# VELP SCIENTIFICA

# CN 802

## Carbon / Nitrogen Analyzer

Elemental Analyzer for a Wide Range
of Applications

# CN 802 Carbon / Nitrogen Analyzer

The CN 802 combustion elemental analyzer is a versatile, cloud-enabled and fully automatic solution for carbon and nitrogen determination in a wide range of applications. The CN 802 offers high performance on both solid and liquid samples, working in accordance to international standards such as AOAC, AACC, ASBC, ISO, DIN, IFFO, OIV, ASTM, EPA.

## RAPID C/N DETERMINATION

The CN 802 performs analysis of both carbon and nitrogen in just 3-5 minutes. The quick start and sleeping mode ensures fast operation set up with possibility of leak test per zone.

## FLEXIBLE

Fully automatic determination of TC, TN and Carbon/Nitrogen Ratio on solid and liquid samples. Determination of TOC and TIC after external acidification

## PRECISE

The NDIR (Non Dispersive Infrared) detector and LoGas™ TCD (Thermal Conductivity Detector) designed by VELP guarantee unmatched precision and unrivaled LOD.

## EFFICIENT

The fully automatic and reliable combustion method of CN 802 together with DriStep™ water trap guarantees moderate cost. The 30-positions disc autosampler expandable with extra 3 discs ensures maximum productivity and uptime.

## VERSATILE

The CN 802 works with solid, liquid and doughy samples of up to 1 gram. Seamless carrier gas selection between Helium and Argon without hardware changes and with no memory effect.

## SMART & SAFE

The CN 802 is easy to use thanks to the user-friendly CNSoft™ software which is equipped with maximum safety control of the instrument. VELP Ermes connection will deliver a new user experience and smart workflows.

