

# UDK 159 Automatic Distillation & Titration System

## VELP Fully Automatic, Interactive Kjeldahl System

- All-in-one Solution: Integrated Distillation & Colorimetric Titration System
- Patented Steam Generator and Patent Pending Titanium Condenser
- Low Consumption of Cooling Water (from 0.5 l/min)



The UDK 159 Distillation & Titration System is designed to perform nitrogen and protein content according to the Kjeldahl Method (TKN) in the Food & Feed industries and several other applications in environmental control (phenols, nitrogen in water, sludge, soil and lubricant) and also in the chemical and pharmaceutical industries after having digested the sample accurately.

The UDK 159 is exceptional in providing savings, by using **TEMS™** technology:

**Time Saving** - Fast and frequent analyses; no heating delay between runs.

**Energy Saving** - Cooling water consumption starting from only 0.5 l/min; excellent insulation of internal parts.

**Money Saving** - Cost reduction is substantial, in line with reduced power consumption.

**Space Saving** - The extremely compact footprint saves useful laboratory bench space.

The UDK 159 is designed to satisfy the most demanding laboratories needing **high productivity and high safety standards**. It combines both distillation and titration units in one fully automatic, **integrated system**. Exceptional and original VELP design features are found in both units. Designed with a **highly resistant technopolymer housing** for corrosion protection, the system is built around the tough, **patented steam generator, titanium condenser (patent pending) and technopolymer splash head** ensure the ultimate in nitrogen analysis for precise determination. High-precision pumps and burette ensure constant accurate dosing of reagents.

**Official and customizable methods** are piloted via the 6" color touch screen where the operator can set sodium hydroxide, water and boric acid addition, select the distillation and reaction times and regulate steam output (10% to 100%), in this **multifunction and easy to use system with full data handling features**.

The UDK 159 incorporates all advanced VELP technologies and innovations in distillation & titration.

The **patented VELP steam generator** operates without pressure for **safe distillation**, no heat-up delays and requires **no maintenance**. The **efficient titanium condenser** offers reduced water consumption, ensuring that the distillate temperature always remains below the threshold value and provides high resistance to breakage. The unique **technopolymer splash head**, that contains no glass in its robust design, ensures long life.

A **range of sensors make the UDK 159 convenient and safe** – tube positioning, closed protective door, lever to avoid touching the base of the tube during placement, drip tray, cooling water flow and reagent level alarms... all on board. Colored tubes enable an immediate identification for safety.

Automatic **colorimetric titration (AOAC recommended)** is followed by **automatic titration vessel cleaning**. The **multitasking software** enables the operator to set all the parameters for a fully automatic control of the distillation and titration processes. UDK 159 offers **powerful data handling** with on-board archive for data storage, balance data input, output to PC, pen drive, printer in a common format, via Ethernet, USB and RS232.

The unit comes **ready to use**, supplied with test tube, pincer for test tube, collecting flask, inlet and discharge tubes.

#### Industry – Application Fields

- **Food, Feed and Beverage** industries - TKN, proteins, TVBN (Total Volatile Basic Nitrogen), alcohol
- **Environmental and Agriculture** industries - TKN, Devarda, phenols, ammonia
- **Pharmaceutical and Chemical** industries - organic nitrogen, ammonia

| Technical Data                                         | Description                                                   |
|--------------------------------------------------------|---------------------------------------------------------------|
| Structure:                                             | Corrosion-resistant technopolymer                             |
| Display:                                               | 6" color touch screen                                         |
| Storage capacity:                                      | Up to 100,000 measurements                                    |
| Max burette standard volume:                           | 25 ml                                                         |
| Min. burette volume:                                   | 2 µl / step                                                   |
| Programmable delayed start for Devarda alloy analysis: | 0 – 99 min                                                    |
| Protocol library:                                      | 54 (30 standard + 24 customizable)                            |
| Selectable language:                                   | UK, I, E, F, RUS, CN + Additional Customizable (downloadable) |
| Addition of sodium hydroxide / water / boric acid:     | Automatic / Automatic / Automatic                             |
| Steam flow regulation:                                 | 10 -100 %                                                     |
| Tap water consumption:                                 | From 0,5 l/min at 15°C – From 1 l/min at 30°C                 |
| Reproducibility (RSD):                                 | ≤ 1 %                                                         |
| Recovery:                                              | ≥ 99.5 % at nitrogen levels between 1 and 200 mg N            |
| Detection Limit:                                       | ≥ 0.1 mg N                                                    |
| Interfaces:                                            | Ethernet, 2 x USB and RS232                                   |
| Conformity with standards:                             | AOAC, EPA, DIN, ISO, GLP                                      |
| Power:                                                 | 2200 W                                                        |
| Power supply:                                          | 230 V - 50 / 60 Hz                                            |
| Weight:                                                | 31 kg / 68.3 lb                                               |
| Dimensions (WxHxD):                                    | 385x780x416 mm (15.2x30.7x16.4 in)                            |
| Ordering Information                                   | Description                                                   |
| Code No                                                |                                                               |
| F30200150                                              | UDK 159 Distillation & Titration System                       |