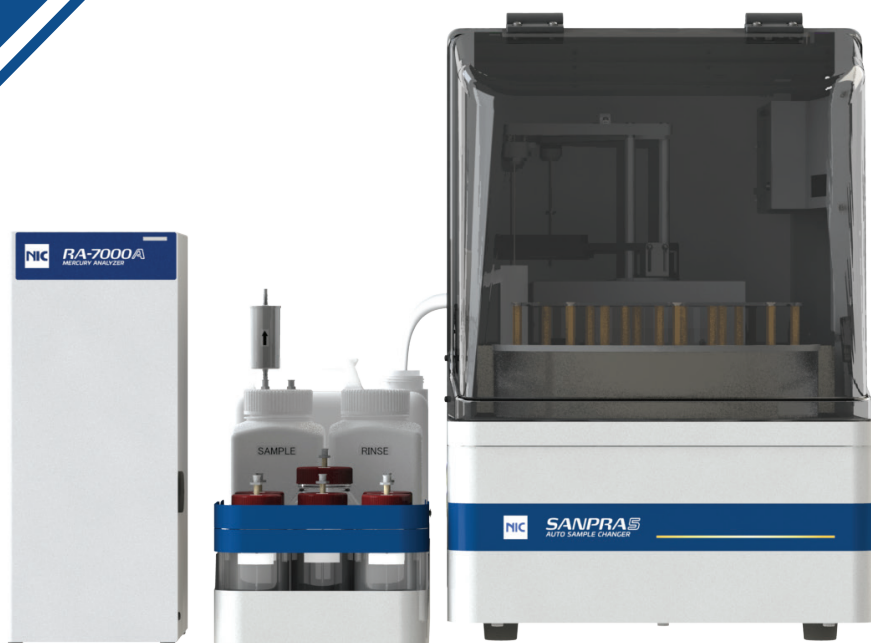




A Rigaku
Company

TECHNICAL SPECIFICATIONS FOR RA-7000A



Specifications

Measurement principle	Non-dispersive double-beam cold vapor atomic absorption spectrometry (CVAAS)
Detector	Semiconductor sensor (w/254nm bandpass filter)
Light source	Thermostatically-stabilized low-pressure mercury discharged lamp
Wave length	253.7nm
Measurement method	1. Reducing vaporization (with open air-supply) 2. Gold amalgam tube thermal desorption (with optional RH-module)
Measured sample	Aqueous liquid or digestates, gas tube (option needed)
Sample Volume(liquid sample)	5mL (SANPRA™ 3/5); 20mL (SANPRA™ 7); 5, 20, 100, 250mL (Impinger)
Detection limit	0.0025ng/5mL (0.5ppt) *5ppt in case of including chemical treatment
Measurement range	5mL: 0 to 2000ng(400ppb)/ Linear 0 to 200ng(40ppb) 20mL: 0 to 3000ng(150ppb)/ Linear 0 to 800ng (40ppb) 100mL: 0 to 9000ng(90ppb)/ Linear 0 to 3500ng(35ppb) 250mL: 0 to 15000ng(60ppb)/ Linear 0 to 6250ng(25ppb)
Measuring time	30 to 600 secs (adjustable)
Carrier gas	Ambient air purified by mercury filter
Measuring flow rate	0.1 to 0.8L/min (adjustable)
Flow control	Pump duty & needle valve
Flow monitor	Flow sensor
Dehumidifier	Peltier cooling device
Dehumidifying solution discharge	Peristaltic pump (automatic discharge)
Exhaust filter	Mercury removal by activated carbon filter
Communication interfaces	SANPRA™ (1 unit) via RS-232C (DSUB 9-pin X 1) SANPRA™ (2 or more units with Line selector) via RS-232C (DSUB 9-pin X up to 3) RH-module via direct cable connection
Voltage Source	Single-phase AC, 100 to 240V, 50/60Hz
Power Rating	0.05KVA
Instrument dimensions	148W x 183.5D x 350H (excluding protrusions)
Installation dimensions	300W X 450D x 350H mm (excluding PC work space)
Operating status Indicator light	RGB LED
Weight	5.7kg (In the case of without Line selector)
Options	SANPRA™ 3, SANPRA™ 5, SANPRA™ 7, Line selector, Impinger (5, 20, 100, 250mL), RH-collector tube heating unit and EPA245.1 QC software

