SPECIFICATION SHEET

AUTOMATIC PROCESS ANALYZER

XAT-300

The Automatic Process Analyzer XAT-300 series fully automates various chemical analyses that are normally performed manually.

Silica is one of the important management quality indicator of pure water which is used for boiler or for cleaning products in the semiconductor manufacturing process.

The analyzer adopts molybdenum blue absorptiometry to repeat the automatic measurement of silica concentration in a water sample.

The analyzer consists of a control unit and an analysis unit. The control unit contains that performs analysis operation control, data processing, and so on.

The analysis unit consists of air valves, a reactor, a colorimeter, and so on. It is used to analyze a sample water.

The XAT-300 series is capable of using various analysis procedures, including a measuring device with other entries (such as phosphate).

Features

- OA wide range of samples can be used, from 0 to 10 µg/L in the low concentration range, and 0 to 50 mg/ L in the high concentration range.
- OMulti-flow channel switching measurements (up to 4 channels maximum) are available.
- * Specifications with a varied measurement range are available for each channel.

OThe LED light source of the colorimeter has a longlife, so it is virtually unnecessary to replace.

Different settings can be easily carried out with the interactive mode via the LCD touch panel.

OOf the measurement data with the USB memory is movable, and also the data analysis with the PC is easy.

Standard Specifications

Product Name	: Automatic Process Analyzer	
Model	: XAT-300	Repe
Measurement objects	: Ionic silica-based ultra-pure water and	
	pure water, ionic silica contained in	Outp
	pure water, and so on.	
Measurement range	: 3 versions are available according to	
	the application.	
	1. Extremely low concentration (ultra-	
	pure water)	
	Specified range between 0 to 10 µg/L to	
	0 to 500 µg/L (2-range automatic	
	switching is available.)	
	2. Low concentration (boiler water)	
	Specified range between 0 to 50 µg/L to	
	0 to 5000 μg/L (2-range automatic	
	switching is available.)	
	3. High concentration (raw water for	
	pure water production)	



	Specified range between 0 to 5 mg/L to 0 to 50 mg/L (2-range automatic
	switching is available.)
Measurement flow 3	Up to 4 channels
Channel	Different measurement ranges are
	available for each flow channel.
Measurement Method :	Molybdenum blue absorptiometry
	Add ammonium molybdate to sample
	water to produce silicomolybdic acid.
	After adding tartaric acid, reduce the
	silicomolybdic acid to molybdenum blue
	with ascorbic acid. This liquid is sent to
	a colorimeter to measure absorbance at
	around 830 nm. Then calculate the
	silica concentration using a previously
	obtained calibration curve
Measurement :	15 to 9999 min/flow channel
Frequency	The measurement is repeatedly
requercy	nerformed at the frequency set above
	For multiple flow channels, the
	mosurement is performed by
	acquentially switching the flow shapped
	* It is possible to perform the
	it is possible to perform the
	measurement with the shortest cycle of
Dopostability :	$\frac{1}{2}$ minutes (optional).
Repeatability .	$\pm 2\%$ or less for full scale (using the
Output signal	(1) A solution near 80%
Output signal	(1) Analog measured value
	1 measurement for each flow channel
	Output, 4 to 20mADC for a range of
	measurements of $0 - \text{measured value}$.
	4 to 20mADC is output for a range of
	measurements of $0 - \text{measured value}$.
	Load resistance; 600Ω or less Hold
	output; isolated type
	(2) Analyzer abnormality alarm signal;
	No-voltage contact signal
	Contact is closed when detecting
	abnormality.
	Contact capacity; 24VDC, 1A
	Contact is closed when detecting
	abnormality.

