C122-E064A

SHIMADZU
Excellence in Science

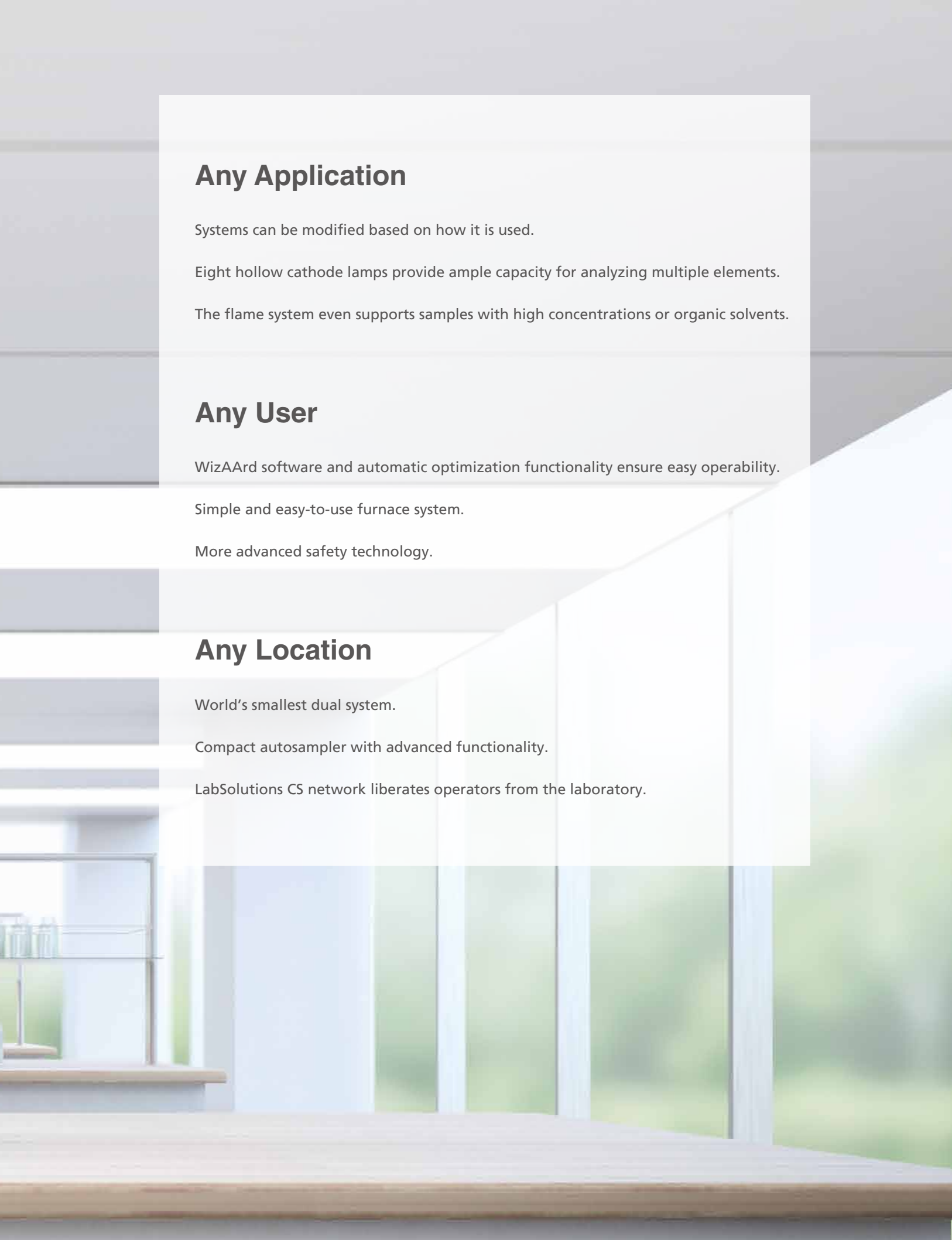
Atomic Absorption Spectrophotometer

AA-7800 Series

AA-7800 Series

ATOMIC ABSORPTION SPECTROPHOTOMETER

Infinite Possibilities.



Any Application

Systems can be modified based on how it is used.

Eight hollow cathode lamps provide ample capacity for analyzing multiple elements.

The flame system even supports samples with high concentrations or organic solvents.

Any User

WizAArd software and automatic optimization functionality ensure easy operability.

Simple and easy-to-use furnace system.

More advanced safety technology.

Any Location

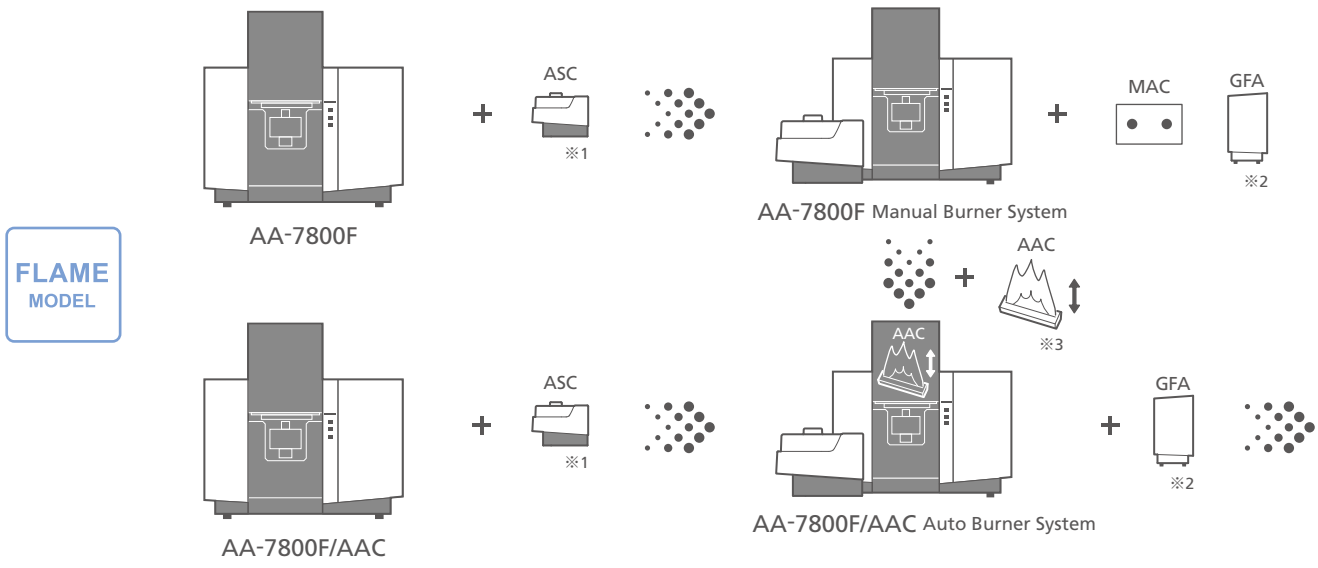
World’s smallest dual system.

Compact autosampler with advanced functionality.

LabSolutions CS network liberates operators from the laboratory.

Any Application

The AA-7800 Series can be upgraded by adding units to allow the system to handle the analysis targets.



Major Fields of Application

AA-7800 Series supports a wide range of analysis applications.

