TitriLyzer®
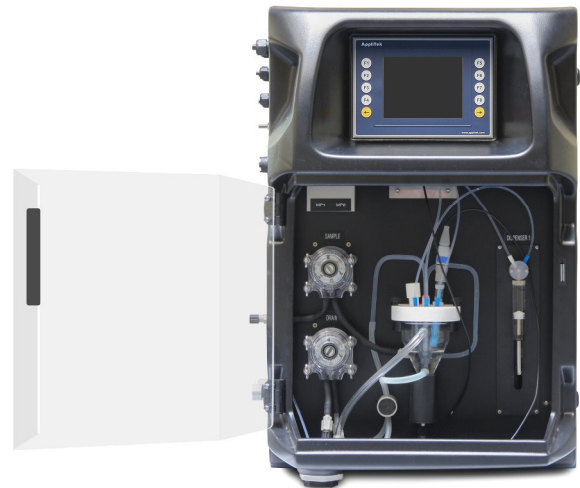## Series of On-line Titrimetric Analyzers

AppliTek

On-line, automatic titration of chemical parameters in various water applications

Advanced features

- Straight-forward design, single methodology, single parameter, factory set measuring range

- Flexibility in titration method: potentiometric or (photo) colorimetric titration

- **New:** remote access and data communication through secure virtual private network (VPN)

- Complete separation between electronics and wet part

- Smart features and add-on units reduce down-time and unnecessary checks substantially

- Multiplexing up to eight (8) sampling points possible

- Incorporated industrial PC with AppliTek controller software

- Extended data communication and exchange features

Application fields

From mg/L up to g/L measuring ranges

On-line monitoring of chemical parameters and quality indices in clean and dirty water types:

- Boiler feed water
- Cooling water
- Drinking water
- Waste water

High analytical performance

- Reduced reagent consumption by batch-wise operation principle and high precision titration techniques

- Smart features: automatic validation and cleaning

- High sensitivity and selectivity

- Factory configured, tested and calibrated

Masters in Analytical Technology. **AppliTek**

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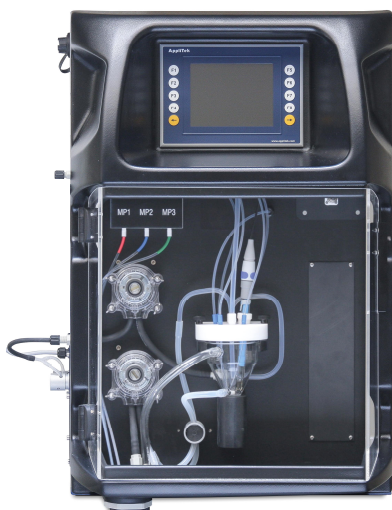
Series of On-line Titrimetric Analyzers

Introduction

Titration involves determining the analyte(s) of interest by the addition of accurately known volumes of standardized titrant to a sample solution. AppliTek's **TitriLyzer®** Series of On-line Titrimetric Analyzers are state of the art titration systems equipped with a high precision dispenser system and other quality components, available at an attractive price/quality ratio. The inherent batch-wise operating principle of the analyzer, coupled with AppliTek's controller-database software, provides the following advantages:

- To program the analysis sequence according to your needs
- To introduce rinsing and cleaning after each analysis cycle
- To limit the loading of the electrodes
- To reduce reagent consumption

Titration methodology

AppliTek's experience with on-line titration is unparalleled. Yet for each and every application it starts with the basics of titration: the right titrimetric technique in function of the measuring range, application and parameter.

Acid-base, redox or precipitation titration are typically used in the **potentiometric** configuration, where the endpoint is determined by use of a pair of electrodes or a combination electrode, i.e. the indicator and reference electrode. The electrodes for this kind of titration are chosen that a change in potential of the titration solution is optimally detected.

In the **(photo)colorimetric** analyzer configuration, color change is used to determine the endpoint of the titration. The color change is accurately measured by AppliTek's own compact photometer, a design with high sensitivity and zero contact between sample and optical parts. Its narrow-band optical filter eliminates any interference from ambient light.

Smart features

Smart features are embedded in the controller software of the **TitriLyzer®** Series, automating otherwise repetitive actions necessary for basic operation. These also contribute to enhanced analytical performance, minimized down-time and negligible operator intervention.

