



ICA-7000

Ion chromatograph

Supports comfortable analysis
New model with a variety of functions

NEW



- ◆ All-in-one, compact design
- ◆ Support for both suppressor and non-suppressor systems

ICA-7000

Ion chromatograph

With a new ion analysis and data processing

**All-in-one
Compact design**

**Excellent
extensibility**

**Suppressor system
and Non-suppressor
system**

For a wide range of analytical needs

1

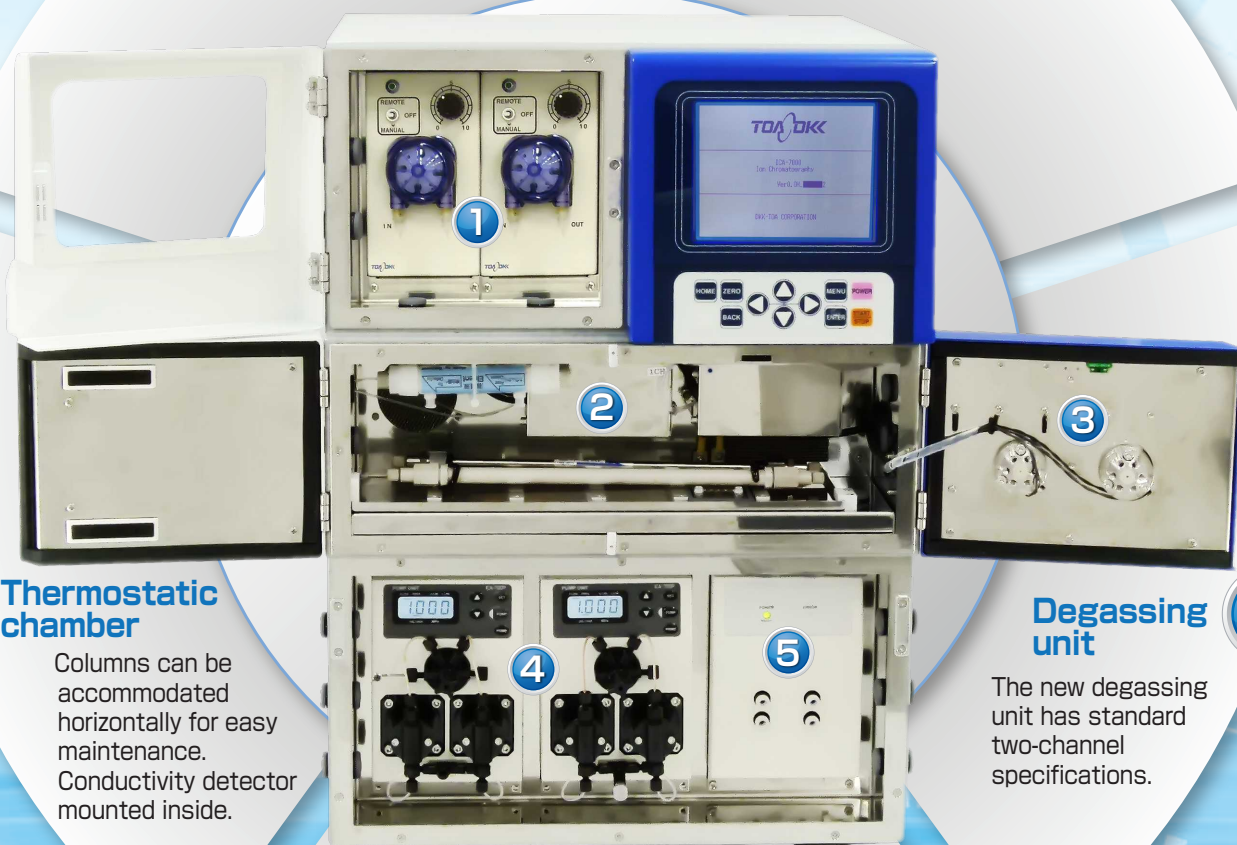
Suppressor pump unit

Maximum storage capacity increased from 1 unit (conventional) to 2 units.

3

Injector

Up to 2ch can be installed.



2

Thermostatic chamber

Columns can be accommodated horizontally for easy maintenance. Conductivity detector mounted inside.

