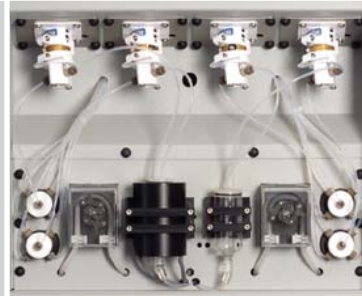


your partner in chemistry automation



On-line Process Analysis



Introduction

Skalar provides on-line analyzers designed to be integrated into water treatment and industrial processes. Optimize your process control by continuous on-line measurement. Increase efficiency by real-time process analysis feedback 24 hours a day. Skalar's On-line Process Analyzers are designed as industrial units, built into heavy duty protective enclosures suited to the environment and do not require any special skills to operate or maintain.

Our engineering department specializes in the integration of monitoring systems in your process environment and in order to comply with all the requirements for the successful installation of your On-line Process Analyzer.



Drinking Water Treatment Plants

With the ever increasing demand for clean wholesome drinking water, the role of the on-line analyzer has become even more important. The on-line monitor's role varies from giving intake protection, to the control of the many and varied processes to compliance testing of the final water.



Waste Water Treatment Plants

The level of automation in municipal waste water treatment plants has increased dramatically in recent years. The on-line monitor has become an integral tool in the monitoring of the strength and toxicity of incoming crude sewage, controlling the levels of treatment chemicals, and monitoring the quality of final discharge for regulatory purposes.



Industrial Effluents

With charges in the treatment of industrial waste at municipal plants and an international tightening of discharge regulations, many companies are operating their own effluent treatment plants. For these to operate efficiently they need reliable real time analytical information. Our on-line monitors provide information on influent quality to optimize processes, and monitor the final discharge to ensure no penalties are incurred.



Process Control

With the ever increasing need for industrial processes to become more efficient and less polluting, on-line monitoring can help provide information to optimize and control these tasks. Real time accurate analytical information can be essential to enable immediate decisions to be made for the control of quality of product which in turn can provide substantial cost savings.

On-Line Analysis



The need for optimal control and more effective automation of industrial processes has been growing steadily. As government regulations for waste disposal continues to evolve, automation of analytical methods has become essential to industry. At Skalar we have dedicated ourselves to finding solutions to industry's demands for efficient and economic on-line process systems. Three areas need to be considered for a successful on-line system.

Sampling

Sample transport from the source, or possibly from multiple sources, to the process analyzer. Sample conditioning such as filtration, cooling, dilution and pressure regulation can be integrated into a fully customized system.

Analysis

The analysis system has been carefully developed to ensure reliability, quick response time, reproducibility, accurate calibration and ease of use.

Data and output

The display panel shows the status of the instrument and the current measured value. Communication is made either via the analog output or via the RS232 connection, which can also be used to connect the instrument directly to a printer.

Skalar offers the right solution for all your process control requirements.

All Skalar's On-line Process Analyzers can be configured to meet any of today's strict standards such as ISO, EPA, BS, DIN, ASTM, NEN. This guarantees excellent correlation with laboratory results. After sales activities are carried out by Skalar's network of subsidiaries and agents, supported by our international "Help desk" facility. The analytical system is based on the well proven flow analysis technique.

The OPA2000 On-line Process Analyzer



The OPA2000 Batch Monitor

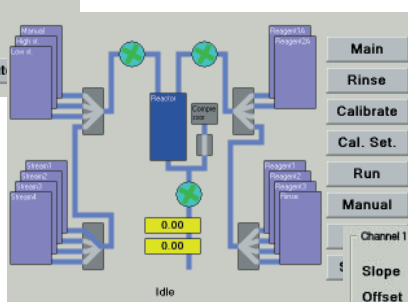
This batch analyzer measures several parameters sequentially in one monitor. The unique dosing technique with ceramic pumps provides low reagent consumption and very low maintenance. The OPA 2000 has an on-board industrial touch-screen computer which can also be accessed remotely for control purposes, real-time data reports and data storage, as well as used locally.