**TEMS™ Technology**
Save Time, Energy, Money and Space.

## CARBON AND NITROGEN DETECTORS

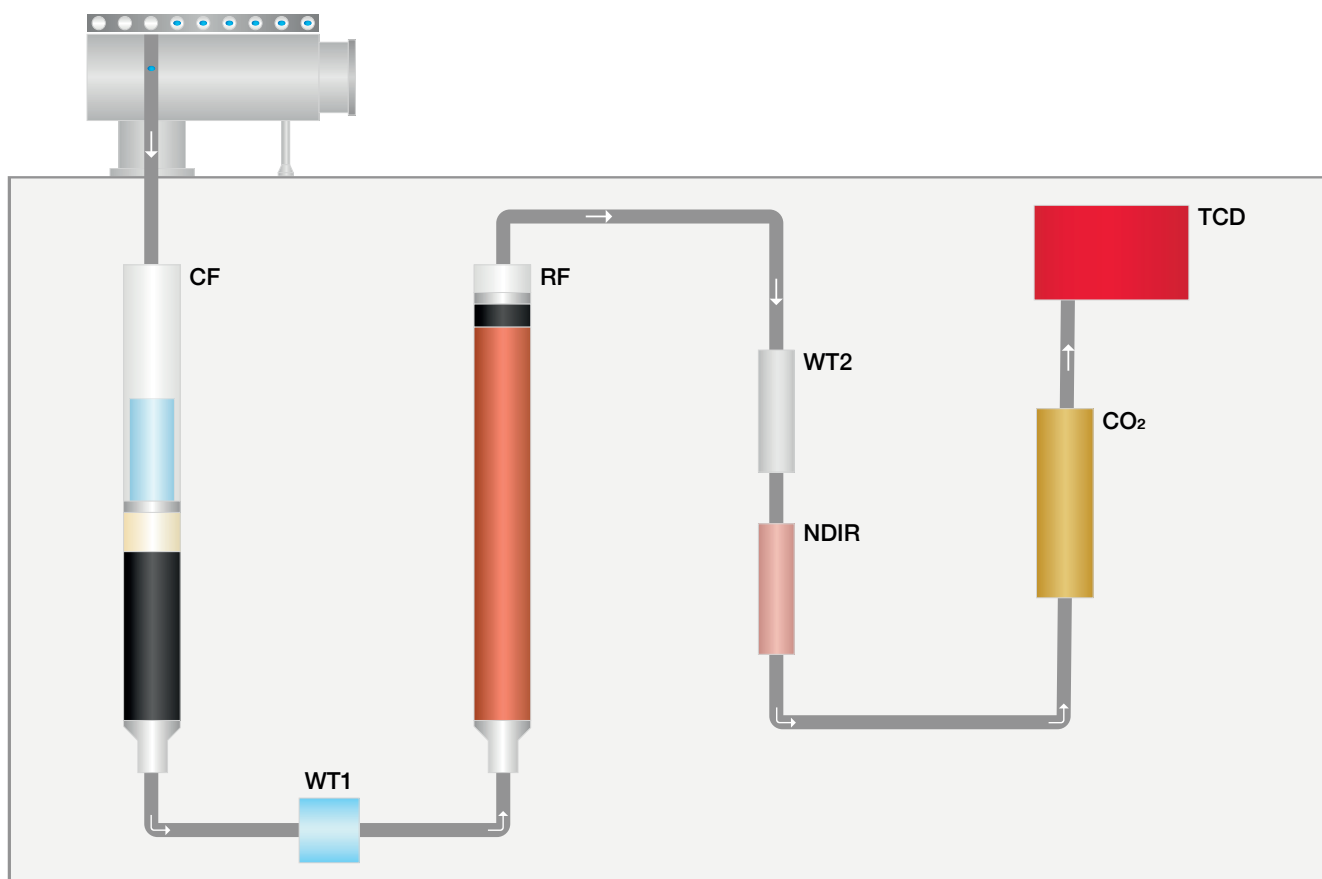### CARBON DETECTOR

**NDIR - NON DISPERSIVE INFRARED DETECTOR**

- Selective detector reading only Carbon content

- Maintenance free

- High Accuracy and Precision

- LOD: 0,01 mgC

### NITROGEN DETECTOR
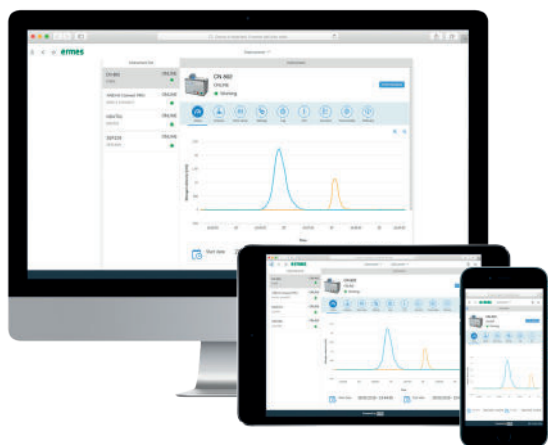
**TCD – THERMAL CONDUCTIVITY DETECTOR**

- Low gas consumption

- No reference gas required

- Long life span

- LOD: 0.001 mgN (He) – 0.01 mgN (Ar)

# CN 802 Analysis Process



- ■ **CF** (Combustion Reactor) Allows complete combustion at 1030 °C in order to convert all of the sample into its elemental substances.

- ■ **WT1** (Physical Water Trap) The maintenance-free DriStep™ cooler permits 99% of water to be removed.

- ■ **RF** (Reduction Reactor) Enables the elimination of unwanted compounds and oxygen, transforming NOx into $N_2$.

- ■ **WT2** (Chemical Water Trap) Eliminates the residual water.

- ■ **NDIR** (Non Dispersive Infrared Detector) Accurately measures the $CO_2$ concentration that the instrument is able to convert in carbon quantity.

- ■ **CO$_2$** (CO$_2$ Regenerating Adsorbers) Used to get rid of all the $CO_2$. Auto-regenerating, maintenance-free system.

- ■ **TCD** (Innovative TCD) LoGas™ determines nitrogen content without the need for a reference gas. Maintenance-free.
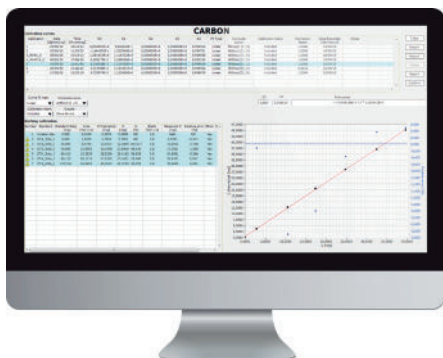
## VELP ERMES CONNECTION



Connect the CN 802 to the exclusive VELP Ermes Cloud Platform to improve your laboratory experience. The VELP Ermes Cloud platform connection will unburden you from tedious tasks, improving your lab productivity.

- ■ Real time monitor and control of the instrument from PC, smartphone and tablet whenever you want, wherever you are

- ■ Immediate alert and notification with the possibility to stop the instrument for maximum safety

- ■ Enhanced service and application support.