Options



Specifications	SANPRA™ 3	SANPRA™ 5	SANPRA™ 7
Number of sample / sample volume	80 tubes / 5mL	80 tubes / 5mL	29 tubes / 20mL
	The number of STD and actual samples can be arbitrarily assigned.		
Sample tube/holder	RA-glass tube, disposable glass tube, 15mL PP centrifuge tube <i>(See note below)</i>	RA-glass tube, disposable glass tube <i>(See note below)</i>	50mL Flat-Bottom Disposable Digestion Tube <i>(See note below)</i>
Stirring/mixing method	Gas bubbling	Magnetic stirrer * 3	Magnetic stirrer * 2
Heating temperature	-	95°C +/- 5°C (liquid temperature)	
Heating method	-	Infra-red radiation heater	
Drive system	Turntable system		
Sample Tray	Polycarbonate table	ETFE coated acid-resistant Aluminum block	
Sensing for with/without sample tube	Infrared Sensor		
KMnO ₄ color checking and sensing	-	LED colour sensor	
Bubbler material	PEEK		
Rinse bottle material	Polypropylene (PP)		
Reagent dispensing method	Peristaltic dosing pump (0.1mL or higher, adjustable)		
Dispensed reagents	For USEPA 245/7470, APHA 3112, ASTM D 3223, JIS K0102: Sulfuric acid, Hydroxylamine Hydrochloride solution, Tin (II) chloride solution For ISO 12846: Hydroxylamine Hydrochloride solution, Tin (II) chloride solution	Sulfuric acid, Nitric acid, Potassium permanganate solution, Peroxide potassium disulfate solution, Hydroxylamine hydrochloride solution, Tin (II) chloride solution	
Exhaust system	Rear exhaust with Ø50 duct hose 1m ³ /min Exhaust Capacity (Without connection to exhaust fan) Option for SANPRA 3	Rear exhaust with Ø50 duct hose 1m ³ /min Exhaust Capacity (Without connection to exhaust fan)	
Safety functions	Earth-leakage circuit breaker (ELCB)	Door auto-locking mechanism (during operation with heating), Over-temperature circuitry protection and Earth-leakage circuit breaker (ELCB)	
Voltage Source	Single-phase AC, 100 to 240V, 50/60Hz		
Power Rating	0.15KVA	1.0KVA	
Control vs Indicator light	Communication control via RS-232C from RA-7000A RGB LED		
Instrument dimensions	365W x 450D x 530H mm (excluding protrusions)		
Installation dimensions	640W x 650D x 950H mm (excluding exhaust duct hose routing space and PC work space)		
Weight	24kg	29kg	
Option	Exhaust unit	-	

Compatible Sample Tubes for SANPRA™ - manufacturer recommended sources and supply

- Disposable glass tube: FISHER SCIENTIFIC (16X 125mm) 14-958G
- 15mL PP centrifuge tube: a. THERMO SCIENTIFIC 339650/339651
b. CORNING 430790/430791
- 50mL Flat-Bottom Disposable Digestion Tube: SCP SCIENCE DigiTUBEs (50mL) 010-500-263 or 364

RH Gas Module

RH Gas Module	Thermal Desorption Unit for Mercury Collector Tube
Sample	N-160 NIC Mercury Collector Tube
Capacity	Manual Single Tube Loading and Exchange
Method	Thermal Tube Desorption
Carrier gas	Indoor purified air
Measurement range	0 to 1000ng (Linear: up to ~30ng), LOD: 5pg Hg
Dimensions and Weight	150W x 280D x 420H mm, 7kg
Source Voltage	Single-phase AC, 100 to 240V, 50/60Hz (3-pin socket)
Power Rating	0.5kVA
Buffer Usage	Yes (Buffer solution pH7)
Heating Temperature	650 °C



Impinger Unit

Impinger Unit	Manual Reducing Vaporization Kit
Sample	Impinger of 5/20/100/250 mL
Capacity	Manual handling; 1 impinger at a time
Carrier gas	Ambient air purified by mercury filter
Measurement range	Refer to table below
Dimensions and Weight	-
Source Voltage	Controlled by RA-7000A

Measurement Specification - Quick Reference Table

	5mL	20mL	100mL	250mL
LOD	0.5ppt	0.5ppt	0.5ppt	0.5ppt
Measurement Time (Reduction time)	120sec	180sec	300sec	420sec
Flow rate	0.2L/min	0.4L/min	0.7L/min	0.7L/min
Linear range	~40ppb (200ng)	~40ppb (800ng)	~35ppb (3500ng)	~25ppb (6250ng)
Measurement range	~400ppb (2000ng)	~150ppb (3000ng)	~90ppb (9000ng)	~60ppb (15000ng)

Control and Data Proceeding Unit

Specifications

OS	Windows 10 Pro or Windows 11 Pro
Communication	USB (between PC and RA-7000A)
Display (Japanese/English)	Peak waveform, calibration curve graph, measurement progress, measurement result
Instrument control	Digestion : dispensed reagents (type and volume), heating temperature and time, cooling time Measurement : Object of measurement, start, stop, time
Data Processing	Calibration curve (linear fit - 3 types ; cubic fit - 3 types), concentration units, concentration calculation, baseline correction, statistical calculation (average, standard deviation, CV%), Peak shape judgement, Self check
Printing	Memo, calibration curve formula and graph, measurement value table, statistical calculation, peak waveform, measurement date and time, Self check result
EPA 245.1 quality control software (optional)	Instrument Performance Check (Blank), Laboratory Reagent Blank, Instrument Performance Check (After Calibration), Continuing Calibration Verification, Laboratory Fortified Blank, Laboratory Fortified Matrix, Quality Control Sample, Unknown sample, Linear Dynamic Range, Method Detection Limit

Installation Environment

Specifications

Temperature	10 - 35 degree Celsius
Humidity	10 - 80% RH (There shall be no condensation.)