- Sample lines, oxidation oven and analysis vessel are cleaned with demineralized water in order to eliminate cross interference.
- Automatic validation cycles with standard solutions to check analyzer functionality. These can also be inactivated and carried out manually with preprogrammed sequences.

Image: close-up of the analysis vessel inside the wet part of the TitriLyzer®.

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Data exchange and supervision

The **TitriLyzer®** mainframe uses a high performance industrial panel PC running AppliTek's proprietary controller-database software **UPAMATIC®** to control all analysis steps, actions and logs. This fully integrated software platform not only acts as the human interface but also features a host of functions specifically designed for industrial monitoring needs. If necessary, the optional **AnaComDa®** Analyzer Communication and Data Transfer Tool can be installed in order to create a secure VPN (Virtual Private Network) connection between the client (the analyzer) and the host (PC, mobile device).

**Solid state data logger recording a history of the last 1,000 analysis results**

These can be visualized in a chronological data table and equally be exported as Microsoft Excel files through the sealed USB port outside the analyzer cabinet (right image).

Full integration and communication within industrial production sites and corporate networks

AppliTek on-line analyzers come with industrial standard 4-20 mA outputs. Ethernet communication by means of the TCP/IP protocol enables easy and reliable integration into existing corporate networks. MODBUS interfacing is possible to assure full integration and communication with DCS systems.

**Remote access to the panel PC minimizing physical operator intervention (through VPN)**

The analyzer screen can remotely be taken over by means of LAN Ethernet software (such as VNC software). Authorized users can carry out all manual operations and settings from a remote PC, such as trouble-shooting before doing any physical intervention.
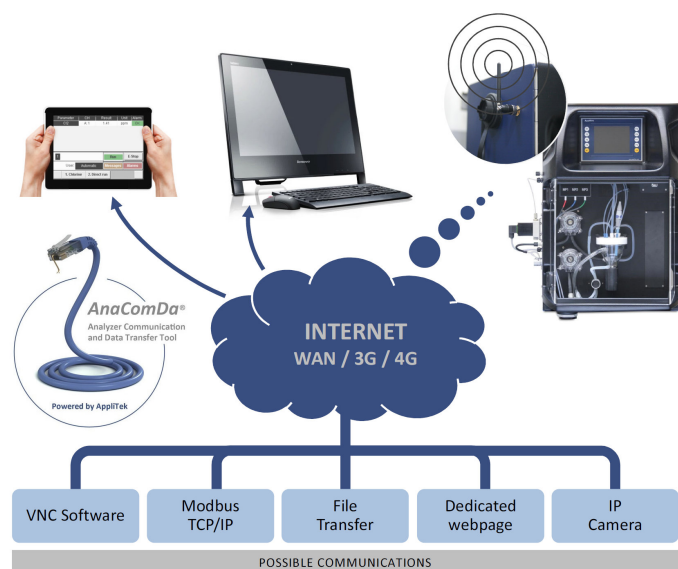
The **AnaComDa®** tool allows to create a secure VPN connection to mobile networks (3G, 4G) or Wide Area Networks, giving authorized users the possibility to use e.g. Modbus TCP/IP control through a dedicated webpage or via VNC software. The tool also allows extended data logging in the cloud and visualization (connection of an IP camera). With the VPN created, FTP protocols can be used directly from a PC or a mobile device.

Analysis of multiple streams

AppliTek's integrated multiplexing unit **ModuPlex®** consists of extra solenoid valves controlled by a special valve control software. This option enables you to monitor up to 8 streams sequentially, thus reducing the cost per sampling point. Results of each stream can be communicated through individual analogue outputs. On special request we can integrate a valve train of 6 valves, doubling the number of streams that can be monitored by one single on-line analyzer.
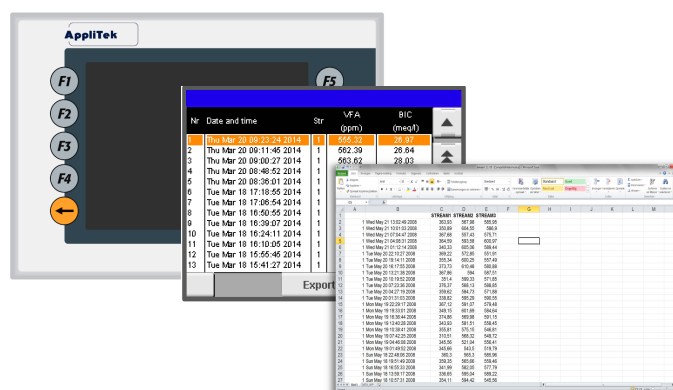
Hardware and analyzer enclosures

The **TitriLyzer®** Series are equipped with a new analyzer enclosure consisting of a solid steel back, combined with an ergonomic ABS hinged part with a transparent door allowing instant visual inspection of the wet-chemical part. Purging with instrument air is possible in case of extreme humidity or risk of accumulation of corrosive gases. If necessary, the analyzer can be integrated in various protective enclosures such as an IP65 rated protective cabinet for outdoor use or any hazardous atmosphere.