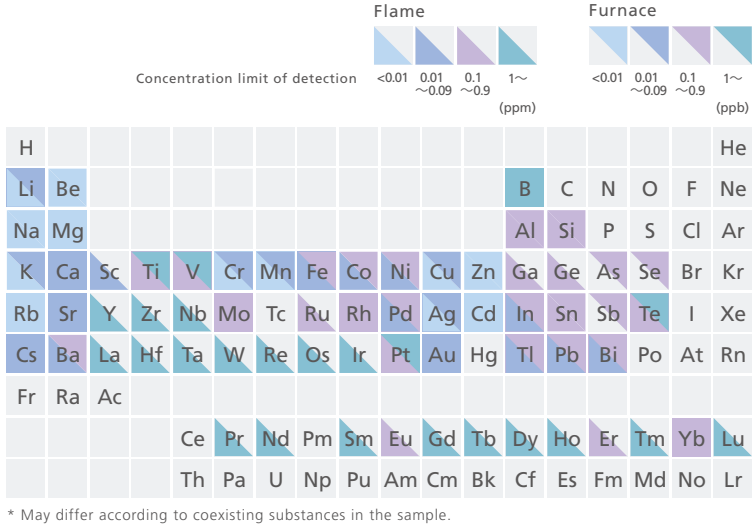
Environment
Seawater, river water, effluent, sludge, air-borne dust

Metals, Semiconductors, Ceramics
Metals, minerals, glass, ceramics, IC chips

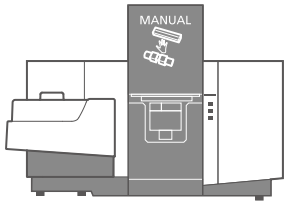
Petroleum, Chemicals, Polymers
Petroleum, oil, catalysts, chemical products, biodiesel

Medical, Biology, Pharmaceuticals
Blood, animals, plants, drugs, foods

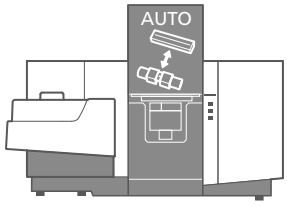
Analysis Sensitivities



* May differ according to coexisting substances in the sample.



AA-7800F Dual Atomizer System



AA-7800F/AAC Dual Atomizer System

Flame Model AA-7800F

ASC Autosampler

GFA Graphite Furnace Atomizer

MAC Manual atomizer changer

AAC Automatic atomizer changer

Manual Manual switching between dual atomizer units

AUTO Dual Atomizer System
Automatic adjustment of atomizer
Automatic search of burner height

Furnace Model AA-7800G (with options attached)

※1 Requires ASC stand kit. ※2 Requires ASK-7800.
※3 Automatic burner height search function can be used.
AA-7800F/AAC equips with AAC as standard.

Flame Selection

Flame and Measurement Procedures

Air-C_2H_2 N_2O-C_2H_2 HVG MVU

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac															
				Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
				Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

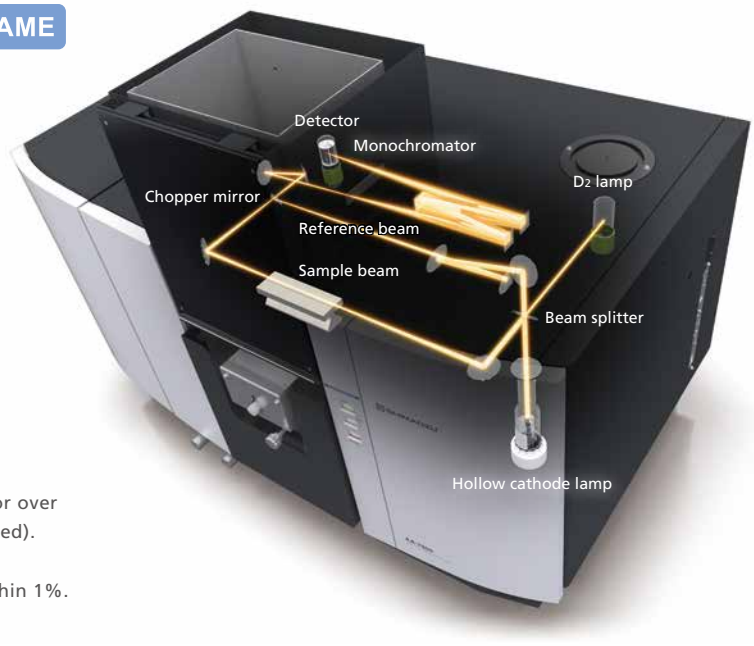
Any Application

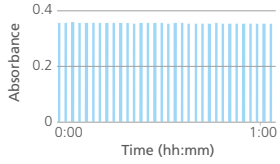
Advanced Basic Performance Supports Wide Variety of Applications

Double-Beam Optical System

FLAME

The AA-7800 is equipped with a three-dimensional optical system that is automatically set to the optical double-beam mode for flame measurements. In addition, the high-speed digital filter and use of optical components with extremely low optical loss levels achieve data stability and high sensitivity.





Results are shown from measuring 2 ppm of copper for over an hour (average of 11 successive measurements plotted). Over the course of hundreds of measurements, the instrument achieved a relative standard deviation within 1%.

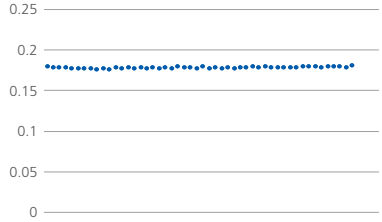
Digital Temperature Control and Gas Control Results in High Stability

FURNACE

The high-sensitivity optical sensor in combination with Shimadzu's unique temperature control method results in precise temperature control throughout all temperature regions for drying to atomization.

An electronically controlled flow controller enables the inner gas flowrate to be controlled precisely in 0.01 L/min increments.

That ensures high data stability even for furnace analysis.



Furnace Analysis Stability Data for Manganese
(Plot of 50 Repetitions of
Averaging 5 Absorbance Measurements)

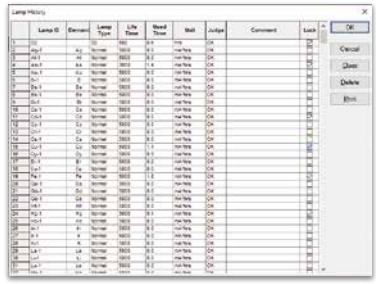
Automatically Switches Between Eight Hollow Cathode Lamps

The AA-7800 lamp housing includes functionality for automatically switching between eight hollow cathode lamps installed in a turret and simultaneously illuminating any two of the lamps.

In combination with an ASC-7800 autosampler, it can measure multiple elements automatically.

Lamp History Function is Helpful for Lamp Management

In the lamp registration window, cumulative operating times can be calculated for each lamp, which is helpful for managing the service life of lamps. Multiple lamps for the same element can be differentiated based on lamp IDs.

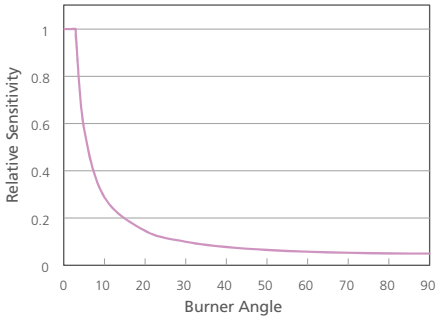


Flame Analysis Offers Superior General Applicability

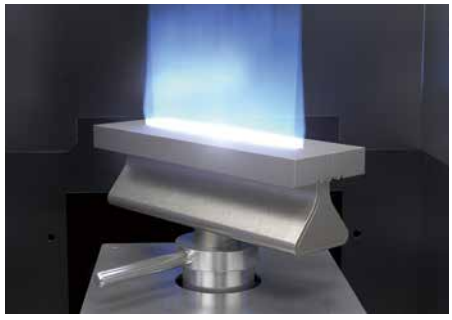
Analyzes High-Concentration Elements by Changing the Burner Angle

Elements present in high concentrations can be measured in the flame analysis mode by adjusting the burner angle to decrease absorbance. That enables measurement of up to about 20 times higher element concentrations, which helps minimize dilution errors and the effects of measurement element contamination from containers or reagents used.

