UDK Series

Distillation Units

A complete range of distillers to meet any laboratory requirement for kjeldahl nitrogen determination and other analyses across multiple applications.

velp®

Driven by curiosity

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

- Ideal for low- to high-throughput labs, from a few samples to unattended operation
- Multiple automation levels for NaOH, H_2O, and Boric Acid addition
- Adjustable steam power (10%–100%) for diverse applications
- Supports a wide range of analytes and industries with dedicated accessories

Unmatched Resistance and Reliability

- Full range of sensors and safety systems for operator protection
- Patented steam generator and titanium condenser for long-term durability
- Technopolymer splash head reduces maintenance and total cost of ownership

Premium Precision and Accuracy

- Guarantees reproducible results with RSD ≤ 1%
- Recovers over 99.5% of nitrogen for highly reliable measurements
- Limit of Detection as low as 0.015 mg N, ideal for low nitrogen samples

Superior Ease of Use & Efficiency

- User-friendly software with guided steps and a 7” display
- Barcode technology streamlines Kjeldahl routine operations
- Seamless connection to Velp Ermes Cloud Platform for remote monitoring, data management, and premium support

ERMES ENABLED

Kjeldahl Analysis Process

Sample Preparation

1

Use Genuine consumables designed to provide a solution for digestion, including catalyst tablets and nitrogen-free weighing boats.

Digestion

2

Place the sample into the Velp Digesters. Choose automatic or semi-automatic models. Hazardous fumes generated during the digestion should be neutralized with the KS 1000 Scrubber.

Distillation

3

Use the Velp Distillation Units for the determination of analytes in your sample.

Titration

4

You can now perform the final step. Choose automatic titration with UDK 159-169 or external titration with UDK 149.

→ **Nitrogen mg** (Protein %)

UDK 129

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.

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

Automatic NaOH addition

UDK 139

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.

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
- 7-inch touchscreen and smart User Interface

Automatic NaOH -H_2O addition

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UDK 149

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

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 versality
- 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)

Automatic NaOH - H_2O - H_3BO_3 addition

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UDK 159

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 versality
- 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 NaOH - H_2O - H_3BO_3 addition

ERMES ENABLED

UDK 169

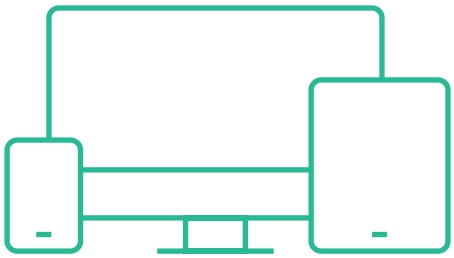
The UDK 169 is the fully automated distiller with an integrated colorimetric titrator for premium performance and continuous operation. It offers the highest sample throughput available when connected to the AutoKjel autosampler, for the most productive system. Just load your samples and walk away: the 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 versality
- 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)
- 24-position carousel 250 ml tubes (standard)
- 21-position carousel 400 ml tubes (optional)

Automatic NaOH - H_2O - H_3BO_3 addition

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

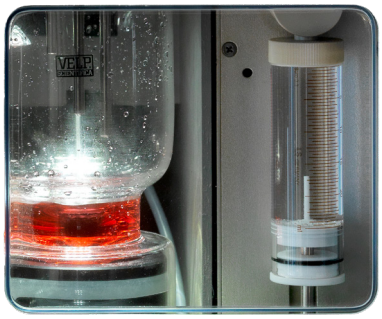
Colorimetric Titration

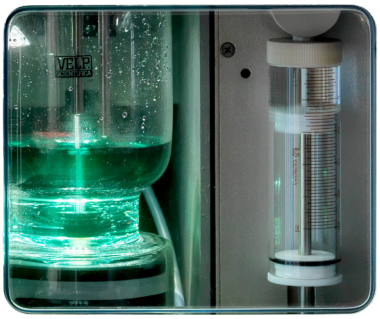
The colorimetric titration is based on precise chemical reactions with indicators. Velp integrated titrator is maintenance-free and is AOAC recommended. It works by dosing an acidic titrant solution to the boric acid containing the ammonia distilled from the sample. This titration process results in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

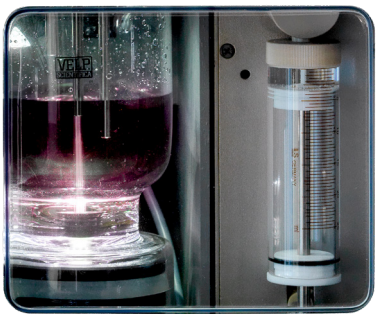
1 **Red**
Absence of ammonia

2 **Green**
Ammonia flows into receiving solution

3 **Grey/Pink**
End point of the analysis







VReceiver™

During Kjeldahl distillation, ammonia is condensed and captured in a boric acid solution to prevent the loss of gaseous NH_3. Velp's unique Vreceiver™ is a certified formula consisting of boric acid powder combined with a mixture of indicators (Bromocresol Green and Methyl Red) as specified by AOAC methods. This ensures quick and standardized preparation of the receiving solution for colorimetric titration.

