

# OPSIS LiquidLINE KjelROC Analyzer

High Precision Kjeldahl System with  
Flexible Communication



# WHY KJELROC ANALYZER?

OPSIS LiquidLINE brings innovation to a 100-years old reference method;

- Improved accuracy with unique Predictive Titration \*
- Improved workflow with the user in the driving seat, having Ethernet/Wireless communication and Easy integration into other systems
- Secured analytical accuracy by providing Performance Tracking systems, Maintenance program and state-of-the-art safety systems



\* Patent Pending

## IMPROVED ANALYTICAL RESULTS INCREASE USEFULNESS AND SAVES COSTS

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- The OPSIS LiquidLINE Predictive Titration lowers the Relative Standard Deviation (rsd) and increases flexibility with different indicators, leading to increased usability of your instrument
- Large, refillable Burette, saves time and costs when moving between high and low content protein
- Performance Tracking saves time when following the instrument performance over time. Easily transfer data to PC in order to produce graphs or calculate standard deviation in a spreadsheet program

## FLEXIBLE WIRELESS/ETHERNET COMMUNICATION INCREASES EFFICIENCY AND REDUCES COSTS

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- The possibility to send and receive weights/results without additional software, computers or cables significantly reduces the integration and IT costs
- It is easy to directly process data files in the KjelROC, in most cases without need for export or import activities. Reduces costs when integrating with your LIMS or other systems
- The same computer laptop can be used to enter data at the balance and transmit data to the KjelROC, leading to efficiency gains in your lab

## OP SIS LIQUIDLINE REDUCES FUTURE COSTS

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- Possible to install with OPSIS LiquidLINE Sampler system
- KjelROC Unique Service System saves time for maintenance
- Prepared for ISO 17025 and GLP features reduces time and costs when integrating the instrument into the Lab procedures

# BENEFITS

After more than 25 years of experience within analysis, we will now raise the standard for Quality Instruments, Information Exchange and Analysis in samples like Food, Forage and Liquids. The KjelROC is prepared for the future with several new, unique, benefits.

## HIGH PRECISION TITRATION SYSTEM

The KjelROC is designed for colorimetric titration and fully complies to standards issued by organisations such as AOAC, IDF and ISO. A unique Titration system, OPSIS LiquidLINE Predictive Titration\*, lowers rsd which directly transforms to more precise results. A large burette with automatic refill during analysis will also secure a wide analysis range.

- OPSIS LiquidLINE unique Predictive Titration\* lowers rsd and simplifies the use of different indicators
- The unique Predictive Titration\* allows for automatic refill during analysis without affecting the precision
- 50 ml Burette and refill secures a wide analysis range and lowers the analysis time
- Burette with a resolution of 1.95 µl/step gives unmatched precision
- Easy exchangeable Glass Splashead minimises carry-over effects
- PTFE tubes limit air bubbles

\* Patent Pending

THE UNIQUE PREDICTIVE TITRATION SYSTEM LOWERS THE RSD AND THE 50 ML BURETTE WITH AUTOMATIC REFILL MAKES IT EASY TO CHANGE BETWEEN HIGH AND LOW PROTEIN ANALYSIS.



## FLEXIBLE WIRELESS/ETHERNET COMMUNICATION

Open file protocols decrease integration costs and the use of a flexible data format allows transfer to different computer systems. The KjelROC data format is open to be read by any text editor, database or spreadsheet. Easy exchange with Wireless/Ethernet\* technology and standard File Transfer Protocol (ftp) reduces integration costs, no expensive investments in cables or dedicated software.

- Transfer to and from laptop computers, tablets and mobile phones - basically any device that has a WiFi or Ethernet client. Offers unique flexibility to integrate the instrument into the Lab at low cost.
- Transfer .csv formatted data directly to instrument, even directly from a computer connected to a balance. The KjelROC is using a well-documented and open exchange format that can be adapted to your own needs which saves integration costs.
- Add your own tags and information to transmitted data. Having your own Lab ID tags included into data files is no problem and of course everything is traceable - from weight entry to final result.
- Easily import your data into spreadsheets, word programs or databases. Sample macro scripts to automatically send and retrieve data to and from a spreadsheet are supplied together with the instrument, making it easy to adapt the instrument to your needs.

\* Ethernet Interface on instrument and included KjelROC Router allows both Ethernet and WiFi communication



THE KJELROC OPEN FORMAT MAKES IT EASY TO USE A SPREADSHEET PC PROGRAM WITH AUTOMATIC TRANSFER OF WEIGHTS AND RESULTS TO/FROM THE INSTRUMENT.

## ADAPTIVE WORKFLOW

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Use your existing Lab procedures or use our ready to use programs, the instrument is fully flexible to adapt to your demands which reduces integration costs.

