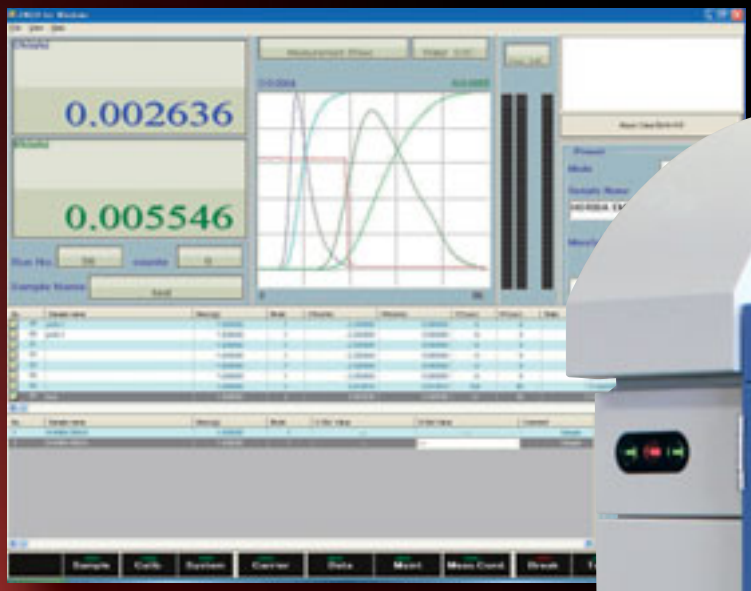
HORIBA
Scientific

Oxygen/Nitrogen Analyzer

EMGA-920



Oxygen
Nitrogen

Evolution

In Pursuit of High performance/Speed/Operability

EMGA-920 is a simultaneous oxygen/nitrogen elemental analyzer with high accuracy and repeatability suited to advanced R&D as well as quality control in the markets of steel, new materials, catalysts and many others. This is a new generation model optimized to fit the user's needs.

Super High Performance

● Wide measurement range

Oxygen: ~5%(m/m) & Nitrogen: ~3%(m/m)

- Dual detectors for CO and CO_2 provide the widest measurement range for oxygen.
- Optimized TCD design for nitrogen.

● Precision

- Oxygen/Nitrogen: SD≦0.02μg/g or RSD≦0.5% whichever is larger (Reference gas)
  SD≦0.3μg/g (Standard sample value 10μg/g or less)
  RSD≦1.0% (Standard sample value 0.01% to 0.02%)

● Standard method

- EMGA-920 fullfills requirements of the standard methods for analysis of steel, titanium, tantalum, ceramics etc.

ISO 10720:1997, ISO17053:2005
JIS G1228:1997
ASTM E1019:2003, ASTM E1569:2003, ASTM E1409:2005 etc.

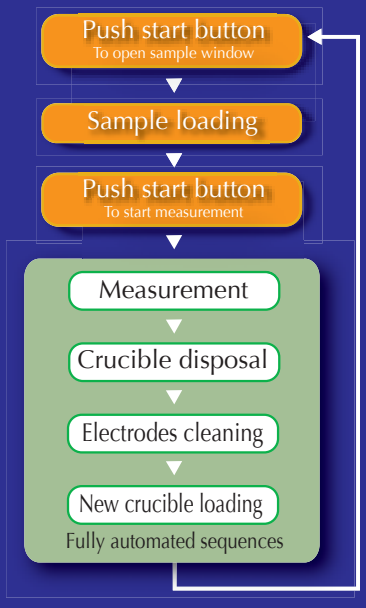
Analysis examples of JSS samples containing low concentrations of oxygen and nitrogen.

	JSS GS-6b	JSS366-8
	O (3.4μg/g)	**N** (7.5μg/g)
1	3.42	7.72
2	3.28	7.74
3	3.48	7.51
4	3.25	7.69
5	3.51	7.25
Average value	3.39	7.58
Standard deviation	0.11	0.20

Simple Operation

● Simple operation

EMGA-920 uses two automation systems for loading and disposing crucibles and for cleaning the electrodes after measurement. Automation sequences allow operation by simply positioning the sample and pushing the start button. The operator has to specify the method and the sample's name in the software. The crucible loader and auto cleaner avoid operator contact with carbon dust by providing clean operating conditions.