Features include

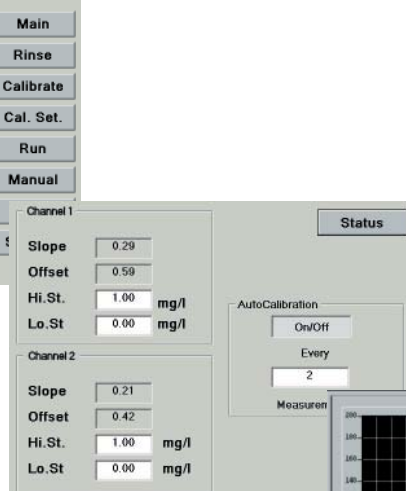
- * Batch operation
- * Easy maintenance
- * Low running costs
- * Minimal service requirements
- * Dual channel operation
- * Touch screen computer
- * Fibre optic sensor
- * Data logging and trending
- * Multiple analysis
- * Self diagnostics
- * Choice of housings
- * Multiple sample streams
- * Numerous alarm options
- * Password security



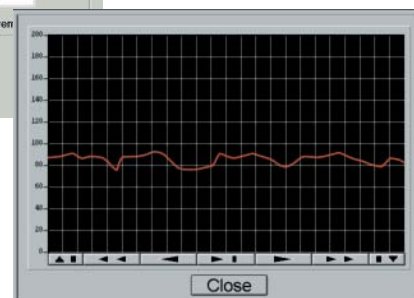
Clear user defined result presentation



Ease of operation with monitor diagnosis



Flexible settings for all system parameters



Statistical evaluation and data storage

The SA9000 On-line Process Analyzer

The Skalar on-line process analyzer SA9000, based on the well proven continuous flow technique, gives excellent correlation with laboratory methods. The SA9000 allows even the most complex analysis to be automated reliably on-line, with excellent correlation with laboratory results. This model measures the process stream continuously for 1 or 2 parameters simultaneously.

Features include

- * Continuous measurement
- * Auto calibration
- * Remote control and data reporting
- * Quality control sampling mode
- * Clear digital display
- * Self diagnostics
- * High and low alarms
- * Two or more sample streams with sample valve multiplexing to monitor process efficiency
- * Auto re-start after power interrupt



The SA9000 with reagent cabinet



Simultaneous display



Easy to use membrane key-pad



Easy to set parameters



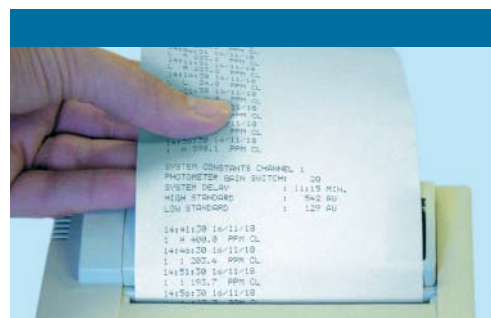
Adjustable calibration time



Measures grab sample

Modular design for one or two channels

The SA9000 is available in two models. A single channel compact model for the determination of one parameter and a dual channel model for simultaneous determination of two parameters.



Printer output

Typical Applications and Specifications

Applications for the OPA2000

Aluminium	Magnesium
Ammonia	Manganese
Calcium	Nitrate
Chloride	Nitrite
Chromium	Phenol
Color	Phosphate (ortho)
Cyanide (free)	Silicate
Fluoride	Sodium
Hardness	Sugers
Hydrazine	Sulfide
Iron	Sulfate
Lead	

Applications for the SA9000

Aluminium	Manganese
Ammonia	Methanol
Calcium	Nitrate + Nitrite
Chlorine	Nitrogen (total)
Chromium	Phenol
Color	Phosphate (ortho)
Cyanide (total)	Phosphate (total)
Formaldehyde	Silicate
Hardness	Sugers
Hydrazine	Sulfide
Iron	Sulfate
Magnesium	TOC

Specifications

OPA2000

SA9000

Operation	Batch	Continuous
Measurement principle	Colorimetric / ISE	Colorimetric / ISE
Spectral range	340 - 1100 nm	340 - 1100 nm
Control	Industrial Panel (733 MHz)	Membrane key-pad
Screen	Touch screen, 12 inch. color	20 character display (LED)
Data logging	Time, date and Measured value stored on Hard Drive	Optional
Calibration	Auto-calibration complete with rinse cycle	Auto-calibration complete with rinse cycle
Outputs	4 x 4-20 mA, 1 x RS232, Note, option other boards are available	8 x 4-20 mA/0-200 mV (programmable) RS232 (printer or work station)
Alarms	Leak, out of range, high & low and calibration	Leak, out of range, high & low and calibration
Power failure	Battery backup / automatic restart	Battery backup / automatic restart
Power consumption	400 - 600 VA	200 - 500 VA
Environmental	Temperature 5 - 50°C Humidity 5 - 95 % (non condensing)	Temperature 5 - 50°C Humidity 5 - 95 % (non condensing)
Enclosure	Polycarbonate, (others optional)	Steel cabinet, (others optional)
Protection class	IP 54 (others optional)	IP 54 (others optional)
Mounting	Wall or frame for free standing	Wall or frame for free standing
Dimensions (HxWxD)	77.5 x 61.2 x 42.9 cm	85 x 61 x 49 cm Single Channel 112 x 61 x 49 cm Dual Channel
Weight	70-100 kg	65 kg Single Channel 80 kg Dual Channel