4

Pump unit

Use of new pumps to prevent air contamination. Improved stability of liquid feeding. Reduce plunger seal exhaustion.

4

Degassing unit

The new degassing unit has standard two-channel specifications.

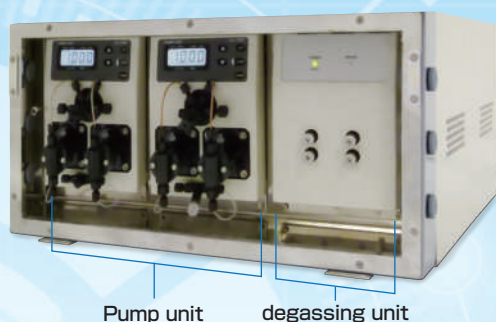
5

All-in-one, compact design the same size for the 2ch system as well

- ◆ The main unit houses and integrates all the units such as the detector, pump, display unit, operation unit, and column thermostat. This has reduced the installation space for the equipment.
- ◆ Low range measurement for high sensitivity analysis has been added

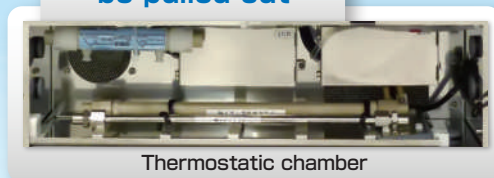
Excellent extensibility due to unitized configuration

- ◆ Up to 2ch of ion chromatograph can be constructed by adding pump units, etc.
- ◆ The use of a new type of pump enables stable liquid feeding.
- ◆ Two remover pumps for suppressor can be accommodated.
- ◆ Horizontal storage of columns to improve maintenance.
- ◆ The new degassing unit has standard two-channel specifications.



Pump unit degassing unit

Column part can be pulled out

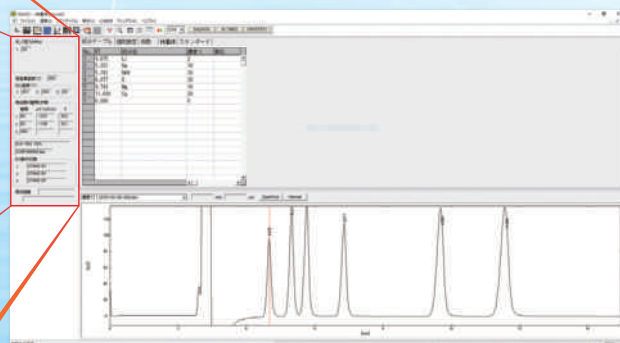


Thermostatic chamber

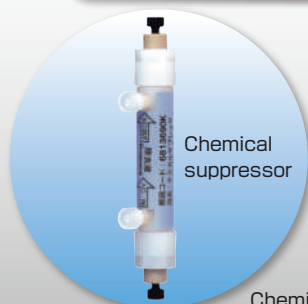


Device control and data processing by USB communication

- ◆ Communication between the main unit and the PC is USB-based, and the PC can be operated remotely by using a commercially available RS232-LAN converter adaptor.
- ◆ All operations can be done from the PC by installing the dedicated software.



High sensitivity analysis with chemical suppressor system



Chemical suppressor



Chemical suppressor pump unit

For a wide range of analytical needs

- ◆ Combined with a post-column reactor, it is also possible to analyze cyan/bromic acid (water test method) and heavy metals.

Post-column reactor



Electrochemical detector

- ◆ When Combined with an electrochemical detector, sugars analysis is possible.

Further low concentration quantitation achieved

Chemical suppressor unit

Suppressor Pump Unit

Chemical suppressor: 6813690K

★ Low-cost, high-sensitivity analysis

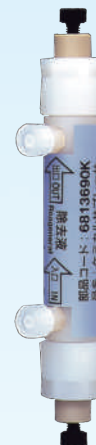
The combination of the suppressor pump unit for liquid removal and the chemical suppressor (6813690K) enables high-sensitivity anion analysis. The chemical suppressor is a suppressor for anion analysis that uses a high-exchange capacity cation-exchange membrane (fiber-type).

★ Space-saving/easy-to-maintain design

The pumping unit can be installed in the body of the ICA-7000 and does not require any extra space. The chemical suppressor can also be installed in the thermostatic chamber of the main unit.



