

Hydrogen Analyzer

# EMGA-921



# Hydrogen

# Evolution

## In Pursuit of High performance/Speed/Operability

EMGA-921 is a hydrogen 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

##### Hydrogen: Up to 200 $\mu$ g/g

- Optimized TCD design for hydrogen.

#### ● Precision

- Hydrogen:  $SD \leq 0.04 \mu\text{g/g}$  or  $RSD \leq 0.5\%$  whichever is larger (Reference gas)

#### ● Standard method

- EMGA-921 fulfills requirements of the standard methods for analysis of various metals (titanium, zirconium, tantalum etc.)  
JIS Z2614, JIS H1619, JIS H1664, JIS H0696  
ASTM E1447

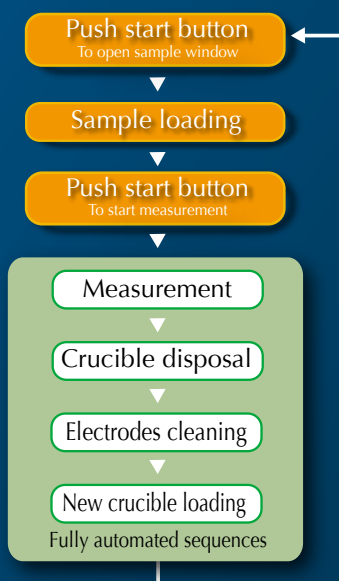
Analysis examples of JSS samples containing low concentrations of oxygen and nitrogen.

	JSS GS-1c	SS-5-27	Gas	
	1.77 $\mu$ g/g	7.39 $\mu$ g/g	-	-
1	1.711	7.364	2.227	6.971
2	1.686	7.367	2.227	6.979
3	1.703	7.439	2.221	6.973
4	1.729	7.418	2.22	6.981
5	1.719	7.436	2.226	6.967
Average value	1.71	7.405	2.224	6.974
Standard deviation	0.016	0.037	0.003	0.006

### Simple Operation

#### ● Simple operation

EMGA-921 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 does not have to specify the method used 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-921.

### Crucible loader (automated crucible supply system)



Crucibles are accurately captured and supplied by motor rotation. Up to 100 crucibles can be stored at once. Compatible with both long and short crucibles.

### Hopper (for sample loading)



The hopper mechanism has been redesigned for easier cleaning.

### Automatic cleaner



Upper and lower rotating brushes clean the electrodes after each analysis. Dirt is removed by a vacuum, to prevent contamination during measurement.

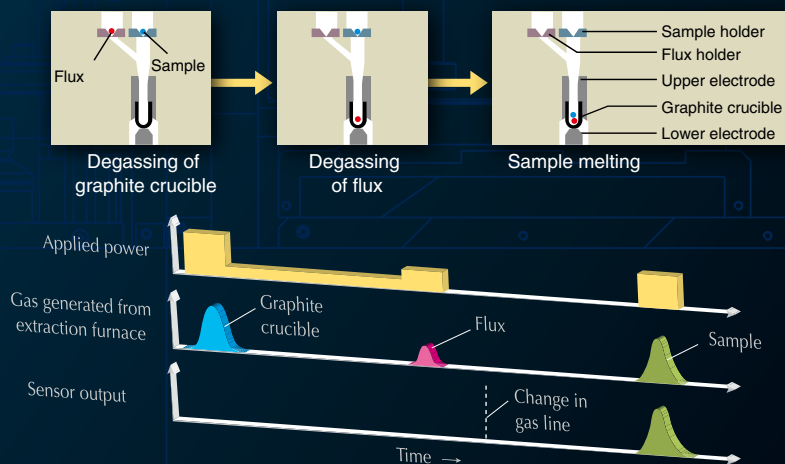
### Crucible recovery box



This box can hold about 200 crucibles for disposal after measurements.

### Sample/Flux dual loading mechanism

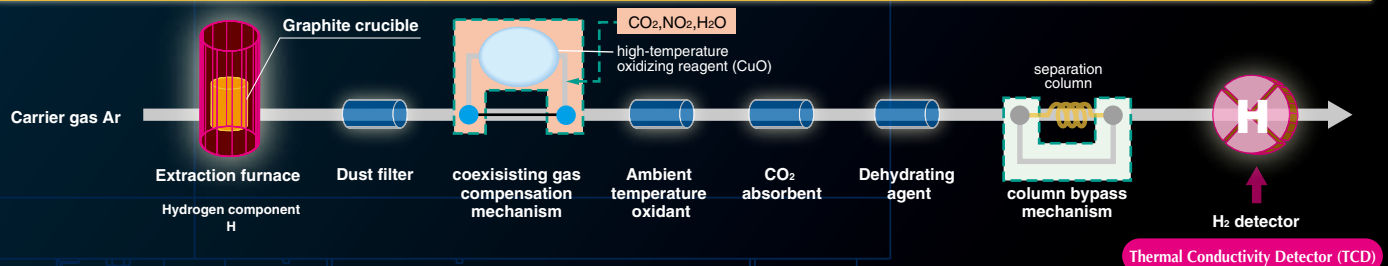
The original Sample/Flux dual loading mechanism developed by HORIBA features separate openings for loading of samples and flux, and incorporates a sequence in which the flux can be loaded in advance to be degassed at a low temperature level. This prevents excessive scattering of flux and crucible erosion, and allows flux degassing at optimum temperatures. As a result, this mechanism contributes to high-precision analysis with maximum use of the flux effect, without affecting the blank.



