Technical Datasheet

EnviroLyzer®

Series of On-line Colorimetric Analyzers

Part of the On-line Analyzers Suite
www.applitek.com

Single-parameter water analysis by colorimetry for industrial and environmental applications

Advanced features

- On-line, automatic colorimetric measurements
- Single methodology, single parameter, factory set measuring range
- Standard measuring ranges with optional internal dilution for high to very high ranges
- Minimalistic design: small footprint, less complexity
- **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

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

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

High analytical performance

- Low reagent and sample consumption by batch-wise operation principle
- Additional built-in sample digestion possible
- Smart features: automatic calibration, automatic validation and automatic cleaning
- High sensitivity and selectivity
- Factory configured, tested and calibrated

Introduction

Historically managing both quantity and quality of water resources has been a challenging task for companies and authorities. On-line monitoring can help them to measure quickly and effectively all the relevant parameters in the water, originating from either a natural source or an industrial site.

Since their introduction in 2009 the **EnviroLyzer®** Series of On-line Colorimetric Analyzers have served in a myriad of industrial and municipal water applications. The flexible analyzer mainframe allows a perfect on-line duplicate of any standard/laboratory wet-chemical method, with outstanding precision and accuracy.

The **EnviroLyzer®** Series harness features originally developed for our industrial, state of the art analyzers, and now available in an attractive, ergonomic mainframe with a compact footprint:

- Excellent analytical performance
- Smart automatic features
- High quality industrial panel PC
- Standard 4 - 20 mA signal output with alarm processing
- Standard Ethernet TCP/IP connection
- Higher measuring ranges: internal sample dilution
- Optionally built-in sample digestion
- Optionally multiple stream analysis

On-line, automatic colorimetry

The **EnviroLyzer®** Series of On-line Colorimetric Analyzers are equipped with a flexible mainframe designed for monitoring chemicals, trace metals and water quality indices in all sorts of water sources (see page 4). For samples with higher organic load, suspended particles or changing composition, a built-in sample digestion unit can facilitate analysis of certain parameters, i.e. copper, iron, nickel, manganese, chromium, zinc and cyanide. Our Application department can advise you correctly on this option.

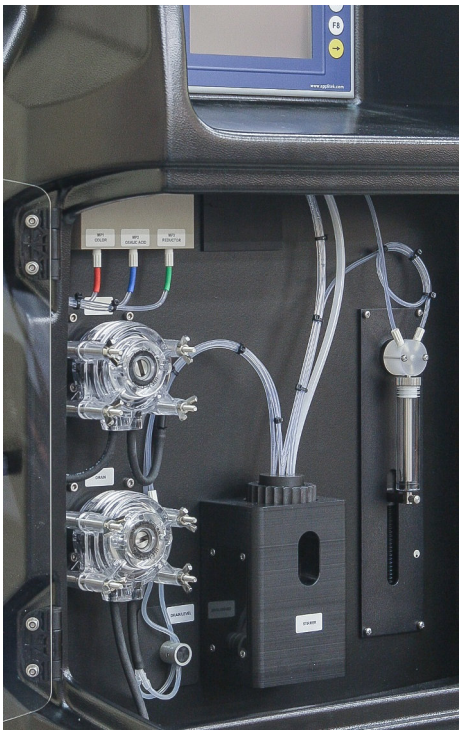
At the heart of the colorimeter there is a compact photometer assembly developed especially for the **EnviroLyzer®** Series. Consumption of reagents is reduced by low volume analysis, yet high sensitivity (µg/L range) is assured by a long optical path length. All hardware, including the precision micro pumps used for addition of reagents, are controlled by AppliTek's controller software running on the industrial panel PC.

Smart features

Smart, automatic features are embedded in the controller software of the **EnviroLyzer®** 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, analysis vessel and oxidation oven (if integrated) are cleaned with demineralized water in order to eliminate cross interference.
- Automatic calibration-validation cycles with standard solutions to check analyzer functionality. These can also be inactivated and carried out manually with preprogrammed sequences.

Image, left: internal sample dilution by dispenser.
Image, middle: pinch valves for standard solutions, cleaning and sample.
Image, right: mainframe with sample digestion and reflux cooler on top.