User-friendly Software

● Measurement window

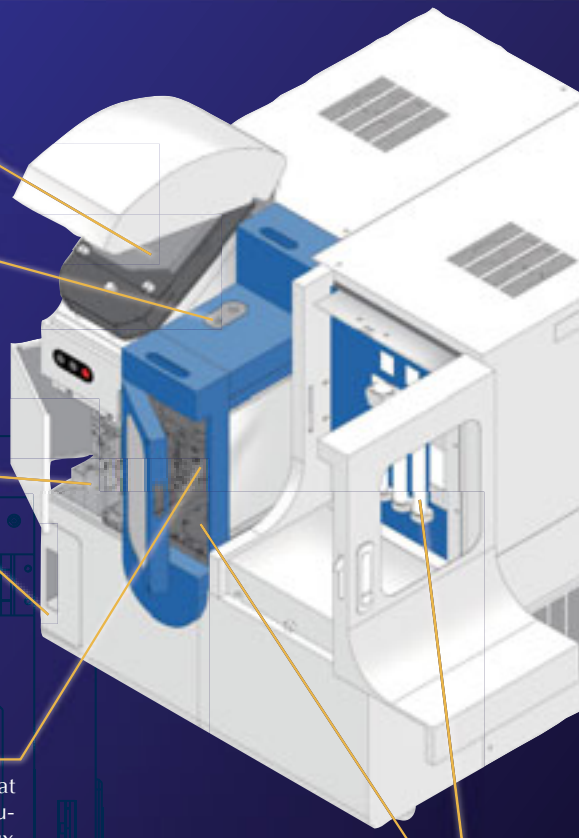
Simple software allows easy operation. Extracted gas signals are displayed in real time numerically as well as graphically with curves that include temperature level. Graphs are saved automatically. In the measurement window, sample weight can be registered automatically. Results are saved in a data table for easy management.

● HORIBA originality - Maintenance navigator

Maintenance counter informs users about consumables replacement to assure high accuracy results. In the same window, you can reach pictures and videos illustrating maintenance operations by a simple click. Operators can freely have a look at the concerned area by playing with the 3D display. As the navigator describes the easy-to-understand procedure for replacing parts, operators can perform routine maintenance without any experience or technical knowledge.

Fully Supported Accessories

To achieve high-speed and simple operation all accessories are included in the EMGA-920.



Crucible loader (Automated crucible supply system)

Precise capture and positioning of crucibles by rotary mechanism Maximum stock: 100pcs. Compatible with normal or long type crucibles.

Hopper (Sample window)

Improved Hopper mechanism for easy cleaning.

Auto cleaner

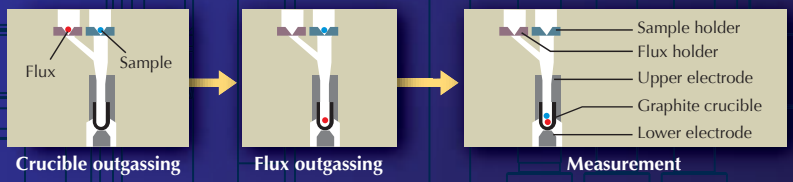
Two rotating brushes clean the upper and lower electrode after each measurement. The vacuum cleaner prevents contamination by removing dust.

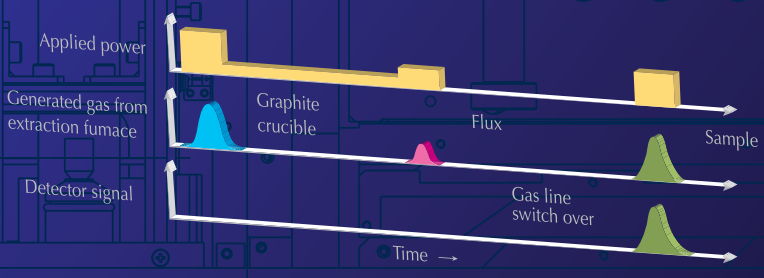
Crucible waste box

About 200 crucibles can be held in the waste box.

