



# FIWE ADVANCE

## Automatic Fiber Analyzer

Crude and Detergent Fiber Determination  
according to Official Methods



# FIWE Advance Fiber Analyzer

The FIWE Advance is a fully automatic analyzer for Crude and Detergent Fiber determination according to standard methods. State-of-the-art technology ensures safety, premium remote connectivity and a unique user experience. FIWE Advance Load&Go operation, requires a minimum operator time of only 2 minutes, to improve lab productivity.

## COMPLIANCE AND CONSISTENCY

- The FIWE Advance crucible method is adherent to official standards (ISO and AOAC) ensuring reliability and efficiency.
- Crude Fiber determination and Detergent Fiber determination of NDF, ADF and ADL.
- Fiber residues stay in crucibles during all steps of the analysis eliminating the risk of errors and ensuring consistent results.

## LOAD THE SAMPLES AND GO

- The FIWE Advance heats and doses the required reagents precisely to analyze up to 6 samples.
- The VELP Dispensing Nozzle drives the reagents precisely into each column avoiding user contact with hot chemicals and fumes.
- FIWE Advance automates digestion, filtration and washing steps without any operator intervention.

## SAVING TIME AND MONEY

- The operator time required is as little as 2 minutes.
- FIWE Advance treats each sample individually and takes care of each step of the analysis allowing for overnight work.
- The FIWE Advance automatic processes free up valuable time enhancing lab productivity and saving money.

## COMPLETE SAFETY

- All the reagents required are contained in dedicated glass tanks and bottles located inside the instrument.
- The FIWE Advance pre-heats, dispenses, and collects hot chemicals automatically so the risk of contact with the operator is eliminated.

## SMART AND EASY TO USE

- The 7" color touch screen offers simple and intuitive user interface designed to simplify operations.
- Choose from preset methods or customize your own, mark as your favorites for quick access.
- Optional balance connection and barcode scanner are available to simplify analysis preparation.



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

## THE MAIN FIBER DETERMINATION OFFICIAL METHODS

### CRUDE FIBER (Weende Method)

The crude fiber is a method of analysis based on the estimation of the amount of fiber or plant cell walls. Crude fiber is also known as Weende method and is widely spread for the determination of fiber content for monogastrics.





### DETERGENT FIBER (Van Soest Method)

Van Soest method is based on the concept that plant cell can be divided into less digestible cell walls consisting of hemicellulose, cellulose and lignin. As a result is possible to fraction fiber in NDF, ADF and ADL that are used to estimate the energy intake from feed and particularly for ruminants.

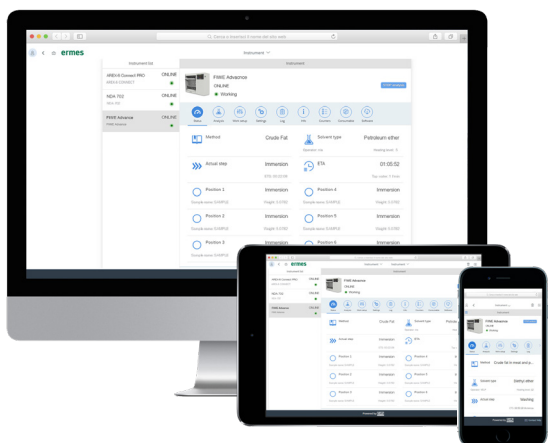
CRUDE FIBER ANALYSIS - CF	EN ISO 6865	AOAC 978.10
NEUTRAL DETERGENT FIBER - NDF, aNDF	ISO 16472	AOAC 2002.04
ACID DETERGENT FIBER and LIGNIN - ADF, ADL	EN ISO 13906	AOAC 973.18

# Load and Go!

Drastically reduce the manual and repetitive operation of Fiber analysis to save time and increase productivity in your lab. The fully automatic FIWE Advance system takes care of each step and guarantees consistency and repeatability.

FIWE ADVANCE	SEMI AUTOMATIC EXTRACTOR
 <b>OPERATOR TIME</b> in front of the instrument (Crude Fiber determination)	 <b>OPERATOR TIME</b> in front of the instrument (Crude Fiber determination)
<div> <div>1'</div> <div>●</div> <div>Crucible loading and instrument start</div> </div> <div> <div>⋮</div> </div> <div> <div></div> <div></div> <div>Preheating and reagent loading (acid + antifoam)</div> </div> <div> <div></div> <div></div> <div>Heating up until reagent boiling</div> </div> <div> <div></div> <div></div> <div>Filtration and washing (hot water)</div> </div> <div> <div></div> <div></div> <div>Preheating and reagent loading (alkali + antifoam)</div> </div> <div> <div></div> <div></div> <div>Heating up until reagent boiling</div> </div> <div> <div></div> <div></div> <div>Filtration and washing (hot water)</div> </div> <div> <div>1'</div> <div>●</div> <div>Crucible removing</div> </div>	<div> <div>1'</div> <div>●</div> <div>Crucible loading and instrument start</div> </div> <div> <div>⋮</div> </div> <div> <div>5'</div> <div>✋</div> <div>Preheating and reagent loading (acid + antifoam)</div> </div> <div> <div>⋮</div> </div> <div> <div>10'</div> <div>✋</div> <div>Heating up until reagent boiling</div> </div> <div> <div>⋮</div> </div> <div> <div>10'</div> <div>✋</div> <div>Filtration and washing (hot water)</div> </div> <div> <div>⋮</div> </div> <div> <div>5'</div> <div>✋</div> <div>Preheating and reagent loading (alkali + antifoam)</div> </div> <div> <div>⋮</div> </div> <div> <div>10'</div> <div>✋</div> <div>Heating up until reagent boiling</div> </div> <div> <div>⋮</div> </div> <div> <div>15'</div> <div>✋</div> <div>Filtration and washing (hot water)</div> </div> <div> <div>⋮</div> </div> <div> <div>1'</div> <div>●</div> <div>Crucible removing</div> </div>
TIME OF ANALYSIS: 120 MIN	TIME OF ANALYSIS: 120 MIN
 <b>TOTAL OPERATOR TIME: 2 MIN</b>	 <b>TOTAL OPERATOR TIME: 57 MIN</b>

## VELP ERMES CONNECTION



Connect the FIWE Advance 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.

- Enhanced analytical and service support resulting in the highest system uptime
- Real time monitoring 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
- Regular software updates will guarantee the best performance and new features with just one-click

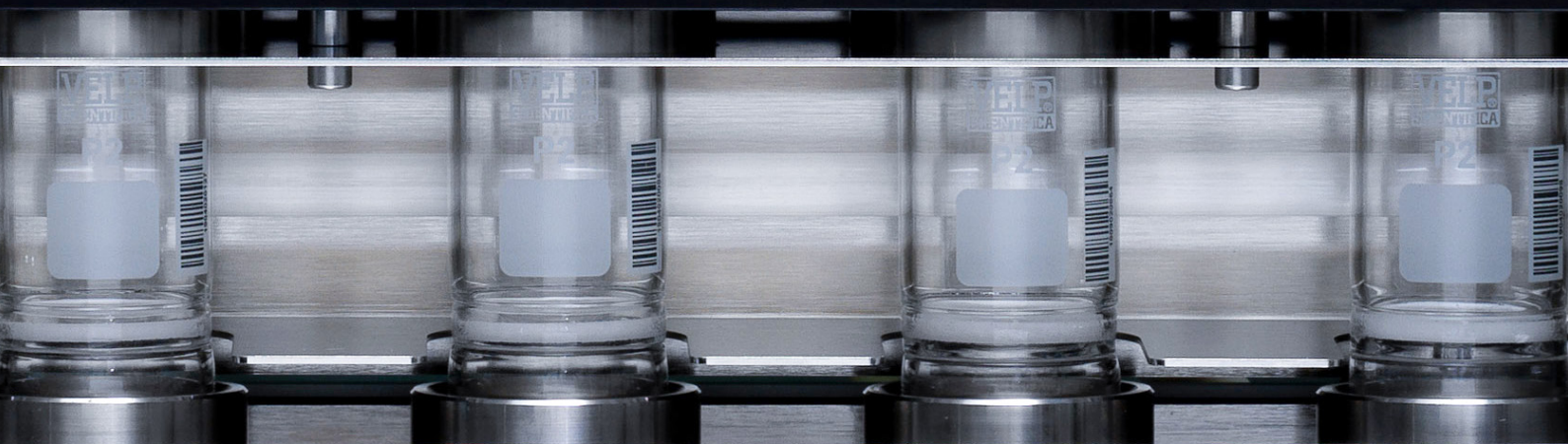
**ermes enabled**





**EASY TO USE,  
INTUITIVE & SMART**

**FULLY AUTOMATIC AND  
COMPLIANT TO OFFICIAL METHODS**



**STATE-OF-THE-ART  
SAFETY**



## OPTIONAL ACCESSORIES

Glass crucible P0 6pcs/box	A00000138
Glass crucible P1 6pcs/box	A00000139
Glass crucible P2 6pcs/box	A00000140
Glass crucible P3 6pcs/box	A00000137
Adapter USB-RS232	A00000195
Barcode scanner with USB socket	A00000364
Wireless barcode scanner	A00000365
H <sub>2</sub> O residues tank with caps	A00000266
Oat meal, 30g	A00000318
IQ/OQ FIWE Advance Manual	A00000386
VELP Ermes 1 Year Connection	E00010012
VELP Ermes 3 Years Connection	E00010036

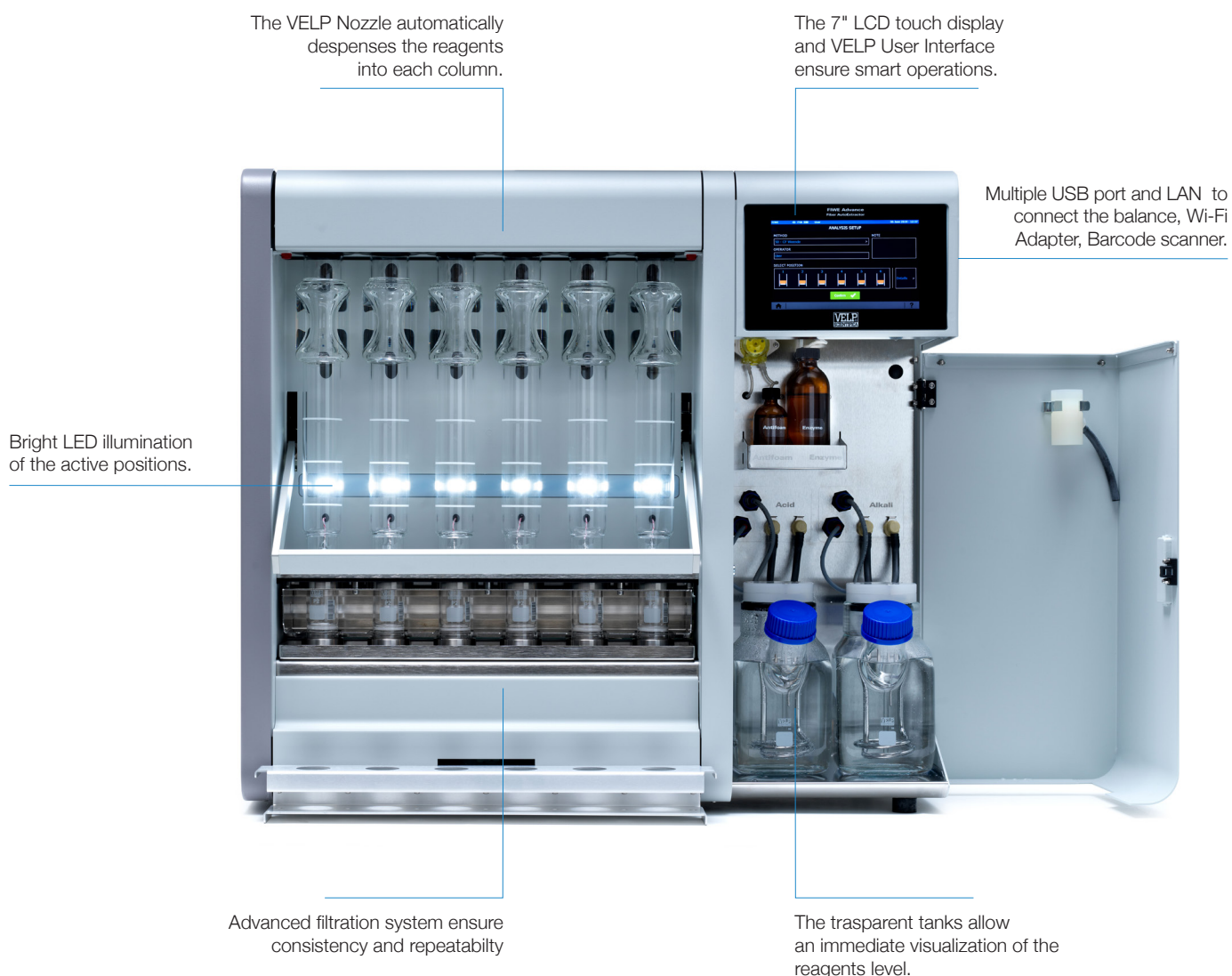
## INSTRUMENT - CODE

<b>FIWE Advance</b>	230 V / 50-60 Hz	<b>F30500500</b>
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## SUPPLIED WITH

VELP Ermes 1 Year Connection	E00010012
Glass crucibles P2 6 pcs/box	A00000140
Calibration pump device	A00000384
Cooling tap water inlet tube	10000280
PVC tube Ø 7x10 mm	10001086
EPDM tube Ø 6.4x11.2 mm	10002412
Inlet tube for distilled H <sub>2</sub> O	40000153
Outlet tube for residues	40000387
Pincer for crucibles	10000247
Holder for crucibles	40002662
Heat shield	40002545
Handling device for crucibles	40002596
USB Wi-Fi Adapter	A00000392

## Premium technology



# TECHNICAL DATA

	FIWE ADVANCE
POSITIONS / NUMBER OF SAMPLES	Up to 6 samples simultaneously
CAPACITY PER DAY	Up to 36 (Crude Fiber / Weende Method) Up to 60 (Other Methods)
SAMPLES PROCESSING	Individually processed
SAMPLE QUANTITY	From 0,5 to 3 g
DISPLAY	7" LCD color touch screen
MEASURING RANGE	0.1-100%
REPEATABILITY	± 1% relative at 5%-30% fiber level
BARCODE READER CONNECTION	Yes
LIGHTING	LED showing active positions
HEATING AND DISPENSING OF REAGENTS	Automatic
REAGENT PRE-HEATING TIME	5 - 7 min
TIME FROM PRE-HEATED TEMPERATURE TO BOILING	5 - 10 min
CONNECTIVITY	Cloud via USB Wi-Fi adapter and LAN
INTERFACES	3 x USB, Ethernet (PC)
RESULT CALCULATION	Automatic, On-board archive for data storage
PROTOCOL LIBRARY	5 standard methods + 30 customizable methods
WATER CONSUMPTION	From 1.0 l/min
DIMENSION (WXDXH)	735 x 420 x 666 mm 28,9 x 16,5 x 26,2 in
WEIGHT	57 Kg 125 lb
POWER SUPPLY	230 V – 50/60 Hz
POWER CONSUMPTION	2100 W



## 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



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We do not assume liability for errors in printing, typing or transmission

VELP Official Partner

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# SER 158

## Automatic Solvent Extractor

Safe Solid-Liquid Extractor for a Variety  
of Applications



# SER 158 Solvent AutoExtractor

Solvent extraction with the SER 158 can be performed for extractable matter determination on a wide range of sample matrices either in food and non-food industries (such as pulp, paper, textile, chemical etc...) and for sample preparation. The solid-liquid extraction process removes the soluble components from solids using a liquid solvent. The SER 158 works in accordance to international standards such as AOAC, ISO, EPA, APHA, UNI.

## FAST EXTRACTION

The automatic extraction process completes fully unattended analysis according to the Randall method that is five times faster than traditional Soxhlet.  
The high-speed heating plates in glass-ceramic ensure fast solvent boiling.

## MINIMUM SOLVENT CONSUMPTION

The patent pending titanium condensers guarantee the unparalleled solvent recovery of more than 90% that is collected in cooled recovery tank.

## HIGH PRODUCTIVITY & VERSATILITY

The powerful ControlPad is able to control up to 4 SER 158 units (3 or 6 positions) independently allowing to increase the number of units according to throughput requirement.

## MAXIMUM SAFETY

- SolventXpress™ ensures zero exposure to solvents
- SafeEnd™ prevents the overheating and burning of soluble matter
- Remote analysis interruption and immediate notifications through VELD Ermes

## EASE OF USE

- The SER 158 Series makes hot solvent extraction easy and fast:
- Preset library of methods and possibility to add new ones and mark preferred methods
  - Multilingual support
  - Balance connection for automatic result calculation
  - Barcode reader to reduce risk of errors

## SMART INSTRUMENT

The SER 158 is designed to work unattended 24/7 with Load&Go technologies, minimizing necessary operator intervention.  
Thanks to VELD Ermes connection is possible to monitor the analysis and be notified, anytime, anywhere.



## CONFIGURATIONS



SER 158/3



SER 158/6



SER 158/3  
no ControlPad

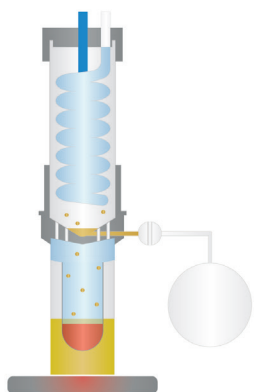


SER 158/6  
no ControlPad



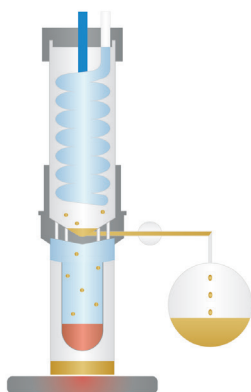
# Fully Automatic Extraction Process

The analysis consists of up to 5 steps to ensure a complete sample extraction



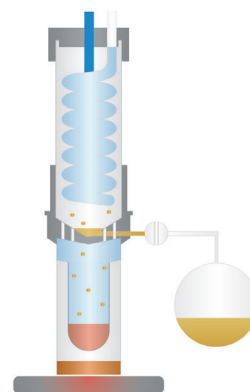
## 1 IMMERSION

The sample is immersed in boiling solvent for an effective defatting action.