AppliTek

Data exchange and supervision

The **EnviroLyzer®** 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

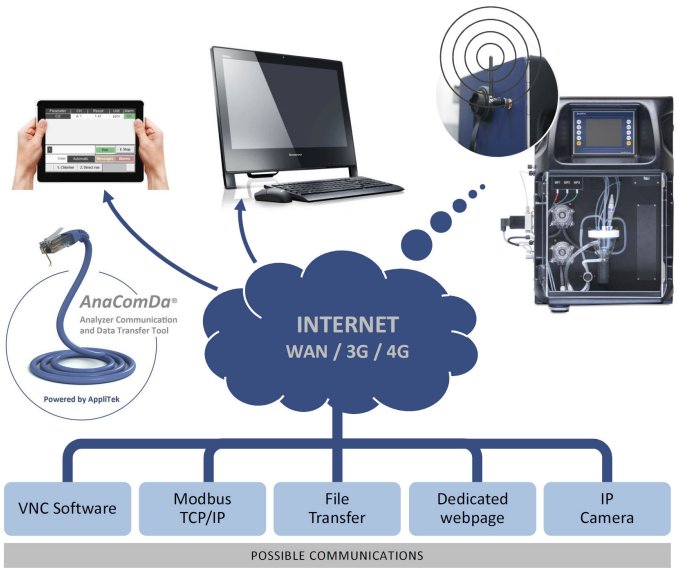
These can be visualized in a chronological data table and equally be exported as Microsoft Excel files through the sealed USB port outside the analyzer cabinet (right image).

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)

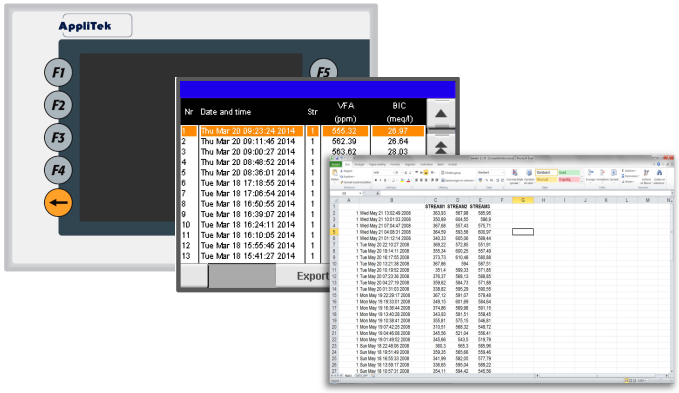
The analyzer screen can remotely be taken over by means of LAN Ethernet software (such as VNC software). Authorized users can carry out all manual operations and settings from a remote PC, such as trouble-shooting before doing any physical intervention.



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.



Hardware and analyzer enclosures

The **EnviroLyzer®** 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.

Technical specifications

Parameters

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

Aluminium	0 - 150 µg/L	▲	
Aluminium	0 - 200 µg/L	▲	
Ammonia	0 - 1 mg/L	▲	
Ammonia	0 - 2.5 mg/L	▲	
Arsenate	0 - 2 mg/L		●
Biocides	0 - 1.5 mg/L		
Boron	0 - 1 mg/L		
Chloride	1 - 10 mg/L	▲	
Chlorine (total)	0 - 1.5 mg/L	▲	
Chlorine (free)	0 - 1.5 mg/L	▲	
Chlorine dioxide	0 - 1.5 mg/L		
Chromium III	0 - 500 µg/L	▲	
Chromium VI	0 - 500 µg/L	▲	
Chromium (total)	0 - 500 µg/L	▲	
Color	0 - 500 Pt-Co		
Copper	0 - 3 mg/L	▲	●
Copper	0 - 5 mg/L		●
Cyanide	0 - 200 µg/L	▲	
DEHA	0 - 500 µg/L		
Formaldehyde	0 - 10 mg/L		
Hardness (total)	0 - 500 µg/L	▲	
Hardness (total)	0 - 1,000 µg/L	▲	
Hydrazine	0 - 500 µg/L		
Iron II	0 - 1 mg/L	▲	●
Iron III	0 - 1 mg/L	▲	●
Manganese	0 - 10 µg/L	▲	●
Manganese	0 - 1 mg/L		●
Nickel	0 - 500 µg/L		●
Nitrate	0 - 200 µg/L		
Nitrite	0 - 200 µg/L	▲	
Permanganate	0.2 - 25 mg/L		
Phenol	0 - 2 mg/L		
Phosphate	0 - 1 mg/L		
Phosphate	0 - 10 mg/L		
Silica	0 - 100 µg/L		
Silica	0 - 1,000 µg/L		
Silicium dioxide	0 - 2,000 µg/L		
Sulphate	0 - 40 mg/L		
Sulphide	0 - 1 mg/L	▲	
Thiocyanate	0.1 - 2 mg/L		
Urea	0 - 3 mg/L		
Zinc	0 - 1 mg/L		●

▲ Also possible by titration (higher ranges)
● Also possible by voltammetry

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

Other sample requirements
Temperature: 10 °C – 30 °C (50 °F – 86 °F)
Maximum size 100 µm, < 0.1 g/l
Turbidity < 50 NTU

Mechanical data

Protection class
Analyzer cabinet: IP55 / Panel PC: IP65

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

Cabinet and materials, wall section
Galvanized steel, powdercoated

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 20, active 4 –20 mA
Max. 500 Ohm load

Alarms (digital outputs)
- Malfunctioning 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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