

The Thermo Scientific FLASH 4000 Nitrogen/Protein Analyzer provides fully automated analysis with results obtained within a few minutes. Designed with a large sample weight capacity and superior performance, the FLASH 4000 is ideal for a variety of food analyses.

Thermo Scientific FLASH 4000 Nitrogen / Protein Analyzer

Bursting with Productivity



The new Thermo Scientific FLASH 4000 N/Protein analyzer is a step forward in the automatic Dynamic Flash Combustion technique for the analysis of N/Protein in any food matrix. The FLASH 4000 is the optimum choice for Quality Control and R&D environments in the food industry and an excellent economic alternative for the classical Kjehldal method.

With proven accuracy and unbeatable cost-per-analysis, the FLASH 4000 gives lab managers an automated 24/7 solution for solid and liquid samples that they can be confident in.

The FLASH 4000 requires minimum sample pre-treatment handling and no use of toxic or noxious chemicals because the FLASH 4000 analyzer introduces two important automatic devices – water drainage condensers and regenerative CO₂

adsorption filters (international patent pending) – drastically improving the autonomy and reducing downtime, maintenance and cost per analysis .

The dedicated Thermo Scientific Eager Xperience Software is designed to maximize productivity with numerous functions – different calibration methods, preparation of a personalized analytical report, average visualization of the results, PASS/FAIL qualification for QC labs, and includes instrument maintenance control functionalities.

The coupling of an analytical balance for evaluating sample weight, the possibility to analyze 124 solid samples with the use of the MAS 4000 autosampler and the optional AS 3000 model liquids autosampler makes the FLASH 4000 affordable for any food & animal feed laboratories.

FLASH 4000 features:

- Large sample weight (more than 2 g)
- Accurate and precise results
- Enhanced Eager Xperience dedicated software
- Ease of use
- Low cost per analysis
- Official methods compliance
- Large range of Food, Animal feed and Beverages applications
- Analytical conditions stable for months

Technical Specifications

FLASH 4000 BASE UNIT

Dimensions	667 x 635 x 695 mm (w x d x h) including MAS 4000 autosampler
Power supply	230 V ; 9,3 A max ; 2140 watt ; 50 / 60 Hz
Weight	93 kg (net value)

MULTI AUTOSAMPLER MAS 4000

The MAS 4000 can accommodate the samples in a single tray, of solid or liquids (supported on solid inert material) placed in tin containers

First tray capacity	31 samples
Max capacity (4 drums of 31 positions)	124 samples

UTILITIES

Gases	Helium GC grade (99.995 % minimum purity) Oxygen GC grade (99.995 % minimum purity)
He flow	300 ml/min (measurement channel) / 20 – 500 ml/min flow range 300 ml/min (reference channel) / 20 – 500 ml/min flow range 250 - 300 ml/min (Regenerative CO ₂ filters)
Helium gas pressure	100 – 150 kPa
Oxygen gas pressure	450 kPa
Gas connectors	1/8" Swagelok
Important: in Stand-By condition the Helium flow is brought to 20 ml/min , the Oxygen flow is cut off while the temperatures of the Left and Right furnaces are reduced by 50 % versus operating temperatures	
Furnace voltage	48 V
Furnace temperature sensor	Pt / Pt-Rh thermocouple
Furnace temperature	max 1050 °C (2008 °F)

ENVIRONMENTAL CONDITIONS:

Operating temperatures	15 – 35 °C (54 – 95 °F)
Maximum relative humidity between	5 % and 95 %
Voltage variations not exceeding +/-	10 % of the nominal value

TECHNICAL FEATURES

Detector	Thermal Conductivity Detector (TCD)
External interface	RS 232 serial line, Local Area Network (LAN)
Instrumental control	Eager Xperience for Windows / Vista

OPTIONS

AI 3000 or AS 3000 liquid autosampler
Manual liquid injector

Analytical specifications

Sample matrix	Solid and Liquid
Sample size	0.100 – 2 g or more (depending on the sample nature)
Working range	100 ppm – 100 %
Calibration	K factors or Linear Regression
Analysis time	5 - 7 min (depending on the sample nature)

ACCURACY FOR N DETERMINATION

Theoretical Value	Experimental Value
0.01 % (100 ppm)	100 ppm ± 10
0.10 %	0.1 % ± 0.01
1.00 %	1.00 % ± 0.02
10.00 %	10.00 % ± 0.1
50.00 %	50.00 % ± 0.3
90.00 %	90.00 % ± 0.3

Conformance tested by pure organic elemental analysis standard.

Official methods include:

AACC (American Association of Cereal Chemist) 46 -30;

AOAC (Association of Official Analytical Chemists) 990.03;

AOAC 992.15,

AOAC 992.23,

AOAC 993.13;

AOCS (American Oil Chemists Society) Ba 4e;

ASBC (American Society of Brewing Chemists)

ISO 13878, Soil Quality - Det. Of Total Nitrogen.

Gazzetta Ufficiale, New regulation for fertilizer's control

Office International de la Vigne et du Vin, OENO 13 Quantification of Total Nitrogen