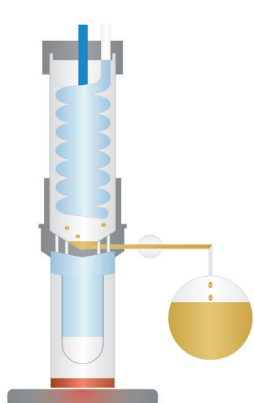
## 2 REMOVING

The level of solvent is automatically lowered below the extraction thimble. Part of the solvent is collected in the recovery tank, the rest continues to flow through the sample.



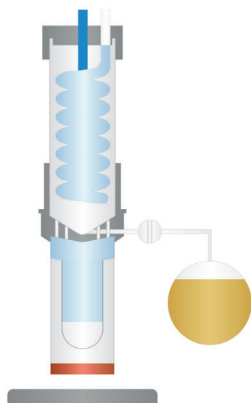
## 3 WASHING

The condensed solvent flows over the sample and through the thimble to complete the extraction process.



## 4 RECOVERY

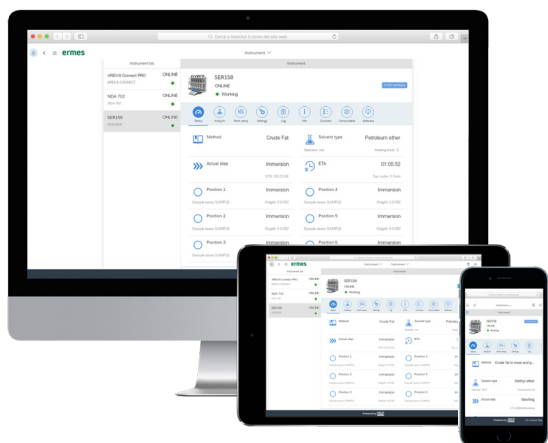
More than 90% of the solvent is recovered in the internal recovery tank.



## 5 COOLING

The heaters are switched-off and the cups containing the extracts are automatically lifted to prevent burning of the extracted matter.

## VELP ERMES CONNECTION



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- Enhanced analytical and service support resulting in the highest system uptime
- 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
- Regular software updates will guarantee the best performance and new features with just one-click

**ermes enabled**



**MAXIMUM PRODUCTIVITY  
AND VERSATILITY**



## TIME, ENERGY, MONEY, SPACE SAVING

- TIME SAVING:** Fast solvent addition, easy analysis set-up, one-click start function.
- ENERGY SAVING:** Heaters are independent, limited water consumption.
- MONEY SAVING:** More than 90% solvent recovery and reduced extraction time.
- SPACE SAVING:** Extremely compact footprint saves bench space.

**MONITOR AND  
CONTROL  
ANYTIME,  
ANYWHERE**





## OPTIONAL ACCESSORIES

White vaflon seal SER158 3pcs/box	A00000288
Green viton seal SER158 3pcs/box	A00000297
Grey butyl seal SER158 3pcs/box	A00000298
Extraction cup Ø 48x120mm 3pcs/box	A00000303
Extraction cup Ø 65x120mm 3pcs/box	A00000302
Extraction cup Ø 56x120mm 3pcs/box	A00000290
Extraction cup STD aluminium 3pcs/box	A00000361
Extraction thimble holder Ø 25mm	A00000291
Extraction thimble holder Ø 33 mm	A00000312
Extraction thimble holder Ø 40mm	A00000292
Cellulose thimbles 25x80mm, 25pcs/box	A00000294
Cellulose thimbles 33x80mm, 25pcs/box	A00000295
Cellulose thimbles 40x80mm, 25pcs/box	A00000296
Glass fiber thimbles 25x80mm, 25pcs/box	A00000314
Glass fiber thimbles 33x80mm, 25pcs/box	A00000313
Glass fiber thimbles 40x80mm, 25pcs/box	A00000393
Thimble weighing cup	A00000310
Thimbles stand 6 places	A00000311
Handling device extraction cups SER158/6	A00000304
Crucible holder HU 6 for SER158	A00000293
Complete Glass bottle solvent collection	A00000301
Inlet Connection 1/4NPT-tube Ø 4,3÷4,5mm	A00000299
Inlet Connection 1/4NPT-tube Ø4,8÷5mm	A00000300
Barcode scanner with USB socket	A00000364
Wireless barcode scanner	A00000365
Slave connection cable	A00000287
Adapter USB-RS232	A00000195
Extension lead 2m for ControlPad	A00000315
IQ/OQ SER158	A00000306
Boiling stones, 30g	A00000305
Oat meal, 30g	A00000318
VELP Ermes 1 Year Connection	E00010012
VELP Ermes 3 Year Connection	E00010036

## GLP Good Laboratory Practice

AOAC	ISO	EPA
APHA	UNI	

## INSTRUMENT - CODE

SER 158/3	115-230 V / 50-60 Hz	S303A0390
SER 158/6	115-230 V / 50-60 Hz	S303A0380
SER 158/3 no ControlPad	115-230 V / 50-60 Hz	F303A0390
SER 158/6 no ControlPad	115-230 V / 50-60 Hz	F303A0380

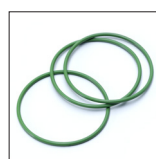
## SUPPLIED WITH



**A00000286\***  
ControlPad



**A00000298**  
Grey butyl  
seal SER158  
3pcs/box



**A00000297**  
Green viton  
seal SER158  
3pcs/box



**A00000290**  
Extraction cup  
Ø 56x120mm  
3pcs/box



**A00000312**  
Extraction  
thimbles holder  
Ø 33mm



**A00000305**  
Boiling stones,  
30g



**A00000295**  
Cellulose thimbles  
33x80mm,  
25pcs/box



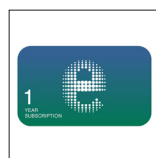
**10000280**  
Inlet water  
tube



**10002866**  
Teflon tube  
Ø 4x6mm



**10006054**  
Connection 1/8  
NPT - tube 6x4



**E00010012**  
VELP Ermes  
1 Year Connection

\* Included only in codes S303A0390 and S303A0380

The SER 158 can be supplied with or without ControlPad.  
All configurations already include a set of accessories that can be used  
for the most common industries and applications. Optional accessories  
are available on request.

## FIELDS OF APPLICATION

The SER 158 Series is ideal for the determination of crude and total fat content and for sample preparation aimed at the extraction of pollutants and contaminants according to the Randall technique.

FOOD, FEED AND BEVERAGE INDUSTRY

ENVIRONMENTAL INDUSTRY

PHARMACEUTICAL AND CHEMICAL INDUSTRY

# TECHNICAL DATA

	SER 158/3	SER 158/6
POSITIONS	3 positions	6 positions
MAXIMUM CAPACITY	21 samples/day/unit	42 samples/day/unit
SCALABILITY	12 positions (up to 4 units)	24 positions (up to 4 units)
SOLVENT VOLUME	up to 200 ml	up to 200 ml
DISPLAY	7" color touch screen - extractable ControlPad	7" color touch screen - extractable ControlPad
SOLVENTS ACCEPTED	Capable of being used with the majority of solvents	Capable of being used with the majority of solvents
SOLVENT RECOVERY	> 90%	> 90%
MEASURING RANGE	0.1 - 100%	0.1 - 100%
RSD	≤ 1%	≤ 1%
ACCURACY	According to officially approved methods	According to officially approved methods
AUTOMATION	Immersion, Removing, Washing, Recovery, Cooling	Immersion, Removing, Washing, Recovery, Cooling
LIGHTING	LED showing active positions	LED showing active positions
HEATING ELEMENT	Glass ceramic - positions independent switch on/off	Glass ceramic - positions independent switch on/off
TEMPERATURE RANGE	Room temperature - 300 °C	Room temperature - 300 °C
SAMPLE SIZE	0.5 to 15 g (generally 2-3 g in 33x80 mm thimbles)	0.5 to 15 g (generally 2-3 g in 33x80 mm thimbles)
SEALS	Viton, Butyl, and Vafion	Viton, Butyl, and Vafion
CONDENSERS	Titanium (VELP Patent Pending)	Titanium (VELP Patent Pending)
CONNECTIVITY	Cloud via LAN	Cloud via LAN
INTERFACES	3 x USB (balance, mouse, USB stick), Ethernet (Pc)	3 x USB (balance, mouse, USB stick), Ethernet (Pc),
BARCODE READER CONNECTION	Yes	Yes
RESULT CALCULATION	Automatic, archived on the ControlPad	Automatic, archived on the ControlPad
WATER CONSUMPTION	From 1.0 l/min	From 1.0 l/min
DIMENSIONS (WxHxD)	358x546x450 mm 14x21,5x17,7 in	546x546x450 mm 21,5x21,5x17,7 in
DIMENSIONS WITH CONTROLPAD	358x546x570 mm 14x21,5x22,4 in	546x546x570 mm 21,5x21,5x22,4 in
WEIGHT (SER 158/CONTROLPAD)	Kg 29 / 1 64 / 2,2 lb	Kg 36 / 1 80,3 / 2,2 lb
POWER SUPPLY	115/230 V - 50/60 Hz	115/230 V - 50/60 Hz
POWER CONSUMPTION	630/850 W	630/850 W



## 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.

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VELP Official Partner

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# CN 802

## CN 802 Carbon / Nitrogen Analyzer

Highly Sensitive Combustion Analyzer for a wide range of applications from micro to macro sample weights.



# CN 802 Carbon / Nitrogen Analyzer

Fast, versatile, and highly sensitive elemental analyzer for simultaneous Carbon (Total and TOC) and Nitrogen determination ranging from micro to macro sample weights. The CN 802 offers high performance on both solid and liquid samples, working in accordance with 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 ensure fast operation set up with possibility of leak test per zone.

## FLEXIBLE

Fully automatic determination of TC, TOC, TIC, TN and Carbon/Nitrogen Ratio on both solid and liquid samples. Using dedicated accessories, it is possible to analyze liquid samples with high sensitivity and accuracy.

## PRECISE

The HighSensIR Detector (Non-dispersive Infrared detector) and the 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 provide reduced cost-per-analysis. The 30-position disc autosampler expandable with an 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 cloud connection will deliver a new user experience and smart workflows.



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

### CARBON DETECTOR

#### HighSensIR - NON-DISPERSIVE INFRARED DETECTOR

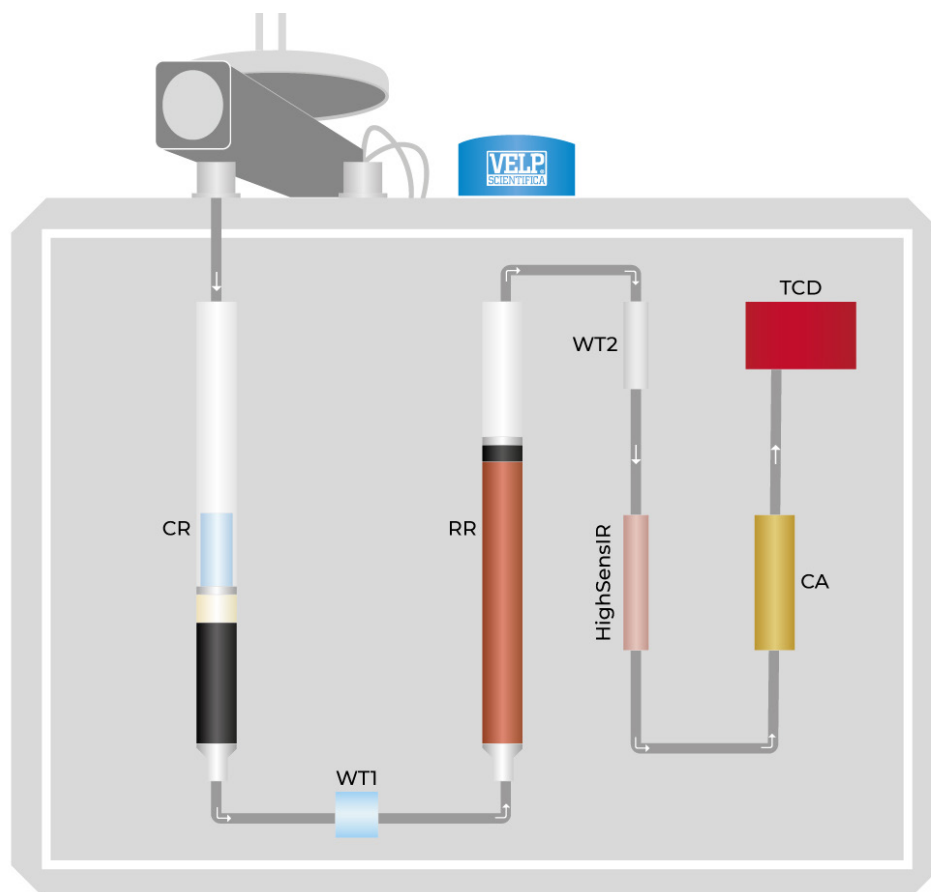
- Selective detector reading only Carbon content
- Maintenance free
- High Accuracy and Precision
- Measuring Range: ppm up to 150 mg abs. (or 100 %)

### NITROGEN DETECTOR

#### TCD – THERMAL CONDUCTIVITY DETECTOR

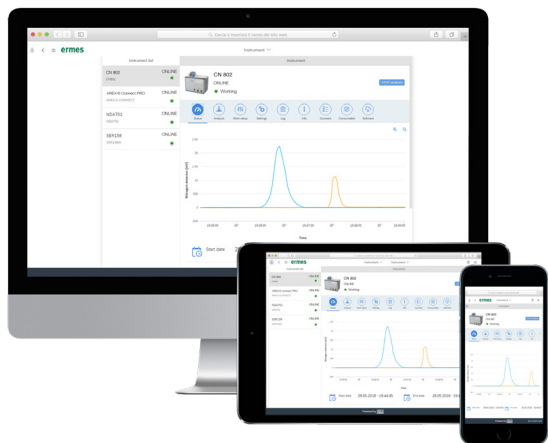
- Low gas consumption
- No reference gas required
- Long life span
- Measuring Range: ppm up to 200 mg abs. (or 100 %)

# CN 802 Analysis Process



- **CR** (Combustion Reactor) Allows complete combustion at 1100 °C to convert all the sample into its elemental substances.
- **WT1** (Physical Water Trap) The maintenance-free DriStep™ cooler permits 99% of water to be removed.
- **RR** (Reduction Reactor) Enables the elimination of unwanted compounds and oxygen, transforming NOx into N<sub>2</sub>.
- **WT2** (Chemical Water Trap) Eliminates the residual water.
- **HighSensIR** (Non-Dispersive Infrared Detector) Accurately measures the CO<sub>2</sub> concentration that the instrument is able to convert in carbon quantity.
- **CA** (CO<sub>2</sub> Adsorbers) Used to trap all the CO<sub>2</sub>. Auto-regenerating, maintenance-free system.
- **TCD** (Innovative TCD) LoGas™ determines nitrogen content without the need for a reference gas. Maintenance-free.

## VELP ERMES CONNECTION



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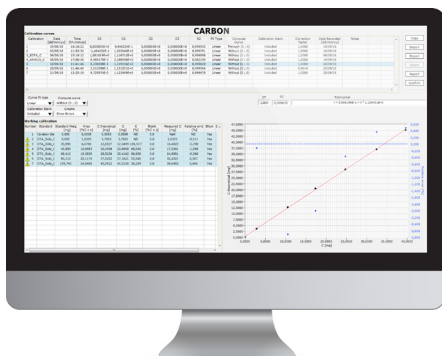
- Real time monitor and control of the instrument from PC, smartphone and tablet whenever you want, wherever you are
- Immediate alert and notification with the possibility to stop the instrument for maximum safety
- Enhanced service and application support.
- Regular software updates will guarantee 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.

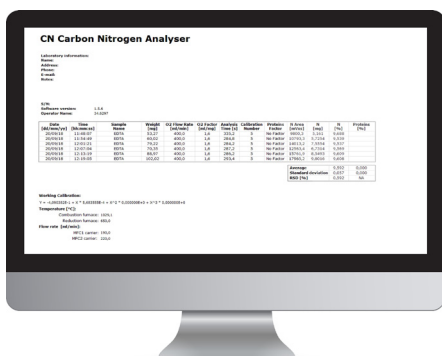


## 1 BEFORE THE ANALYSIS

- 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
- Create, print and download reports of single or multiple analysis
- If necessary, set necessary set the instrument in Stand-by mode or Sleeping mode
- Short statistical analysis in one click

The CN 802 Elemental Analyzer is fully compliant with FDA's Code of Federal Regulations Title 21 Part 11 that defines the requirements for using electronic records and electronic signatures on computerized systems.

- Track and record of settings and any changes to settings with the system log function running permanently, serving as an audit trail
- Track who performs any operation as analysis results are automatically signed with the user information. Each user has a unique identification and electronic signature
- Ensure the quality and incorruptibility of recorded data with backup procedures. Exported files are protected from unwanted or improper alteration
- Ensure the right delegation of responsibilities at the right level with the user management system with three access levels

## 21 CFR Part 11 Compliance



## 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
Disc 1 for capsules for Autosampler	A00000390
Disc 2 for capsules for Autosampler	A00000420
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
Tin capsules 6x18mm, 100 pcs	A00000482
Tin capsules 8x22mm, 100 pcs	A00000483
Manual dosing liquids samples kit	A00000486
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

## INSTRUMENT - CODE

CN 802

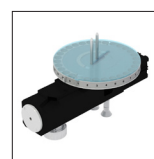
230 V / 50-60 Hz

F30800090

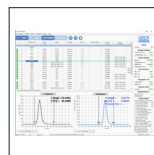
## SUPPLIED WITH



**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



## GLP Good Laboratory Practice

AOAC	AACC	ASBC
ISO	DIN	IFFO
OIV	ASTM	EPA

## 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



### CHEMICAL INDUSTRY



# TECHNICAL DATA

	CN 802
METHOD OF ANALYSIS	Carbon/Nitrogen determination according to combustion method
ANALYSIS TIME	3/5 minutes
DETECTOR	N= TCD (Thermal Conductivity Detector) C= HighSensIR Detector (Non-Dispersive Infrared)
SAMPLE WEIGHT	Up to 1 g
AUTOSAMPLER TYPE	Electronic
AUTOSAMPLER CAPACITY	Up to 4 discs, 30 positions each (up to 117 samples)
REPRODUCIBILITY (RSD)	< 0.5% for EDTA standards approx. 100 mg
RECOVERY	> 99.5%
DETECTION RANGE	C: ppm up to 150 mg abs. (or 100 %) N: ppm up to 200 mg abs. (or 100 %)
COMBUSTION TEMPERATURE	1100 °C 2012 °F
CARRIER GAS	Helium or Argon (grade 5.0)
COMBUSTION GAS	Oxygen (grade 5.0)
CONNECTIVITY	Ermes Cloud Platform via Wi-Fi or LAN connected to a PC
21 CFR PART 11 COMPLIANCE	Yes, optional package available
INTERFACES	USB
OFFICIAL REFERENCES	ISO 10694; EN 16168; EN 15936; ISO 20236; AOAC 993.13; ISO 20620; ISO 13878; EN 13654-2, EPA Method 440.0, etc.
WEIGHT	54 kg 119 lb
DIMENSIONS (WXHxD)	655x510x410 mm (H 690 mm with autosampler) 25.8x20.1x16.1 in (H 27.0 in with autosampler)



## 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](#)



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

VELP Official Partner

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Tel. +8621 34500630  
velpchina@velp.com





# COEX

## Cold extraction Unit

Six-position extractor for sample de-fatting



# Easy to use and Convenient

Cold Extraction Unit for convenient de-fatting of samples for crude and detergent fiber analysis.

