

# ASDM

## AutoSampler Dilution Module

Autosampler for ICP. Sample solutions can be automatically diluted by a factor of 2 to 1,000, and when combined with ASAS, standards can be added automatically.

### Feature

- ◆ The sample solutions to be diluted are set on the left side rack, which are automatically diluted and prepared on the center rack. The samples that can be analyzed without dilution are set on the right side rack.
- ◆ Dilution probe wash and preparation of next dilution sample are performed during the sample measurement.
- ◆ Two models of ASDM are available: one for acids and alkaline solutions, and the other for organic solvents.
- ◆ Syringes can be selected according to the required dilution factor.

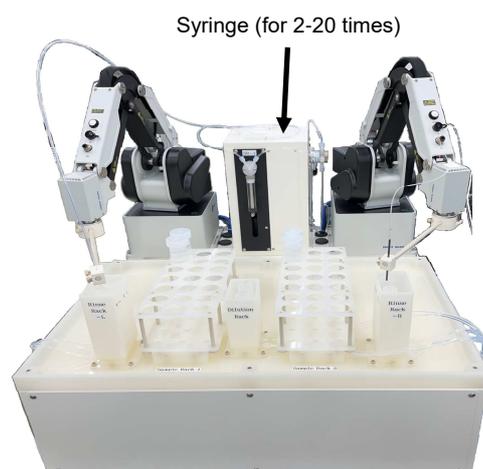
2-20 times dilution

1 syringe (Standard : 10 mL syringe)

50-1,000 times dilution

2 syringes

- ◆ Once a recipe (dilution condition setting file) is created and the sequence is setup together with the ASAS, the sequence is executed and the quantitation using the method of standard addition is performed automatically.



For aqueous solution



For organic solvents

### Dilution example

#### Recovery

	Mg:24	Al:27	K:39	Mn:55	Fe:56	Co:59	Ni:60
A: Dilution by manual preparation (cps)	21330	27267	27340	18057	8805	18527	5087
B: Dilution with ASDM (cps)	21730	27035	28070	18803	8929	19250	5291
<b>Recovery B / A (%)</b>	<b>101.9</b>	<b>99.2</b>	<b>102.7</b>	<b>104.1</b>	<b>101.4</b>	<b>103.9</b>	<b>104.0</b>
	Cu:63	Ga:69	Sr:88	Ag:107	Ba:138	Ta:181	Pb:208
A: Dilution by manual preparation (cps)	11807	3409	6916	2294	3034	5676	1062
B: Dilution with ASDM (cps)	12315	3486	7146	2378	3204	5740	1088
<b>Recovery B / A (%)</b>	<b>104.3</b>	<b>102.2</b>	<b>103.3</b>	<b>103.6</b>	<b>105.6</b>	<b>101.1</b>	<b>102.5</b>

#### BEC

	Mg:24	Al:27	K:39	Mn:55	Fe:56	Co:59	Ni:60
<b>BEC (ppt)</b>	<b>&lt;0.05</b>	<b>0.06</b>	<b>0.11</b>	<b>&lt;0.05</b>	<b>&lt;0.05</b>	<b>&lt;0.05</b>	<b>&lt;0.05</b>
	Cu:63	Ga:69	Sr:88	Ag:107	Ba:138	Ta:181	Pb:208
<b>BEC (ppt)</b>	<b>&lt;0.05</b>						

H<sub>2</sub>SO<sub>4</sub> : 10 times dilution (wt/wt)  
 A : Dilution by manual preparation  
 B : Dilution by ASDM

#### Recovery test

Addition of element equivalent to 1 ppb to conc H<sub>2</sub>SO<sub>4</sub>

Comparison of 10 times dilution by "manual preparation" and "ASDM"

#### BEC

TAMAPURE-AA100 H<sub>2</sub>SO<sub>4</sub> is diluted 10 times by ASDM

# Software

Once a recipe setup in the ASDM software is specified in the ASAS software, dilution and addition of standard solution can be executed automatically.

## Main functions of the autosampler software

### Recipe

Set detailed dilution parameters such as dilution factor, specific gravity, agitation, etc. for each sample.

### Mode / Auto

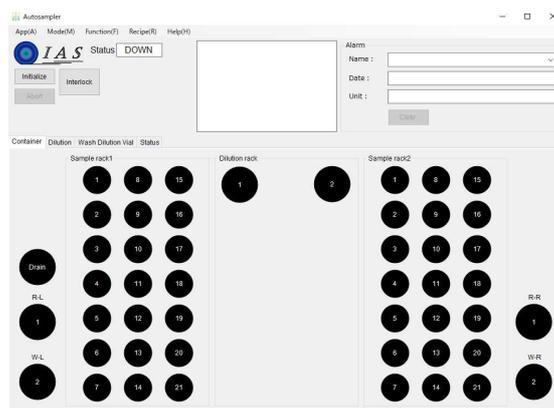
Preparation of dilution samples and cleaning of dilution ports according to registered recipes.

### Mode / Manual

Manual operation of Dobot-D and -S (probe control arm)  
Manual operation of syringes  
Assistance of recipe creation  
Manual supply of rinse solution, etc. to each port  
Continuous rinsing of each port  
Cleaning of Dilution Tubes

### Mode / Maintenance

• Dobot-D, -S position teaching



Autosampler software

# Configuration and Specifications

## Dilution ratio

For aqueous samples : 2 - 20 times (standard)  
Up to 1,000 dilution with additional syringe unit (option)  
For organic samples : 2 - 1,000 times (standard)

## Sample rack

For aqueous samples : 50 mL vessels, 21 position x 2  
One each for dilution and non-dilution samples

## Option

For aqueous samples : Ultrapure water supply pump, Additional syringe unit

## Environment and Utilities

Room temp. : 15 - 30°C  
Humidity : 35 - 85%RH, no condensation  
Altitude : 2,000 m  
Power : 100 - 240 VAC ±10%, 5 A single phase 50/60 Hz  
Size : 940(W) x 776(D) x 860(H) mm  
Weight : 95 kg (For aqueous) , 85 kg (For organic)



1 unit



2 unit

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