

OPSIS LiquidLINE KjelROC Analyzer

High Precision Kjeldahl System
with Wireless Communication



WHY OPSIS ?

After more than 30 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:

- Unique accuracy with OPSIS LiquidLINE Predictive Titration*
- Integrated workflow with OPSIS LiquidLINE LabConnect Software
- High Chemical Resistance with the unique OPSIS LiquidLINE BlackLINE coating and plastic material in critical areas

* *Patent Pending*



Intertek



Intertek



Intertek



Intertek





■ Feed

Crude protein analysis in mixed feeds, silages, cereals, oilseeds and other feed ingredients.



■ Food

Crude protein analysis in flour, cookies, chocolate, snacks.



■ Dairy

Total/Crude protein, non-protein nitrogen (NPN), casein analysis in milk and dairy products



■ Meat and Fish

Crude protein, total volatile basic nitrogen (TVB-N), total SO₂, hydroxyproline analysis in meat and fish.



■ Tobacco

Total nitrogen, nitrates, alkaloids analysis in tobacco



■ Beverages

Crude protein, alcohol, volatile acids, total SO₂ analysis in wine, beer and other beverages



■ Fruits and Nuts

Crude protein and total SO₂ analysis in fruits and nuts



■ Fertilizers

Total kjeldahl nitrogen (TKN), Total oxidised nitrogen (TON), ammonia (NH₃), urea-N, ammonium (NH₄) analysis in fertilizers



■ Water and Soil

Total kjeldahl nitrogen (TKN), total oxidized nitrogen (TON), ammonium (NH₄), total cyanide, total petroleum hydrocarbons (TPH) analysis in water and soil



Adaptive Workflow and GLP Requirements

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.
- The KjelROC Analyzer can easily be qualified for your laboratory. Additional Installation, Operational and Performance Qualification documents can be purchased
- Easy check and adjustment of all components in your KjelROC, using the Managers and Service menus
- Automatic self test with recommendations for user actions and complete cleaning programs for daily maintenance
- The KjelROC offers different access levels and menus according to GLP requirements
- An extensive set-up of User Protection safety systems is included in the KjelROC

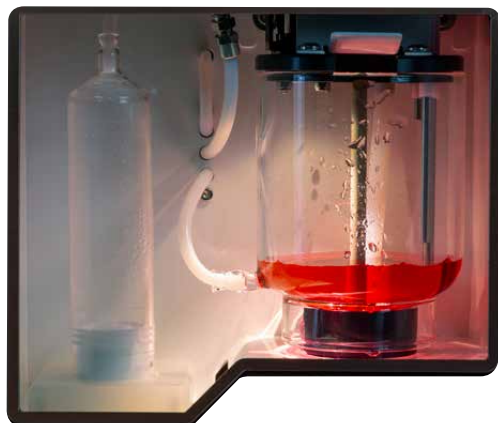
ISO 17025 Prepared

Traceability of data files and user access levels make it easy to implement ISO 17025.

- 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



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 the Relative Standard Deviation which directly transforms to more precise results. A large burette with automatic refill during analysis will also secure a wide analysis range.

- Colorimetric Titration
- Easy exchangeable Glass Splashhead for high precision or Polypropylene Splashhead for high volume analyses
- Unique Steam Stirrer function ensure safe distillation to avoid dangerous exothermic reactions
- PTFE tubes limit air bubbles

Analytical Precision

- Unique OPSIS LiquidLINE Predictive Titration technology
- Proven Relative Standard Deviation 0.75%
- Burette with a resolution of 1.95 µl/step gives unmatched precision

Wireless Transfer

A System Solution to Save Time & Costs

- The possibility to send and receive weights/results without additional software, computers or cables significantly reduces the integration and IT cost
- 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 transmitt data to the KjelROC, leading to efficiency gains in your lab



KjeIROC 210

Automatic Distillation Unit

Automation

Traceability of data files and user access levels make it easy to implement ISO 17025.

- User defined automatic addition of Water and Alkali
- User defined addition of Receiver Solution (only KD-210)
- Possibility to connect to external titrator, for both Colorimetric and pH titration
- Steam Generator can be regulated, from 10 to 100%.
- User defined behaviour with programmable delay and selection of tube drain.
- Retrieve log files for easy maintenance support, which lowers maintenance costs.