- The COEX guarantee maximum reliability
- The efficient pump aspirates and removes the fatty component that will be collected in a dedicated waste tank/bottle.
- The crucible containing the defatted sample is transferred directly to the FIWE and FIWE Advance analyzer eliminating possible errors due to sample transfer.



## INSTRUMENT - CODE

COEX	230 V / 50 Hz	F30520204
COEX	230 V / 60 Hz	F30530204
COEX	115 V / 60 Hz	F30540204

## TECHNICAL DATA

CONSTRUCTION MATERIAL	Epoxy painted stainless steel structure
TYPE OF EXTRACTIONS	Cold extractions
REAGENT DISCHARGE	Peristaltic pump
POWER	120 W
WEIGHT	19 Kg (41.8 lb)
DIMENSIONS (WXHDX)	730x300x380 mm (29.5x11x15 in)



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# CSF6

## Dietary fiber analyzers

Filtration unit for dietary fiber extraction





# Rapid and efficient filtration

CSF6 is the robust Filtration unit for the final filtration and washing phase defined in the enzymatic method for dietary fiber extraction.

- CFS6 filtration unit is able to perform single or multiple samples at the same time, up to a maximum of 6 samples at the same time
- The high efficient pump allows to speed-up the filtration step and the final washing.
- Single or multiple sample processing
- Short filtration time – under 20 minutes, even for 6 samples
- Electronic setting of counter pressure



## INSTRUMENT - CODE

CSF6	230 V / 50 Hz	F30420210
CSF6	230 V / 60 Hz	F30430210
CSF6	115 V / 60 Hz	F30440210

## TECHNICAL DATA

CONSTRUCTION MATERIAL	Epoxy painted stainless steel structure
COUNTERPRESSURE	Electronic setting
RESIDUES COLLECTING	Separate
FILTRATION	Peristaltic pump with high suction capacity
POWER	220 W
WEIGHT	28 Kg (61.6 lb)
DIMENSIONS (WXHDXD)	750x420x380 mm (28.7x16.5x15 in)



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# UDK Series

## Distillation Units

---

A complete range of distillers to meet any laboratory requirement for the determination of analytes in different fields of application



# UDK Distillation Units

The UDK Series Distillers are designed to meet the most challenging demands and requirements for diverse applications, according to international standards: Kjeldahl nitrogen TKN, proteins, ammoniacal nitrogen, nitric nitrogen (Devarda), phenols, TVBN and volatile acids, cyanides, and alcohol content. Five different UDK models are available with different automation levels to match any laboratory requirement of automation and throughput.

## UNRIVALED FLEXIBILITY

The UDK Distillers address any laboratory requirements from few samples per day to unattended operations with different level of automation for NaOH, H<sub>2</sub>O and Boric Acid addition.

The regulation of the steam power (10% -100%), dedicated accessories and premium technologies ensure a wide application range for diverse analytes in diverse industrial fields.

## UNMATCHED RESISTANCE AND RELIABILITY

The VELP UDK distillers are equipped with a full range of sensors and safety systems designed for maximum operator protection.

The patented steam generator, patented titanium condenser and the technopolymer splash head provide maximum resistance and low maintenance, reducing the cost of ownership.

## PREMIUM PRECISION AND ACCURACY

The UDK distillers guarantee reproducible results with a RSD  $\leq$  1% and are able to recover more than 99.5% of Nitrogen.

With a Limit of Detection of 0.015 mg N the UDK are the perfect solution even for challenging low nitrogen applications.

## SUPERIOR EASE OF USE

The multitasking software with its intuitive user interface guides the operator step by step throughout the analysis.

The 7" display ensures easy operations and the multiple connectivity options widen the possibilities of workflows optimizations.

## MAXIMIZED EFFICIENCY

The barcode technology streamlines routine operation for Kjeldahl analyses. The exclusive connectivity to VELP Ermes Cloud Platform (LAN cable or Wi-Fi) projects your lab from time-consuming manual operations to a data-rich environment with premium remote service support.



## VELP SOLUTIONS FOR KJELDAHL ANALYSIS

### SAMPLE



#### 1 DIGESTION

DKL SERIES / DK SERIES  
DIGESTERS

JP  
RECIRCULATING WATER VACUUM PUMP

SMS  
SCRUBBER

#### 2 DISTILLATION

UDK SERIES  
DISTILLATION UNITS

#### 3 TITRATION

UDK 149  
CONNECTIVITY TO EXTERNAL TITRATION  
SYSTEMS

UDK 159 / UDK 169  
INTEGRATED COLORIMETRIC TITRATION  
SYSTEM



NITROGEN mg (Protein %)

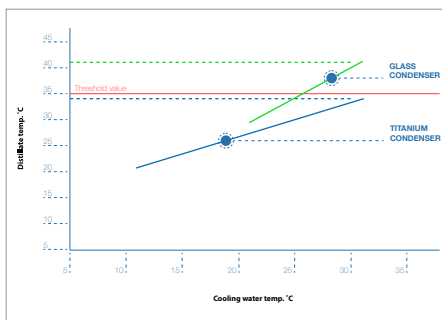


# Making a Difference



## SAFETY AND REPEATABILITY WITH THE PATENTED STEAM GENERATOR

All the UDK models have inbuilt the patented steam generator technology ensuring premium performance and maximum safety. Heating time is very fast, the system works without pressure for the maximum safety, steam output is very stable ensuring repeatability of analyses and is a maintenance-free component reducing the cost of ownership.



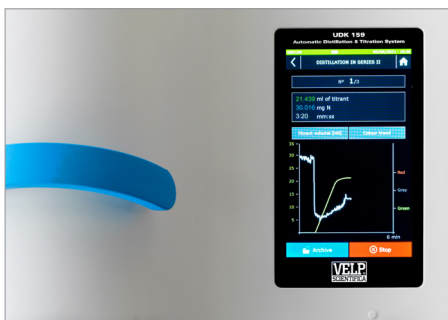
## EFFICIENT THERMAL EXCHANGE WITH THE PATENTED TITANIUM CONDENSER

VELP innovative titanium condenser is able to ensure high performance and considerable water savings (from 0.5 l/min). The graph shows the high efficiency of the titanium condenser compared to the traditional glass. The titanium condenser ensures that distillate temperature always remains below the safe threshold value (35 °C), as indicated in the Kjeldahl method.



## UNMATCHED RESISTANCE WITH THE TECHNOPOLYMER SPLASH HEAD

The VELP UDK Distillers come with the unique technopolymer splash head ensuring the highest chemical resistance for the longest durability. VELP splash head in technopolymer is able to last up to 10,000 analyses before being serviced.



## MULTI-TASKING SOFTWARE AND PREMIUM CONNECTIVITY

The VELP Distillers from UDK 139 to UDK 169 feature a 7" touch screen with an easy-to-use and intuitive software that facilitates daily operations and allows the lab to benefit from premium connectivity options for accessories and cloud-based services.



## ACHIEVE COMPLIANCE TO 21 CFR PART 11

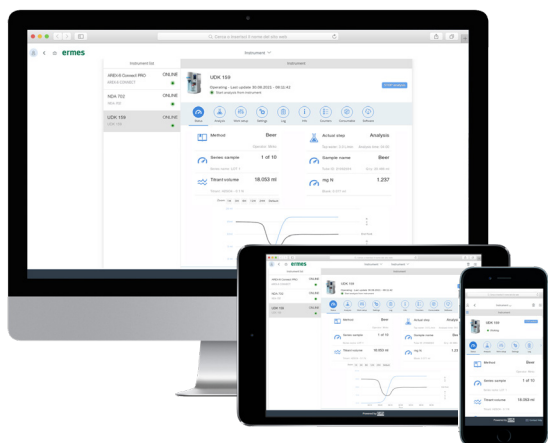
The Kjeldahl analysis is a primary method for the determination of Nitrogen in Quality Control, especially in pharmaceutical laboratories. UDK 159 and UDK 169 are fully compliant with FDA's Code of Federal Regulations Title 21 Part 11 that defines the requirements for using electronic records and electronic signatures on computerized systems.



## MAXIMUM VERSATILITY WITH A WIDE RANGE OF ACCESSORIES

Configure your distillation unit based on your analytical and laboratory requirements. The barcode technology simplifies distillation data management and results calculation.

## VELP ERMES CONNECTION



Connect the UDK Distillation Units 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.

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

**ermes enabled**

# UDK 129 Distillation Unit

The UDK 129 is the VELP entry level distiller guaranteeing an ideal solution for a wide range of laboratories looking for a reliable instrument with limited automation.

Automatic Addition of  
**NaOH**

## YOUR BENEFITS

- Accurate dosing of reagents with high precision NaOH pump
- Chemically-resistant technopolymer housing
- Intuitive interface for easy analysis settings
- Lever operation simplifies tube insertion / removal
- Unmatched flexibility with a wide accessory range



# UDK 139 Semi-Automatic Distillation Unit

The UDK 139 is a semi-automatic distiller ideal to manage low-medium throughput requirements. The exclusive interface and software and the connectivity option guarantee the best-in-class features of high-end instruments in a semi-automatic analyzer.

Automatic Addition of  
**NaOH · H<sub>2</sub>O**

## YOUR BENEFITS

- The semi-automatic process ensures efficient operations
- Selectable steam generation output level 10% – 100% for maximized analytical versatility
- Auto removal of residues from sample tube
- Clear and intuitive operations thanks to the Smart User Interface and 7" digital display
- Up to 10 customizable methods
- Multi-lingual support
- Maximum safety for the operator
- Unmatched flexibility with a wide accessory range
- Ability to connect: 2 USB (mouse, printer, pen drive; Wi-Fi adapter); Ethernet (Pc, Ermes)



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# UDK 149 Automatic Distillation Unit

The UDK 149 is VELP fully automatic distillation unit with external potentiometric titrator connection.

Automatic Addition of  
 $\text{NaOH} \cdot \text{H}_2\text{O} \cdot \text{H}_3\text{BO}_3$

## YOUR BENEFITS

- Connection to various external titrators for automated processing and efficient operations
- Premium result accuracy and precision
- Selectable steam generation output level 10% – 100% for maximized analytical versatility
- Auto removal of residues from sample tube
- Clear and intuitive operations thanks to the Smart User Interface and 7" digital display
- Up to 20 customizable methods
- Multi-lingual support
- Maximum safety for the operator
- Unmatched flexibility with a wide accessory range
- Ability to connect: 2 USB (balance, barcode scanner, mouse, printer, pen drive; Wi-Fi adapter); Ethernet (Pc, Ermes); RS232 (external titrator)



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## External Potentiometric Titrator

The UDK 149 connectivity is optimized for the most common automatic titrators to guarantee fully automated operations.

The optional TITROLINE 5000 Automatic Titrator is a very compact titrator for simple routine titrations. GLP compliant results can be documented on a connected printer or USB-memory stick.

## TITRATION FEATURES

- Automatic Titration
- Real time volume dosing of the titrant
- Automatic cleaning and washing of the titrant solution vessel
- Titrations to pH, mV - endpoint (2 EP)
- Titrations with dynamic or linear titration solution additions
- Maximum versatility





# UDK 159 Automatic Distillation & Titration System

The UDK 159 combines all the advantages of a fully automatic distillation with the added benefits of integrated colorimetric titration (AOAC approved) for a high-performance all-in-one system.

## YOUR BENEFITS

- The fully automatic process ensures efficient operations, distillation and titration performed simultaneously
- Shortest time-to-results with online titration and automatic results calculation
- Premium result accuracy and precision thanks to the integrated colorimetric titrator with high precision burette
- Selectable steam generation output level 10% – 100% for maximized analytical versatility
- Auto removal of residues from titrator & sample tube
- Clear and intuitive operations thanks to the Smart User Interface and 7" digital display
- Maximum safety for the operator
- Unmatched flexibility with a wide accessory range
- Ability to connect: 2 USB (balance, barcode scanner, mouse, printer, pen drive; Wi-Fi adapter); Ethernet (Pc, Ermes)

Automatic Addition of  
**NaOH · H<sub>2</sub>O · H<sub>3</sub>BO<sub>3</sub>**  
Titrant Solution

Integrated  
**Colorimetric Titrator**  
AOAC Recommended



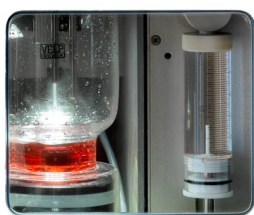
**ermes enabled**

## Colorimetric Titration (UDK 159 - 169)

The colorimetric titration is based on precise chemical reactions with indicators. VELP integrated titrator is maintenance-free and is AOAC recommended. It works by dosing an acidic titrant solution to the boric acid containing the ammonia distilled from the sample. This titration process results in a color change that is evaluated by the system.

**1** RED

Absence of ammonia



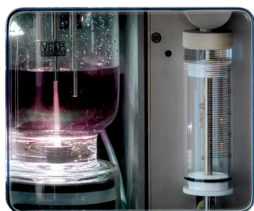
**2** GREEN

Significant amount of ammonia is flowing into the receiving solution



**3** GREY/PINK

End point of the analysis



### VRECEIVER™

VELP unique Vreceiver™ is a certified formula composed of Boric Acid powder and a mixture of indicators mentioned by AOAC methods (bromocresol green and methyl red) allowing fast and standardized receiving solution preparation for colorimetric titration.

Code **A00000411**



# UDK 169 Distillation & Titration System with Autosampler

The UDK 169 is the fully automated distiller with an integrated colorimetric titrator for premium performance and continuous operation. It offers the highest sample throughput available when connected to the AutoKjel autosampler, for the most productive system. Just load your samples and walk away: the system will carry out analysis of all samples unattended and store the results.

## YOUR BENEFITS

- The fully automatic process ensures efficient operations, distillation and titration performed simultaneously
- Shortest time-to-results with online titration and automatic results calculation
- Premium result accuracy and precision thanks to the integrated colorimetric titrator with high precision burette
- Selectable steam generation output level 10% – 100% for maximized analytical versatility
- Auto removal of residues from titrator & sample tube
- Clear and intuitive operations thanks to the Smart User Interface and 7" digital display
- Maximum safety for the operator
- Unmatched flexibility with the autosampler and a wide accessory range
- Ability to connect: 2 USB (balance, barcode scanner, mouse, printer, pen drive; Wi-Fi adapter); Ethernet (Pc, Ermes); RS232 (Autosampler)

Automatic Addition of  
**NaOH · H<sub>2</sub>O · H<sub>3</sub>BO<sub>3</sub>**  
Titrant Solution

Integrated  
**Colorimetric Titrator**  
AOAC Recommended

24-position carousel  
250 ml tubes (standard)

21-position carousel  
400 ml tubes (optional)







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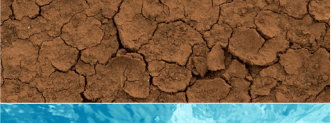

# Main Applications and Methods

UDK Series complies with many official methods for different applications such as the determination of ammoniacal nitrogen, protein determination, nitrogen content (Kjeldahl or direct alkaline distillation), nitric nitrogen (after reduction/Devarda), phenols, volatile acids, sulphur, cyanides and alcohol content. A short list of the most common samples with the corresponding references follows, but many others can be tested according to official methods (AOAC, ISO, DIN, EPA, AACC etc.).

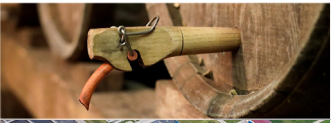


## Nitrogen / Protein on Food&Feed Samples

DESCRIPTION	METHODS (main reference, many others are complied)	
	Animal feed and pet food	AOAC 984.13, EN ISO 5983-2 (AOAC 2001:11)
	Beer (and its ingredients: barley, malt, wort)	AOAC 920.53, AOAC 950.09
	Bread and baked products	AOAC 950.36
	Milk and derived products (including cheese)	ISO-IDF 8968-1/20-1:2014, ISO 20483, ISO 8968-2, ISO 8968-3, ISO 8968-4
	Cereals and grains (wheat, oats, barley, rice, rye, soy beans, etc.)	AOAC 979.09 EN ISO 5983-2 (AOAC 2001:11)
	Malt	AOAC 950.09
	Meat and derived products (bacon, ham, sausage, liver paté, etc.)	ISO 937 (AOAC 981.10)
	Nuts and nut products (almonds, coconuts, peanuts, etc.)	AOAC 950.48
	Pasta (e.G. Macaroni, etc.)	AOAC 930.25
	Plants (vegetables, forage, straw, seeds, tea, etc.)	AOAC 978.04
	Yeast	AOAC 962.10
	Oil seeds	EN ISO 5983-2 (AOAC 2001:11)

## Nitrogen on Other Samples

DESCRIPTION	METHODS (main reference, many others are complied)	
	Coal	ISO 333:1996
	Fertilizers	AOAC 920.03
	Lubricating oils and fuel oils	ASTM D3228-96
	Paper and paperboard (gelatin, casein)	TAPPI STD T418 05-61
	Rubber, raw natural, and rubber latex	ISO 1656:1996
	Soil	"Method of soil analysis" part 2 – Chemical and microbiological properties, 2 ed.
	Urea	ISO 1592:1977
	Water	AOAC 973.48

## Other Applications

DESCRIPTION	METHODS (main reference, many others are complied)	
	Alcohol determination	Reg. (CEE) 2870/2000, EBC 9.2.1
	Cyanides in waste water	EPA 9010C
	Nitric nitrogen on water after reduction (devarda method)	ISO 10048:1991
	Phenols in water, saline water, domestic and industrial wastes	EPA 9065; APAT CNR IRSA 5070
	Total volatile basic nitrogen (tvbn) in fresh/frozen fish	Conway & Byrne Method (1933)
	Urea and ammoniacal nitrogen in animal feed	AOAC 941.04
	Volatile acidity of tomato paste	Reg. (CEE) 1764/86
	Volatile acidity of wines	Reg. (CEE) 266/90
	Sulphur	AOAC 962.16, AOAC 990.28

## TEMS



UDK Series Kjeldahl distillation units work with the innovative **TEMS™ benefits**, for unmatched savings.