Suppressor pump unit



Chemical suppressor

Compatible with ion chromatography and post-column method

Post-column reactor

ICA-200PR

- ★ Non-metal pumps with excellent chemical resistance are used.
- ★ Equipped with 2 pumps for reaction reagents and 2 heaters.
- ★ Temperature control is possible between *40° C and 100° C.
- ★ Equipped with plunger self-cleaning function of the pump unit.

Application Example

- ◆ Cyan/Bromic acid analysis (Water test method)
- ◆ Heavy metal analysis

Non-metal pump



Heater unit

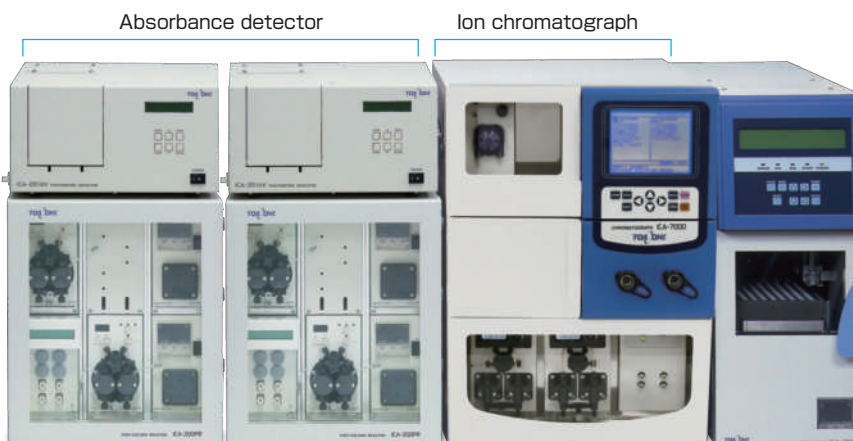
Inline degassing section

◆ Example of system application Cyanide / Bromic acid multiple sample simultaneous analysis system (example)

Cyan/Bromic acid multiple sample simultaneous analysis (water test method)



PC for data processing



Post-column reactor

Auto-sampler ICA-200AS (With cooling function)

Auto-sampler

ICA-200AS



★ Up to 2ch simultaneous measurement

By adding a syringe unit and a valve unit, simultaneous measurement of 2ch or independent measurement can be performed.

★ Continuous automatic measurement of up to 90 samples is possible

Up to 90 samples can be measured continuously and automatically by simply placing the sample container in the sample rack (when the instrument control software is used).

★ Voluntary setting of sample measurement order, injection volume, repeat measurement

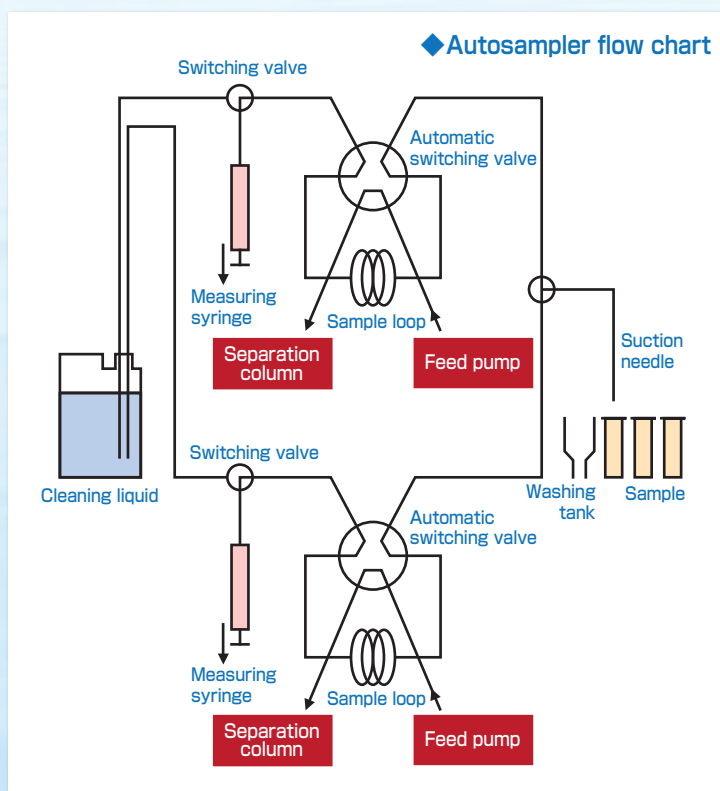
Samples lined in the sample rack can be measured in the order or randomly. Sample injection volume, repeat measurement, measurement channel can be set according to the sample.