Note: The automatic dual atomizer system, which is a combination of the model with AAC and the GFA-7800, cannot change the burner angle.



Burner Angle vs. Relative Sensitivity



With Burner Angle Changed

Burner Head with Angle-scale Markings (Optional)

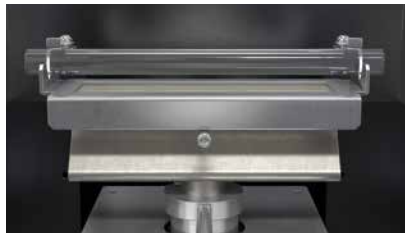
High-Sensitivity Analysis Using Atom Booster (Optional)

The atom booster is a 15 cm long quartz tube with a vertical slit cut in the tube. Positioned above the burner head, the tube increases the delay time of atoms inside the flame, which increases absorbance by increasing the atomization density.

Element	Atom Booster		Sensitivity Increase
	Without	With	
Cd	0.0015	0.0007	Approx. 2.1 x
Pb	0.025	0.012	Approx. 2.3 x

Comparison of Lower Limit of Detection with or without Atom Booster (Units: mg/L)

* This option cannot be used with N_2O-C_2H_2 flame. Contact us for information about the types of samples for which this option is available and the elements for which this option is useful.



Atom Booster

Compatible with Various Organic Solvents

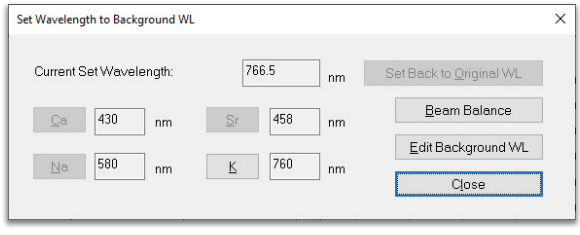
By replacing standard parts with optional organic solvent-resistant parts, organic solvents that normally cause difficulties if injected in the standard configuration, such as MIBK or butyl acetate, can be injected.

Support Gas Flow Meter Included Standard

Float-type flow meter (rotameter) included standard for Support gas (N_2O).

Also Compatible with Flame Emission Spectrophotometry

The AA-7800 can also be used as a flame emission spectrophotometer. By using the wavelength shift function to specify two measurement wavelengths, the background can be corrected even for flame emission spectrophotometry.



[Wavelength Shift] Window

Any Application

Selectable Manual or Automatic Dual Atomizer System

Manual Dual Atomizer System

Model with Manual Atomizer Switching Offers Superior General Applicability

Adding a GFA-7800 graphite furnace atomizer to the AA-7800F system enables manual switching between flame and furnace units. Switching between units is extremely easy and does not require any tools.

The manual-switching model also enables changing the burner angle and using an atomic muffle, which can measure various samples.

Flame analysis

Furnace Analysis

Variable Burner Angle
(for analyzing high concentration samples)

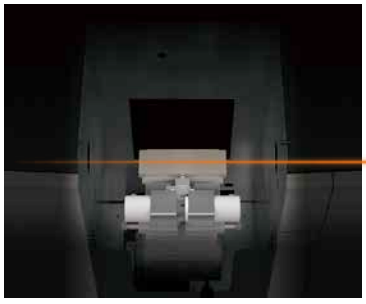
Atomic Muffle Furnace
(for hydride generation method with an electric furnace)

Automatic Dual Atomizer System

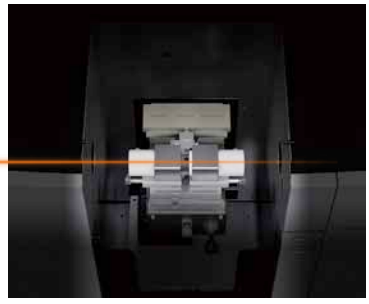
Model with Automatic Atomizer Switching Offers Excellent Operability and Speed

By adding a GFA-7800 graphite furnace atomizer to the AA-7800F/AAC system, automatic and quick switching between flame and furnace modes becomes possible with software operation. There is no need to disconnect tubing or wiring either.

It is recommended for users to switch between flame and furnace frequently for routine analysis.



During Flame Measurements



During Furnace Measurements

Dual-Background Correction Functions

Equipped Standard with Two Kinds of Background Correction - D_2 (Deuterium Lamp) and SR (High-Speed Self-Reversing) Methods

By selecting the best background correction method for the given sample, highly accurate and reliable analytical results can be obtained for a wide variety of samples.

Samples suitable for the D_2 method

Purified water, tap water, environmental water, etc.
Samples with a relatively simple matrix

Samples suitable for the SR method

Samples with a complex matrix
(Containing a large quantity of a specific element as the main component)

D_2 Method — Highly sensitive background correction

Features

1. Detection sensitivity is superior to the SR method. Therefore, this method is suitable for the analysis of samples with a simple matrix requiring high sensitivity, such as the measurement of trace levels of impurities in ultrapure water or environmental analyses.
2. As the lighting frequency is higher than with the SR method, it can eliminate noise due to emission components of the flame or graphite tube to permit accurate atomic absorption measurements.
3. The original hollow cathode lamp can be used.

SR Method — Accurate background correction over a wide range

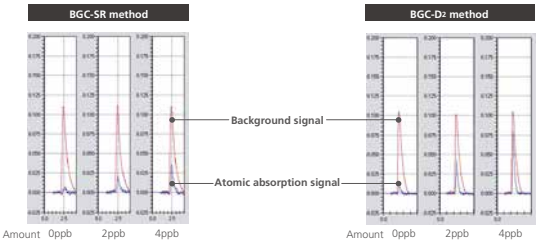
Features

1. SR correction is generally more accurate than D_2 correction. As both atomic absorption and background absorption can be measured using a single lamp, the correction errors due to light-axis misalignment are extremely small.
   This is ideal for the quantitation of trace components in a matrix exhibiting complex background absorption, such as bio-samples and metals.
2. Permits background correction over the entire wavelength range from 185 nm to 900 nm.
3. This method can correct for spectral interference due to neighboring lines that can occur when a resonance line for another element exists near the analytical line for the target element.
4. As no polarizer is used, measurements are possible with low light losses and a high S/N ratio.
5. The rapid lamp lighting permits accurate measurement unaffected by emission noise in the atomizer.

* Hollow cathode lamp L-2433 is required to use the SR method. Hollow cathode lamp L-2433 can also be used for the D_2 method.

■ Examples suitable for D_2 method
(where differences result between SR and D_2 methods)

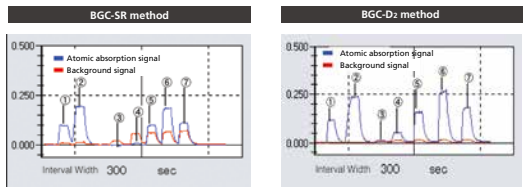
Example: Measurement of trace levels of lead in 2% NaCl solution by molecular absorption (analysis of Pb in 2% NaCl solution)



It can be seen that the sensitivity is higher with the BGC-D_2 method.

