SPECIFICATION SHEET

TOA DKK

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

○A wide range of samples can be used, from 0 - 10 µg/L in the low concentration range, and 0 - 50 mg/L in the high concentration range.

○Multi-flow channel switching measurements (up to 4 channels maximum) are available.
* Specifications with a varied measurement range are available for each channel.

○The LED light source of the colorimeter has a long-life, so it is virtually unnecessary to replace.
Different settings can be easily carried out with the interactive mode via the LCD touch panel.

○Of 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

Measurement objects : Ionic silica-based ultra-pure water and pure water, ionic silica contained in 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 - 10 µg/L to 0 - 500 µg/L (2-range automatic switching is available.)
2. Low concentration (boiler water)
Specified range between 0 - 50 µg/L to 0 - 5000 µg/L (2-range automatic switching is available.)
3. High concentration (raw water for pure water production)
Specified range between 0 - 5 mg/L to 0 - 50 mg/L (2-range automatic switching is available.)

Measurement flow Channel : Up to 4 channels
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 Frequency : 15 - 9999 min/flow channel
The measurement is repeatedly performed at the frequency set above. For multiple flow channels, the measurement is performed by sequentially switching the flow channel.
* It is possible to perform the measurement with the shortest cycle of 5 minutes (optional).

Repeatability : ± 2% or less for full scale (using the standard solution near 80%)

Output signal : (1) Analog measured value
1 measurement for each flow channel
Output; 4 - 20mADC for a range of measurements of 0 – measured value.
4 - 20mADC is output for a range of measurements of 0 – 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 output
One contact for each flow channel
Contact capacity; 24VDC, 1A
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 Conditions : Pressure; 0.01 - 0.2 MPa
Flow rate; 0.2 - 2 L/min
Temperature; 10 - 40°C
SS; 20 mg/L or less
Coexisting substance; A high concentration of phosphorus affects 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
Pressure; 0.4 - 0.7 MPa
Normal usage; 1 NL/min
*No condensation, and without oil, dust or mist particles.
2. Power Source
100V ± 10VAC, 50/60Hz 500VA
For other voltage, please consult.
On Japanese Industrial Standards (JIS), greater class than D grounding is required.
*Max. grounding resistance 100Ω
3. Drain
Open to atmospheric pressure (no riser piping 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 - 40°C
Ambient humidity; 80% or less (no condensation)
No corrosive air and no direct sunshine.
Anti-freezing heater can be installed. (Optional)

Configuration : 1. Operation/control unit
Display, keys; Touch panel
2. Analysis unit configuration
Solenoid air control valve; 24 VDC drive, Manifold
Wetted part valve; Air drive, wetted part material; PTFE, PP
Reactor; Wetted part material; acrylic
Feed pump; Wetted part material; EPDM
Reagent pump; Wetted part material; acrylic, PTFE and glass
Colorimeter; LED light source

Dimensions : 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 (Best quality) 500g	143G271	4
2	Sulfuric acid (Best quality) 500mL	143J059	7
3	Tartaric acid (Best quality) 500g	143C084	26
4	L-ascorbic acid (Best quality) 500g	143A303	3
5	Silicon standard solution 1000ppm 100mL	143B151	1
6	Ethyl alcohol (Best quality) 500mL	143A208	6
7	Salicylic acid (Best quality) 25g	143C131	3

*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.

○Measurement 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.

○Addition 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 f low 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.

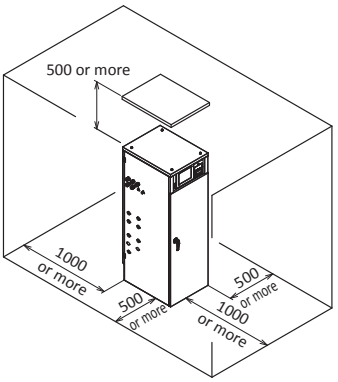
○Installation conditions

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.