★ 2 types of sample injection methods can be selected.

As for sample injection, LOOP mode (Loop volume constant injection) or INJECTION mode (Optional setting of injection volume) can be selected.

★ Automatic dilution of samples (Max. 40 samples)

Sample can be diluted with voluntary factor, and the diluted sample can be injected. Dilution factor can be set according to the sample.



Specification

◆ Ion Chromatograph Main Unit ICA-7000

| | | |
|--------------------------------------|---|---|
| Indicator | Backlit monochromatic LCD | |
| Setup operation | Key operation or setting operation using PC-only software | |
| Wetted materials | Non-metal | |
| Power | AC100V 50/60Hz | |
| Power consumption | Up to Approx. 300VA | |
| Outside dimension | Approx. 400 (width) × 550 (height) × 471 (depth) mm | |
| Weight | 1 flow path: approx. 28 kg, 2 flow paths: approx. 31kg | |
| Constant temp. section | Temp. control system | Air circulation system |
| | Temp. control range | Room temp. +10 to 60°C |
| | Temp. stability | ±0.1°C |
| | Internal dimensions of the thermostatic chamber | Approx. 365 (width) × 100 (height) × 113 (depth) mm |
| | Storable column | Three units of ϕ 4.6 x 250mm can be accommodated at the same time. |
| | Liquid leakage sensor | Built-in |
| | Other | Two conductivity cells, two injectors, two suppressors, and a reaction coil can be accommodated at the same time. |
| Sample injection port | Method | Manual Sample Injector using PEEK syringe needles |
| | Wetted materials | PEEK and ceramics |
| | Pressure resistance | 25MPa |
| | Sample weighing system | Loop cut method |
| | Number of installations | Up to two equations |
| Degassing section | Method | In-line fluororesin gas permeation separation type |
| | Number of installations | 2-channel (standard built-in) |
| Pumping section | Type name | ICA-700P (dedicated pumps) |
| | Liquid feed system | Linear drive double plunger reciprocating system |
| | Wetted materials | PEEK, sapphire, ruby, PTFE, PCTFE, PFAs, ETFE, and Kalrez |
| | Max. delivery pressure | 20MPa |
| | Flow setting range | 0.001 to 9.999mL (setting range in dedicated software: 0.01 to 9.99mL/min) |
| | One head discharge amount | 80 μ L |
| | Gradient | Isocratic: 1 type, gradient: 2 types |
| Sensor | Method | Electrical conductivity circuit 2ch, analog input circuit 2ch |
| | Number of installations | Up to 3ch |
| Data processing Controlling software | OS | Windows7, Windows8. 1, Windows10 32bit or 64 bits |
| | Form of communication | USB |
| | Main Control/Monitor Contents | Turn ON/OFF the power supply and start/stop the timers for one week. Flow rate, pressure, pressure limit, temp. (constant temp. chamber, cell section), electrical conductivity detector setting, measurement signal, etc. |
| | Data capture | Independent 3ch |

◆ Recommended PC (Note: Please purchase a PC/printer separately) to use the software for control/data analysis.

| | | |
|----------------------------------|-------------------|---|
| Recommended PC (sold separately) | OS | Windows7, Windows8. 1, Windows10 32bit or 64 bits |
| | Processor | Intel Core i3 or more |
| | Memory | 2 GB or more of RAM |
| | Hard disk | More free space than HDD 16GB |
| | USB | One or more USB2.0 interface free ports |
| | Screen resolution | 1366 x 768 pixels or more |