**Time Saving:** Rapid heating reduces wasted time

**Energy Saving:** Limited energy consumption thus cutting CO<sub>2</sub> emissions

**Money Saving:** Cost reduction for each analysis

**Space Saving:** The narrow footprint saves valuable laboratory bench space



## OPTIONAL ACCESSORIES

Vreceiver TKN formula for 1L, 10 pcs/pack	<b>A00000411</b>
Tube connection Ø26, Ø48	<b>A00000043</b>
Spacer for test tube Ø 48x260 mm	<b>A00000206</b>
Guide for test tube Ø 50 AUTOKJEL	<b>A00000255</b>
Carousel for 21x400 ml tubes AUTOKJEL	<b>A00000459</b>
H3BO3 tank with caps (UDK149,159,169)	<b>A00000264</b>
NaOH tank with caps (UDK1X9)	<b>A00000265</b>
H2O tank for UDK or H2O and residue tank for FIWE Advance	<b>A00000266</b>
Residues tank with caps	<b>A00000267</b>
Barcode scanner with USB socket	<b>A00000364</b>
Wireless barcode scanner	<b>A00000365</b>
USB Wi-Fi adapter	<b>A00000392</b>
Waterproof mouse	<b>A00000215</b>
Printer	<b>A00001009</b>
Adapter USB-RS232	<b>A00000195</b>
Kit SI Analytics TL5000/7000/7750/7800	<b>A00000211</b>
Kit conness. Mettler T5-T7-T9-G10S-G20S	<b>A00000214</b>
Glass splash head kit UDK	<b>A00000216</b>
Glass splash head kit UDK129	<b>A00000238</b>
Acid pump kit UDK1X9 230V	<b>A00000422</b>
Acid pump kit UDK129 115V	<b>A00000423</b>
IQ/OQ UDK129 Manual	<b>A00000424</b>
IQ/OQ UDK139 Manual	<b>A00000425</b>
IQ/OQ/PQ UDK149 Manual	<b>A00000426</b>
IQ/OQ/PQ UDK159 Manual	<b>A00000427</b>
IQ/OQ/PQ UDK169 Manual	<b>A00000428</b>
IQ/OQ AUTOKJEL Manual	<b>A00000256</b>
TITROLINE 5000 Automatic titrator UDK 149	<b>R30800194</b>
21 CFR part 11 package for UDK 169-159	<b>A00000429</b>
VELP Ermes 1 year Connection	<b>E00010012</b>
VELP Ermes 3 years Connection	<b>E00010036</b>

Visit VELP website to discover our preventive maintenance kits. VELP Kit is designed to keep your running with high performances while ensuring long life and reliability, even under high workloads.

## INSTRUMENT - CODE

<b>UDK 129</b>	230 V / 50-60 Hz	<b>F30200125</b>
<b>UDK 129</b>	115 V / 60 Hz	<b>F30210125</b>
<b>UDK 139</b>	230 V / 50-60 Hz	<b>F30200135</b>
<b>UDK 149</b>	230 V / 50-60 Hz	<b>F30200145</b>
<b>UDK 159</b>	230 V / 50-60 Hz	<b>F30200155</b>
<b>UDK 169</b>	230 V / 50-60 Hz	<b>F30200165</b>
<b>AutoKjel</b>	230 V / 50-60 Hz	<b>F30200430</b>
<b>UDK 169 &amp; AutoKjel</b>	230 V / 50-60 Hz	<b>S30200165</b>

## SUPPLIED WITH



**A00001080**  
Test tube  
Ø 42x300 mm



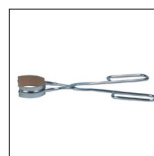
**A00000392**  
USB Wi-Fi  
adapter



**E00010012**  
VELP Ermes  
1 Year  
Connection



**10001106**  
Collecting  
flask 250 ml

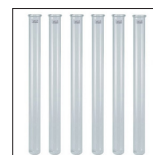


**10000247**  
Princer for  
test tubes

## TEST TUBES AND KITS



**A00000144**  
Test tube 250 ml  
Ø 42x300 mm



**A00000146**  
Test tube 100 ml  
Ø 26x300 mm



**A00001088**  
Test tube 300 ml  
Ø 48x260 mm



**A00000185**  
Test tube 400 ml  
Ø 50x300 mm



**A00001083**  
Test tube 1000ml  
Ø 80x300 mm



**A00000082**  
Kjeldahl balloon  
500 ml



**A00000285**  
Alcoholic  
strength kit

## FIELDS OF APPLICATION

FOOD, FEED AND BEVERAGE INDUSTRY

ENVIRONMENTAL INDUSTRY

PHARMACEUTICAL AND CHEMICAL INDUSTRY



# TECHNICAL DATA

	UDK 129	UDK 139	UDK 149	UDK 159	UDK 169
ANALYSIS TIME	5 min for 100 ml of distillate	4 min for 100 ml of distillate	3 min for 100 ml of distillate	From 4 min (titration included)	From 4 min (titration included)
MEASURING RANGE	0.04 - 220 mg N	0.04 - 220 mg N	0.04 - 220 mg N	0.04 - 220 mg N	0.04 - 220 mg N
REPRODUCIBILITY (RSD)	≤ 1%	≤ 1%	≤ 1%	≤ 1%	≤ 1%
RECOVERY	≥ 99.5 %	≥ 99.5 %	≥ 99.5 %	≥ 99.5 %	≥ 99.5 %
DETECTION LIMIT (LOD)	> 0.015 mg N	> 0.015 mg N	> 0.015 mg N	> 0.015 mg N	> 0.015 mg N
SODIUM HYDROXIDE ADDITION	Automatic	Automatic	Automatic	Automatic	Automatic
WATER ADDITION	-	Automatic	Automatic	Automatic	Automatic
BORIC ACID ADDITION	-	-	Automatic	Automatic	Automatic
DISTILLATION RESIDUES REMOVAL	-	Automatic	Automatic	Automatic	Automatic
TITRATION RESIDUES REMOVAL	-	-	Automatic	Automatic	Automatic
TITRATION VESSEL CLEANING	-	-	Automatic	Automatic	Automatic
SELECTABLE DISTILLATION TIME	Yes	Yes	Yes	Not necessary	Not necessary
STEAM FLOW REGULATION	-	10 - 100 %	10 - 100 %	10 - 100 %	10 - 100 %
DELAY TIME (DEVARDA ALLOY ANALYSIS)	00 sec - 99 min 59 sec	00 sec - 99 min 59 sec	00 sec - 99 min 59 sec	00 sec - 99 min 59 sec	00 sec - 99 min 59 sec
WATER CONSUMPTION	From 0,5 L / min to 15 °C From 1 L / min to 30 °C	From 0,5 L / min to 15 °C From 1 L / min to 30 °C	From 0,5 L / min to 15 °C From 1 L / min to 30 °C	From 0,5 L / min to 15 °C From 1 L / min to 30 °C	From 0,5 L / min to 15 °C From 1 L / min to 30 °C
DISPLAY	LCD display	7" color touch screen	7" color touch screen	7" color touch screen	7" color touch screen
DISTILLATION IN SERIES	-	-	Yes	Yes	Yes
USER MANAGEMENT	-	Yes	Yes	Yes	Yes
BARCODE TECHNOLOGY	-	-	Yes	Yes	Yes
LANGUAGE SELECTION	-	Yes	Yes	Yes	Yes
PROGRAMS	1 customizable	10 customizable	20 customizable	32 standard + 24 customizable	32 standard + 24 customizable
ARCHIVE (ON-BOARD DATA STORAGE)	-	-	Yes	Yes	Yes
21 CFR PART 11 COMPLIANCE	-	-	-	Yes, accessory	Yes, accessory
CONNECTIVITY	-	2 x USB; Ethernet	2 x USB; Ethernet; RS232 (external titrator)	2 x USB; Ethernet	2 x USB; Ethernet; RS232 (Autosampler)
POWER INPUT	1700 W at 115 V 2200 W at 230 V	2200 W	2200 W	2200 W	2300 W
DIMENSIONS (WxHxD)	385x780x416 mm 15.2x30.7x16.4 in	385x780x416 mm 15.2x30.7x16.4 in	385x780x416 mm 15.2x30.7x16.4 in	385x780x416 mm 15.2x30.7x16.4 in	385x780x416 mm 15.2x30.7x16.4 in
WEIGHT	25 kg; 55 lb	26 kg; 57.3 lb	27 kg; 59.5 lb	31 kg; 68.3 lb	31 kg; 68.3 lb
ERMES CONNECTION	-	Yes, via Wi-Fi or LAN	Yes, via Wi-Fi or LAN	Yes, via Wi-Fi or LAN	Yes, via Wi-Fi or LAN



## 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



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

VELP Official Partner

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Shanghai city - China  
Tel. +8621 34500630  
velpchina@velp.com



# NDA 702

## Dumas Nitrogen Analyzer

Nitrogen / Protein Determination in a Flash



# NDA 702 Nitrogen Analyzer

The NDA 702 combustion elemental analyzer is a versatile, cloud-enabled and fully automated solution for nitrogen determination according to Dumas Method in a wide range of applications. The NDA 702 offers high performance on both solid and liquid samples, working in accordance to international standards such as AOAC, AACC, ASBC, ISO, IFFO, OIV.

## FAST ANALYSIS

The fully automatic NDA 702 elemental analyzer perform analysis in 3-4 minutes. The quick start and sleeping mode ensure fast operation set up with possibility of leak test per zone.

## THE HIGHEST PRECISION

The LoGas™ TCD (Thermal Conductivity Detector) designed by VELP guarantees unmatched precision with the unrivaled LOD of 0,001 mgN and low standard deviation.

## MAXIMUM SAFETY

The NDA 702 is equipped with state-of-the-art safety features that interrupt the analysis in case of irregularities. Immediate notification and remote stop via VELP Ermes Cloud Platform ensures safe unattended operations.

## EFFICIENCY

The fully automatic and reliable combustion method of the NDA 702 together with DriStep™ water trap guarantee moderate cost. The 30-positions disc electronic autosampler expandable with extra 3 discs ensures maximum productivity and uptime.

## VERSATILITY

NDA 702 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 INSTRUMENT

The NDA 702 N/protein analyzer is easy to use and does not require skilled operator. The user-friendly DUMASoft™ software and VELP Ermes connection will deliver a new user experience and smart workflows.



### TEMS™ Technology

Save Time, Energy, Money and Space.

## APPLICATIONS

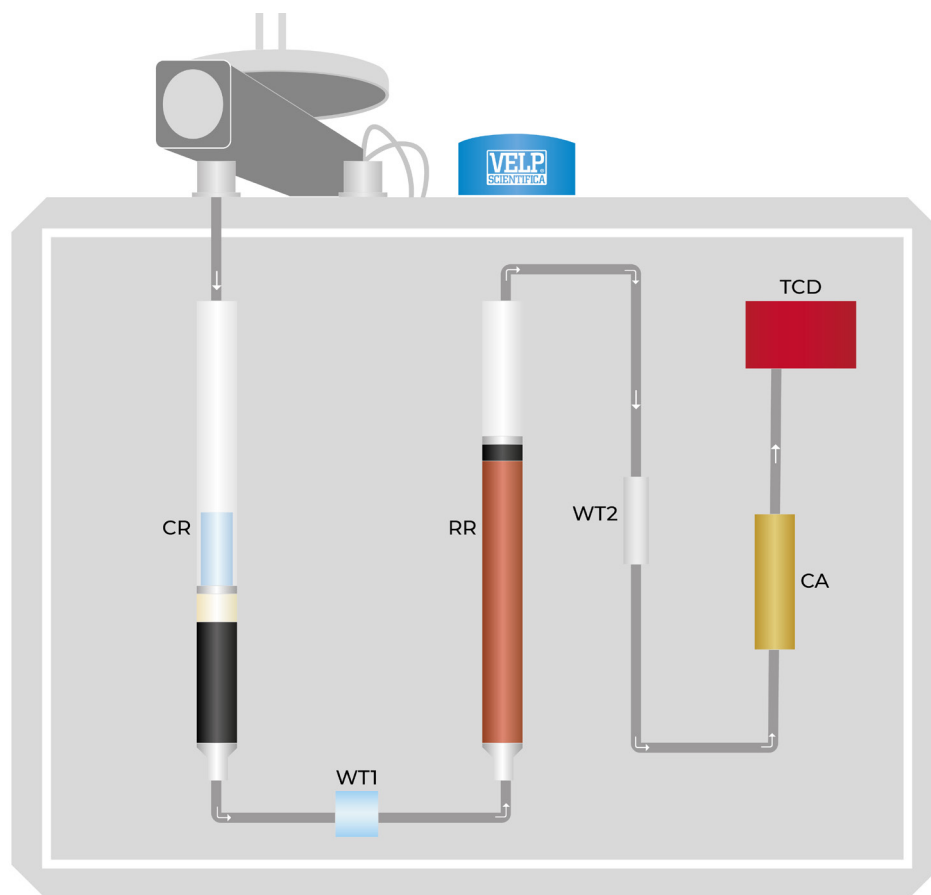
### PROTEIN DETERMINATION

- CEREAL GRAINS AND OILSEEDS  
AOAC 992.23
- ANIMAL FEED  
AOAC 990.03
- MILK AND MILK PRODUCTS  
UNI EN ISO 14891, FIL-IDF 18
- FLOURS, CEREALS GRAINS, OIL SEEDS AND ANIMAL FEEDS  
AACC 46-30
- GRAIN AND GRAIN PRODUCTS  
ICC 167
- OIL SEEDS AND ANIMAL FEEDING STUFFS  
ISO 16634-1:2008
- BEER, WORT, AND BREWING GRAINS  
AOAC 997.09
- MEAT AND MEAT PRODUCTS  
AOAC 992.15

### NITROGEN DETERMINATION

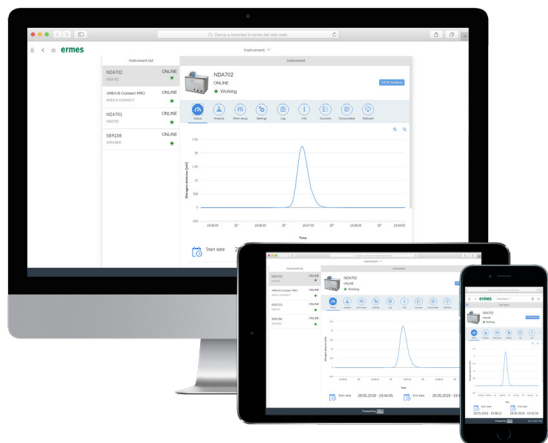
- FERTILIZERS  
AOAC 993.13
- SOIL  
ISO 13878:1998
- RUBBER, LATEX, ELASTOMERS  
ISO TC 45/SC 2 N2116
- CELLULOSE
- VACCINES
- PLASTICS
- PAPER

# NDA 702 Analysis Process



- **CR** (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.
- **RR** (Reduction Reactor) Enables the elimination of unwanted compounds and oxygen, transforming NO<sub>x</sub> into N<sub>2</sub>.
- **WT2** (Chemical Water Trap) Eliminates the residual water.
- **CA** (CO<sub>2</sub> Regenerating Adsorbers) Used to get rid of all the CO<sub>2</sub>. 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 NDA 702 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.

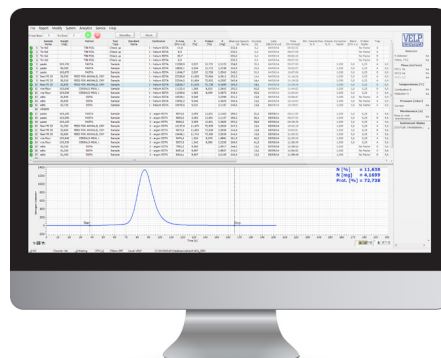
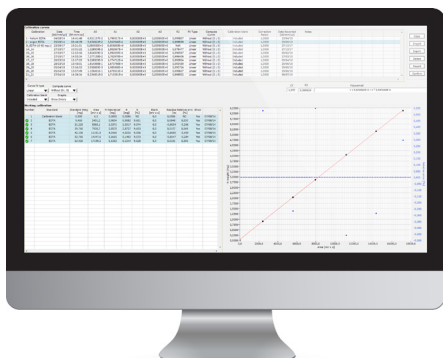
- Enhanced analytical and service support resulting in the highest system uptime
- Real time monitor and control of the instrument from PC, smartphone and tablet whenever you want, wherever you are
- Immediate alert and notification with the possibility to stop the instrument for maximum safety
- Regular software updates will guarantee the best performance and new features with just one-click

**ermes enabled**



# DUMASoft™ Software

The DUMASoft™ software is the powerful VELP solution that controls and operates the NDA 702 analyzer. The DUMASoft™ 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
- 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
- Real time graph of the analysis
- Immediate read-out of the results in mg of nitrogen, nitrogen % and protein %



## 3 AFTER THE ANALYSIS

- Multiple data comparison
- Data export in .xls, .txt and .csv to PC or LIMS
- Create, 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

The NDA 702 Elemental Analyzer is fully compliant with FDA's Code of Federal Regulations Title 21 Part 11 that defines the requirements for using electronic records and electronic signatures on computerized systems.