- ■ Regular software updates will guarantee the best performance and new features with just one-click

**ermes enabled**

# CNSoft™ Software

The CNSoft™ software is the powerful VELP solution that controls and operates the CN 802 analyzer. The CNSoft™ comes with a user-friendly interface that displays all relevant information at a glance: results, database and instrument conditions. It is possible to choose from a rich library of pre-installed methods and create customized ones.
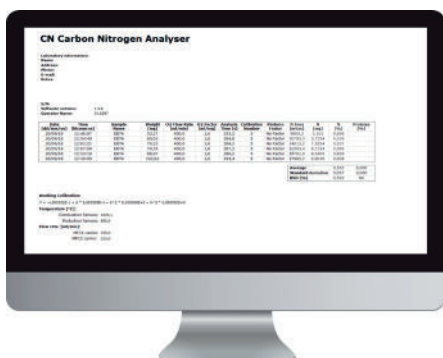
## 1 BEFORE THE ANALYSIS

- Create or choose a calibration curve for C and N
- Fill in the required data (sample name, analysis type, weight…)
- Select a method and calibration curve

## 2 DURING THE ANALYSIS

- Monitor of the working parameters
- Realtime graph of C and N peaks
- Immediate readout of the results in mg and % of C and N, % protein

## 3 AFTER THE ANALYSIS

- Multiple data comparison in graph
- Data export in .xls, .txt and .csv to PC or LIMS
- Crate, print and download reports of single or multiple analysis
- If necessary set the instrument in Stand-by mode or Sleeping mode
- Short statistical analysis in one click

## APPLICATIONS AND METHODS

**SOILS**
TOTAL N: ISO 13878
TOTAL C - TOC: ISO 10694

**SOILS IMPROVERS AND GROWING MEDIA**
TOTAL N: EN 13654-2

**SEDIMENTS**
TOTAL N - TOTAL C: EPA Method 440.0

**SLUDGE, TREATED BIOWASTE, SOIL AND WASTE**
TOC: EN 15936

**PETROLEUM PRODUCTS AND LUBRICANTS**
TOTAL N - TOTAL C: ASTM Method D5291

**SOLID MINERAL FUELS**
TOTAL N - TOTAL C: ISO 29541

**SOLID BIOFUELS**
TOTAL N - TOTAL C: ISO16948

**SLUDGE, TREATED BIOWASTE AND SOIL**
TOTAL N: EN 16168

**COAL AND COKE**
TOTAL N - TOTAL C: ASTM Method D5373

**FERTILIZERS**
TOTAL N: AOAC 993.13

**CARBON BLACK**
TOTAL C: ASTM D 7633

## OPTIONAL ACCESSORIES

| | |
|---|---|
| 1000 analyses kit | A00000194 |
| 2000 analyses kit | A00000270 |
| 4000 analyses kit | A00000271 |
| Disc 2 for Autosampler | A00000199 |
| Disc 3 for Autosampler | A00000200 |
| Disc 4 for Autosampler | A00000201 |
| Pre-packed combustion reactor | A00000158 |
| Pre-packed reduction reactor | A00000226 |
| Quartz reactor tube | A00000162 |
| Metal reactor tube | A00000321 |
| Cleaning kit for metallic ash collector | A00000353 |
| Ceramic ash collector | A00000198 |
| Metallic ash collector | A00000322 |
| Quartz ash collector | A00000161 |
| Anhydrone, 454g | A00000225 |
| Super-Absorbent Powder, 10g | A00000317 |
| Quartz wool, 50g | A00000154 |
| Vcopper High Reduction Efficiency, 470g | A00000240 |
| Copper oxide, 50g | A00000157 |
| Velpcatalyst with inert layer, 36g | A00000320 |
| EDTA Certified, 100 gr | A00000149 |
| Rice Flour, 30g | A00000235 |
| Tin Foil Cups, 150pcs | A00000153 |
| Tin Foils 50x50mm, 450 pcs | A00000260 |
| Mold for tin foils 50x50mm | A00000262 |
| Tin foil cup closing device | A00000217 |
| Kit for TOC/sample preparation | TA00000378 |
| Silver Foil 35x35mm, 100 pcs | A00000371 |
| High temperature sealing grease | A00000236 |
| IQ/OQ/PQ CN Manual | A00000370 |
| VELP Ermes 1 Year Connection | E00010012 |
| VELP Ermes 3 Year Connection | E00010036 |