◆ Conductivity cell

| | | |
|---------------------------|--|-----------|
| Built-in model | ICA-7000 main unit | |
| Measurement method | Operational amplification method using a three-pole electrode | |
| Measurement range | 0~500mS/m | |
| Response | FAST (Approx. 1.5 seconds), MIDD (Approx. 3 seconds), and SLOW (Approx. 5.5 seconds) | |
| Cell control temp | 30°C, 35°C, 40°C, 45°C, 50°C | |
| Output | Analogues: 0 to 1V | |
| | Range \times 100 | 500mS/m |
| | \times 10 | 50.0mS/m |
| | \times 1 | 5.00mS/m |
| | \times 0.1 | 0.500mS/m |
| Output polarity switching | Yes | |
| Wetted materials | PEEK, titanium, and PCTFE | |
| Cell withstand voltage | 1MPa | |
| Outside dimension | Approx. 51 (width) × 114 (height) × 59 (depth) mm (excluding protrusions) | |
| Weight | Approx. 0.5kg | |

◆ Pump unit ICA-700P

| | |
|---------------------------|--|
| Built-in model | ICA-7000 main unit |
| Liquid feed system | Linear drive double plunger reciprocating system |
| Wetted materials | PEEK, sapphire, ruby, PTFE, PCTFE, PFAs, ETFE, and Kalrez |
| Maximum delivery pressure | 20MPa |
| Flow setting range | 0.001~9.999mL (Setting range for dedicated software: 0.01-9.99mL/min) |
| One head discharge amount | 80 μ L |
| Gradient | Isocratic: 1 type, gradient: 2 types |
| Communication | RS485 (inter-pump communication) |
| Outside dimension | Approx. 105 (width) × 144 (height) × 199 (depth)mm (excluding protrusions) |
| Weight | Approx. 5.2kg |

NOTE) ● Windows is a registered trademark of the U.S. Microsoft Corporation in the U.S. and other countries.

● Intel Core is a registered trademark of the U.S. Intel Corporation.

◆Suppressor pump unit

| | |
|--------------------|--|
| Built-in model | ICA-7000 main unit |
| Liquid feed system | Peristaltic tube pump |
| Flow area | 0 to 1.0mL/min |
| Outside dimension | Approx. 80 (width) × 140 (height) × 190 (depth) mm (excluding protrusions) |
| Weight | Approx. 0.9kg |

◆Chemical suppressor 6813690K

| | |
|---------------------------------|---|
| Suppressor volume | 150 μ L |
| Maximum flow rate of the eluent | 2.0mL/min |
| Operating pressure | 1MPa or less |
| pH range used | pH1~13 |
| Outside dimension | ϕ 21.5mm× length 130mm (Max. dimension of protrusion 30mm) |

◆Degassing unit

| | |
|-------------------|--|
| Built-in model | ICA-7000 main unit |
| Degassing system | In-line type, fluororesin gas permeation separation type |
| Debt volume | 2-channel (standard built-in) |
| Outside dimension | Approx. 105 (width) × 144 (height) × 199 (depth)mm (excluding protrusions) |
| Weight | 2 flow paths: Approx. 1.8kg |

◆Absorbance detector ICA-201 UV

| | | |
|---------------------------------|--|----------------------|
| How to connect the ICA-7000 | Imported to the data processing software through the analog input terminal | |
| Method | Dual beam, single cell | |
| Wetted materials | PEEK, PTFE and silica-glass | |
| Lighting source | Deuterium and halogen lamps | |
| The maximum range of wavelength | 190~900nm | |
| Spectral width | 10nm | |
| Precision of wave length | \pm 2nm | |
| Response | FAST (Approx. 0.1 sec), MIDD (Approx. 1.0 sec), and SLOW (Approx. 2.0 sec) | |
| Zero point adjustment | Manual and external contacts can be used. | |
| Analog output | 0 to 1V (integrator) | 0 to 10mV (recorder) |
| Power | AC100V 50/60Hz | |
| Power consumption | Up to 160VA | |
| Outside dimension | Approx. 290 (width) × 160 (height) × 440 (depth) mm | |
| Weight | Approx. 14kg | |