- Track and record of settings and any changes to settings with the system log function running permanently, serving as an audit trail
- Track who performs any operation as analysis results are automatically signed with the user information. Each user has a unique identification and electronic signature
- Ensure the quality and incorruptibility of recorded data with backup procedures. Exported files are protected from unwanted or improper alteration
- Ensure the right delegation of responsibilities at the right level with the user management system with three access levels

## 21 CFR Part 11 Compliance



## 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
Disc 1 for capsules for autosampler	A00000390
Disc 2 for capsules for autosampler	A00000420
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
Oat meal, 30g	A00000318
Tin Foil Cups, 150pcs	A00000153
Tin Foils 50x50mm, 450 pcs	A00000260
Tin capsules 6x18 mm, 100 pcs	A00000482
Tin capsules 8x22 mm, 100 pcs	A00000483
21 CFR part 11 package for Elemental Analyzers	A00000455
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

## INSTRUMENT - CODE

NDA 702

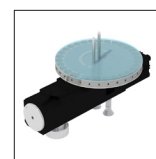
230 V / 50-60 Hz

F30800080

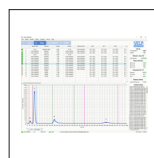
## SUPPLIED WITH



**A00000193**  
Start-up kit



**40003234**  
Autosampler  
with disc 1



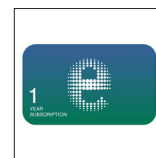
**40001504**  
DUMASoft™  
Software



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



**10003926**  
RS232 Cable  
for balance



**E00010012**  
VELP Ermes  
1 Year  
Connection

The Dumas Analyzer 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 accessories to get the best performance from your NDA 702



## GLP Good Laboratory Practice

AOAC

AACC

ASBC

ISO

IFFO

AOCS

OIV

## FIELDS OF APPLICATION

The NDA 702 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

ENVIRONMENTAL INDUSTRY

PHARMACEUTICAL AND CHEMICAL INDUSTRY



# TECHNICAL DATA

	NDA 702
METHOD OF ANALYSIS	Nitrogen determination according to Dumas method (combustion)
ANALYSIS TIME	3/4 minutes
DETECTOR	TCD (Thermal Conductivity Detector)
SAMPLE WEIGHT	Up to 1 g
AUTOSAMPLER TYPE	Electronic
AUTOSAMPLER CAPACITY	Up to 4 discs, 30 positions each (up to 117 samples)
REPRODUCIBILITY (RSD)	< 0.5% for EDTA standards (9.57%N)
RECOVERY	> 99.5%
DETECTION RANGE	N: ppm up to 200 mg abs. (or 100 %)
COMBUSTION TEMPERATURE	1100 °C 2012 °F
CARRIER GAS	Helium or Argon (grade 5.0)
COMBUSTION GAS	Oxygen (grade 5.0)
CONNECTIVITY	Ermes Cloud Platform via Wi-Fi or LAN connected to a PC
21 CFR PART 11 COMPLIANCE	Yes, optional package available
INTERFACES	USB; RS232
OFFICIAL REFERENCES	ISO 16634; ISO 14891; AOCS Ba 4e-93, AOAC 992.23; AACC 46-30; ICC 167, ASBC Barley 7C; AOCS Ba 4f-00; AOAC 992.15; ASBC AOAC 997.09; OIV-MA-AS323-02A; AOAC 990.03; AOAC 993.13; ISO 13878; EN 16168, etc.
WEIGHT	54 kg 119 lb
DIMENSIONS (WXHxD)	655x510x410 mm (H 690 mm with autosampler) 25.8x20.1x16.1 in (H 27.0 in with autosampler)



## 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](#)



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VELP Official Partner

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# EMA 502

## CHNS-O Elemental Analyzer

Versatile Micro Elemental Analyzer ensuring accuracy and reliability  
for a wide range of applications





# EMA 502 CHNS-O Analyzer

The EMA 502 Elemental Analyzer is the accurate and reliable solution for the determination of carbon, hydrogen, nitrogen, sulfur, and oxygen in various industrial sectors such as pharma and life science, organic chemistry, petrochemistry and energy, environmental, agronomy, food & feed. The EMA 502 offers consistent performance, versatility, ease-of-use and premium features for combustion analysis in accordance with international standards: AOAC, AACC, ASBC, ISO, DIN, IFFO, OIV, ASTM, EPA.

## ONE SOLUTION FOR MULTIPLE ANALYTICAL CHALLENGES

- All-in-one solution for the determination of Carbon, Hydrogen, Nitrogen, Sulfur, and Oxygen in organic matrices
- Combustion and pyrolysis in a single analyzer avoiding the need for external modules

## VERSATILITY AND PRODUCTIVITY

- 30-position electronic autosampler expandable with extra 3 discs to ensure maximum productivity
- Seamless switch from CHNS to O mode with the exclusive connection panel, without the need for external modules
- Helium and Argon as carrier gas

## SUPERIOR RELIABILITY AND ACCURACY

- The exclusive TCD of the EMA 502 ensures maximum accuracy and reliability
- Precise determination from few ppm to 100% for solid, paste and liquid samples
- The Gas Chromatographic technology ensures the complete separation of all elements and real-time peak data

## UNMATCHED EASE-OF-USE

- Intuitive operation with the powerful EMASoft™ software
- Monitor the analytical process with the real-time graph
- Benefit from a comprehensive reporting system

## IMPROVED WORKFLOW

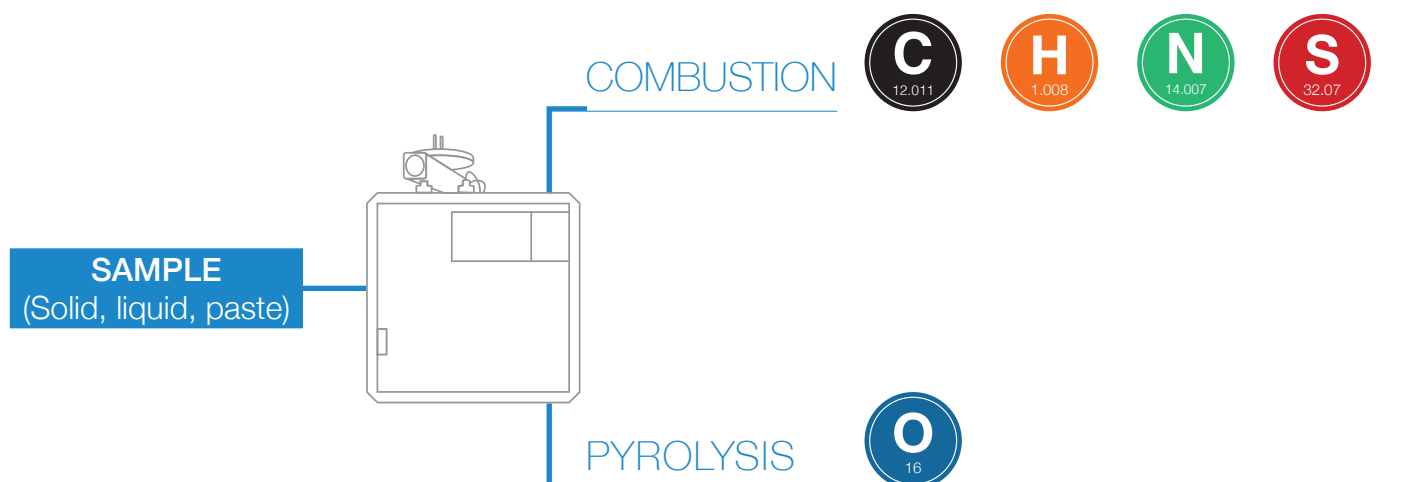
The exclusive connectivity to VELP Ermes Cloud Platform projects your lab to a data-rich environment with premium remote service support resulting in the highest system uptime.



### TEMS™ Technology

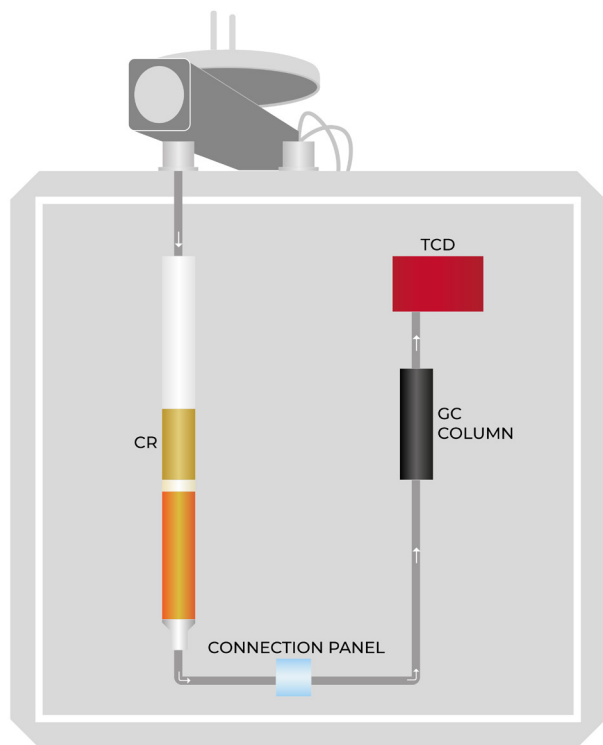
Save Time, Energy, Money and Space.

## EMA 502 TECHNOLOGY



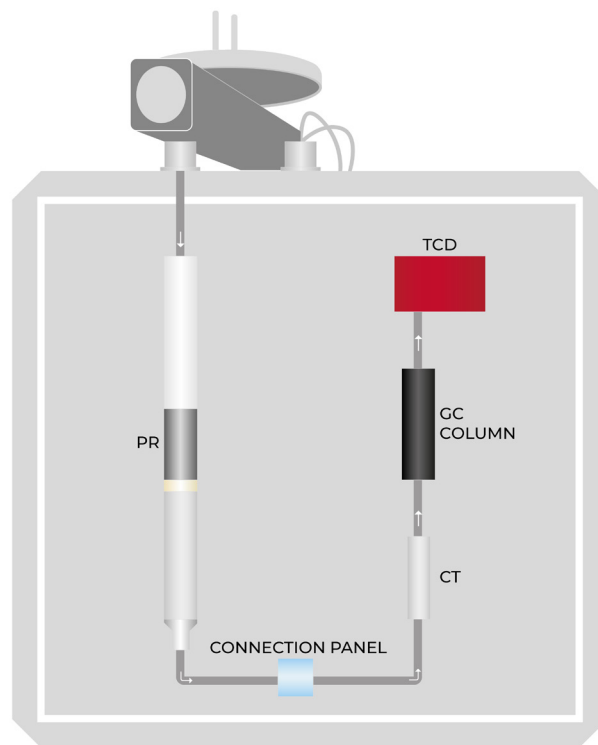
# EMA 502 Analysis Process

## CHNS DETERMINATION



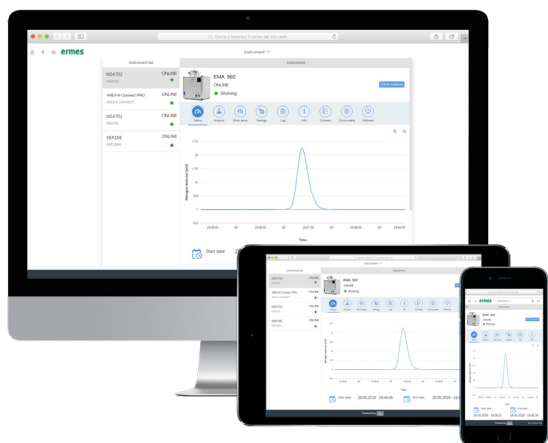
- **CR**  
(Combustion Reactor) Allows complete combustion at 1030 °C in order to convert all of the sample into its elemental substances. Vcopper in the lower part of the reactor helps the reduction of NOx into N2.
- **GC COLUMN**  
(Gas Chromatographic Column) Analyzes the gases and let them flow out of the column with different retention times.
- **TCD**  
(Innovative TCD) Determines the content for all the elements without the need for a reference gas. Maintenance-free.

## O DETERMINATION



- **PR**  
(Pyrolysis Reactor) Allows complete pyrolysis at 1060 °C in order to convert all of the sample into its elemental substances.
- **CT**  
(Chemical Trap with Anhydron) Absorbes all the impurities from pyrolysis and conveys the flow to the GC Column for O analysis.
- **GC COLUMN**  
(Gas Chromatographic Column) Analyzes the gas flow before O quantification.
- **TCD**  
(Innovative TCD) determines the content for oxygen without the need for a reference gas. Maintenance-free.

## VELP ERMES CONNECTION



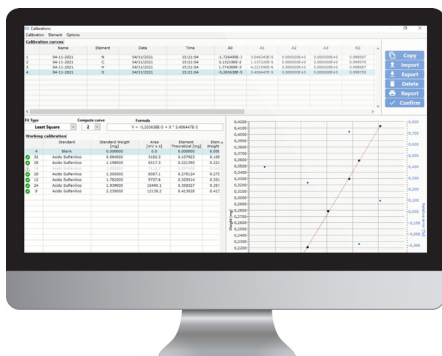
Connect the EMA 502 to the exclusive VELP Ermes Cloud Platform to improve your laboratory experience. The VELP Ermes Cloud platform connection will unburden you from tedious tasks, improving your lab productivity.

- Enhanced analytical and service support resulting in the highest system uptime
- 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
- Regular software updates will guarantee the best performance and new features with just one-click

**ermes enabled**

# EMASoft™ Software

The EMASoft™ software is the powerful VELP solution that controls and operates the EMA 502 analyzer. The EMASoft™ comes with a user-friendly interface that displays all the relevant information at a glance: results, database and instrument conditions. It is possible to choose from a library of pre-installed methods and create customized ones.

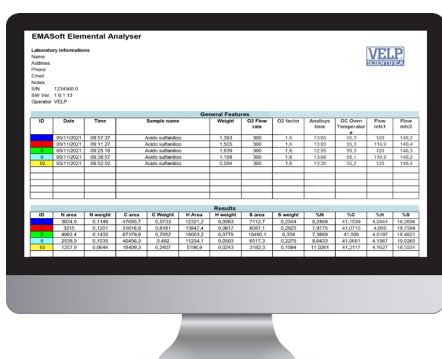


## 1 BEFORE THE ANALYSIS

- Create or choose a calibration curve for C, H, N, S and O
- 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
- Real-time graph with all the element peaks for a comprehensive understanding of the analysis as it progresses
- Immediate readout of the results in mg and %



## 3 AFTER THE ANALYSIS

- Multiple data comparison in graph
- Data export in .xls, .txt and .csv to PC or LIMS
- Create, print and download reports of single or multiple analysis
- When necessary, set the instrument in Stand-by mode or Sleeping mode
- Short statistical analysis in one click: result table displaying average, SD, and RSD of the analysis with direct selection on the graph

The EMA 502 Elemental Analyzer is fully compliant with FDA's Code of Federal Regulations Title 21 Part 11 that defines the requirements for using electronic records and electronic signatures on computerized systems.

- Track and record of settings and any changes to settings with the system log function running permanently, serving as an audit trail
- Track who performs any operation as analysis results are automatically signed with the user information. Each user has a unique identification and electronic signature
- Ensure the quality and incorruptibility of recorded data with backup procedures. Exported files are protected from unwanted or improper alteration
- Ensure the right delegation of responsibilities at the right level with the user management system with three access levels

## 21 CFR Part 11 Compliance



## OPTIONAL ACCESSORIES

Tin Foil Cups, 5x9 mm 250 pcs	A00000436
Silver foil 35x35 mm, 100 pcs	A00000371
Pre-packed CHNS reactor	A00000443
Pre-packed O reactor	A00000444
Quartz reactor tube diam. 18 mm	A00000435
Quartz ash collector diam. 13 mm	A00000445
Kit approx. 1000 analysis for CHNS	A00000432
Kit approx. 1000 analysis for Oxygen	A00000433
Quartz wool, 50 g	A00000154
Nickel wool, 5 g	A00000447
Nickel Carbon wool, 5 g	A00000440
Anhydron, 454 g	A00000225
EDTA Certified, 100 gr	A00000149
Sulphanilic acid certified, 5 gr	A00000434
Vcopper High Reduction Efficiency, 470 g	A00000240
Tungsten oxide, 25 g	A00000439
Quartz Chips, 50 g	A00000441
High temperature sealing grease	A00000236
Super-Absorbent Powder, 10 g	A00000317
GC column for CHNS 2 m PTFE	A00000438
GC column for oxygen SS 1 m	A00000437
Disc 2 for autosampler	A00000199
Disc 3 for autosampler	A00000200
Disc 4 for autosampler	A00000201
21 CFR part 11 package for EMA 502	A00000455
IQ/OQ/PQ EMA 502 Manual	A00000442
PM kit EMA502	40003081
Fluorine Absorber, 15g	A00000456
Vanadium pentoxide, 10g	A00000457
VELP Ermes 1 Year Connection	E00010012
VELP Ermes 3 Year Connection	E00010036

## INSTRUMENT - CODE

EMA 502

230 V / 50-60 Hz

F30800100

## SUPPLIED WITH

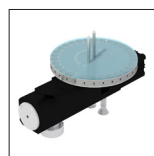
The EMA 502 Elemental Analyzer is supplied with all necessary parts to perform up to 1000\* analyses CHNS (inclusive of catalysts, copper, quartz wool, reagents and seals). In addition, it contains chemicals and small consumables spare for maintenance.



**A00000438**  
GC column  
for CHNS



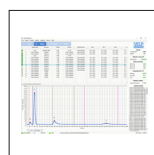
**40001693**  
USB cable for  
PC, 5m



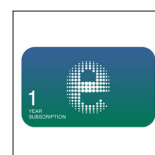
**40003062**  
Autosampler  
with disc 1



**10003926**  
RS232 Cable  
for balance



**40003064**  
EMASoft™  
Software



**E00010012**  
VELP Ermes  
1 Year  
Connection

## OXYGEN DETERMINATION

For Oxygen analysis, the following codes must be ordered in addition to the instrument code F30800100



**A00000433**  
Kit approx. 1000\*  
analysis for Oxygen



**A00000437**  
GC column  
for oxygen

## GLP Good Laboratory Practice

AOAC	AACC	ASBC
ISO	DIM	IFFO
OIV	ASIM	EPA

## FIELDS OF APPLICATION

The EMA 502 is extremely versatile, being suitable for carbon, hydrogen, nitrogen, sulfur and oxygen determination in several types of sample, in accordance with official AOAC, AACC, ASBC, ISO, ASTM, EPA, DIN and OIV methods.





