



Lab Solutions

# NDA 701

## Dumas Nitrogen Analyzer

Nitrogen / Protein  
Determination in a Flash!





## Lab Solutions

Foods are all substances that supply energy and the components essential for growth and preservation of the vital functions when ingested. Their compositions must be defined in terms of proteins, carbohydrates and fats for their nutritional content, in conformity with international standards.

The innovative equipment manufactured by VELP Scientifica provides substantial assistance to food and feed specialists involved in production and research.

- Combustion Reactor (CF)**
- Physical Water Trap (WT1)**
- Reduction Reactor (RF)**
- Chemical Water Trap (WT2)**
- CO<sub>2</sub> Regenerating Adsorbers (CO<sub>2</sub>)**
- Innovative TCD (TCD)**

# NDA 701

## NDA 701 Dumas Nitrogen Analyzer

The new and completely innovative step forward for nitrogen determination by VELP Scientifica. VELP is now able to offer different solutions for nitrogen determination, from the standard Kjeldahl method to the flash of Dumas combustion. In accordance with the Dumas method, NDA 701 is ideal for high throughput, being fully automated and requiring just 3-4 minutes per analysis.

Must be connected to



Can be connected to



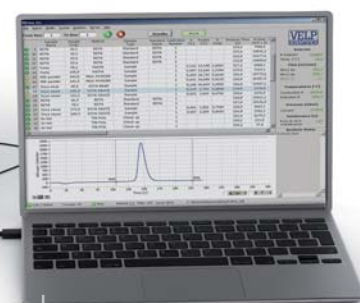
NDA 701 Dumas Nitrogen Analyzer



**Analysis in a Flash!**  
Fully automated, high productivity, 24/7 operation.



**Eco-Friendly**  
Limited energy consumption, stand-by and Helium-saving mode and no wastes.

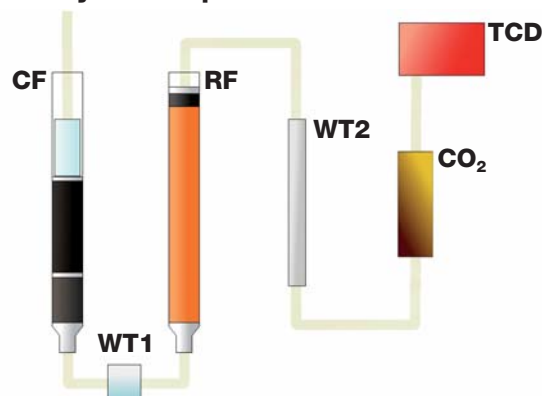


**Long-life VELP Consumables**

**Minimum Maintenance**  
Monitoring of consumables, no daily calibration, no use of corrosive chemicals.

**Precision and Accuracy**  
High repeatability, very low detection limit (0.003 mg N).

### Analysis Flowpath



allows combustion at 1030 °C in order to break all of the sample into its elemental substances. the maintenance-free **DriStep™** cooler permits 99% of water to be removed. enables the elimination of unwanted compounds and oxygen, transforming NO<sub>x</sub> into N<sub>2</sub>. eliminates the residual water. used to get rid of all the CO<sub>2</sub>. Auto-regenerating, maintenance-free system. **LoGas™** determines nitrogen content without the need for a reference gas. Maintenance-free.

### Features and Benefits

- Fast
- Fully Automated for Unsupervised Analysis
- Long Lifespan
- Flexible and Versatile
- Compact Profile
- Safe

**GLP** Good Laboratory Practices  
**AOAC AACC ASBC ISO OIV**

The autosampler can hold up to 116 samples (both solids and liquids) loaded in tin capsules. The samples need to be accurately homogenized, in order to maximize the results precision and to achieve a representative analysis.



TEMS technology saves  
Time, Energy, Money and Space

- Time Saving: Unparalleled productivity, results in only 3-4 minutes
- Energy Saving: Excellent engineering, low consumption
- Money Saving: Limited cost per analysis, less gas and reagent used (LoGas™ and DriStep™)
- Space Saving: Just one slim unit required for the whole analysis



## DUMASoft™ SOFTWARE

NDA 701 is completely controlled and operated by the DUMASoft™ software, offering all the most important info at a glance in one window!



### ...before the analysis

Simply position the capsule in the autosampler, enter sample name, type and weight and select the method and the calibration curve. Automatically, the software will set the analytical conditions according to the entered data. The dosing of gases is optimized by the software, in order to achieve complete combustion of the sample with minimum consumption. Create and save calibration curves using standards, pure test substances with a well-known nitrogen content. No need to create a new calibration curve every day. Recall it before starting the analysis. A good calibration curve requires 5-6 points. These should represent different standard quantities (in mg) to create a range (in mg of nitrogen) that will then contain the nitrogen content of the analyzed sample. The more that the content of mg of nitrogen is centered in the range, the greater are the accuracy and precision of the analysis. The software accepts weight values directly from the balance.