- With our adaptive workflow you are always in control, for example handling express samples with no previous weight entry, weight entry via touch screen or weight entry from an external device. Any combination is possible.
- Customisable touch screen to define your own workflow. For example, you can personalise settings for results types, methods or analysis sequence to simplify your daily routine. Your dedicated buttons for operation are accessible directly at start-up.
- The KjelROC offers different access levels and menus according to GLP requirements. A dedicated menu allows the Lab manager to further control settings of the instrument such as Burette test, Titration Endpoints, Factory defaults and Time&Date.
- An extensive set-up of User Protection safety systems is included in the KjelROC. Sensors will, for example, detect if tube is missing or if protection door is open. Automatic Tube Draining eliminates the need for handling hot reagents after distillation. Several other systems are also monitoring the operator activities.
- The KjelROC uses 250 and 750 ml tubes. Additional 100 ml and 300 ml tubes can be used with adapter.



AN OVERVIEW OF THE WHOLE RACK WITHOUT POP-UP DIALOGUES - A SYSTEM WITH THE USER IN MIND.

## ISO 17025 PREPARED

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Traceability of data files, QR component codes and user access levels make it easy to implement ISO 17025. OPSIS LiquidLINE Performance tracking system warns if analysis results change over time.

- OPSIS LiquidLINE Performance Tracking is a system to secure analysis results over time. Using a standard reagent solution, with known nitrogen content, it is possible to follow and document performance over time. All results are stored in a separate log-files and can easily be transferred wirelessly to a PC.
- OPSIS Component traceability program allows tracking of components. It is also possible for a service engineer to retrieve lifetime status of main components.
- The User ID is included in weight entry and analysis log file to ensure traceable events. Data remains intact, and traceable, from PC to instrument and back
- Dedicated Managers menu to perform QC operations such as Burette test.



## OP SIS LIQUIDLINE MAINTENANCE PROGRAM

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OP SIS LiquidLINE tools allow easy diagnostics and follow-up of both instruments and components, for both customer and service engineers which greatly reduces risk for stand-still of instrument.

- Unique system that allows Individual test of every component in the instrument via a Service menu
- Follow lifetime of internal components by Instrument Log file
- Fluoropolymer coating in sensitive areas to protect against Alkali
- Automatic self test with recommendations for user actions and complete cleaning programs for daily maintenance



OP SIS COMPONENT  
TRACEABILITY PROGRAM MEANS  
THAT WE TRACK INDIVIDUAL  
COMPONENTS FROM FACTORY  
TO CUSTOMER VIA QR CODES.

# KJELROC ANALYZER, KD-310-B

Analytical Data	
Titration System	Colorimetric Titration, system based on three RGB color sensors that allow use of a wide range of indicators. Unique Predictive Titration system automatically adjust titration speed on the actual distance from the end point. PTFE tubing used throughout to eliminate formation of air bubbles between burette-titration vessel.
Sampler System	It is possible to install the KjelROC Analyzer with an optional Sampler system
Measuring Range w/o burette refill	0,1 - 225 mg N
Recovery	> 99.5% (1-200 mg N)
Burette volume	Interchangeable burette 50 ml (automatic refill during analysis)
Dosing accuracy	1.95 µl/step
Accuracy/Precision %rsd	0.75% at N levels 1 - 225 mg
Distillation Speed	40 ml/min at 230V
Start time for Analysis	Instant start of analysis, no heating delay between analyses
Distillation Time	3.5 - 4 min (10 mgN), 5-5.5 min (225 mgN)
Technical Data	
Operating Temperature	5°C - 40°C, max 80 % relative humidity
Power Supply	190-240 VAC, 50-60 Hz, 10A
Power consumption	max 2200 W
Cooling Water consumption	1,75 l/min at 20° C
Steamgen. water consumption	approx. 200 ml/analysis
Dimensions (WxHxD) and Weight	430 x 700 x 330 mm, 30 kg
Graphics Display	7" 800x480 colour touchscreen
Safety	Safety sensors (Tube in Place-, Protection- and Service door), Steam Generator sensors, Cooling Water Measurement, Drip Tray, Tank level detectors, Maintenance warning systems
Electronic Steam Regulation	10-100%
Distillation Head	Easily exchangeable Splashhead with only one tube connector made of glass to reduce carry-over effects.
Password Protection	Three Levels with separate Managers Menu
Open Data Format	Well documented transfer protocols. Example code (for sending of weight entries and retrieving data) for Excel Spreadsheet provided. Transfer programs for iPad, iPhone, Windows and Mac OS.
Reagent Level Warning	4 x RJ-11 (External tank levels), 1 x RJ-11 (titration tank), OPSIS LiquidLINE flexible level detectors (optional accessory)
Data Communication	Ethernet (RJ-45) interface. Included KjelROC router for Wireless, 802.11 b/g.
Automatic Distillation and Titration	Programs for automatic control of cooling water, dilution water, sodium hydroxide and receiver solution as well as automatic emptying of tube and titration vessel. Automatic control of Water cooling, Selectable delay times and cleaning program.
Programs	Kjeldahl, Direct Distillation, Auto Clean, Auto Blank Methods. User-configured five program buttons directly accessible from main menu (unlimited combinations).
Manual Control	Possibility to bypass automatic titration system to allow for manual titration.
Daily Maintenance	Manual and Automatic Cleaning programs

*Specifications subject to change without notice*

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