



**NC TECHNOLOGIES**

Innovative Elemental  $\mu$ -Analysis

ECS40 Series | ORGANIC ELEMENTAL ANALYZER

CHNS-O Analyzer



# ECS40 SERIES

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## ECS 4024 “CLASSIC ANALYZER”

### CHNS-O ELEMENTAL COMBUSTION SYSTEM

The elemental analyzer CHNS-O Classic 4024 Model is an instrument for organic elemental analysis based on the Dumas method for the simultaneous determination of CHNS-O elements.

#### DESCRIPTION

It represents an evolution of the elemental analysis techniques based on "flash combustion" / chromatographic separation. CO<sub>2</sub>, H<sub>2</sub>O, SO<sub>2</sub> and N<sub>2</sub> are separated in a GC column kept at a constant temperature, user selectable within 30° up to 110 °C.range.

The ECS Classic 4024 is a fully automated, microprocessor controlled analytical unit interfaced to a PC. The results can be viewed directly via PC using a dedicated software.

The ECS Classic 4024 Model is suggested in case of:

- low sample amount (it can be used combined with MS or other instrument, where a little amount of sample is burnt)
- low use of instrument
- low budget available



ECS 4024 “CLASSIC ANALYZER”

# ECS40 SERIES

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## *ECS 4024 – Classic Analyzer*

The ECS 4024 has **one furnace** configuration and it is optimized for C,S; C, N, S; C,N,H,S and S analysis.

The ECS Classic 4024 has three main modules: a sampling/combustion system (three different autosamplers are available and various types of reactors to ensure a constantly optimized application), the detection system and the data handling system.

This is a high sensitivity analysis instrument, very flexible and suitable for applications ranging from the pharmaceutical industry to marine biology, from the food analysis to petrolchemical analysis.

The Detector (TCD, Thermal Conductivity Detector) is self calibrating and does not require reference gas.

The ECS Classic 4024 combines robustness, reliability and flexibility in order to meet the most different analytical requirements.

The ECS Classic 4024 Model is particularly suitable for linking to other units for determination of the isotopic ratios of stable isotopes in elements.

## FEATURES AND BENEFITS

- **Fully automatic** analysis system
- High **sensitivity, accuracy** and **precision**
- Application **flexibility** and **versatility**
- **Ease** of use detector. No **reference gas needed**
- **Powerful software** for viewing results from PC
- **No background nitrogen**
- **Three types of autosamplers** available (Electronic/Pneumatic/Manual)
- **Easy connection** to Mass Spectrometers and other detectors for stable isotope analysis
- **Low** operation and management **costs**

ECS 4024 “CLASSIC ANALYZER”

# ECS40 SERIES

## TECHNICAL SPECIFICATIONS – ECS 4024

ANALYZER DETECTOR RANGE FOR C, H, N, S & O	200 ppm - 100 %  C: 0.002 - 8 mg N: 0.002 - 2 mg H: 0.002 - 2 mg S: 0.002 - 2 mg
SAMPLE SIZE AND TYPE (Solids & Liquids)	0.01 mg - 500 mg (according to the sample nature)
CAPSULE	High purity tin and/or silver capsule
ACCURACY (%)	< 0.2 (reference material)
PRECISION (%)	< 0.1 (reference material)
COMBUSTION VIEWING FACILITY	Standard top viewing
DETECTOR	TCD
FURNACE	800-1100 °C (Flash Temperature 1700 to 1800 Deg C)
AUTOSAMPLER	PNEUMATIC: up to 3 stackable carousels for a total of 147 sample; ELECTRONIC: carousels 32, 50, 100 positions; MANUAL
ANALYSIS TIME	CHNS-O CN           5 min CHN         8 min CHNS       13/25 min O            4 min
CALIBRATIONS	Linear, quadratic, cubic
GAS SEPARATION	0.8 to 4 m GC Column
SOFTWARE	Dedicated, EAS CLARITY
PC OS	Windows
GAS UTILITIES	Compressed air (dry and oil free), Helium (He), Oxygen (O <sub>2</sub> )
O <sub>2</sub>	99.999% (5.0) purity, 3-5 bar
HE	99.999% (5.0) purity, 3-5 bar
SIZE	760 x 350 x 700 mm (W x D x H)
POWER	230 VAC ± 10%, 1-10 A

ECS 4024 “CLASSIC ANALYZER”

# ECS40 SERIES

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## ECS 4010

### CHNS-O ELEMENTAL COMBUSTION SYSTEM

The elemental analyzer ECS 4010 is an instrument for organic elemental analysis based on the Dumas method for the simultaneous determination of CHNS-O elements.