■ Examples suitable for SR method
(where differences result between SR and D_2 methods)

Example: Measurement of trace levels of zinc in iron (analysis of Zn in Fe solution)



The identical 0.5 ppm Zn solution is accurately corrected to the same absorbance at (2) and (6).

Due to inadequate correction, the absorbance is higher at (6) than at (2) for the identical 0.5 ppm Zn solution.

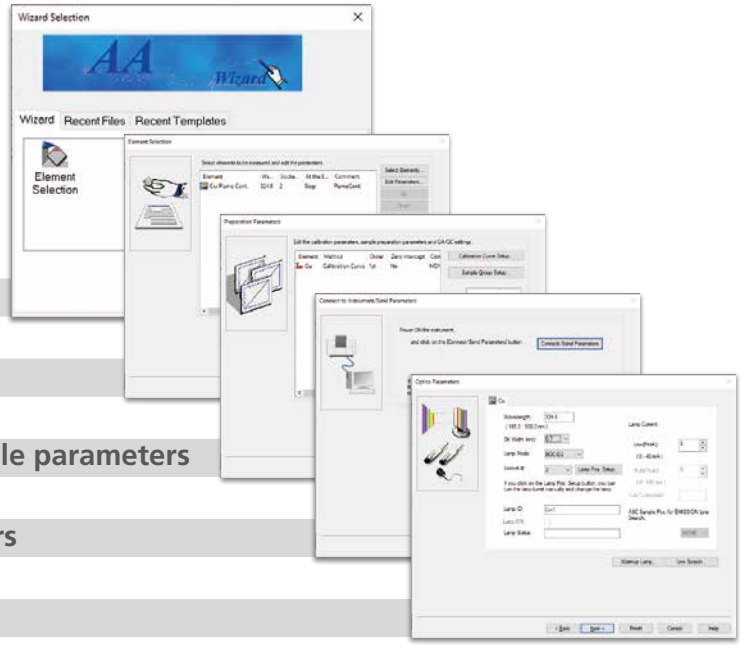
Any User

Clear, Easy-to-Use Software WizAArd

WizAArd Software can Specify Settings Easily and Enables Parameter Settings to be Changed Quickly.

Just set the measurement conditions using WizAArd to complete the general settings.

The initial settings can also be completed simply by following the Wizard procedures.



Start Wizard

▼

Select element

▼

Set calibration curve and sample parameters

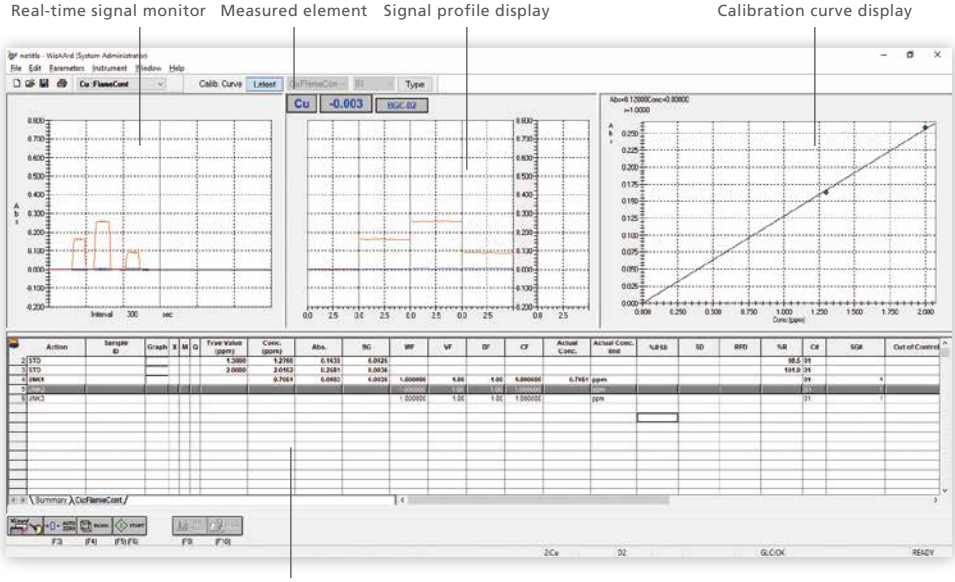
▼

Set monochromator parameters

▼

Connect to instrument

Measurement Screen Layout Shows Measurement Status at a Glance



MRT(Measured Result Table)
The worksheet shows sample names, absorbance, concentrations, and correction calibration results.

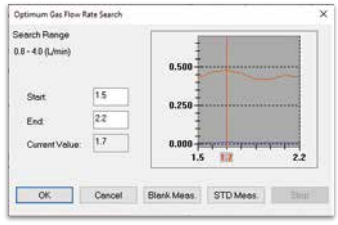
Functionality for Supporting Analytical Condition Development

Automatic Gas Flowrate Optimization

FLAME

The optimal flame gas flowrate value must be determined when using organic solvents or after changing the burner height. The AA-7800 performs that gas flowrate optimization process automatically.

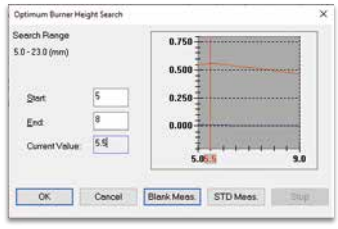
It detects the gas flowrate that results in the highest sensitivity by measuring the change in the absorbance of blank and standard samples due to gas flowrate, displays the absorbance difference in the window, and then automatically sets the flowrate to that value.



Automatic Burner Height Optimization (Models with AAC)

FLAME

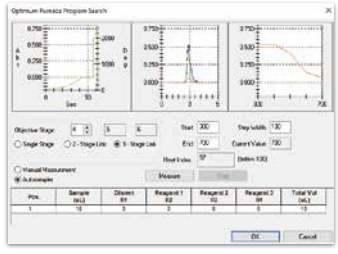
The absorption sensitivity of flame analysis can vary depending on burner height. This is because flame temperature can vary due to the burner height, sensitivity levels can vary due to different flame types, even for the same height, and the absorption sensitivity can also be influenced by components in the matrix. The AA-7800F/AAC automatically searches for the optimal setting by varying the burner height in 0.5 mm steps.



Optimum Furnace Program Search

FURNACE

This function can automatically perform the steps involved in measuring data as the graphite tube heating parameters are gradually varied and then plotting that data as a graph in the window. That enables the optimal atomization and ashing temperatures to be determined.



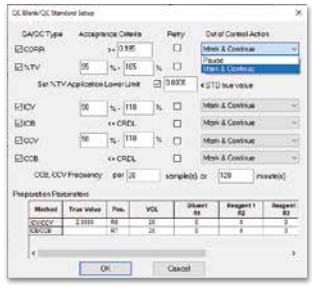
Supports System Management and Accuracy Control

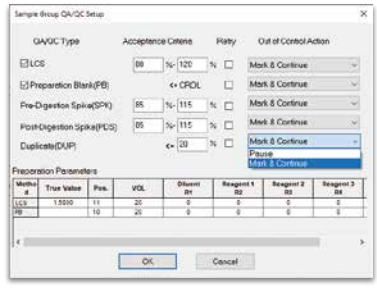
Hardware Validation Software Included Standard

Instrument performance can be evaluated easily using the hardware validation software included standard with the system. If used in combination with an autosampler, it can automatically inspect the wavelength accuracy, noise level, baseline drift, absorbance/repeatability, and other factors and print results from comparing performance to passing criteria.