	Output is performed when one or more
	abnormalities listed below occur.
	(Abnormality contents)
	1. Colorimeter abnormality
	2. water sample cut-off 3. Thermostat bath abnormality
	4 Instrumentation air cut-off
	(3) Concentration abnormality signal;
	No-voltage contact signal
	One contact for each flow channel
	Contact capacity; 24VDC, 1A
	Output when the measurement falls
	outside the set range.
	Contact at concentration abnormality;
	Closed
	(4) Range signal, No-voltage contact
	One contact for each flow channel
	Contact conacity: 24VDC 14
	Output when the range is set to Hi
	Contact at Hi range; Closed
	(5) Under maintenance signal;
	No-voltage contact signal
	Contact capacity; 24VDC, 1A
	Contact under maintenance; Closed
Sample water	Pressure; 0.01 to 0.2 MPa
Conditions	Flow rate; 0.2 to 2 L/min
	Temperature; 10 to 40°C
	SS, 20 mg/L or less
	concentration of phoenhorms officiate the
	measured value A large amount of
	dissolved gas may interfere with the
	measurement.
	Coexistence of SS (suspended solids)
	may interfere with operations such as
	sampling. Please let us know the
	estimated maximum concentration of
	SS. We will suggest suitable sample
	filters, etc.
Utilities	Supply the following.
	1. Instrumentation Air
	Normal usage: 1 NL/min
	*No condensation and without oil dust
	or mist particles.
	2. Power Source
	$100V \pm 10VAC$, 50/60Hz 500VA
	For other voltage, please consult.
	On Japanese Industrial Standards
	(JIS), greater class than D grounding is
	required.
	^a Max. grounding resistance 1002
	o. Drain Open to atmospheria pressure (no riser
	nining or counter pressure)
	Since waste liquid is discharged with a
	pH of about 1 to 2, appropriate waste
	disposal is required.
Installation Site	: Indoor installation
	Ambient temperature; 10 to 40°C
	Ambient humidity; 80% or less (no
	condensation)
	No corrosive air and no direct sunshine.
	Anti-treezing heater can be installed.
Configuration	· 1 Operation/control unit
computation	Display keys: Touch papel
	2 Analysis unit configuration
	Solenoid air control valve; 24 VDC
	drive, Manifold
	Wetted part valve; Air drive, wetted
	part material; PTFE, PP

	Feed pump; Wetted pa	Feed pump; Wetted part material;			
	EPDM Reagent pump; Wette acrylic, PTFE and gla Colorimeter; LED ligh	EPDM Reagent pump; Wetted part material; acrylic, PTFE and glass Colorimeter: LED light source			
Dim	ensions : Please refer to the dim	Please refer to the dimensions on the			
next page. * The drawing shows the standard dimensions. They may be changed according to the required specifications Color : Munsell 5Y7/1 Reagent consumption: Please show a list below the quantity of reagent to use a year by the measurement every 30 minutes.					
No.	Reagent	P/N	Amaount		
1	Ammonium molybdate (Special grade) 500g	143G271	4		
2	Sulfuric acid (Special grade) 500mL	143J059	7		
3	Tartaric acid (Special grade) 500g	143C084	26		
4	L-ascorbic acid (Special grade) 500g	143A303	3		
5	Silicon standard solution 1000ppm 100mL	143B151	1		
6	Ethyl alcohol (Special grade) 500mL	143A208	6		
7	Salicylic acid (Special grade) 25g	143C131	3		

Reactor; Wetted part material; acrylic

*Need to be change the preparation reagent about biweekly.

Optional Specifications

The product is available in specialized specifications according to the customer's requirements. Examples of specialized specifications are listed below. If the product is manufactured by a specialized specification, please be aware that they will differ from the standard specifications listed in the documents, such as the accuracy of measurement, the measurement time and the dimensions.

○Capable of dealing with measurements with the shortest cycle of 5 minutes

Monitoring the silica concentration when the boiler starts up is one of the objectives of measuring the silica in the boiler water. In this case, a rapid measurement is required. While the shortest standard measurement time is 15 minutes, a model with a shortened measurement time is available by decreasing the response time and the washing process.

The analyzer is equipped with a function (addition of a masking agent) to reduce the effect of the presence of phosphorus in the samples. However, in samples with a high concentration of phosphorus, reaction time is required to make full use of the masking effect. In such samples, completion of the measurement in less than 15 minutes may be difficult.

In addition, the measurement accuracy is lower when repeated, even in cases where phosphorus is not present. OMeasurement of phosphorus

As mentioned in the previous section, since the presence of phosphorus in the sample is an obstacle to measuring silica, monitoring the concentration of phosphorus itself is required. Some customers need to measure both silica and phosphorus. An analyzer to measure both items can be manufactured.

OAddition of input and output signals

External input and output signals can be added, such as 1) the reception of the external input signal to designate a flow channel and start the measurement, 2) the signal of operation status (during measurement operations or while waiting) and 3) outputting power off signal. In addition, digital communication with an upper level is available via RS-232C interface.

OInstallation conditions

Although the standard product specifications include indoor installation, outdoor installation is also available when requested. In addition, if the product is being installed in a cold area, an anti-freezing heater can be built inside the analyzer.

Caution) The outdoor specifications, please avoid the setting to the place getting the long-term direct rays of the sun for a simple outdoor board.

 \bigcirc Printer

Thermal paper 58 mm wide





500 or more Maintenance space



Caution Sample inlet 2 to 4, Sample outlet 2 to 4 are optional.



Measurement System Diagram (4 flow channels switching measurement)



Caution. About various special specifications except the product cord. please contact one of our sales representatives.



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Please read the operation manual carefully before using producuts.