External Titrator

- Allows both pH and Colorimetric Titration (depending on your titrator)
- Automatic Start and stop of your titrator. Tested with most popular Titrator brands
- All integrated inside the instrument: Stirrer, Titrant tube and pH electrode
- Use the OPSIS LiquidLINE LabConnect software to handle your weights and results

Expandable System

The KjelROC Distillation Unit is designed for easy expansion to a full KjelROC Analyzer system.

- Possible to upgrade from Manual Distillation to Automatic Distillation (KD-200 to KD-210).
- Possible to upgrade from Automatic Distillation to Analyzer (KD-210 to KD-310), adding the titration module.
- Possible to upgrade from Analyzer to an Autosampler (KD-310 to KD-625)



OPSIS Maintenance Program



OPSIS LiquidLINE designed for your maximum safety, with several safety sensors inside. Easy diagnostics in software which reduces risk for downtime of instrument.

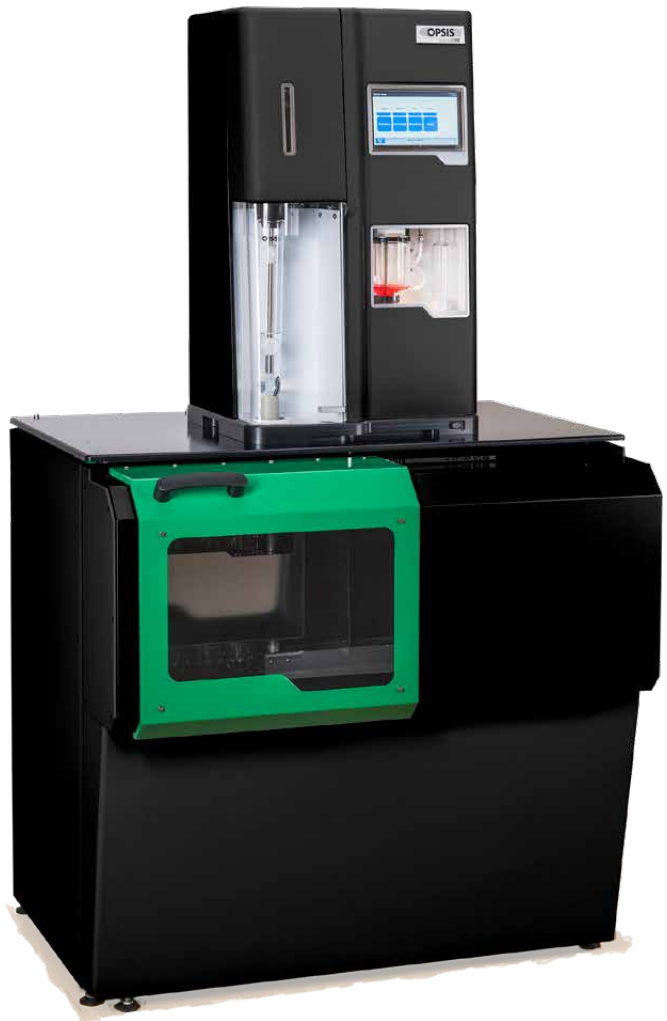
- Unique system that allows Individual test of every component in the instrument via a Service menu
- Follow lifetime of internal components by Instrument Log file
- Fluoropolymer coating in sensitive areas to protect against Alkali
- Automatic self test with recommendations for user actions and complete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

A Unique System allows individual test of every Component in the Instrument, which reduces Maintenance costs

Autosampler

An Autosampler allows automatic analysis of several tubes in a sequence, without manual intervention. The KjelROC Autosampler has several features.

- Allows analysis of a complete tube rack with 20 sample tubes and 5 extra tubes for additional analysis
- An extra row of tube samples allows easy analysis of blanks outside of the tube rack, running autoblanks or running express samples.
- All tubes can be moved directly into the Autosampler in one step, without having to move tube by tube. No risk to mix tubes during the movement from digester to distillation.
- Easy to clean all sensitive parts for daily and monthly maintenance.
- The sampler can easily be switched-off and the Analyzer can then be used independently if so required.