# TECHNICAL DATA

	EMA 502
METHOD OF ANALYSIS	CHNS: Combustion O: Pyrolysis
ANALYSIS TIME	CHNS: 12 minutes O: 6 minutes
DETECTOR	TCD (Thermal Conductivity Detector)
SAMPLE WEIGHT	Up to 100mg (depending on C content)
AUTOSAMPLER TYPE	Electronic
AUTOSAMPLER CAPACITY	Up to 4 discs, 30 positions each (up to 117 samples)
DETECTION RANGE	C: ppm up to 20 mg abs. (or 100 %) H: ppm up to 5 mg abs. (or 100 %) N: ppm up to 20 mg abs. (or 100 %) S: ppm up to 6 mg abs. (or 100 %) O: ppm up to 6 mg abs. (or 100 %)
PRECISION	≤ 0.2 %
COMBUSTION / PYROLYSIS TEMPERATURE	1100 °C 2012 °F
CARRIER GAS	Helium or Argon (grade 5.0)
COMBUSTION GAS	Oxygen (grade 5.0)
CONNECTIVITY	Ermes Cloud Platform via Wi-Fi or LAN connected to a PC
21 CFR PART 11 COMPLIANCE	Yes, optional package available
INTERFACES	USB; RS232
OFFICIAL REFERENCES	ISO 16948; ISO 21663; ISO 10694; ISO 15178; ISO 13878; ISO 20620; ISO 2287; ISO 29541; EN 13654; EN 13654-2, EN 15936; ASTM D 5373; ASTM D 5291; ASTM D 4239; ASTM D 5622; AOAC 993.13; AOAC 2017.08, etc.
DIMENSIONS (W X H X D)	500 x 510 x 410 mm (H 680 mm with autosampler) 19.7 x 20.1 x 16.1 in (H 26.8 with autosampler)
WEIGHT	45 kg 99 lb



## 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:

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- [Preventive Maintenance](#)
- [Help-desk and Remote support](#)
- [Technical Assistance](#)
- [Analytical Support](#)
- [Calibration Certification](#)



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# DKL Series

## Fully Automatic Digestion Units

---

Fast, safe and compact aluminum heating block digesters  
for unattended operations



# DKL Fully Auto Digesters

The digester is a widely used instrument in laboratories performing analysis for diversified applications in food&feed, beverage (nitrogen, protein, Total Kjeldahl Nitrogen), environmental (COD, Total Kjeldahl Nitrogen, Heavy Metal Trace), chemical and pharmaceutical (organic nitrogen) industries. DKL digesters work in accordance with a variety of Standards (such as AOAC, ISO, EPA, DIN etc.)

## FULLY AUTOMATIC

The auto-lift facilitates the operator by reducing strain and time spent in manual tasks. The customizable programs allow for repeatable processes to run fully unattended.

## FAST AND FLEXIBLE

Extremely fast aluminum heating block is capable of reaching 420°C in just 20 min and maintaining temperature with an accuracy of  $\pm 0.5^\circ\text{C}$ . A complete set of available accessories allows for analysis of all sample types and quantities.

## SAFE AND ROBUST

The separated control panel is protected from heat and spills ensuring reliability and longevity. The innovative microprocessor controls the temperature of the block and is supported by safety thermostat.

## RESISTANT

The DKL Series is constructed with highly resistant materials such as the corrosion-protected housing that provides resistance to harsh working environments.

## USER FRIENDLY

The intuitive control panel makes operating and monitoring every stage of the analysis effortless. Many standard methods are pre-loaded and more can be customized and saved.

## COMPACT DESIGN

Thanks to the narrow footprint, the DKL Series saves valuable fume hood space to accommodate other instruments.



## VELP SOLUTIONS FOR KJELDAHL ANALYSIS

### SAMPLE



### 1 DIGESTION

DKL SERIES / DK SERIES  
DIGESTERS

KS 1000  
SCRUBBER

### 2 DISTILLATION

UDK SERIES  
DISTILLATION UNITS

### 3 TITRATION

UDK 149  
CONNECTIVITY TO EXTERNAL TITRATION  
SYSTEMS

UDK 159 / UDK 169  
INTEGRATED COLORIMETRIC TITRATION  
SYSTEM



NITROGEN mg (Protein %)

# Configurations

## DKL 8



8 x 250 ml

## DKL 12



12 x 250 / 400 ml

## DKL 20



20 x 250 / 400 ml

## DKL 42/26



42 x 100 ml

Microkjeldahl tubes (100 ml) are suitable for samples with a high nitrogen/protein content, 250 ml for standard Kjeldahl digestion and Jumbo tubes (400 ml) for samples with a low nitrogen/protein content.

## VELP Recommendation

In order to remove hazardous and toxic gases and vapors generated during the digestion process, every digester should be combined with a KS 1000 Scrubber to prevent potential damage to the digester and surrounding equipment.

### KS 1000 SCRUBBER



KS 1000 SCRUBBER is designed for the neutralization of toxic and corrosive fumes coming from digestion.

- HIGHLY EFFICIENT
- SAFE AND ROBUST
- EXTREMELY COMPACT
- REDUCED WATER CONSUMPTIONS
- USABLE FOR BOTH ACID AND BASIC NEUTRALIZATION

## FULLY AUTOMATED AND UNSUPERVISED DIGESTION IN 3 STEPS



**1** DIGESTION



**2** COOLING

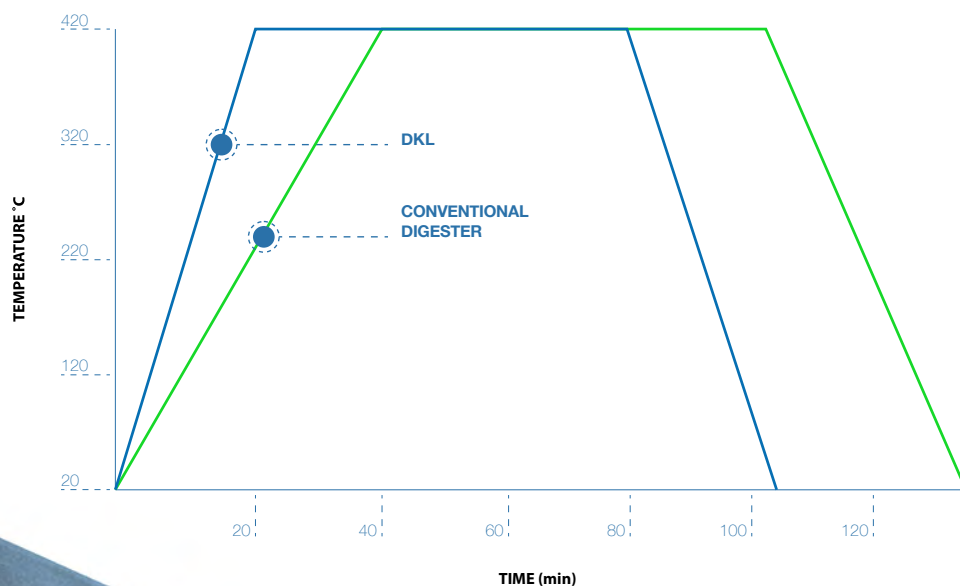


**3** RACK EXTRACTION AND RE-LOADING





## ALUMINUM HEATING BLOCK



**TIME, ENERGY, MONEY,  
SPACE SAVING**



## OPTIONAL ACCESSORIES

DKL 8 Stand for sample rack	A00000184
DKL 12 Stand for sample rack	A00000183
DKL 20, DKL 42/26 Stand for sample rack	A00000182
DKL 12, DKL 20 Test tube Ø 50x300 mm, 400 ml	A00000185
DKL 12 Sample rack for test tubes 400 ml	A00000181
DKL 20 Sample rack for test tubes 400 ml	A00000246
DKL 8, 12, 20 Glass cap	A00000243
DKL 20 Sample rack for COD analysis	A00000237
DKL 20 Test tubes Ø42x200mm, 200 ml with cone NS 29/32 (3pcs/box) for COD analysis	A00000145
DKL 20 Air refrigerator with ground cone for COD analysis	A00001041
DKL 20 Antisplash bell for COD analysis	A00001045
DKL 20 PTFE sheaths for 29/32 cones for COD analysis	A00001042
USB cable A/B 1,8mt	40002309
DKL IQ/OQ Manual	A00000186
KjTabs VCM - 1000 pcs/box	A00000274
KjTabs VKPC - 1000 pcs/box	A00000275
KjTabs VCT - 1000 pcs/box	A00000276
KjTabs VST - 1000 pcs/box	A00000277
KjTabs VTCT - 1000 pcs/box	A00000281
KjTabs VW - 1000 pcs/box	A00000282
KjTabs VS - 1000 pcs/box	A00000283
Adapter x probe Ø3mm for DK/DKL/ECO	A00000362



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

## INSTRUMENT - CODE

DKL 8	230 V / 50-60 Hz	S30100200
DKL 8	115 V / 50-60 Hz	S30110200
DKL 12	230 V / 50-60 Hz	S30100190
DKL 12	115 V / 50-60 Hz	S30110190
DKL 20	230 V / 50-60 Hz	S30100210
DKL 42/26	230 V / 50-60 Hz	S30100180

## SUPPLIED WITH



LIFT

DKL 8	A00000170
DKL 12	A00000176
DKL 20	A00000167
DKL 42/26	A00000167



SAMPLE RACK

DKL 8	A00000173
DKL 12	A00000172
DKL 20	A00000168
DKL 42/26	A00000180



SUCTION CAP AND DRIP TRAY

DKL 8	A00000175
DKL 12	A00000174
DKL 20	A00000169
DKL 42/26	A00000179



TEST TUBES

DKL 8	A00000144
DKL 12	A00000144
DKL 20	A00000144
DKL 42/26	A00000146

## TEST TUBES



**A00000144**  
DKL 8, DKL 12,  
DKL 20  
Test tubes  
Ø 42x200 mm  
250 ml (3pcs/box)



**A00000145**  
DKL 20  
Test tubes  
Ø 42x200 mm  
with cone NS  
29/32 (3pcs/box)



**A00000146**  
DKL 42/26  
Test tubes  
Ø 26x300 mm  
100 ml (6pcs/box)



**A00000185**  
DKL 12, DKL 20  
Test tubes  
Ø 50x300 mm  
400 ml (3pcs/box)

## FIELDS OF APPLICATION

The DKL Series is suitable for a variety of applications including the determination of nitrogen, protein, COD, TKN and more, in accordance with official methods.

FOOD, FEED AND BEVERAGE INDUSTRY

ENVIRONMENTAL INDUSTRY

PHARMACEUTICAL AND CHEMICAL INDUSTRY



# TECHNICAL DATA

	DKL 8	DKL 12	DKL 20	DKL 42/26
CONSTRUCTION MATERIAL	Stainless steel with chemical resistant coating	Stainless steel with chemical resistant coating	Stainless steel with chemical resistant coating	Stainless steel with chemical resistant coating
LIFT AND SUCTION CAP CONTROL	Automatic	Automatic	Automatic	Automatic
CONTROL SYSTEM	Microprocessor with LCD Graphic Display	Microprocessor with LCD Graphic Display	Microprocessor with LCD Graphic Display	Microprocessor with LCD Graphic Display
TEMPERATURE RANGE	Room temp. to 450 °C / 842 °F	Room temp. to 450 °C / 842 °F	Room temp. to 450 °C / 842 °F	Room temp. to 450 °C / 842 °F
TEMPERATURE ACCURACY	± 0.5 °C	± 0.5 °C	± 0.5 °C	± 0.5 °C
SET TEMPERATURE	Digital Readout in °C, °F or K	Digital Readout in °C, °F or K	Digital Readout in °C, °F or K	Digital Readout in °C, °F or K
TEMPERATURE CALIBRATION	Automatic	Automatic	Automatic	Automatic
PROGRAM LIBRARY	54 Program library, including 24 user-programmable memories	54 Program library, including 24 user-programmable memories	54 Program library, including 24 user-programmable memories	54 Program library, including 24 user-programmable memories
TEMPERATURE RAMPING	4 ramps per program	4 ramps per program	4 ramps per program	4 ramps per program
TIME SELECTION	1 to 999 Minutes - 1 Minute Steps	1 to 999 Minutes - 1 Minute Steps	1 to 999 Minutes - 1 Minute Steps	1 to 999 Minutes - 1 Minute Steps
COUNTDOWN	Digital Readout	Digital Readout	Digital Readout	Digital Readout
LANGUAGES	UK, I, E, F, RUS, CN + Additional downloadable	UK, I, E, F, RUS, CN + Additional downloadable	UK, I, E, F, RUS, CN + Additional downloadable	UK, I, E, F, RUS, CN + Additional downloadable
INTERFACE	USB	USB	USB	USB
RUN COMPLETED ALERT	Visual and Acoustic Signal	Visual and Acoustic Signal	Visual and Acoustic Signal	Visual and Acoustic Signal
DAMAGED TEMPERATURE PROBE	Automatic Detection and Alarm Message	Automatic Detection and Alarm Message	Automatic Detection and Alarm Message	Automatic Detection and Alarm Message
HEATING PLACES	8	12	20	42
SIZE OF TUBES	250 ml	250 / 400 ml	250 / 400 ml	100 ml
POWER	1150 W	1500 W	2300 W	2300 W
OVERALL DIMENSION (WxHxD)	210x690x540 mm 8.3x27.2x21.3 in	266x690x540 mm 10.5x27.2x21.3 in	322x690x584 mm 12.7x27.2x23.0 in	322x690x584 mm 12.7x27.2x23.0 in
OVERALL WEIGHT	19.7 kg 43.5 lb	23.3 kg 51.4 lb	30.8 kg 68.0 lb	33.5 kg 74.0 lb



## 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](#)
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- [Analytical Support](#)
- [Calibration Certification](#)



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# KS 1000 Scrubber

## Fumes Neutralization

---

Designed to neutralize toxic fumes produced during mineralization and safeguard lab operators without requiring any connection to tap water





# Space saving and ease-of-use

The KS 1000 Scrubber guarantees maximum workplace safety by neutralizing corrosive and toxic fumes produced during Kjeldahl digestion in two steps: dilution and neutralization.

- High-efficiency gas scrubbing for maximum safety in the laboratory
- Tap water-free for reduced water consumption and no need for a dedicated water supply
- A small footprint for a high space saving
- Designed for DK and DKL connection
- 4 adjustable suction power levels
- Intuitive and easy-to-use
- High-quality construction materials
- Usable for both acid and basic neutralization



## INSTRUMENT - CODE

KS 1000 Scrubber

100-240 V / 50-60 Hz

F307A0660

## TECHNICAL DATA

CONSTRUCTION MATERIAL	Metal structure and PVC components
WORKING IN CONTINUOUS	Admitted
FLOW REGULATION	Up to 25 L/min
VACUUM REGULATION	Down to 200 mbar abs
CAPACITY OF GLASS TANKS	3.5 L
POWER INPUT	130 W
CURRENT CONSUMPTION	500 mA
WEIGHT	11 Kg 24.3 lb
DIMENSIONS (WXHxD)	315x335x360 mm 12.4x13.2x14.2 in



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# GDE

## Dietary fiber analyzers

Enzymatic digestion for dietary fiber analysis  
according to the official AOAC method



# Reliable and accurate

Enzymatic digestion for dietary fiber analysis according to AOAC 985.29 method.

- Outstanding temperature regulation
- It is possible to set the temperature, with an excellent accuracy of only  $\pm 0.2$  °C
- Intuitive digital display
- Set the timer for unattended operation, you can quickly set the operating time and focus on other tasks.
- The transparent polycarbonate tank ensures visibility and enhanced resistance up to 105 °C
- Non-stop sample mixing for homogeneity
- Constant temperature, no overheating of samples



## INSTRUMENT - CODE

GDE	230 V / 50-60 Hz	SA30400209
GDE	115 V / 50-60 Hz	SA30410209

## TECHNICAL DATA

TEMPERATURE RANGE	From room temp. to 105 °C
POWER	900 W
WEIGHT	6.2 Kg (13.66 lb)
DIMENSIONS (WXHxD)	413x295x410 mm (16.2x11.6x16.1 in)



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# HU 6

## Hydrolysis Unit

---

Convenient, reliable and safe hydrolysis unit,  
as preliminary step for total fat determination





# Acid and basic hydrolysis for total fat determination

The VELP Hydrolysis Unit HU 6 is the ideal solution for sample preparation prior to solvent extraction for total fat determination according to official methods.

- Fast and precise heating with 0.5°C temperature stability and homogeneity
- Convenient operations saving operator time
- Faster and enhanced filtration thanks to the valves that allow to selectively interrupt the vacuum in each position
- Continuous filtration and rinsing of six samples in parallel
- Intuitive digital interface
- Low energy consumption
- Space saving design



**TEMS™ Technology**

Save Time, Energy, Money and Space.