Sample/Flux dual loading mechanism

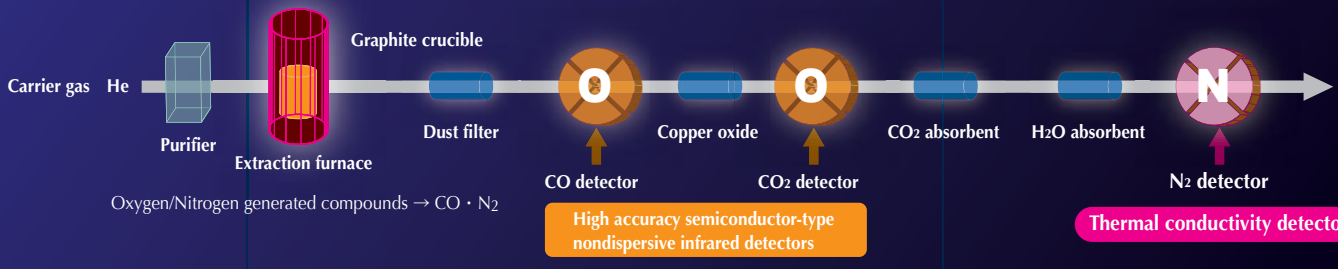
Thanks to this mechanism, sample and flux drop independently allowing outgasing of the flux at low temperature prior to the analysis. The benefits are prevention of flux spatter, control of crucible errosion and optimization of flux outgassing temperature. As a result, optimization of flux efficiency and blank reduction contribute to high accuracy measurements.





Easy replacement of electrode and reagent tubes

Gas flow diagram



■ **Oxygen determination : 2 NDIR detectors for high accuracy among the full measurement range. Automatically controlled by the software.**
- **CO for high oxygen levels**
- **CO_2 for low concentration of oxygen with high sensitivity**

■ **Nitrogen determination : N_2 with Thermal Conductivity Detector (TCD)**

Specifications

Product name	Oxygen/Nitrogen analyzer
Model	EMGA-920
Principle	Oxygen: Non Dispersive Infrared detector (NDIR) Nitrogen: Thermal Conductivity detector (TCD)
Measurement range*	Oxygen: ~5%(m/m) Nitrogen: ~3%(m/m) *Up to 100% wt is possible by decreasing the sample weight.
Sample weight	1g as standard condition, possible to decrease
Sensitivity (Minimum reading)	Oxygen/Nitrogen: 0.001μg/g
Precision (Repeatability)	Oxygen/Nitrogen SD≦0.02μg/g or RSD≦0.5% whichever is larger (Reference gas) SD≦0.3μg/g (Standard sample value 10μg/g or less) RSD≦1.0% (Standard sample value 0.01% to 0.02%)
Display	1) Measurement result: PC or printout 2) Alarm message: PC or printout 3) Flow sheet: PC
Type and power of furnace	Impulse furnace with inert gas fusion with power variable from 0 to 8.0kw
Sample loading	Sample/flux dual loading mechanism
Automation functions	Auto cleaner, Crucible loader
Integration conditions	Preset integration times, integration time to reach the comparator level or both with the shortest time used.
Sample ID	Enter up to 20 characters
Calibration	1) One point or multi point calibration (Reference gas or standard samples) 2) Calibration using previous analysis data 3) Calibration curve correction function