### ...during the analysis

In the main window the user can continuously check the instrument status, controlling the flow rate and the reactor temperatures on the right side of the page. Beneath, the user can also read suggestions about the maintenance, monitoring the number of analyses that can be performed before the next replacement. The real time graph shows the progress of the analysis, creating the peak as soon as the nitrogen starts reaching the Thermal Conductivity Detector (TCD).



### ...after the analysis

Once the analysis is completed, the operator will find all the test information in the main window, with a real-time graph, info about the method and results in different formats (nitrogen mg, nitrogen % and protein %). All analysis data are stored into databases and can be exported in .xls, .txt and .csv format to PC or LIMS. The operator can also create test reports for a single test or multiple analyses for a better interpretation of the data. Results can be also recalculated using different calibration curves, without performing a new test, but only selecting the new curve. A particularly useful additional function can be the reintegration of the peak area. Results can be output to a printer.

## DUMAS

- **High Productivity** - Non-stop performance
- **Time Saving** - Few minutes required
- **Low Cost of Ownership** - Moderate running costs
- **Totally Unsupervised** - Fully automated process
- **Dry Chemistry** - No chemicals
- **Eco-friendly** - Less residues and no wastes produced
- **Officially recognized method** - Gaining in international use with advanced instruments

## KJELDAHL

- **Less Productivity** - Inability to operate continuously
- **Time-consuming** - Analyses last hours
- **Affordable Equipment Cost**
- **Partly Unsupervised** - Not entirely automated process
- **Wet Chemistry** - Uses chemicals
- **Costly Wastes Produced** - Residues must be disposed of
- **Worldwide Official Method** - Traditional technique, simple equipment

### Fields of Application

The NDA 701 is extremely versatile, being suitable for nitrogen and protein determination in several kinds of sample, in accordance with official AOAC, AACC, ASBC, ISO and OIV methods.



Food, feed and beverage industry



Environment industry



Pharmaceutical and chemical industry

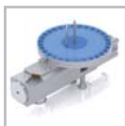
Fields of Application

Instrument	Power supply	Code No
NDA 701 Dumas Nitrogen Analyzer	230 V / 50 – 60 Hz	F30800070

## Supplied with



**A00000193**  
Start-up kit



**40001065**  
Autosampler  
with disc 1



**40001504**  
NDA 701  
DUMASoft™  
Software



**40001693**  
USB cable  
for PC, 5m



**10003926**  
RS232  
Cable for  
balance

## Optional Accessories

	Code No
Chromosorb, 10g	A00000148
Quartz wool, 50g	A00000154
Reduced copper, 250g	A00000155
Copper oxide, 50g	A00000157
VHT catalyst, 50g	A00000159
VLT catalyst, 25g	A00000160
Sicapent, 100 g	A00000171
EDTA, 100 g	A00000149
Tin Foil Cups, 100pcs	A00000153
Quartz reactor tube	A00000162
Ash collector	A00000161
1000 analyses kit for NDA701	A00000194
Disc 1 for autosampler	A00000199
Disc 2 for autosampler	A00000200
Disc 3 for autosampler	A00000201

The Dumas Unit contains all necessary parts to perform up to 400 analysis (inclusive of catalysts, copper, quartz wool, reagents and seals). In addition it contains chemicals and small consumables spares for maintenance. All consumable and spare parts can also be ordered separately, please access to our E-shop.

## Description

Method of analysis:	Dumas method / Combustion
Detector:	Innovative autocalibrating TCD (no need for a reference gas)
Sample weight:	Up to 1 g
Autosampler capacity:	Up to 116 samples
Reproducibility (RSD):	< 0.5% for EDTA standards approx. 100 mg (9.57% N)
Recovery :	> 99.5%
Detection range:	0.1 - 200 mg N
Detection limit:	0.003 mg N absolute
Combustion temperature:	1030 °C / 1886 °F
Helium (He):	purity 99.999% (grade 5.0)
Oxygen (O <sub>2</sub> ):	purity 99.999% (grade 5.0)
Compressed air or Nitrogen (N <sub>2</sub> ):	purity 99.6 % (oil and water free)
Helium (He) pressure:	3 bar
Oxygen (O <sub>2</sub> ) pressure:	3 bar
Compressed air or Nitrogen (N <sub>2</sub> ) pressure:	4 bar
Interfaces:	USB, RS232
Power:	1400 W
Power supply:	230 V / 50 - 60 Hz
Weight:	54 kg / 119 lb
Dimensions (WxHxD):	655 x 510 x 410 mm (655 x 690 x 410 mm including autosampler) 25.8 x 20.1 x 16.1 in (25.8 x 27.0 x 16.0 in including autosampler)

Your authorized agent:

We reserve the right to make technical alterations  
We do not assume liability for errors in printing, typing or transmission

Constant Commitment to  
Knowledge Development



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