◆Post-column reactor ICA-200PR

| | | |
|-----------------------|--|--|
| Pumping section | Method | Double plunger: 2 type |
| | Wetted materials | PEEK, ruby, and sapphire |
| | Pressure resistance | 35MPa |
| | Maximum delivery pressure | 25MPa (Upper limit of 20MPa is set by dedicated software.) |
| | Flow setting range | 0.01~3.0mL/min |
| Degassing section | Fluororesin gas permeable type (composed of vacuum pump and degassing unit 2 type) | |
| Reaction tank section | Block type heater: 2 type | Setting temp.: room temp. +5 to 100°C |
| Power | AC100V 50/60Hz | |
| Power consumption | Up to Approx. 300VA | |
| Outside dimension | Approx. 300 (width) × 360 (height) × 460 (depth) mm | |
| Weight | Approx. 20kg | |

◆Auto-sampler ICA-200AS

| | Standard | With cooling function |
|---|--|--|
| Indicator | LCD display with backlight | |
| Number of samples (When using software for device control) | Usually 90 samples (up to 40 samples when using dilution mode) | |
| Sample container | 2-mL container | |
| Injection volume of sample | 1- 150 μ L (1 μ L step) 150 μ L or more with a maximum of 250 μ L for sample loop fixation | |
| Sample injection type | Syringe discharge system (INJECT MODE) Loop cut method (LOOP MODE) | |
| Dose repeatability | C.V. value not exceeding 0.5% (20 μ L injection at room temp. of 25°C) | |
| Samples dilution | Automatic dilution by injection of pure water | |
| Dilution ratio | 10 to 200 times (10 times step) | |
| Dilution accuracy | Within \pm 5% (100-fold dilution at room temp. of 25°C) | |
| Wetted materials | PEEK, fluorinated resins, SUSs (needles) | |
| Output connector | RS-232 C, contact signal | |
| Operating temp. limit | 5~35°C | |
| Cooling system | ———— | Block Cooling of Aluminum Rack by Electronic Cooler |
| temp. controllable range | ———— | Room temp. minus 5°C to room temp. minus 25°C However, the lower limit is 0°C |
| temp. control accuracy | ———— | \pm 2°C (room temp. minus 20°C) |
| Power | AC100V 50/60Hz | AC100V 50/60Hz |
| Power consumption | Up to Approx. 80VA | Up to Approx. 150VA |
| Outside dimension (Single-channel type and double-channel type with no change in dimensions) | Approx. 213 (width) × 378 (height) × 570 (depth) mm | Approx. 215 (width) × 500 (height) × 570 (depth) mm |
| Weight | Approx. 13.5kg (one-channel type) Approx. 15kg (2-channel type) | Approx. 18kg (one-channel type) Approx. 20kg (2-channel type) |

◆Electrochemical detector ICA-5212

Common specification

| | |
|-----------------------------|--|
| How to connect the ICA-7000 | Imported to the data processing software through the analog input terminal |
| Method | Tripolar potentiostat |
| Range of voltage setting | 0 to \pm 1.99V (10mV step) |
| Zero point adjustment | Auto zero (external controls available) |
| Zero adjustment range | Entire measuring range |
| Polarity switching | Yes |
| Cell capacity | 0.4 μ L×2 |
| Flow cell withstand voltage | 1MPa |
| Flow cell wetting material | FEP,PCTFE,SUS316 |
| Sensor | Working electrode (glassy carbon, platinum*, gold*, silver*) Referenced electrode (calomel) and counter electrode (SUS316)* are optional. |
| Operating temp. limit | 10~40°C |
| Response | FAST (Approx. 2 seconds), MIDD (Approx. 4 seconds), and SLOW (Approx. 9 seconds) |
| Analog output | 0 to 1V FS (integrator) 0 to 10mV FS (range) (recorder) |
| Power | AC100V 50/60Hz |
| Power consumption | Approx. 13VA |
| Outside dimension | Approx. 290 (width) × 61 (height) × 462 (depth) mm |
| Weight | Approx. 10kg |

Normal mode specification

| | |
|-------------------|---|
| Measurement range | 0~ \pm 1,024nA |
| Measuring range | 0.1 to 102.4nA (×1) I1 range 1 to 1,024nA (×10) I1 range |
| Outputs mode | I1 (ch1 only), I2 (ch2 only), I1+I2, I1-I2 |