### GLP Good Laboratory Practice

| | | |
|---|---|---|
| AOAC | AACC | ASBC |
| ISO | DIN | IFFO |
| OIV | ASTM | EPA |

## INSTRUMENT - CODE

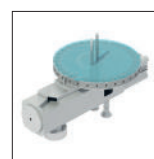| CN 802 | 230 V / 50-60 Hz | F30800090 |
|---|---|---|

## SUPPLIED WITH



**A00000193**
Start-up kit



**40001065**
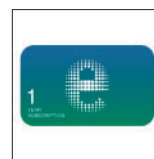Autosampler
with disc 1



**40002622**
CNSoft™
Software



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



**10003926**
RS232 Cable
for balance



**E00010012**
VELP Ermes
1 Year
Connection

The CN 802 is supplied with all necessary parts to perform up to 1000* analyses (inclusive of catalysts, copper, quartz wool, reagents and seals). In addition it contains chemicals and small consumables spares for maintenance.

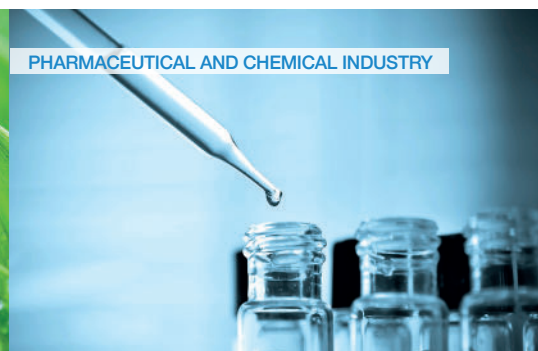Use Genuine VELP consumables and accessories to get the best performance from your CN 802

## FIELDS OF APPLICATION

The CN 802 is extremely versatile, being suitable for carbon and nitrogen determination in several kinds of sample, in accordance with official AOAC, AACC, ASBC, ISO, ASTM, EPA, DIN and OIV methods.

**AGRONOMY INDUSTRY**

**ENVIRONMENTAL INDUSTRY**

**PHARMACEUTICAL AND CHEMICAL INDUSTRY**

# TECHNICAL DATA

| | CN 802 |
|---|---|
| METHOD OF ANALYSIS | Combustion method |
| DETECTOR | N = TCD (Thermal Conductivity Detector) <br> C = NDIR (Non Dispersive Infrared Detector) |
| CARRIER GAS | Helium and Argon |
| SAMPLE WEIGHT | Up to 1 g |
| NITROGEN MEASURING RANGE | ppm - 200 mgN |
| CARBON MEASURING RANGE | ppm - 150 mgC |
| ANALISIS TIME | 3-5 min |
| AUTOSAMPLER CAPACITY | Up to 4 discs, 30 positions each |
| AUTOSAMPLER TYPE | Pneumatic |
| REPRODUCIBILITY (RSD) | < 0.5% for EDTA standards approx. 100 mg |
| RECOVERY | > 99.5% |
| NITROGEN DETECTION LIMIT | 0.001 mgN (He); 0.01 mgN (Ar); |
| CARBON DETECTION LIMIT | 0.01 mgC |
| COMBUSTION TEMPERATURE | 1030 °C / 1886 °F |
| HELIUM (He) / ARGON (Ar) | Purity 99.999% (grade 5.0) |
| OXYGEN (O$_2$) | Purity 99.999% (grade 5.0) |
| CARRIER GAS PRESSURE | 2 bar |
| OXYGEN (O$_2$) PRESSURE | 2 bar |
| CONNECTIVITY | Cloud via LAN or Wi-Fi |
| INTERFACES | USB, RS232, VELP Ermes Cloud Platform |
| POWER | 1400 W |
| POWER SUPPLY | 230 V / 50 - 60 Hz |
| WEIGHT | 54 kg <br> 119 lb |
| DIMENSIONS (WxHxD) <br> (including autosampler) | 655 x 690 x 410 mm <br> 25.8 x 27.2 x 16.1 in |

# SERVICE & SUPPORT

VELP Scientifica products are designed by our engineers to resist years of laboratory use.

Our products are manufactured with premium materials to guarantee the best performance with maximum safety.

According to our experience, a proper and regular maintenance is necessary to ensure the highest performance of analytical instrument. VELP Service Department and VELP Official Partners are always ready to offer you maintenance and service support tailored to your needs.

## GET THE SUPPORT YOU NEED CHOOSING THE OPTIONS:

- Installation
- Preventive Maintenance
- Help-desk and Remote support
- Technical Assistance
- Analytical Support
- Calibration Certification

CE

VELP Official Partner

## DESIGNED AND MANUFACTURED IN ITALY

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