Precision Control (QA/QC) Functionality

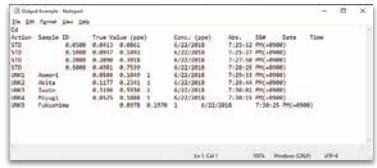
Reliable measurement results are obtained thanks to QA/QC functions including checks of calibration curve correlation coefficients and recovery rates.





Variety of Data Output

In addition to typical printing of data and summary reports, the text file output function in the WizAArd software can also be used to output tab-delimited text files to specified folders.



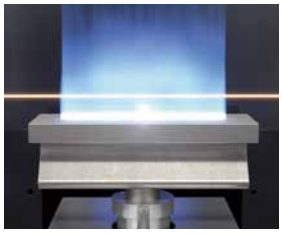
Example of Output Using Text File Output Function

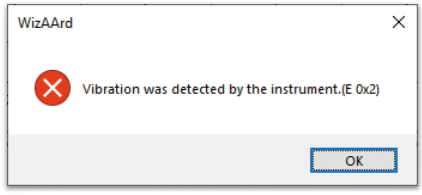
Any User

Safety Technology for Flame AA Systems

■ Automatic Flame Extinguishing Function by Vibration Detection Sensor

A built-in sensor automatically extinguishes the flame when it detects vibration. That eliminates any worry in the event of an earthquake or other major shaking.





The device detects vibrations and automatically digests flames.

Automatic flame extinguishing

■ Multi-Mode Automatic Gas Leak Check Function

If the power supply is ON and the flame is extinguished, this function automatically checks for gas leakage from fuel gas lines inside the system's gas control unit. If a gas leak occurs, an alarm sound is emitted and a warning is displayed in the window.

■ Automatic Flame Ignition and Extinguishing

The flame can be ignited or extinguished easily. Flashback is prevented by an Air-C_2H_2 flame priority ignition system.

■ Automatic Air-N_2O Switching Mechanism with Acetylene Flowrate Monitor

Once the Air-C_2H_2 flame is ignited, it automatically switches to an N_2O-C_2H_2 flame. If C_2H_2 levels do not increase, due to a solenoid valve problem, for example, then flashback is prevented by not switching to the support gas.

■ Acetylene Regulator Failure Detection Mechanism

Even if the acetylene gas cylinder regulator fails, this mechanism detects the abnormally high gas pressure to protect the system by preventing the acetylene inlet solenoid valve from opening.

■ Flashback Prevention by Pressure Monitor

■ Automatic Gas Shutoff by Flame Monitor

■ Instantaneous Power Interruption Detection Mechanism and Safety System for Reigniting Flame

■ Burner Misuse Prevention Mechanism

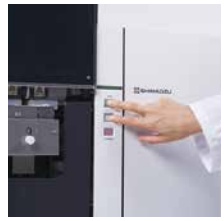
■ Drain Tank Level Monitor

■ Flame Retardant Materials Used

Flame retardant materials (UL standard: 94V-0) are used for outer cover of the main unit and the atomizer. Outstanding design achieved while ensuring safety.

■ Ignition Switches Designed for Safety

The switches are shaped to fit fingers and are located near the window. The mechanism is designed so that ignition requires pressing two switches simultaneously, which eliminates the worry of accidental operation.



■ Tubing Parts with High Durability and Joints with High Reliability Used

Tubing parts selected based on durability are connected using joints with high reliability.

■ Clear Window

The flame status can be checked via a large window and the large opening provides easy accessibility to the burner unit. Also, the window closes automatically when released, so there is no risk of forgetting to close the window.

Simple and Easy-to-Use Furnace System

Replacing the Graphite Tube is Easy

Furnace measurements require replacing the graphite tube. Thanks to the simple furnace structure, even first-time users can replace the tube easily using a specialized positioning jig. It is also easy to differentiate between using different graphite tubes ideal for given measurement applications.

Graphite Tube Positioning Jig

Replacing the Graphite Tube

Selecting the Graphite Tube

Pyro-coated graphite tube
(P/N 206-50588-11)

Effective for elements that readily form carbides (Ni, Fe, Cu, Ca, Ti, Si, V, Mo, etc.).

High-density graphite tube
(P/N 206-50587-12)

Effective for low-boiling point elements (Cd, Pb, Na, K, Zn, Mg, etc.).

Platform tube
(P/N 206-50887-02)

Restricts chemical interference due to coexisting substances. Effective for the analysis of environmental samples and biosamples, such as sea water and industrial waste.

* Depending on the state of the sample, some other combinations may be appropriate.

GFA-TV Graphite Furnace Camera (Optional)

The camera can be used to confirm the sample injection position or sample drying status, which is helpful when evaluating or optimizing the temperature program. The sharp image clearly shows the status inside the graphite tube.

GFA-TV

Checking the Sample Injection Position

Checking the Drying Status

Safety Technology for Furnace AA Systems

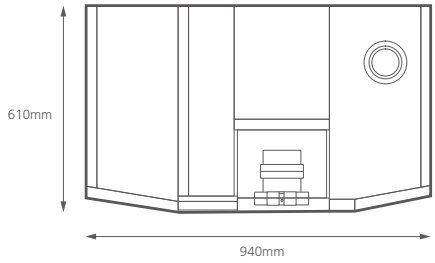
・Cooling Water Flow Rate Monitor ・Argon Gas Pressure Monitor ・Furnace Block Cooling Check

・Overcurrent Preventive Mechanism (Double-Checked by Circuit Protector and Optical Sensor)

Any Location

World's Smallest Dual System

Despite being a dual atomizer, the unit is only 940 mm wide (including the power supply unit for the graphite furnace atomizer).



AA-7800/AAC Dual Atomizer System Dimensions (Top surface)

Note: The indicated size does not include the ASC-7800 unit.

Compact and Multifunctional Autosampler ASC-7800

The Same Autosampler can be Used for Both Flame and Furnace Measurements

A single autosampler can be used for both flame and furnace measurements. There is no need to prepare two autosamplers. The simple design allows for sliding the autosampler left or right.

During Flame Measurements

During Furnace Measurements

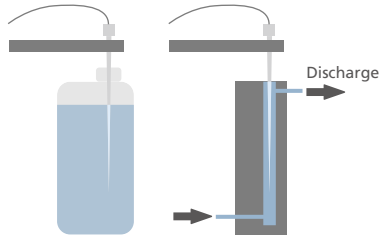
Space-Saving Design

Connecting the autosampler directly to the main unit minimizes installation space and simplifies maintenance.

Low Carryover

FLAME

Flame analysis requires being careful of carryover. The ASC-7800 rinses the nozzle at the overflow mechanism rinse port after each sample measurement is finished, which keeps carryover below 10^{-4} even when measuring multiple samples.