Code A00000411

Fields of Application

The UDK Series complies with official methods (AOAC, ISO, DIN, EPA, AACC, etc.) for a wide range of applications, including protein, ammoniacal nitrogen, nitric nitrogen, phenols, volatile acids, sulfur, cyanides, and alcohol.

Food, Feed & Beverage
Meat, Fish, Poultry, Cereals, Bakery products, Milk, Dairy, Oils, Fats, Brewery, Oils Seeds, Pet food

Environmental & Agro
Soils, Plants, Fertilizers, Waste, Wastewater, Water, Sludges, Sediments

Chemical & Petrochemical
Rubber, Plastic, Lubricants, Petroleum products, Coal fuels, Coke

Pharmaceutical & Life science
Pharmaceutical products, Vaccines, Active ingredients

Cosmetics & Personal Care
Creams, Lotions, Powders

Optional Accessories

Vreceiver TKN formula for 1L, 10 pcs/pack	A00000411
Tube connection Ø26, Ø48	A00000043
Spacer for test tube Ø 48x260 mm	A00000206
Guide for test tube Ø 50 AUTOKJEL	A00000255
Carousel for 21x400 ml tubes AUTOKJEL	A00000459
H3BO3 tank with caps (UDK149,159,169)	A00000264
NaOH tank with caps (UDK1X9)	A00000265
H2O tank for UDK or H20 and residue tank for FIWE Advance	A00000266
Residues tank with caps	A00000267
Barcode scanner with USB socket	A00000364
Wireless barcode scanner	A00000365
USB Wi-Fi adapter	A00000392
Waterproof mouse	A00000215
Printer	A00001009
Adapter USB-RS232	A00000195
Kit SI Analytics TL5000/7000/7750/7800	A00000211
Kit conness. Mettler T5-T7-T9-G10S-G20S	A00000214
Glass splash head kit UDK	A00000216
Glass splash head kit UDK129	A00000238
Acid pump kit UDK1X9 230V	A00000422
Acid pump kit UDK129 115V	A00000423
IQ/OQ UDK129 Manual	A00000424
IQ/OQ UDK139 Manual	A00000425
IQ/OQ/PQ UDK149 Manual	A00000426
IQ/OQ/PQ UDK159 Manual	A00000427
IQ/OQ/PQ UDK169 Manual	A00000428
IQ/OQ AUTOKJEL Manual	A00000256
TITROLINE 5000 Automatic titrator UDK 149	R30800194
21 CFR part 11 package for UDK 169-159	A00000429
Velp Ermes 1 year Connection	E00010012
Velp Ermes 3 years Connection	E00010036

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

UDK 129	115 V / 60 Hz	F30200125
UDK 129	230 V / 50-60 Hz	F30200125
UDK 139	230 V / 50-60 Hz	F30200135
UDK 149	230 V / 50-60 Hz	F30200145
UDK 159	230 V / 50-60 Hz	F30200155
UDK 169	230 V / 50-60 Hz	F30200165
AutoKjel	230 V / 50-60 Hz	F30200430
UDK 169 with AutoKjel	230 V / 50-60 Hz	S30200165

Supplied with

Temperature probes and thermoregulators ensure precise temperature control for accurate and reproducible results.

A00001080
Test tube
Ø 42x300 mm

A00000392
USB Wi-Fi
adapter

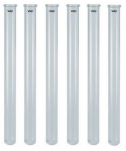
E00010012
Velp Ermes
1 Year
Connection

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

21 CFR Part 11 Compliance

The Kjeldahl method is a primary technique for nitrogen determination in Quality Control, especially in pharmaceutical labs. The UDK 159 and UDK 169 are fully compliant with FDA 21 CFR Part 11 for electronic records and signatures.

- 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

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 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:

- Help-desk and Remote support
- Technical Assistance
- Analytical Support

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