OP SIS LiquidLINE LabConnect allows you to:

- Automatically connect your OP SIS LiquidLINE instruments to your information flow
- Manage analysis for Protein, Ash, Moisture, Fiber or Fat, regardless of used equipment
- Analyze, store, export and print result reports

Connect your Laboratory

- Send weights and retrieve results to a KjelROC Analyzer/Autosampler
- Works with barcode scanners, label printers and balances
- Export information compatible to LIMS systems, Microsoft Excel or as PDF files



The OP SIS LiquidLINE LabConnect Software



Labconnect standard software is a solution delivered together with all OP SIS LiquidLINE KjelROCs, SoxROCs and FiberROCs

- Registration of weights, analysis results and export of data
 - Automatic import from your balance or barcode scanner
- Labconnect LIMS license is an upgrade that allows expansion to a complete Laboratory Information Management System (LIMS)
- Sample registration and reporting
 - A software for all your protein, fiber and fat analyses
 - Compliance with FDA Title 21 CFR Part

ANALYTICAL DATA	
Titration System	Colorimetric Titration. Unique Predictive Titration system automatically adjust titration speed on the actual distance from the end point. Steam stirrer function ensure safe distillation to avoid dangerous exothermic reactions. 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 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
Cooling Water consumption	approx. 200 ml/analysis
Dimensions (WxHxD) and Weight	430 x 700 x 330 mm, 30 kg
Graphics Display	7" 800x480 color 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 for high precision (B1) or Polypropylene for durability (B2).
Password Protection	Three Levels with separate Managers menu
Included Software	OPSIS Labconnect Standard software (can later be upgraded to LabConnect LIMS). OPSIS LiquidLINE Transfer Utility supplied for iPhone and iPad. Well documented open transfer protocols and example code for Excel spreadsheet provided.
Communication	Ethernet (RJ-45) interface. Included KjelROC router for wireless, 802.11 b/g.
Reagent Level Warning Data	4 x RJ-11 (external tank levels), 1 x RJ-11 (titration tank), OPSIS LiquidLINE flexible level detectors (optional accessory)
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	Up to 64 customized programs
Manual Control	Possibility to bypass automatic titration system to allow for manual titration.
Daily Maintenance	Manual and automatic cleaning programs

TECHNICAL DATA	
Distillation Speed	40 ml/min at 230V
Measuring range	0.1 - 200 mgN
Reproducibility (RSD)	<1 %
Recovery	> %99,5 (1-200 mg N)
Operating Temperature	5°C - 40°C, max 80 % relative humidity
Power Supply	190-240 VAC, 50-60 Hz, 10A, max 2200 W
Cooling Water Consumption	1,75 l/min at 20°C
Steamgen. water Consumption	approx. 200 ml/analysis
Dimensions (WxHxD)	430 x 700 x 330 mm, 30 kg
Graphics Display	7" 800x480 colour touchscreen
Safety	Safety sensors (Tube in Place-, Protection door- and Service door), Steam Generator sensors, 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 for high precision (B1) or PP Plastic for durability (B2).
Password Protection	Three Levels with separate Managers Menu
Reagent Level Warning	4 x RJ-11 (External tank levels), OPSIS LiquidLINE flexible level detectors - adaptable for different reagent tanks (optional accessory)
Data Communication	Ethernet (RJ-45) interface. Possible to use with Wireless communication
Automatic Distillation	Programs for automatic control of cooling water, dilution water and sodium hydroxide. Program to control distillation process. Automatic Tube drain included.
Future Expansion	All KjelROC Units from OPSIS LiquidLINE are expandable, which means that it is possible to upgrade a Distillation Unit to an Analyzer and Sampler system.
Programs	Standard Method, Special Method with traceability and Auto Clean. Userconfigured five program buttons directly accessible from main menu.
Daily Maintenance	Manual and Automatic Cleaning programs

KjelROC 210

In addition to the features in the KjelROC Manual Distillation Unit

Advanced Features	Pump and Programs for automatic addition of receiver solution Enhanced water valve with extra protection
Titration and Receiver vessel	Two possibilities: Fixed Titration vessel (possible to mount stirrer) for easy titration with external titrator or Receiver vessel using standard Conical Flask
Included Software	OP SIS Labconnect Standard software (can later be upgraded to LabConnect LIMS)

KjelROC



Kjeldahl Distillation Unit

Digestor



Digestion Unit

Scrubber



Acid Neutralization Unit

SoxROC



Soxhlet Fat Extraction Unit

FiberROC



Acid Hydrolysis and Fiber
Analysis Unit

Consumables



Kjeldahl Tablets

Distillation Tubes

Soxhlet Thimbles

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