Conventional Method

Overflow Method

Advanced Functionality

FURNACE

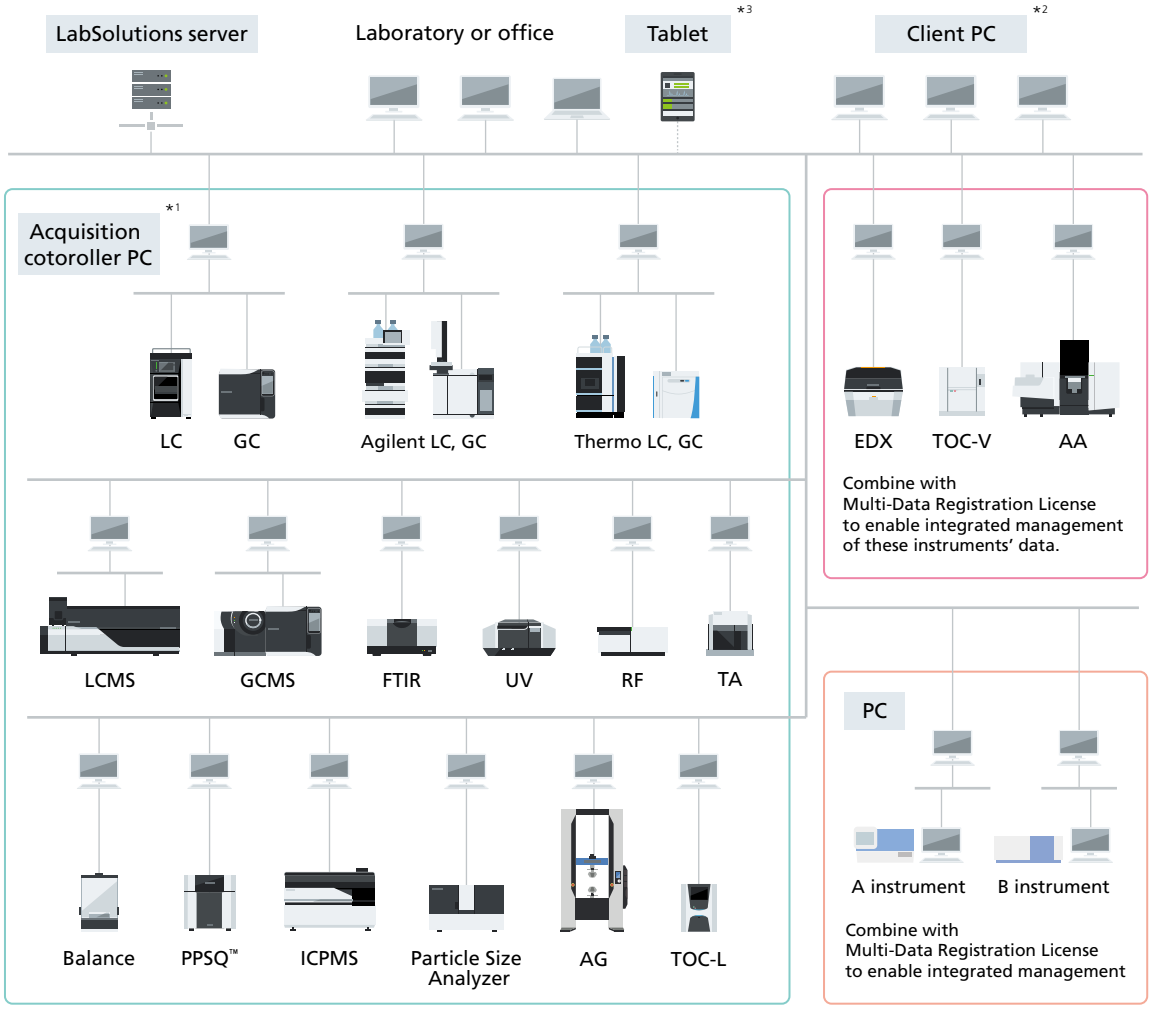
Up to four kinds of samples (such as diluents, standard solutions, samples, or matrix modifiers) can be mixed together before injection. (Non-mixtures can also be injected, of course.) Either a fluoropolymer tube or pipette tip can be selected as the injection nozzle. Samples can be automatically diluted and remeasured if the concentration exceeds the calibration curve concentration range.

LabSolutions™ CS Supports Laboratory Network Connectivity

Adding a WizAArd Agent connection kit (optional) enables compliance with electronic recordkeeping and electronic signature regulations, such as requirements specified in FDA 21 CFR Part 11. Select either a standalone (LabSolutions DB) or networked (LabSolutions CS) system that is best for the given application.

LabSolutions CS manages all analytical data in a database on a network server, so that the data can be loaded and analyzed on any computer connected to the network.

Note: An additional software license is required for analyzing data onto a computer not connected to the AA system.



*1 The acquisition control PC controls analytical instruments.
It can also be used to send analytical instructions and perform postrun analysis, just like a client PC.

*2 If a terminal service is used, then LabSolutions software does not need to be installed on client PCs.

*3 If an iPad is used, then XenApp from Citrix must be installed.

Software Required for Using the System Connected to LabSolutions

Part Name	P/N	Remarks
WizAArd Agent Connection Kit	206-77741-92	
LabSolutions Manager DB Multi-Data Registration Function	223-19127-92	Standalone System
LabSolutions Manager CS Multi-Data Registration Function	223-19169-92	Network System
WizAArd Second License	206-59774-41	Requires when installing WizAArd to a PC other than the control PC.

Optional Accessories

ASC-7800 Autosampler

(P/N 208-00400-XX)
Power requirements: 100 to 240 VAC, 50 VA, 50/60 Hz

Compact-size autosampler for flame and furnace units can install 60 samples and 8 reagents.

ASC stand kit (208-00490-41) is required to mount with dedicated flame measurement system, and ASK-7800 extension unit for furnace measurement is required to mount with dedicated furnace measurement system or dual system.

An ASC starter kit for aqueous solutions (206-59765-41) or organic solvents (206-59765-42) is required for the flame continuous method or hydride generation method.

HVG-100 Hydride Vapor Generator

(P/N 208-00900-XX)
Power requirements: 120, 230 VAC, 50 VA, 50/60 Hz

This is useful for high-sensitivity analysis of elements such as As, Se, and Sb.

Used with an ASC-7800 autosampler, it permits the automated serial analysis of up to 60 samples.

Nozzle ASSY, HVG (P/N: 206-67563) is required for operation in conjunction with the ASC-7800.

MVU-100 Mercury Vaporizer

(P/N 208-00850-XX)
Power requirements: 100 to 240 VAC, 50 VA, 50/60 Hz

This mercury vaporizer is for cold vapor atomic absorption spectroscopy.

It also requires a gas flow cell (201-98687), gas flow cell holder (206-77703-91), and mercury hollow cathode lamp (200-38422-28).

Burner Head with Angle-scale Markings

(P/N 206-50370-92)

Used to specify a constant fixed angle for measuring high concentration elements by changing the burner angle.

High-temperature Burner Head

(P/N 206-77530-91)

Made of pure titanium. Air-cooled. 5 cm slot for N_2O–C_2H_2 flame

- Extremely corrosion-resistant
- Can also be used for Air–C_2H_2 flame.

AMF-100 Atomic Absorption Muffle Furnace (Electronic Cell Heater)

(P/N 208-00950-47)
Power requirements: 200 to 240 VAC, 550 VA, 50/60Hz

This product contains Refractory Ceramic Fiber (RCF) and cannot be sold in some areas. Please inquire about the details.

This dedicated furnace permits higher sensitivity measurements using the hydride vapor generator than the flame heating method. The temperature controller provides optimal control of the quartz cell temperature to prevent damages to cells due to excessive overheating.
Mount adopter is required separately.
For AA-7800F: 206-52135-41
For AA-7800G: 206-83755-91
* The AMF-100 cannot be used with the AA-7800F/AAC.

Atom Booster

(P/N 206-50957-91)

Quartz slotted tube, useful for further increasing sensitivity of flame analysis with a cell holder.
* Cannot be used with N_2O-C_2H_2 flame.
  Contact us for information about the types of samples for which this option is available and the elements for which this option is useful.

