display
- Averaging of all measured values. Averaging time: 2, 10, 20, 30, 60, 120, 180 seconds
- Graphical presentation of all measured values as diagram
- Storage for 16 measurements - "measure now, print later"
- Powerful PC program for analyser settings and data communication

Software capabilities

- Automatic zeroing when the analyser is switched on
- All settings for the analyser carried out with PC program
- List of 6 common fuels (from DIN or OENORM)
- 4 further freely programmable fuels
- Permanent automatic check of the instrument with acoustic warning and full information in the "control list"

Hardware capabilities

- Integrated clock/calendar
- IR interface for external printer
- Incredible 75 hours operating time from one set of batteries
- Full graphic display LCD 66 x 36 mm
- Gas probe with thermocouple and condensate trap

Options

- leather-look case for storage and rubber boot for protection of the instrument
- Magnetic plate to attach the instrument to steel surfaces
- External thermal printer with wireless IR communication



The smallest combustion gas analyser from madur. A full-blood analyser despite compact size. This combustion gas analyser can be fitted with up to 3 electrochemical sensors. This is an attractive alternative to other, larger analysers on the market. Is especially suited to short-term measurements on small burner systems.

Technical data

- Size 245x116x45mm
- Weight 600g
- Probe length 150mm
- Length of gas line 2m
- In line filter 20 µm
- Display 38x66mm
- Power supply 6V (4xAA) Battery
- External power supply 9VDC
- Membrane pump
- Operating temperature 10 °C ÷ 50°C
- Storage temperature -20 °C ÷ +55 °C

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Measuring technology

Parameter	Method	Indication range	Display resolution	Accuracy	Detection limit	Time (t90)
Gases measured in standard configuration						
O2 - oxygen, volumetric concentration	electrochemical gas sensor	0..25%	0.01%	± 0.2% or 2% rel.	0,01%	45 s
CO2 - carbon dioxide, volumetric concentration	calculated from volumetric concentration of O2	0..25%	0.01%	± 0.2% or 2% rel.	0,01%	45 s
CO - ambient carbon monoxide, volumetric concentration (standard)	electrochemical gas sensor	0..100ppm	1ppm	± 5ppm or 5 % rel.	1ppm	45 s
CO - ambient carbon monoxide, volumetric concentration (option)	electrochemical gas sensor	0..100ppm	0,1ppm	± 0,5ppm or 5 % rel.	0,1 ppm	45 s
CO - carbon monoxide, volumetric concentration (standard)	electrochemical gas sensor	0...4000ppm	1ppm	± 5ppm or 5% rel.	1ppm	45 s
CO - carbon monoxide, volumetric concentration (option)	electrochemical gas sensor	0...20000ppm	1ppm	± 5 ppm or 5% rel.	1ppm	45 s
COmg - carbon monoxide, mass concentration	calculated from volumetric concentration of CO	0...	1mg/Nm3	± 5 mg/Nm3 or 5% rel.	1mg/Nm3	45 s
COrel - carbon monoxide, mass concentration relative to O2	calculated from volumetric concentration of CO and O2	0...	1mg/Nm3	± 5 mg/Nm3 or 5% rel.	1mg/Nm3	45 s
Gases measured with optional electrochemical sensors						
NO / NOx - volumetric concentration of nitrogen oxides.	electrochemical gas sensor	0...1000ppm	0,1ppm or 1ppm as set	± 5 ppm or 5 % rel.	1ppm	45 s
NOmg/NOxmg - mass concentration of nitrogen oxides	calculated from volumetric concentration of NO	0...	3mg/Nm3	± 10mg/Nm3 or 5% rel.	2mg/Nm3	45 s
NOrel / NOxrel - mass concentration of nitrogen oxides relative to O2	calculated from volumetric concentration of NO and O2	0...	3mg/Nm3	± 10mg/Nm3 or 5% rel.	2mg/Nm3	45 s
Temperature measurements						
Tgas - flue gas temperature	Thermocouple	-10...1000°C	0,1°C or 1°C as set	± 2°C or 1, 5% rel.	1°C	30 s
Tamb - ambient temperature	Thermistor	-10...100°C	0,1°C or 1°C as set	± 1°C	1°C	30 s
Calculated parameters						
TI (CO/CO2-Toxic Index)	calculated	0...0,01	0,0001	0,0001		
Lambda - excess air number	calculated	1...10	0.01	0.01		
qA - combustion losses	calculated	0...100%	0.1%	0.1%		
Eta - efficiency	calculated	0...120%	0.1%	0.1%		
Other measured values						
Pressure	DMS bridge	-25hPa ... +25hPa	0,1Pa or 1Pa as set	± 2Pa or 5% rel.	0,1Pa	10 s
Diff. Pressure	DMS bridge	-25hPa ... +25hPa	0,1Pa or 1Pa as set	± 2Pa or 1% rel.	0,1Pa	10 s
V - flow velocity	Pitot tube	1...30m/s	0.1m/s	0,5m/s or 2% rel.	1m/s	10 s
rH -relative humidity	capacitive sensor	5...95%	0,01%	2% or 2% rel.	5%	10 s