## INSTRUMENT - CODE

HU 6	230 V / 50-60 Hz	F30300150
HU 6	115 V / 50-60 Hz	F30310150

## TECHNICAL DATA

	HU 6
CONSTRUCTION MATERIAL	Epoxy painted stainless steel structure
NUMBER OF SAMPLES	6 samples
SET TEMPERATURE	Display visualization
COUNTDOWN	Display visualization
DISPLAY	LCD
NUMBER OF PROGRAMS	20
SELECTABLE LANGUAGE	IT, EN
TEMPERATURE RANGE	From room temp. to 200 °C
TEMPERATURE CALIBRATION	Automatic
STABILITY OF THE HEATING BLOCK TEMPERATURE	± 0,5°C
PRECISION OF THE HEATING BLOCK TEMPERATURE	± 0,5°C
REACHING OF SET TEMPERATURE	Acoustic and visual signal
POWER	1150 W
WEIGHT	14 Kg / 30.8 lb
DIMENSIONS (WXHxD)	420x230x130 mm (16.5x9.0x5.1 in)



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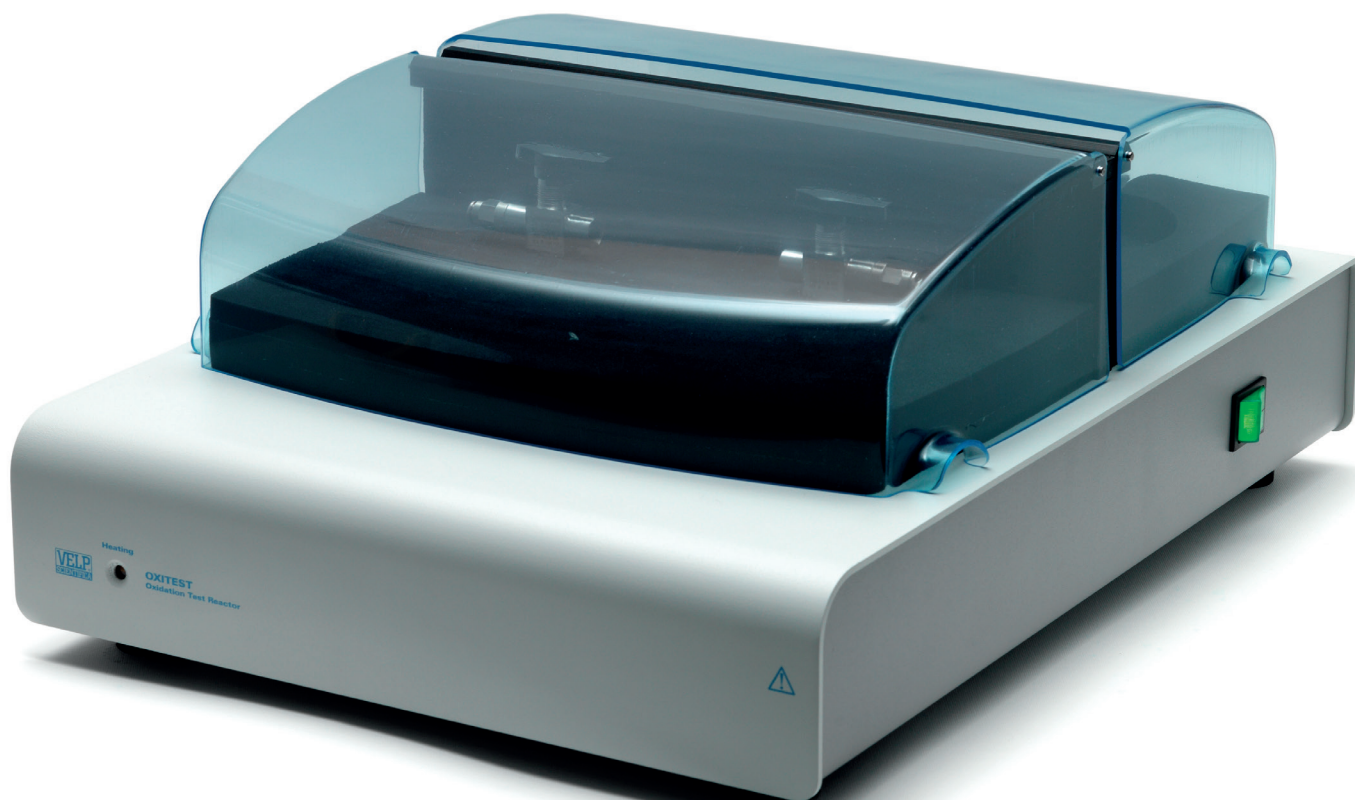


# OXITEST

## Oxidation Stability Reactor

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Oxidative Stability Studies Directly on the Whole Sample  
According to AOCS Standard Procedure



# OXITEST Oxidation Stability Reactor

The OXITEST is designed for R&D and Quality Control laboratories interested in investigating the behaviour of fat oxidation stability. The OXITEST speeds up the oxidation process because of the two accelerating factors: temperature and pressure. The instrument measures the absolute pressure change of oxygen inside the two titanium heating chambers at constant temperature, thus monitoring the oxygen uptake by reactive components in the sample and automatically generating an IP value for further analysis via software.

## REPRESENTATIVE RESULTS

The OXITEST ensures representative results by determining the oxidation stability of the whole sample without extensive sample preparation: be it solid, liquid, or doughy.

## PREMIUM RESISTANCE

The oxidation chambers, sample holders and covers are made of titanium, a premium material guaranteeing:

- High resistance and excellent chemical compatibility;
- Cost savings by eliminating required consumables.

## EASE OF USE

The OXITEST is entirely controlled via PC by the powerful OXISoft™ Software.

- All information at a glance;
- Multilingual support;
- Preloaded methods for data analysis.

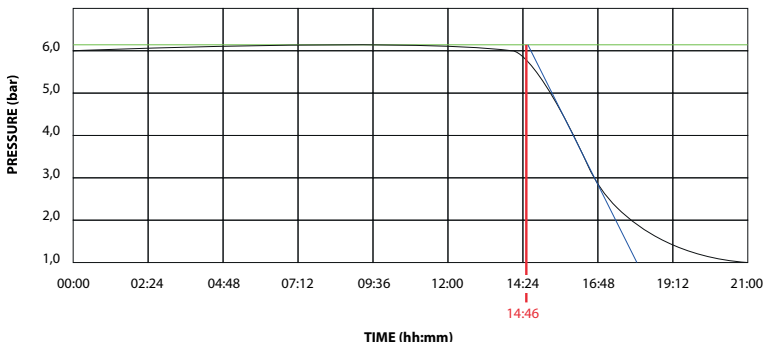
## PRODUCTIVITY

The OXITEST has 2 independent oxidation chambers and further expansion by connecting up to 4 systems to the same PC allowing the simultaneous analysis of up to 8 samples.



## AOCS Standard Procedure Cd 12c-16

Accelerated Oxidation Test for the Determination of the Oxidation Stability of Foods, Oils and Fats using the Oxitest Oxidation Test Reactor



## INDUCTION PERIOD - IP

### Results

Induction Period (IP)	14h 46 min (Graphical method)
Test duration	21h 00 min
Curve 1	$Y = -0,003X + 6,18$
Curve 2	$Y = -1,575X + 29,43$

The test allows the sample oxidation curve to be obtained, characterized by an **Induction Period (IP)**. The Induction Period is the time required to reach the starting point of oxidation, corresponding to either a level of detectable rancidity or a sudden change in the rate of oxidation. **The longer the Induction Period, the higher the stability against oxidation over time.** The operator can create **test reports** for a single test or compare different analyses for a better interpretation of the data.

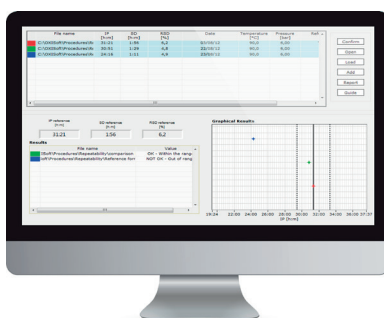
# OXISoft™ Software

The OXISoft™ is available in different languages and comes with a pre-installed library of methods related to a wide range of sample types. The operator can use and modify them, or create personalized methods. In order to obtain a visible oxidation flex, the sample tested should contain 2-4% of unsaturated fatty acids. When product degradation is mainly due to the loss of the aromatic components and the oxidation flex is not visible, information on the product oxidation can be achieved by interpreting the slope of the oxidation curve. Many parameters can be investigated, including:



## 1 REPEATABILITY TEST

A series of tests run on the same sample or standard to verify its IP, to calculate accuracy and repeatability of the data.



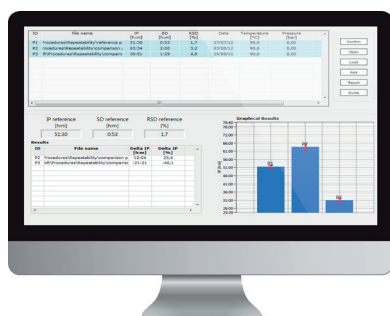
## 2 FRESHNESS TEST

To verify the quality of different lots, for example of the same raw material, by comparing them. This can be valuable to confirm, for example, whether the product freshness is related to the cost of raw materials.



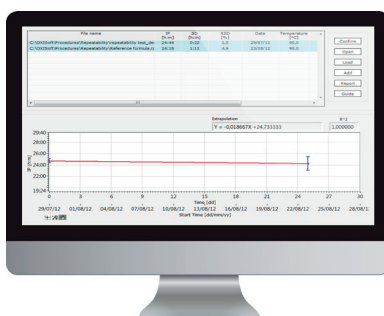
## 3 FORMULAS COMPARISON

Which ingredients are required to create the most stable formula of a finished product, under the same conditions. By comparing the results, OXISoft™ will be able to automatically distinguish the best formula, easily recognizable by the higher IP.



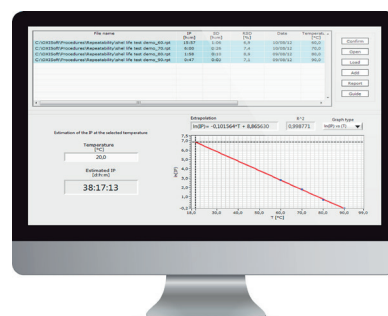
## 4 PACKAGING COMPARISON

Particularly useful for testing which packaging maintains the product in the freshest condition.



## 5 IP DURING AGEING

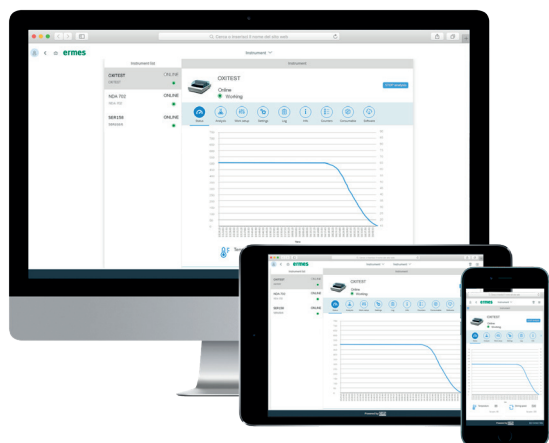
This procedure allows to obtain a prediction of the oxidation stability during a shelf life study by measuring the product at defined time intervals.



## 6 ESTIMATED SHELF LIFE TEST

It is possible to have a prediction of oxidation stability for shelf life studies. By following a dedicated procedure and testing the same product at different temperatures, in the case of a linear equation, the operator can extrapolate and estimate the oxidation stability of the sample even at room temperature.

## VELP ERMES CONNECTION



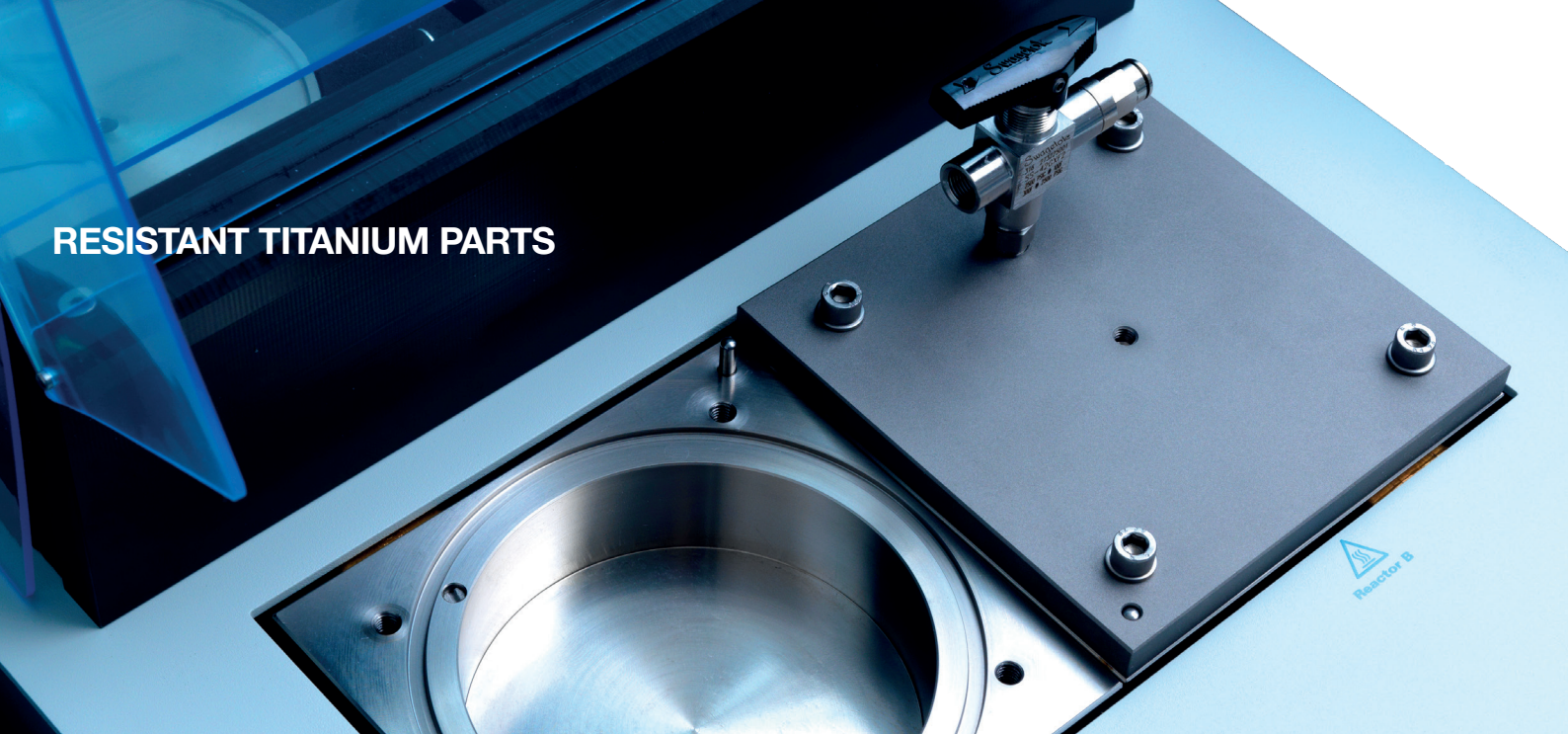
Connect the OXITEST to the exclusive VELP Ermes Cloud Platform to improve your laboratory experience. The VELP Ermes Cloud Platform connection will unburden you from tedious tasks, improving your lab productivity and enhancing service support.

- Enhanced analytical and service support resulting in the highest system uptime
- Real-time monitoring 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;
- Regular software updates guaranteeing the best performance and new features with just one-click.

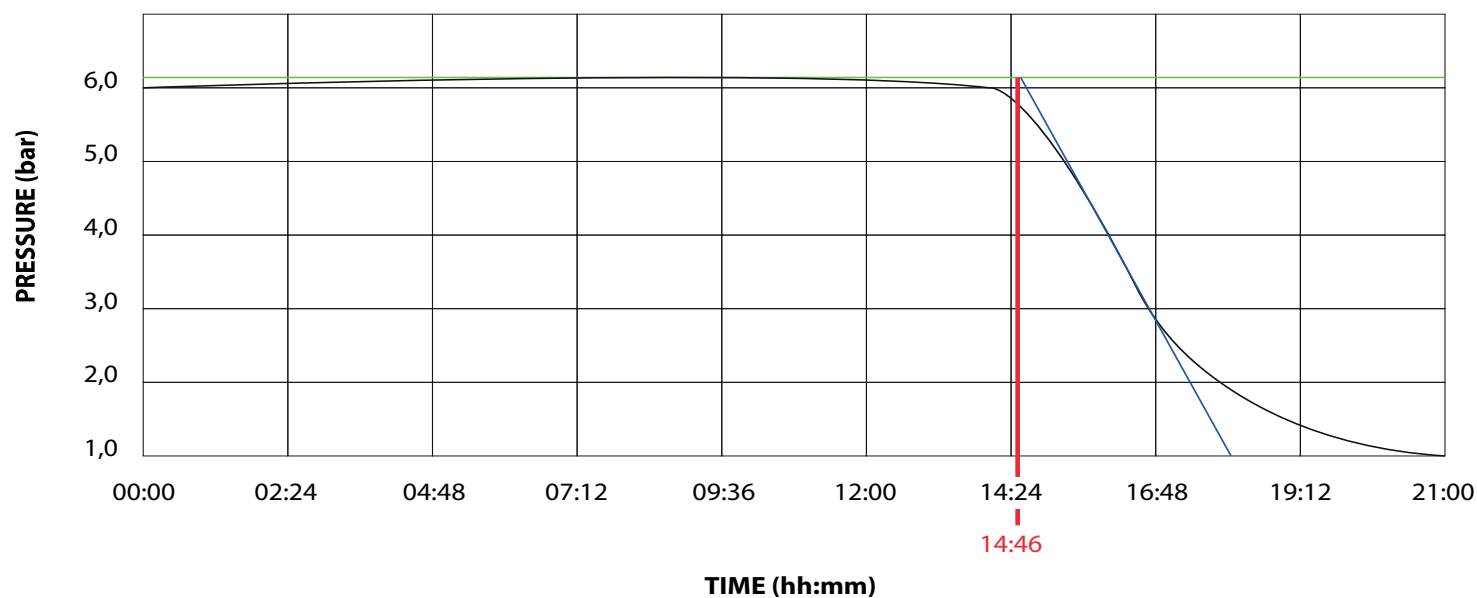
**ermes enabled**



**RESISTANT TITANIUM PARTS**



**OXISoft™ POWERFUL AND INTUITIVE SOFTWARE**



**ANALYSIS ON THE WHOLE SAMPLE**



## INSTRUMENT - CODE

OXITEST	230 V / 50-60 Hz	F30900248
OXITEST	115 V / 60 Hz	F30910248

## SUPPLIED WITH



**10002948**  
OXITEST OXISoft™  
Software



**10003134**  
USB cable



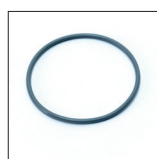
**10001985\***  
Sample holder



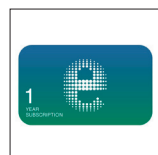
**10001984\***  
Spacer



**A00000236**  
High temperature  
sealing greaser



**10002033**  
O-ring 3475  
viton



**E00010012**  
VELP Ermes  
1 Year Connection

\* OXITEST is supplied with 6 sample holders and 4 spacers.



