

# AMPRO<sup>2000</sup>

## SIMULTANEOUS MEASUREMENT OF UP TO 7 GAS COMPONENTS

### THE MOST POWERFUL HANDHELD GAS ANALYZER

The AMPRO 2000 is a true 7 sensors Handheld Emission Analyzer which can be equipped with up to 6 electrochemical sensors and a CO<sub>2</sub> IR-bench (sensor) for simultaneous measurement.

Selected cells can be installed for low CO and low NO with resolution down to only 0.1 ppm.



- >> Modern, slim enclosure with magnets on the rear side
- >> Super bright, color 3.5" TFT-Display with LED backlight and zoom function
- >> Mini-USB interface for data transfer and battery charging
- >> IR Interface for external printer
- >> Integrated condensate trap with PTFE filter and backlight
- >> Internal storage for up to 16,000 data sets
- >> Integrated SD Card reader for additional data storage and data transfer to PC
- >> Menu guided software and function keys
- >> Rechargeable Battery Li-Ion for up to 15 hours operation time
- >> Stainless steel gas and pressure connectors
- >> Bluetooth for wireless data transmission (OPTION)
- >> Weight with 7 Sensors, without probe, less than 2.2 lbs.



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## THE MOST POWERFUL HANDHELD GAS ANALYZER

Suitable for emission monitoring of combustions and industrial processes

### Functions of the AMPRO 2000

- >> Simultaneous measurements of up to 7 gas components!  
e.g. O<sub>2</sub>, CO H<sub>2</sub>-comp., NO, NO<sub>2</sub>, NO(x), SO<sub>2</sub>, CO<sub>high</sub>, CO<sub>very high</sub>,  
up to 6 electrochemical sensor configurations are possible!  
Plus additional NDIR bench with CO<sub>2</sub>
- >> Emission calculations like: mg/m<sup>3</sup>, NO(x) as mg/m<sup>3</sup> NO<sub>2</sub>, true measurement of NO(x) = NO + NO<sub>2</sub>, including  
O<sub>2</sub> referencing (normalization) to user definable values
- >> Gas temperature measurement up to 2,012°F (use stainless steel up to 1,200°F, use Inconel tubes up to 2,012°F)
- >> Large condensate separator with PTFE (Teflon) coated filter
- >> Air purging pump for CO-sensor protection (not possible with NDIR)
- >> Internal data storage for up to 16.000 measurements!
- >> High energy Li-Ion battery (up to 15 hours operation time / with NDIR approx. 6 hrs.)
- >> Color backlit 3.5" TFT display with zoom function
- >> Customizable screen settings
- >> Durable and dirt resistant keypad
- >> IR Interface for external printer (printer is optional)
- >> Integrated SD Card reader for additional data storage and data transfer to PC

### Continuous analysis of:

O<sub>2</sub> Long-life (0...21 Vol.-%)  
CO H<sub>2</sub>-compensated (0 ... 4.000 / Overload 10.000 ppm)  
Combustion air temperature (short plug included)  
Stack gas temperature  
Stack pressure  
Differential pressure  
Differential temperature

### Combustion calculations (fuel type dependent):

CO<sub>2</sub>  
CO/CO<sub>2</sub> ratio  
Dew point  
Excess air and air ratio (Lambda)  
Combustion efficiency  
Heat losses

### Interfaces:



Bluetooth\*:  
Date transfer  
\* Option



USB:  
Data Transfer  
Battery charging



SD Card:  
2 GB  
Data Memory  
\* Option



IR:  
For external printer



AUX:  
For additional  
external sensors  
\* Option

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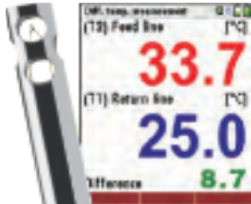
## THE MOST POWERFUL HANDHELD GAS ANALYZER

Suitable for emission monitoring of combustions and industrial processes

**FLUE GAS**  
measurement



**TEMPERATURE**  
measurement



**PRESSURE**  
measurement



**FLOW - SPEED**  
measurement



**GAS LEAKAGE**  
detection



**SPEED PRINTER**  
external



**PROBES**  
and hoses

MRU offers a wide range of probes and hoses of all kind of applications  
Standard probes for up to 1200°F  
Industrial probes for up to 3000°F