Sample Pre-treatment

OVERFLOW UNIT



For handling pressurized samples an overflow unit has been developed by Skalar. The pressured sample is run into a catch reservoir, from where the sample is taken at atmospheric pressure through a valved PVC line to the analyzer and the overflow runs to waste.

PAPER BAND FILTER



Paper band filtration is ideally suited for samples that contain small quantities of relatively large particles. The filtration removes particles larger than fifteen microns in size and will also remove any oil in the sample. The paper band filtration unit is available as a single or dual stream system. Paper band filtration is being successfully applied to surface water, drinking water, effluent streams and small pilot plants. The 25 mm paper filter moves over the Teflon table. The unfiltered sample is pumped with the sample pump and sprayed over the filter paper. The filtered sample line is directly connected to the monitor sample selection valve. The transport of the filter paper is controlled by a slow speed motor which moves the paper continuously with a speed of approximately 15 cm per hour.

CROSS-FLOW FILTER



The cross-flow ultra filtration membrane is a low-pressure membrane filtration with the capacity to filter sample streams with a high number of suspended solids and floating particles. A semi-permeable membrane incorporated into membrane modules performs the filtration. Low molecular weight pieces e.g. salts; sugars and surfactants pass through the membrane and are removed as permeate. The membrane rejects suspended solids. Ultra-filtration membranes can retain material as low as 5 μm .

DISC FILTER



The Disc filter is a miniaturized cross-flow filtration. The key is the combination of this filter unit with the low sample volume of the monitor unit. The filtration unit has a completely closed sample loop and is mainly used for samples with average suspended solids. The filter cell for the raw liquid guarantees a cleaning effect due to turbulent flow in combination with filter material, POM/Teflon, and therefore provides the On-line Process Analyzer with sufficient, 3 ml/min filtrate over a long period (min. 1 week). The cleaning is dependent on the sample composition, mechanical or mechanical in combination with chemical, by periodical back-flush with a cleaning agent. The filtration system is such that it is easy to change a filter without breaking the process.



Skalar's Headquarters

Tinstraat 12
4823 AA Breda
The Netherlands

Tel. +31 (0)76 5486 486
Fax. +31 (0)76 5486 400
Email: info@skalar.com
Internet: www.skalar.com

USA

Skalar, Inc.

5995 Financial Drive, Suite 180
Norcross, GA 30071
Tel. + 1 770 416 6717
Toll Free: 1 800 782 4994
Fax. + 1 770 416 6718
Email: info.usa@skalar.com

United Kingdom

Skalar (UK) Ltd.

Breda House,
Millfield Industrial Estate
Wheldrake, York
YO19 6NA United Kingdom
Tel. + 44 (0)1904 444800
Fax. + 44 (0)1904 444820
Email: info.uk@skalar.com

Belgium

Skalar Belgium bvba

Antwerpsestraat 126
2850 Boom
Tel. + 32 (0)3888 9672
Fax. + 32 (0)3844 3441
Email: info.belgium@skalar.com

Germany

Skalar Analytic GmbH

Gewerbestraße Süd 63
41812 Erkelenz
Germany
Tel. + 49 (0)2431 96190
Fax. + 49 (0)2431 961970
Email: info.germany@skalar.com

Austria

Skalar Analytic GmbH

Am Anger 22
A-7451 Oberloisdorf
Austria
Tel. + 43 (0)2611 2023411
Fax. + 43 (0)2611 2023412
Email: info.austria@skalar.com

France

Skalar Analytique S.A.R.L.

79, Avenue Aristide Briand
94110 Arcueil
France
Tel. + 33 (0)1 4665 9700
Fax. + 33 (0)1 4665 9506
Email: info.france@skalar.com



For more information please contact
your local Skalar agent or
Skalar's headquarters
in the Netherlands

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