### Easy replacement of electrodes and reagent tubes



### Gas flow



## Specifications

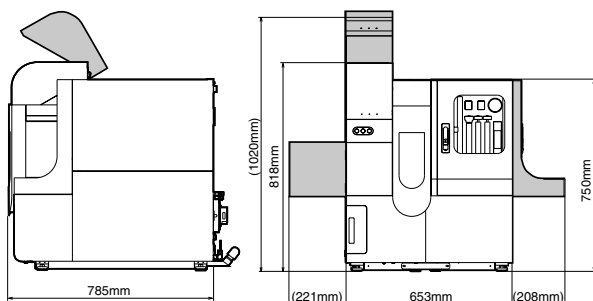
Product name	Hydrogen Analyzer
Model	EMGA-921
Measurement method	Thermal Conductivity Detector (TCD)
Measuring range	~0.02% (m/m) *Up to 100% wt is possible by decreasing the sample weight.
Sample weight	1g as standard condition, possible to decrease.
Sensitivity (Minimum reading)	0.0001µg/g
Precision (Repeatability)	SD 0.04µg/g or RSD 0.5% whichever is larger (Reference gas)
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 0.8kw
Sample introduction	Dual sample/flux introduction mechanism
Automation functions	Auto cleaner, Crucible loader
Integration conditions	Present integration times, integration time to reach the compare level or both with the shortest time used.
Sample ID	Enter up to 20 characters

### Other available models

- EMGA-821AC: same performance as EMGA-921 but without crucible loader
- EMGA-821M: same performance as EMGA-921 but without crucible loader and auto cleaner

## External dimensions

(Areas marked in gray indicate space for opening/closing doors, etc.)



## Spare parts / options

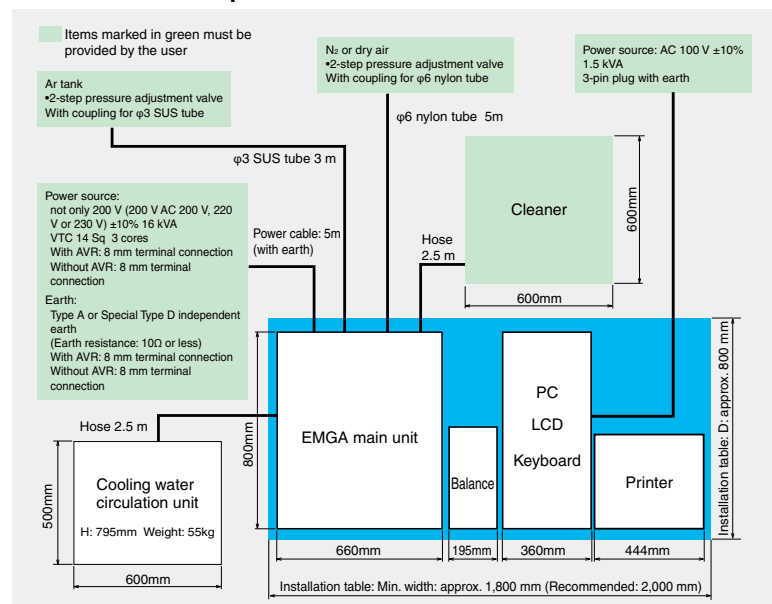


**HORIBA continues contributing to the preservation of the global environment through analysis and measuring technology.**



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 (RC-232C or TCP/IP)
Dimensions	750mm (H) × 785mm (D) × 653mm (W) Sample window is positioned at 650mm from table.
Weight	230kg: For transportation, the system can be split into 2units < 140kg each
Computer	PC with Windows (SP2)
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°C Optimum temperature: 5-35°C Humidity: Maximal relative humidity 80% RH between 5-31°C Linearly decrease down to 50% RH between 31-40°C Vibration: Duplex amplitude 20micron and less than 0.098m/S2 accelerations at frequency band
Required gas	Ar carrier gas: Purity greater than 99.995%, Pressure 0.35MPa Stainless steel tube (O.D.3mm) and suitable connector fitting within 3m of unit Dry air or N2 as operating gas: Pressure 0.45MPa Nylon pipe(O.D.6mm) and suitable connector fitting within 5m of 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

## Installation example



\*Please note that the indicated lengths of tubes, power cables, etc., are based on the length of accessories included. In the actual installation, ensure that the layout allows for some freedom of movement.



**Please read the operation manual before using this product to assure safe and proper handling of the product.**

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