Versatile Configurations

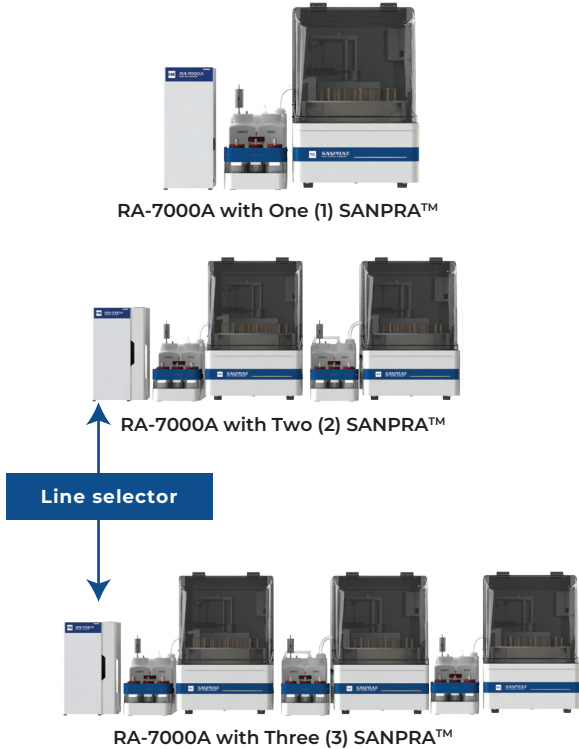

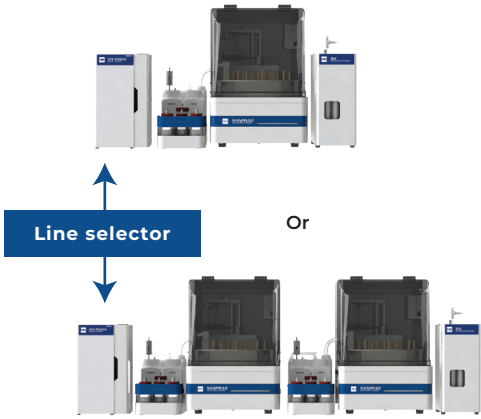
The NEAT



Remark

RA-7000A with a Reducing Vaporization/ Impinger Kit

- Choices are available for different volume of impinger kit: 5mL/20mL/100mL/250mL
- User has to perform wet chemical sample decomposition externally
- Impinger kit only performs Reducing Vaporization: Hg²⁺ -> Hg⁰
- Reducing Vaporization is done via Stannous Chloride reduction

The COLLECTIVE	Remark
 <p>RA-7000A with One (1) SANPRA™</p> <p>RA-7000A with Two (2) SANPRA™</p> <p>Line selector</p> <p>RA-7000A with Three (3) SANPRA™</p>	<p>RA-7000A with SANPRA™ Autosampler</p> <ul style="list-style-type: none"> a. One (1) unit of RA-7000A can operate up to three (3) units of SANPRA™ autosampler b. The choices of SANPRA™ can be mixed between SANPRA™ 3, SANPRA™ 5, and SANPRA™ 7 c. One unit of RA-7000A can achieve up to 240 samples/batch if 80 positions of SANPRA™ is used d. Line selector is required for additional SANPRA™
The FLEXI	Remark
	<p>RA-7000A with RH Gas Module</p> <ul style="list-style-type: none"> a. RA-7000A can control a unit of RH Gas Module for Gas Tube analysis
The HYBRID	Remark
 <p>Line selector</p> <p>Or</p>	<p>RA-7000A with RH & SANPRA™</p> <ul style="list-style-type: none"> a. RA-7000A can operate for liquid and gaseous analysis with SANPRA™ and RH gas module combination b. RA-7000A can operate up to 2 different attachments which is SANPRA™ and RH gas module c. Line selector is required for hybrid combination

Specifications may subject to change without prior notice.



Nippon Instruments Corporation
A Rigaku Company

Headquarters & Technical Centre
: 110 Nishikujō Gawarajōchō, Minami Ward, Kyoto, 601-8424, Japan
TEL : +81 75-748-6200 FAX : +81 75-748-6208
EMAIL : info-nic@rigaku.co.jp URL : www.hg-nic.com
ISO 9001:2015 & ISO 14001:2015 Accredited

Singapore office
: 61 Bukit Batok Crescent #04-04A, Singapore 658078
TEL : +65-6873-7068 FAX : +65-6873-6372

Distributors