○Printer

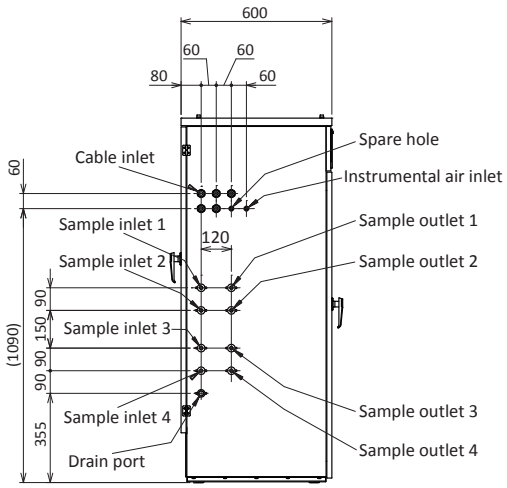
Thermal paper 58 mm wide

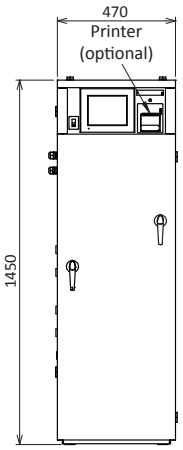


Maintenance space

Dimensions

Unit : mm

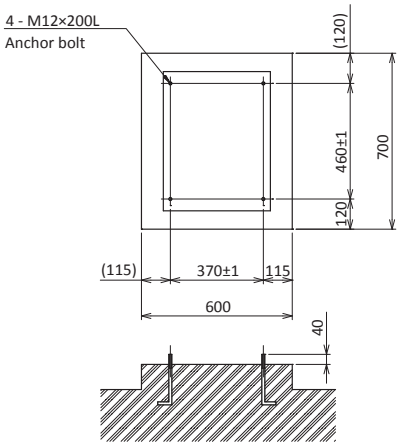




Caution

Sample inlet 2 - 4,

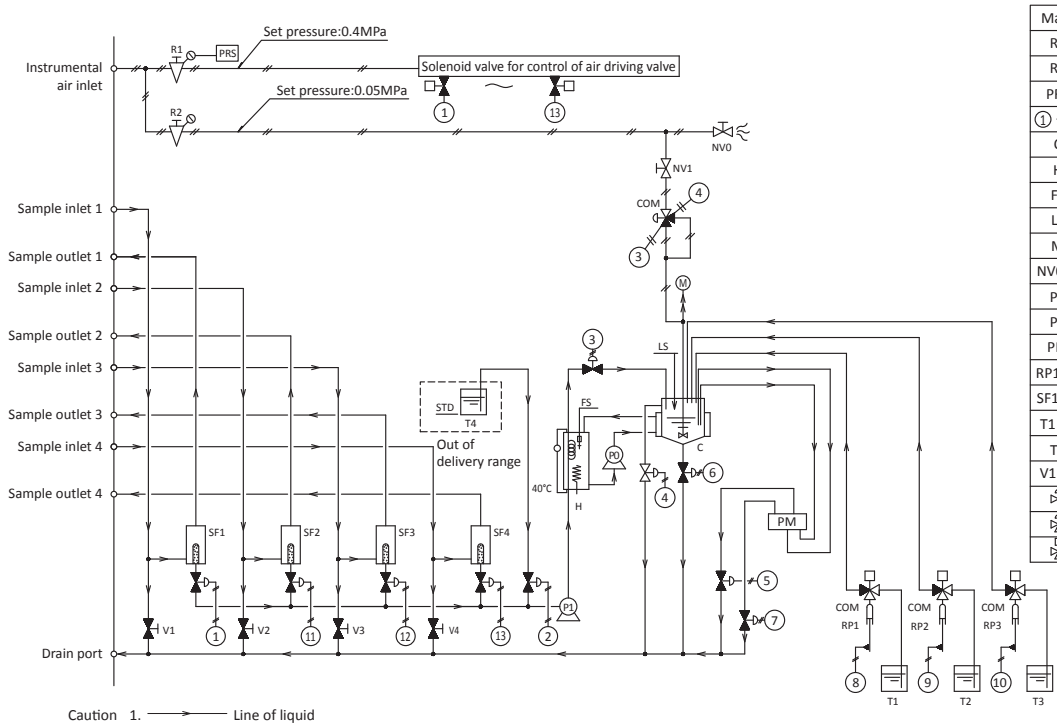
Sample outlet 2 - 4 are optional.



Base bolt diagram

Measurement Syatem Diagram

(4 flow channels switching measurement)



Mark	Name
R1	Air reducing valve for driving
R2	Air reducing valve for pressurization
PRS	Pressure switch
① - ⑬	The number of controller control target
C	Reaction cell (with jacket)
H	Heater
FS	Float switch
LS	Level sensor
M	Stirring motor
NV0, 1	Air regulating valve
P0	Pump for warm water circulation
P1	Sample liquid feed pump
PM	Colorimeter
RP1 - 3	Reagent pump
SF1 - 4	Sample filter
T1 - 3	Reagent tank
T4	Standard solution tank
V1 - 4	Closing valve
	Air driving valve (2 directions)
	Air driving valve (3 directions)
	solenoid valve (3 directions)

Caution 1. ——→—— Line of liquid

2. ——//——// —— Line of air

3.Sample inlet 2 - 4, Sample outlet 2 - 4 are optional.

Product code

XAT300-0-□□□□□□□□□□□□

- Measurement item
  - 1 Silica for ultra pure water (exremely low concentration)
  - 2 Silica for boiler water (low concentration)
  - 3 Silica for raw water (high concentration)
  - 4 Hydrogen peroxide
  - 5 Copper ion
- Power supply
  - A 100VAC, 50/60Hz
  - B 110VAC, 50/60Hz
  - C 200VAC, 50/60Hz
- Printer (built-in)
  - 0 None
  - 1 Supplied
- Measurement unit
  - 1 µg/L
  - 2 ppb
  - 3 mg/L
  - 4 ppm
- Measurement range
  - A 0 - 10 / 0 - 500 (2 ranges automatic switching)
  - B 0 - 50 / 0 - 5000 (2 ranges automatic switching)
  - C 0 - 5 / 0 - 50 (2 ranges automatic switching)
  - D 0 - 1
  - E 0 - 2
  - F 0 - 5
  - G 0 - 20
  - H 0 - 50
- Measurement channel
  - 1 1 channel
  - 2 2 channel
  - 3 3 channel
  - 4 4 channel
- Adjustment tank
  - A None
  - B Supplied
- Transmission output identification method
  - 0 Dual output
  - 1 1channel (by channel identification signal)
- Anti-freezing heater
  - A None
  - B Supplied
- Channel-base
  - 0 None
  - 1 Supplied (standard)
- Markings
  - A Japanese (standard)
  - B English

Custom spec. code;
Numeric digit: 9
Alphabet: Z

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

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⚠ **CAUTION** Please read the operation manual carefully before using products.