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Technical specifications

Parameters

Please check the respective datasheet for more details on the analysis method.

Parameter	
Acetic acid	
Acidity	
Alkalinity	
Aluminium	▲
Ammonia	▲
Bicarbonate	
Calcium	▲
Chloride	
Chlorine	▲
Chlorine (free)	▲
Chromium III	▲
Chromium VI	▲
Copper	▲
Cyanide	▲
Fatty acids (volatile)	
Fluoride	
Formaldehyde	
Hardness (total)	▲
Hydrochloric acid	
Hydrogen fluoride	
Hydrogen peroxide	
Hydroxide	
Iron II	▲
Iron III	▲
Lime	
Magnesium	▲
Nitrite	
Oxalic acid	
Phosphoric acid	
Potassium hydroxide	
Sodium hydroxide	
Sodium hypochlorite	
Sulphate	
Sulphide	▲
Sulphite	
Sulphuric acid	
Total hardness	
Volatile fatty acids	

▲ Remark: analysis of this parameter is also available by colorimetry.

Environmental data

Ambient operating conditions
10 °C – 30 °C +/- 4 °C deviation at 5 - 95% relative humidity non-condensing
(50 °F – 86 °F +/- 7.2 °F deviation)

Reagent temperature
Keep between 10 °C - 30 °C (50 °F - 86°F)

Sample pressure
By external overflow vessel

Sample flow rate
10 - 30 ml per minute

Sample particulates
Maximum size 200 μm, < 0.1 g/l
Turbidity < 50 NTU

Mechanical data

Protection class
Analyzer cabinet: IP55
Touch screen/Industrial PC: IP65

Cabinet and materials, hinged part
Thermoform ABS
Door: antistatic plexiglass

Cabinet and materials, wall section
Galvanized steel, powder coated

Dimensions
69 cm (27.2") x 46.5 cm (18.3") x 33 cm (13")
(H X W X D)

Total weight
25 kg (55 lbs.)

Utilities

Power
220 - 240 VAC, 2 A, 50 Hz
Max. power consumption: 150 VA
Other voltages available on request

Instrument air
Dry and oil free according to ISA-S7.0.01-1996 quality standard for instrument air

Demineralized water
For rinsing and/or dilution

Drain
Atmospheric pressure, vented, min. Ø 64 mm

Earth connection
Dry and clean earth pole with low impedance (< 1 ohm) using an earth cable of > 2.5 mm^2

Control and communication

User interface / controller
Industrial PC with 5.7" TFT colour user interface, compact flash memory
Backlit touchscreen, brightness adjustable

Data handling, logging and security
- Standard Ethernet 10 M (RJ45) NE 2000
- Communication ports supporting Ethernet connectivity to MODBUS TCP/IP
- Log files with 1,000 values/results are stored
- Easy export to spreadsheet files
- Sealed USB port for data or result graph download and program upload
- User interface with administrator access and menu keys activated/inactivated
- Data retention in case of power failure, initialization program for safe status after restart

Analogue outputs
Maximum 8, active 4 –20 mA
Max. 500 Ohm load

Alarms (digital outputs)
- Titration alarm (potential free contact)
- Result alarm (potential free contact)

MODBUS TCP/IP, MODBUS-RS232 -RS485
Optional

Options / add-on units

Sample preconditioning I
EZ-Size® self-cleaning filtration unit, various pore sizes available, requiring fast loop

Sample preconditioning II
MicroSize® self-cleaning microfiltration unit, various pore sizes available

Reagent level detection
Installed on reagent containers; alarms are generated by controller software

Multiple streams
ModuPlex® 2 or 3 streams (8 on demand)

Secure VPN connection
AnaComDa® remote access and data transfer

Certification

CE approval
Certified to CE approval

Factory Acceptance Test (FAT)
At AppliTek NV, Belgium.

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