Graphite Furnace Camera GFA-TV

(P/N 206-52950-41)

Provides viewing inside the graphite tube.
Including Video View Software (CD-ROM)

Micro Sampling Kit

(P/N 206-77540-91)

Required to use the flame micro sampling method. ASC-7800 and ASK-7800 (or ASC stand kit) are also required.

O-Ring Set

Required for analyzing organic solvents in flame analysis. Contact us for available organic solvents.
Fluoro Rubber O-Ring Set (P/N 206-77620-92)
Silicon Rubber O-Ring Set (P/N 206-77620-93)

Compressor and Gas Equipment

Part Name	P/N	Remarks
Low-noise air compressor	208-91750-36	220/230 VAC, 50/60 Hz, with mist separator
Mist separator kit	206-52458-41	Required if using an air compressor other than above.
YR-71 compressed gas regulator	040-72020-01	For acetylene cylinder
NP2-3-10B6-2RFH85-V compressed gas regulator	040-72034-01	For dinitrogen oxide cylinder (freeze-proof model)
FR-2S-OP compressed gas regulator	208-91763	For argon cylinder
Pressure regulator set, Air	208-91756-91	Pressure regulator for use in laboratory (for air)
Pressure regulator set, C_2H_2	208-91756-92	Pressure regulator for use in laboratory (for acetylene)
Pressure regulator set, N_2O	208-91756-93	Pressure regulator for use in laboratory (for dinitrogen oxide)
Pressure regulator set, AR	208-91756-94	Pressure regulator for use in laboratory (for argon)
Hose ASSY	206-50389-41	For air used to promote incineration in GFA

Cooling Water Equipment

Part Name	P/N	Remarks
CA-1116A cooling water circulator	044-01813-51	For cooling GFA, 100 VAC, 1100 VA, 50/60 Hz
Cooler attach kit	206-84373-41	For connecting GFA and cooling water circulator
Cooling water tube ASSY	206-51028-91	Connecting tubes when using tap water to cool GFA
Regulator ASSY	206-86147-41	Decompression valve when using tap water to cool GFA

Installation Conditions

For more details, refer to the Pre-Installation Requirements.

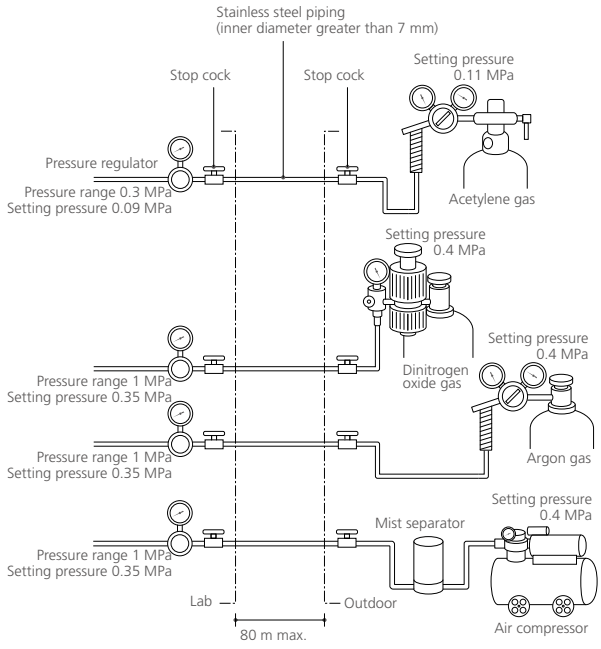
Power requirements	Main unit	Choose from 100, 120, 220, or 230 VAC, 230 VA, 50/60 Hz
	GFA-7800	200, 220, 230, or 240 VAC ±5%, 7400 VA, 50/60 Hz
Operating environment	Temperature range	10 to 35 °C
	Humidity range	20 to 80% (less than 70% when temperature is higher than 30 °C)
Testing bench		1500 mm min. (W) × 700 mm min. (D)
		Withstand load: 200 kg *1, 2
Gas tube	Material	Stainless *3
	Dimensions	7 mm min. I.D. × 80 mm min. (L)
Gas supply pressure (set secondary pressure)	Acetylene	Cylinder: 0.11 MPa Lab: 0.09 MPa
	Air	Compressor: 0.4 MPa Lab: 0.35 MPa
	Dinitrogen oxide	Cylinder: 0.4 MPa Lab: 0.35 MPa
	Argon	Cylinder: 0.4 MPa Lab: 0.35 MPa
Exhaust duct	Material	Stainless
	Dimensions	For flame: Approx. 500 mm W × 500 mm D For furnace: ø150 mm to ø200 mm
	Intake capacity	For flame: 600 to 1200 m³/hr For furnace: 10 to 180 m³/hr
Cooling water (GFA-7800)		Cooling water circulation unit or tap-water equipment *4

*1 Atomic absorption spectrophotometer stand recommended
*2 Maintain a free maintenance space of 150 to 200 mm to the sides and rear of the instrument.
*3 Do not use pipes containing copper, silver, gold, mercury (or alloys containing these metals) as pipes for acetylene.
*4 If tap-water equipment is used, ensure that it meets the specifications below.

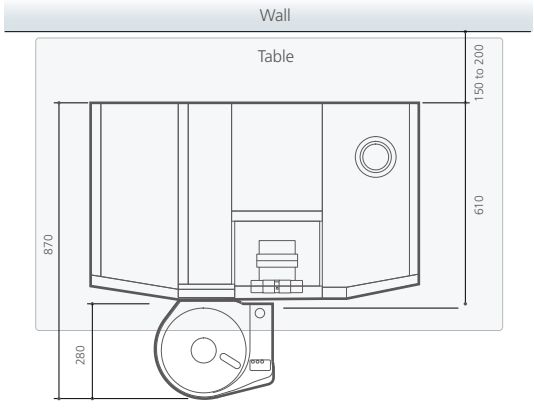
Compatible faucet	Faucet 13 or 12 to 15 mm O.D. rimmed faucet
Water temperature	10 to 30 °C
Water flow rate	0.6 to 1.5 L/min
Supply pressure	0.08 to 0.15 MPa *5
Position of the supply port	Within 7 m of the instrument

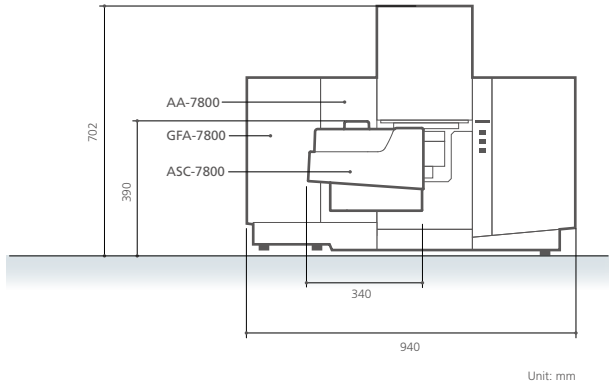
*5 If the supply pressure exceeds 0.17 MPa, use the optional Regulator ASSY.

Example of recommended piping for the atomic absorption system



Dimensions





Unit: mm

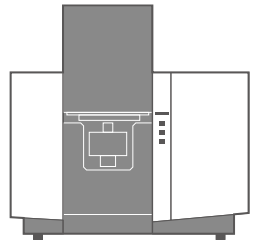
System Configuration Examples

Basic Flame System

Using this simple flame analysis system, samples are replaced manually. It is recommended for applications that involve few measurement elements or samples.