#### DESCRIPTION

It represents an evolution of the elemental analysis techniques based on "flash combustion" / chromatographic separation. CO<sub>2</sub>, H<sub>2</sub>O, SO<sub>2</sub> and N<sub>2</sub> are separated in a GC column kept at a constant temperature that the user can select between 30 and 110 °C.

The ECS 4010 is a fully automated, microprocessor controlled analytical unit interfaced with a computer. The results can be viewed directly via PC using dedicated software.

The ECS 4010 is suggested when big amount of sample is burnt (for example in soil, sediment analysis).

The ECS 4010 is also suggested in laboratories where a lot of samples are analysed.

This model is suggested for N; N,C; N,C,H; N,C,H,S analysis.

Thanks to the double furnace configuration a better optimization of catalyst consumption is possible.



*ECS 4010*

# ECS40 SERIES

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The ECS 4010 has three main modules: a sampling/combustion system (three different autosamplers are available and various types of reactors to ensure an always optimized application), the detection system and the datahandling system.

This is a high sensitivity analysis instrument, very flexible and suitable for applications ranging from the pharmaceutical industry to marine biology, from the food analysis to petrochemical analysis.

The Detector (TCD, thermal Conductivity Detector, featuring an exclusive design) is self-calibrating and does not require the use of a reference gas.

The ECS 4010 combines robustness, reliability and flexibility in order to meet the most different analytical requirements.

The ECS 4010 is particularly suitable for linking to other units for determination of the isotopic ratios of stable isotopes in elements.

## FEATURES AND BENEFITS

- **Fully automated** analysis system
- High **sensitivity, accuracy** and **precision**
- Application **flexibility** and **versatility**
- **Ease** of use detector **does not require reference gas**
- **Powerful software** for viewing results from a computer
- **No background nitrogen**
- **Three types of autosamplers** available (electronic, pneumatic and manual)
- **Easy connection** to Mass Spectrometers and other detectors for stable isotope analysis
- **Low** operation and management **costs**

ECS 4010 CHNS-O

# ECS40 SERIES

## TECHNICAL SPECIFICATIONS – ECS 4010

ANALYZER DETECTOR RANGE FOR C, H, N, S & O	200 ppm - 100 % C: 0.002 - 8 mg N: 0.002 - 2 mg H: 0.002 - 2 mg S: 0.002 - 2 mg
SAMPLE SIZE	0.01 mg - 500 mg (according to sample nature)
ACCURACY (%)	< 0.2 (reference material)
PRECISION (%)	< 0.1 (reference material)
COMBUSTION VIEWING FACILITY	Standard top viewing
DETECTOR	TCD LOQ: 1-5 µg
REACTOR OXIDATION	800-1100 °C (Flash Temperature 1700 to 1800 Deg C)
REACTOR REDUCTION	600-1100 °C
AUTOSAMPLER	PNEUMATIC: up to 3 stackable carousels for a total of 147 sample ELECTRONIC: carousels 32, 50, 100 positions
ANALYSIS TIME	CHNS-O CN                      5 min CHN                     8 min CHNS                   13/25 min O                         4 min
CALIBRATIONS	Linear, quadratic, cubic
GAS SEPARATION	0.8 to 4 m GC Column
SOFTWARE	Dedicated, EAS CLARITY
PC OS	Windows
GAS UTILITIES	Compressed air (dry and oil free), Helium (He), Oxygen (O <sub>2</sub> )
O <sub>2</sub>	99.999% (5.0) purity, 3-5 bar
HE	99.999% (5.0) purity, 3-5 bar
SIZE	760 x 350 x 700 mm (W x D x H)
POWER	230 VAC ± 10%, 1-10 A
CONSUMABLES	Proprietary NC Technologies S.r.l.



# NC TECHNOLOGIES

Innovative Elemental  $\mu$ -Analysis



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