Pulse mode specification

| | |
|--------------------|--|
| Measurement range | 0~ \pm 102.4 μ A |
| Measuring range | 0.01 to 10.24 μ A (×1, ch2 only) I1 range 0.1 to 102.4 μ A (×10) I1 range |
| Outputs mode | I1 = ch1 (normal mode), I2=ch2 (pulsed mode) |
| Time setting range | Pulsing mode T1=50~990mS T3=0~990mS Tad=50mS |

◆Major Column Specifications

| Item | Type name | Applications and Major Measurement Ions | Size (inner diameter × length) mm | Material | pH range |
|--|-----------|---|---|----------|----------|
| For anion analysis | PCI-201S | Non-suppressor analysis and inorganic anions | 4.6×100 | SUS | pH2~8 |
| | PCI-211 | Non-suppressor analysis and inorganic anions | 4.6×100 | SUS | pH2~8 |
| | PCI-205 | Suppressor analysis, inorganic anion | 4.6×250 | PEEK | pH3~12 |
| | PCI-206 | Suppressor analysis, inorganic anion (Features of separation of halide ion) | 4.0×150 | PEEK | pH2~12 |
| | PCI-230 | Suppressor analysis (Features of separation of acetic acid/formic acid and inorganic anion) It can also be used as a column for non-suppressor analysis. | 4.6×150 | PEEK | pH3~12 |
| | PCI-240 | Suppressor analysis, inorganic anion (Features of separation of halogen acids from standard seven anions) | 4.0×250 | PEEK | pH3~12 |
| | AN1 | Suppressor analysis, inorganic anion (Features for separation of sulfate and sulfite ions) | 4.6×250 | PEEK | pH1~14 |
| | AN300B | Suppressor analysis, inorganic anion (Features of separation of phosphorous acid, phosphoric acid, sulfurous acid, and sulfate ions) | 4.6×250 | PEEK | pH1~13 |
| Guard column for anions | PCI-201SG | PCI-201S guard-column | 4.6×10 | SUS | pH2~8 |
| | PCI-211G | PCI-201S guard-column | 4.6×10 | SUS | pH2~8 |
| | PCI-205G | PCI-205/206/230/240, AN1 guard-column | 4.6×10 | PEEK | pH2~12 |
| | AN300BG | AN300B guard-column | 4.6×50 | PEEK | pH1~13 |
| For cation analysis | PCI-302S | Alkali metal ion analysis Alkaline Earth Metal Ion Analysis with Modified Eluent | 4.6×150 | SUS | pH2~7 |
| | PCI-302H | Analysis of alkali metal ions and ammonium ions Analysis of Alkaline Earth Metal Ions by Modifying the Eluent | 4.6×150 | PEEK | pH2~12 |
| | PCI-322 | Simultaneous analysis of alkali metal ion and alkaline earth metal ion Improved peak shape of Mg and Ca ions (Features of sodium and ammonium separation) | 4.6×250 | SUS | pH2~12 |
| Guard column for cations | PCI-302SG | PCI-302S/303 guard-column | 4.6×10 | SUS | pH2~7 |
| | PCI-302HG | PCI-302H guard-column | 4.6×10 | PEEK | pH2~12 |
| | PCI-322SG | PCI-322 guard-column | 4.6×10 | SUS | pH2~7 |
| Column for organic acid analysis | PCI-305S | Analysis of Organic Acids and Weak Acids | 8.0×300 | SUS | pH1~7 |
| Guard column for organic acid analysis | PCI-305SG | PCI-305S guard-column | 4.6×50 | SUS | pH1~7 |
| sugar analysis column | PCI-510 | For sugar analysis Sodium hydroxide can be used in the eluent. | 4.6×250 | PEEK | pH1~14 |
| Guard column for sugar analysis | PCI-510G | PCI-510 guard-column (1 holder and 5 disks) ※ If you purchase the product for the first time, select this one. | 4.6×1.0 | PEEK | pH1~14 |
| | PCI-510GD | PCI-510G replacement disks (Five disks only) | 4.6×1.0 | PEEK | pH1~14 |

Note 1) Application and main measurement target ions described are typical items.

Note 2) The column to be used may be changed depending on the measurement items and measurement details.

Note 3) Please inquire about selecting an appropriate column.

Note 4) Column improvement is made without prior notice.



DKK-TOA CORPORATION



CAUTION

Please read the operation manual carefully before using products.

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