Top Connections  
SD Card reader  
USB Port  
IRDA/BlueTooth



Active CO Sensor protection  
using 2nd internal pump  
(not possible with NDIR module)

3.5" TFT Color Display with ZOOM function  
Customizable

Menu guided software and function keys

User friendly, dirt and moisture  
resistant key pad

AUX  
universal auxiliary socket,  
for connection of  
HC or CO gas detector,  
other pressure, temperature  
external sensors

K-type temperature sockets

Robust stainless steel connectors  
for draft and pressure

Condensate separator  
Effective, high volume,  
backlit condensate separator  
with reusable Teflon filter  
for protection against  
dirt and soiling, with robust  
stainless steel connector  
(gas port)



## TECHNICAL SPECIFICATIONS

DATA SUBJECT TO CHANGE WITHOUT NOTICE

AMPRO 2000 analyzer Hand held analyzer with up to 6 electrochemical sensors and a single or dual gas NDIR bench  
 Fuel types natural gas, liquid gas, oil light, pellets, wood, coal, user definable fuels

Measurement components		Measuring range	Accuracy
O <sub>2</sub>	Oxygen	0 ... 21.0 Vol-%	± 0.2 Vol-% abs.
CO	Carbon monoxide (H <sub>2</sub> compensated)	0 ... 4,000 ppm overload 10,000ppm *	± 20 ppm or 5 % reading < 4,000 ppm / 10 % reading > 4,000 ppm
CO	Carbon monoxide low	0 ... 500 ppm with 0,1 ppm resolution **	± 2,0 ppm or** 5 % reading
CO	Carbon monoxide high	0 ... 4,000 ppm overload 20,000ppm *	± 20 ppm or 5 % reading < 4,000 ppm / 10 % reading > 4,000 ppm
CO	Carbon monoxide very high	0 ... 40,000 ppm overload 100,000ppm *	± 0,02% or 5 % reading < 0.4% / 10 % reading > 0.4%
NO	Nitric oxide	0 ... 1.000 ppm overload 5,000ppm *	± 5 ppm or 5 % reading < 1,000 ppm / 10 % reading > 1,000 ppm
NO	Nitric oxide low low	0 ... 300 ppm with 0,1 ppm resolution **	
NO <sub>2</sub>	Nitrogen dioxide	0 ... 200 ppm overload 1,000ppm *	± 5 ppm or 5 % reading < 200 ppm / 10 % reading > 200 ppm
SO <sub>2</sub>	Sulfur dioxide	0 ... 2,000 ppm overload 5,000ppm *	± 10 ppm or 5 % reading < 2,000 ppm / 10 % reading > 2,000 ppm
CO <sub>2</sub>	Carbon dioxide	single NDIR 0.....40%	± 0.3 % or 5% reading

\*overload range recommend only for short time measurements

\*\*are not separate sensors; selected sensors are used with special calibration

Stack / Flue gas temperature	0 ... 1,200°F / 2,012°F (with stainless steel / Inconel steel tube)	± 4°F ... < 392°F / 1 % reading > 392°F
Primary-air / Ambient temperature	0 ... 212°F	± 2°F
Differential temperature	up to 2,012°F (with suitable material of sampling tube)	± 4°F ... < 392°F / 1 % reading > 392°F
Stack / Differential pressure	+/- 40 inH <sub>2</sub> O (100hPa)	± 0.01 inH <sub>2</sub> O or 1% reading
Gas flow velocity measurement	1 ... 40 m/s (using Pitot tube)	

### Calculated values (fuel type dependent)

Carbon dioxide	0 ... CO <sub>2</sub> max.	Air Ratio (Lambda)	1 ... 9,99
Heat losses qA	0 ... 99,9 %	Excess Air	0 ... 99,9
Efficiency	0 ... 100 % / 120 %	CO/CO <sub>2</sub> ratio	0 ... 10

### General specifications

Operation temperature	41°F .... 113°F, max. 95 % RH, none condensing
Storage temperature	-4°F ..... 122°F
Ambient conditions	not in aggressive, corrosive or high dust ambience, not for use in hazardous areas
Power supply	Lithium-Ion battery, 15 h operation, (with NDIR +/- 6 h)
Grid power supply	100 - 240 V AC / 50 ... 60 Hz 1A
Protection class	IP42
Weight	approx. 2.2 lbs (with 7 sensors)
Dimensions	( W x H x D) 4.3" x 8.8" x 2.04"

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