## OPTIONAL ACCESSORIES

OXITEST IQ/OQ Manual	A00000242
Calibration temperature kit for Oxitest	A00000360
Calibration temperature kit for Oxitest without thermometer and probe	A00000376
High temperature sealing grease	A00000236
VELP Ermes 1 Year Connection	E00010012
VELP Ermes 3 Years Connection	E00010036

## FIELDS OF APPLICATION

OXITEST works directly on the whole sample without the need for preliminary fat separation, ensuring representative results on solid, semi-solid and liquid samples, raw and finished products



FOOD, FEED AND BEVERAGE INDUSTRY



COSMETIC INDUSTRY



PHARMACEUTICAL INDUSTRY

# TECHNICAL DATA

	OXTITEST
NUMBER OF OXIDATION CHAMBERS	2
CAPACITY OF SINGLE CHAMBER	up to 100 ml
MAX DEVIATION FROM THE SET TEMPERATURE	$\leq 0.5$ °C
REPRODUCIBILITY OF SET TEMPERATURE	$\leq \pm 0.2$ °C
INTERFACE	USB
CONNECTIVITY	Cloud via LAN or Wi-Fi
POWER	900 W
POWER SUPPLY	115 V / 60 Hz - 230 V / 50-60 Hz
WEIGHT	16.5 Kg 36.3 lb
DIMENSION (WxHxD)	365x190x485 mm 14.6x7.6x19.4 in
OVERPRESSURE	Safety valve
OUT-RANGE TEMPERATURE	Visual alarm
DAMAGED PROBE	Visual alarm
TEMPERATURE RANGE	From room temp. to 120 °C
PRESSURE RANGE	0 - 8 bar



## 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:

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



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# DK Series

## Semi-Automatic Digestion Units

---

Versatile, safe and precise block digesters for Kjeldahl analysis





# Semi-Automatic Digesters

The DK Series consists of basic digestion blocks providing accuracy, high thermal homogeneity and minimum energy consumption. The DK Series digesters consist of six models to suit any laboratory need for Kjeldahl digestion, Chemical Oxygen Demand (COD) and Heavy Metals Trace Determinations.

## EXCELLENT ACCURACY AND REPEATABILITY

The aluminum heating block ensures high thermal homogeneity heating up to 450°C.

- Temperature selection with 1°C steps and a precision of  $\pm 0.2^\circ\text{C}$ .
- Heating block temperature stability of  $\pm 0.5^\circ\text{C}$ .

## ENERGY SAVINGS

The DK Series digesters guarantee fast temperature set point reaching, reducing the energy consumptions.

- Average 13% lower consumption compared to the previous models.

## SPACE SAVING DESIGN

Save valuable space under the fume hood with the VELP DK digesters. The design of the DK Series ensures minimum space requirement.

## INTUITIVE INTERFACE

The bright digital display provides maximum visibility and easy reading of the information.

- Supports the recording of up to 20 methods with 4 temperature ramps.
- Easy to use interface with 4 buttons.

## VERSATILITY

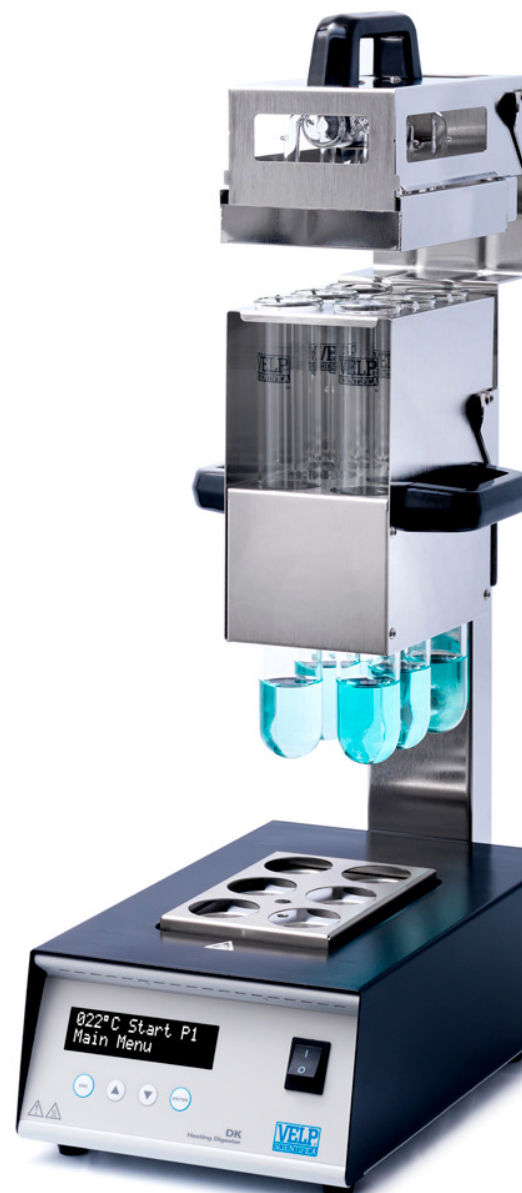
All models DK models are available with tubes and all necessary parts to operate.

- Wide range of accessories is available to match analytical requirements.
- Genuine consumables to digest efficiently the samples.



### TEMS™ Technology

Save Time, Energy, Money and Space.



## VELP SOLUTIONS FOR KJELDAHL ANALYSIS

### SAMPLE



### 1 DIGESTION

DKL SERIES / DK SERIES  
DIGESTERS

KS 1000  
SCRUBBER

### 2 DISTILLATION

UDK SERIES  
DISTILLATION UNITS

### 3 TITRATION

UDK 149  
CONNECTIVITY TO EXTERNAL TITRATION  
SYSTEMS

UDK 159 / UDK 169  
INTEGRATED COLORIMETRIC TITRATION  
SYSTEM



**NITROGEN mg (Protein %)**

# Configurations



## DK 6

6 positions for 250 ml test tubes Ø 42 mm



## DK 6/48

6 positions for 300 ml test tubes Ø 48 mm



## DK 8

8 positions for 250 ml test tubes Ø 42 mm



## DK 18/26

18 positions for 100 ml test tubes Ø 26 mm



## DK 20

20 positions for 250 ml test tubes Ø 42 mm



## DK 42/26

42 positions for 100 ml test tubes Ø 26 mm

# VELP Recommendation

In order to remove hazardous and toxic gases and vapors generated during the digestion process, every digester should be combined with a KS 1000 Scrubber to prevent potential damage to the digester and surrounding equipment.

## KS 1000 SCRUBBER



KS 1000 SCRUBBER is designed for the neutralization of toxic and corrosive fumes coming from digestion.

- HIGHLY EFFICIENT
- SAFE AND ROBUST
- EXTREMELY COMPACT
- REDUCED WATER CONSUMPTIONS
- USABLE FOR BOTH ACID AND BASIC NEUTRALIZATION

## INSTRUMENT - CODE

	POWER	SYSTEM	INSTRUMENT
DK 6	230 V / 50-60 Hz 115 V / 50-60 Hz	S30100400 S30110400	F30100400 F30110400
DK 6/48	230 V / 50-60 Hz 115 V / 50-60 Hz	S30100410 S30110410	F30100410 F30110410
DK 8	230 V / 50-60 Hz 115 V / 50-60 Hz	S30100420 S30110420	F30100420 F30110420
DK 18/26	230 V / 50-60 Hz 115 V / 50-60 Hz	S30100430 S30110430	F30100430 F30110430
DK 20	230 V / 50-60 Hz	S30100440	F30100440
DK 42/26	230 V / 50-60 Hz	S30100450	F30100450

## OPTIONAL ACCESSORIES

Glass cap	A00000243
Air condenser with ground cone	A00001041
PTFE sheaths for 29/32 cones	A00001042
Antisplash bell	A00001045
Stand for DK6-DK6/48	A00000397
Stand for DK-DKL8 DK18/26	A00000184
Stand for DKL-DK20, DKL-DK42/26	A00000182
Adapter for probe Ø3 mm for DK-DKL-ECO	A00000362
TMD6 Mineralization System	A00000409
Sample rack for COD DK6	A00000408
Sample rack for COD DKL20-DK20	A00000237
Test tube COD Ø42x200 mm 200 ml, 3 pcs/box	A00000145
IQ/OQ DK Manual	A00008338
KjTabs VCM - 1000 pcs/box	A00000274
KjTabs VKPC - 1000 pcs/box	A00000275
KjTabs VCT - 1000 pcs/box	A00000276
KjTabs VST - 1000 pcs/box	A00000277
KjTabs VTCT - 1000 pcs/box	A00000281
KjTabs VW - 1000 pcs/box	A00000282
KjTabs VS - 1000 pcs/box	A00000283
Weighing boats 58x10x10 mm, 100 pcs/box	CM0486000
Weighing boats 70x23x15 mm, 100 pcs/box	CM0486001

## SUPPLIED WITH THE SYSTEM



SUPPORT  
SYSTEM

DK 6	A00000191
DK 6/48	A00000191
DK 8	A00000191
DK 18/26	A00000191
DK 20	A00000190
DK 42/26	A00000190



SAMPLE  
RACK

DK 6	A00000395
DK 6/48	A00000398
DK 8	A00000173
DK 18/26	A00000400
DK 20	A00000168
DK 42/26	A00000179



SUCTION CAP  
AND DRIP TRAY

DK 6	A00000396
DK 6/48	A00000399
DK 8	A00000175
DK 18/26	A00000401
DK 20	A00000169
DK 42/26	A00000180



TEST TUBES

DK 6	A00000144
DK 6/48	A00001088
DK 8	A00000144
DK 18/26	A00000146
DK 20	A00000144
DK 42/26	A00000146

## FIELDS OF APPLICATION

The DK Series is suitable for a variety of applications including the determination of nitrogen, protein, COD, TKN and more, in accordance with official methods.

FOOD, FEED AND BEVERAGE INDUSTRY

ENVIRONMENTAL INDUSTRY

PHARMACEUTICAL AND CHEMICAL INDUSTRY

# TECHNICAL DATA

	DK 6	DK 6/48	DK 8	DK 18/26	DK 20	DK 42/26
CONSTRUCTION MATERIAL	Epoxy painted with chemical resistant coating	Epoxy painted with chemical resistant coating	Epoxy painted with chemical resistant coating	Epoxy painted with chemical resistant coating	Epoxy painted with chemical resistant coating	Epoxy painted with chemical resistant coating
TEMPERATURE RANGE	Ambient to 450 °C / 842 °F	Ambient to 450 °C / 842 °F	Ambient to 450 °C / 842 °F	Ambient to 450 °C / 842 °F	Ambient to 450 °C / 842 °F	Ambient to 450 °C / 842 °F
STABILITY OF THE HEATING BLOCK TEMPERATURE	± 0,5 °C	± 0,5 °C	± 0,5 °C	± 0,5 °C	± 0,5 °C	± 0,5 °C
PRECISION OF THE HEATING BLOCK TEMPERATURE	± 0,5 °C	± 0,5 °C	± 0,5 °C	± 0,5 °C	± 0,5 °C	± 0,5 °C
SET TEMPERATURE	Digital readout in °C or °F	Digital readout in °C or °F	Digital readout in °C or °F	Digital readout in °C or °F	Digital readout in °C or °F	Digital readout in °C or °F
TEMPERATURE CALIBRATION	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
SELECTABLE RAMPS	Up to 4 per program	Up to 4 per program	Up to 4 per program	Up to 4 per program	Up to 4 per program	Up to 4 per program
DIGESTION TIME RANGE	1 to 999 minutes	1 to 999 minutes	1 to 999 minutes	1 to 999 minutes	1 to 999 minutes	1 to 999 minutes
TIME SELECTION	1 minute steps	1 minute steps	1 minute steps	1 minute steps	1 minute steps	1 minute steps
COUNTDOWN	Digital readout	Digital readout	Digital readout	Digital readout	Digital readout	Digital readout
SELECTABLE LANGUAGE	EN, IT	EN, IT	EN, IT	EN, IT	EN, IT	EN, IT
HEATING PLACES	6-position	6-position	8-position	18-position	20-position	42-position
SIZE OF TUBES	250 ml test tubes (Ø 42 mm)	300ml test tubes, Ø 48 mm	250 ml test tubes (Ø 42 mm)	100 ml test tubes, Ø 26 mm	250 ml test tubes (Ø 42 mm)	100 ml test tubes, Ø 26 mm
POWER	1000 W	1000 W	1150 W	1150 W	2300 W	2300 W
WEIGHT	9 kg (35.7 lb)	9 kg (35.7 lb)	11 kg (24.2 lb)	11 kg (24.2 lb)	18 kg (39.7 lb)	18 kg (39.7 lb)
DIMENSIONS (WxHxD) (aluminum block only)	220x140x350 mm (8.7x5.5x13.8 in)	220x140x350 mm (8.7x5.5x13.8 in)	230x690x420 mm (9.1x17.2x16.5 in)	230x690x420 mm (9.1x17.2x16.5 in)	330x140x510 mm (13.0x5.5x20.1 in)	330x140x510 mm (13.0x5.5x20.1 in)



## SERVICE & SUPPORT

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# FIWE

## Semi-automatic Fiber Analyzers

Crude and Detergent Fiber Determination  
according to Official Methods



# Reliable and Convenient

The FIWE is the semi automatic fiber extractor that uses pre-heated reagents for fiber analysis according to Weende, Van Soest and other official methods.

- Total raw fiber extraction using Weende technique
- Neutral & acid detergent fiber with NDF, ADF, Van Soest extractions
- Acid detergent lignin extraction with ADL & Van Soest methods
- Reagent preheating on RC 2 hotplate (included)
- Same crucibles used for weighing, drying & washing – no loss of fiber ensured
- High reproducibility
- Back-pressure pump prevents clogging of crucibles



## INSTRUMENT - CODE

FIWE 3	230 V / 50 Hz	SA30520201
FIWE 3	230 V / 60 Hz	SA30530201
FIWE 3	115 V / 60 Hz	SA30540201
FIWE 6	230 V / 50 Hz	SA30520200
FIWE 6	230 V / 60 Hz	SA30530200
FIWE 6	115 V / 60 Hz	SA30540200

The products are supplied with accessories and parts, including RC 2 Hot Plate, to start operating from day 1 (visit [www.velp.com](http://www.velp.com) for more details).

## TECHNICAL DATA

	FIWE 3	FIWE 6
CONSTRUCTION MATERIAL	Epoxy painted stainless steel structure	Epoxy painted stainless steel structure
TYPE OF EXTRACTIONS	Cold and hot extractions	Cold and hot extractions
NUMBER OF SAMPLES	3 positions	6 positions
SAMPLE	Individually processed	Individually processed
SAMPLE QUANTITY	From 0,5 to 3 g	From 0,5 to 3 g
REPRODUCIBILITY (RSD)	± 1%	± 1%
SAMPLE REMOVAL	Air pump	Air pump
REAGENT DISCHARGE	Peristaltic pump	Peristaltic pump
DIGITAL TIMER	0 - 99 minutes with acoustic signal at the end	0 - 99 minutes with acoustic signal at the end
TEMPERATURE	Electronic regulation	Electronic regulation
REAGENTS AND COOLING WATER	Separated outlets	Separated outlets
POWER	900 W	1200 W
WEIGHT	35 Kg (77 lb)	40 Kg (101.2 lb)
DIMENSIONS (WXHxD)	530x620x390 mm (20.9x24.4x15.4 in)	760x620x390 mm (29.5x24.4x15.4 in)
APPLICATIONS	Raw fiber (Weende, Wjstrom) Neutral or acid detergent treatment fiber (Van Soest) Lignin, Cellulose, Hemicellulose	Raw fiber (Weende, Wjstrom) Neutral or acid detergent treatment fiber (Van Soest) Lignin, Cellulose, Hemicellulose



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# SER 148

## Semi-automatic Solvent Extractors

Reliable solid-liquid solvent extraction system  
in 3 and 6 positions



# Reliable Solution for Solvent Extraction

The SER 148 is the safe and convenient semi-automated extraction system suitable for fat extraction and sample preparation in a wide range of applications in food, feed, environmental and other industrial segments.

- Rapid analysis with maximum precision or accuracy
- Maximum reproducibility and highest flexibility
- Extraction according to Randall method, faster than traditional Soxhlet
- Accepts the majority of solvents thanks to the Vaflon seals
- High solvent recovery and low solvent consumption
- IP 55 rating for maximum safety in your lab.
- Compatible with HU6 hydrolysis unit for total fat determination
- Full range of accessories



## INSTRUMENT - CODE

<b>SER 148/3</b>	230 V / 50-60 Hz	<b>F30300240</b>
<b>SER 148/3</b>	115 V / 50-60 Hz	<b>F30310240</b>
<b>SER 148/6</b>	230 V / 50-60 Hz	<b>F30300242</b>
<b>SER 148/6</b>	115 V / 50-60 Hz	<b>F30310242</b>

## TECHNICAL DATA

	<b>SER 148/3</b>	<b>SER 148/6</b>
NUMBER OF SAMPLES	3 positions	6 positions
2 DISPLAYS	Working temperature / settable parameters	Working temperature / settable parameters
REPRODUCIBILITY (RSD)	≤ 1%	≤ 1%
SOLVENT RECOVERY	From 50 to 75%	From 50 to 75%
MAX VOLUME EXTRACTION CUP	150 ml	150 ml
NUMBER OF PROGRAMS	29	29
WORKING TEMPERATURE	From 100 to 260 °C	From 100 to 260 °C
COOLING WATER	2 l/min	2 l/min
SAMPLE QUANTITY	From 0,5 to 15 g (generally 2-3 g)	From 0,5 to 15 g (generally 2-3 g)
SOLVENT VOLUME	From 30 to 100 ml	From 30 to 100 ml
IMMERSION TIME	From 0 to 999 minutes	From 0 to 999 minutes
WASHING TIME	From 0 to 999 minutes	From 0 to 999 minutes
RECOVERY TIME:	From 0 to 999 minutes	From 0 to 999 minutes
CONSTRUCTION MATERIAL:	Epoxy painted stainless steel structure	Epoxy painted stainless steel structure
DIMENSIONS (WXHXD):	480x620x390 mm (18.9x24.4x15.4 in)	700x620x390 mm (27.6x24.4x15.4 in)
WEIGHT	30 Kg (66 lb)	40 Kg (88 lb)
POWER	500 W	950 W



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