The burner angle can be changed to measure samples with high concentrations.

It can be upgraded to a dual atomizer system by adding an autosampler, graphite furnace atomizer, and other parts.

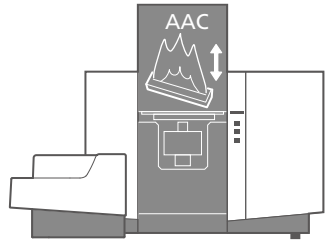


No.	P/N	Part Name
1	208-01700-XX	AA-7800F main unit
2	206-77655-91	Sample stage
3	—	Hollow cathode lamps
4	—	PC, LCD, Printer

Flame Automatic Burner System

This system includes autosampler and atomizer changer units to offer higher flame analysis efficiency.

Because not only the flame gas flowrate but also the burner head height can be controlled automatically, parameter settings can be optimized for each element automatically for serial analysis.

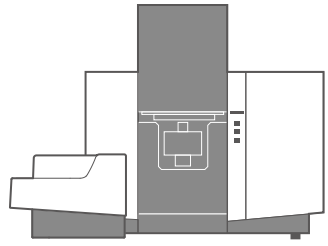


No.	P/N	Part Name
1	208-01720-XX	AA-7800F/AAC main unit
2	208-00400-XX	ASC-7800
3	208-00490-41	Autosampler stand kit
4	206-59765-41	Starter kit, ASC flame, WS
5	—	Hollow cathode lamps
6	—	PC, LCD, Printer

Organic Solvent-Resistant Flame System

This system enables flame analysis of various organic solvents, such as petroleum, MIBK, or butyl acetate.

The automatic gas flowrate optimization function makes it easy to switch over to organic solvent analysis, which requires determining the optimal flame gas flowrate value.



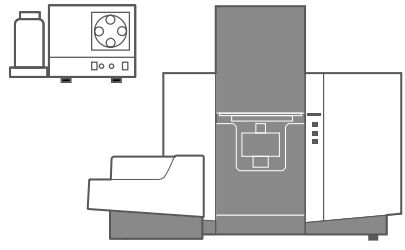
No.	P/N	Part Name
1	208-01700-XX	AA-7800F main unit
2	016-37619-01	Drain tube for organic solvents
3	206-77620-XX	O-ring for organic solvents*
4	208-00400-XX	ASC-7800
5	208-00490-41	Autosampler stand kit
6	206-59765-42	Starter kit, ASC flame, OS
7	—	Hollow cathode lamps
8	—	PC, LCD, Printer

* Select the O-ring best suited to the given type of organic solvent.
For information about compatible organic solvents, contact your Shimadzu representative.

HVG Flame System

This system is for rapid high-accuracy quantitation of elements such as As, Se, and Sb.

Hydride generated by a hydride vapor generator (HVG) is injected into an absorption cell, which is heated with a flame to atomize components for measurement by atomic absorption spectrometry. Used in conjunction with an autosampler, it enables automated serial analysis of up to 60 samples.



No.	P/N	Part Name
1	208-01700-XX	AA-7800F main unit
2	208-00400-XX	ASC-7800
3	208-00490-41	Autosampler stand kit
4	206-59765-41	Starter kit, ASC flame, WS
5	208-00900-XX	HVG-100 hydride vapor generator
6	206-67563	Nozzle ASSY, HVG
7	—	Hollow cathode lamps
8	—	PC, LCD, Printer

Note: Depending on the desired system configuration, a separate compressor, gas pressure regulator, water cooling equipment, or other equipment may be required. (Refer to pages 16 and 17.)

Note: Hollow cathode lamps are sold separately. Order the type of lamp necessary for the given elements being analyzed and the background correction method.

Hollow Cathode Lamps

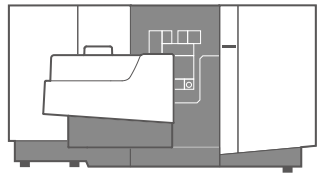
Part Name	P/N	Remarks
L-233 series	200-38422-XX	
L-2433 series	200-38456-XX	Supports SR method

Furnace Autosampler System

This dedicated furnace analysis system offers simple operability, high sensitivity, and high stability.

The ASC-7800 autosampler can mix up to four kinds of solutions (such as diluents, standard solutions, samples, or matrix modifiers) before injection.

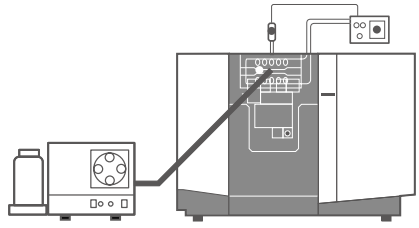
No.	P/N	Part Name
1	208-01710-XX	AA-7800G main unit
2	208-00320-58	GFA-7800
3	208-00400-XX	ASC-7800
4	208-00450-41	ASK-7800
5	—	Graphite tube
6	—	Hollow cathode lamps
7	—	PC, LCD, Printer



Dedicated HVG Atomic Muffle Furnace System

This system uses an electric furnace to heat the absorption cell for the hydride generation method. It offers higher sensitivity and better stability than the flame heating method. Because a flame is not used, it does not require acetylene gas or an air compressor.

No.	P/N	Part Name
1	208-01710-XX	AA-7800G main unit
2	208-00400-XX	ASC-7800
3	208-00450-41	ASK-7800
4	208-00900-XX	HVG-100 hydride vapor generator
5	206-67563	Nozzle ASSY, HVG
6	208-00950-47	AMF-100 Atomic Absorption Muffle Furnace
7	206-83755-91	Mounting adapter
8	—	Hollow cathode lamps
9	—	PC, LCD, Printer

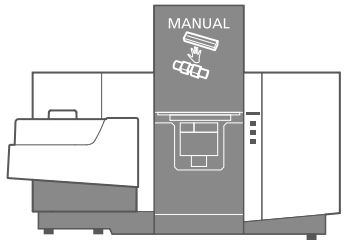


Manual Dual Atomizer System

This manual dual atomizer system is used to manually switch between flame and furnace modes.

It also supports changing the burner angle or using an atomic muffle furnace for a wide range of analyses.

No.	P/N	Part Name
1	208-01700-XX	AA-7800F main unit
2	208-00320-58	GFA-7800
3	208-00480-41	MAC-7800
4	208-00400-XX	ASC-7800
5	208-00450-41	ASK-7800
6	206-59765-41	Starter kit, ASC flame, WS
7	—	Graphite tube
8	—	Hollow cathode lamps
9	—	PC, LCD, Printer



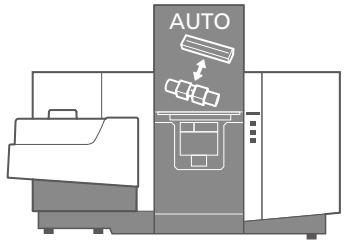
Automatic Dual Atomizer System

This system uses software operations to automatically and quickly switch between flame and furnace modes.

The burner head height can also be controlled automatically.

The system is especially recommended for routine analysis that involves frequently switching between flame and furnace modes.

No.	P/N	Part Name
1	208-01720-XX	AA-7800F/AAC main unit
2	208-00320-58	GFA-7800
3	208-00400-XX	ASC-7800
4	208-00450-41	ASK-7800
5	206-59765-41	Starter kit, ASC flame, WS
6	—	Graphite tube
7	—	Hollow cathode lamps
8	—	PC, LCD, Printer



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