Functions	1) Display of realtime extraction curve 2) Analysis interruption 3) Self diagnosis and alarm display 4) Analysis of extraction curve 5) Output (RS-232C or TCP/IP)
Dimensions	653mm(W) × 785mm(D) × 750mm(H) Sample window is positioned at 650mm from table.
Weight	230kg: For transportation, the system can be split into 2 units < 140 kg each
Computer	PC with Windows®7
Power	Main unit: AC200/220/230/240V ± 10% Vacuum cleaner: AC100V (Step-down transformer included) Frequency: 50/60Hz
Electric power consumption	Main unit:12kVA (MAX) Vacuum cleaner: 1.5kVA (MAX)
Ground resistance	Less than 10Ω
Installation condition	Operation temperature: 5-40℃ Optimum temperature: 5-35℃ Humidity: Maximal relative humidity 80%RH between 5-31℃, Linearly decrease down to 50%RH between 31-40℃ Vibration: Duplex amplitude 20micron and less than 0.098m/S^2 accelerations at frequency band
Required gas	He carrier gas: Purity greater than 99.995%, Pressure 0.35MPa Stainless steel tube (O.D.3mm) and suitable connecter fitting within 3m from unit Dry air or N_2 as operating gas: Pressure 0.45MPa Nylon pipe (O.D.6mm) and suitable connecter fitting within 5m from unit
Cooling mechanism	Separate Water Cooler unit
Electronic balance: option	Enable connection with electronic balance with 1-0.01mg sensitivity
Automatic voltage regulator (AVR): option	Capacity: 15kVA Weight: 130kg

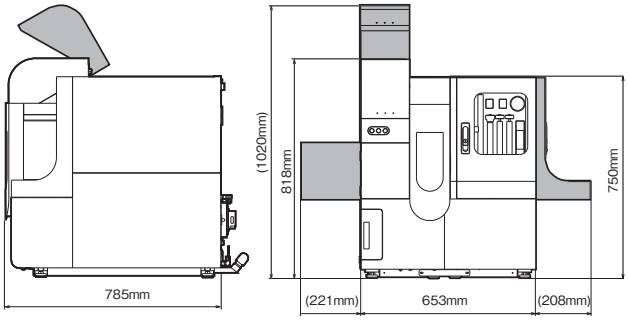
Windows is a registered trademark or trademark of Microsoft Corporation in the United States and other countries.

Other available models

・EMGA-820AC: same performance as EMGA-920 but without crucible loader
・EMGA-820M: same performance as EMGA-920 but without crucible loader and auto cleaner

Dimensional outline drawing

(Space required to open and close the door)



Consumables/Options


Standard crucible


Long crucible


Double crucible


Ni capsule


Sn capsule

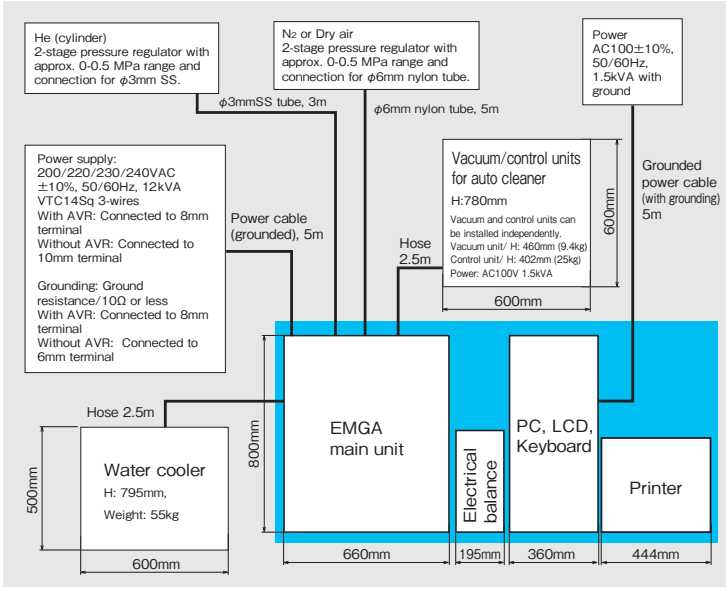

Sn & Ni pellet


Converter C-550


Manual Press

Installation example

Lab bench ■ Minimum width: Approx 1800mm (Recommended 2000mm)
Depth: Approx 900mm



Shown length of pipe and power cable are for accessories. Please install with enough space.

IMS

The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System OHSAS18001.
We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.

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