

novAA 800 Series Atomic Absorption Spectrometer



Technical Data

novAA 800

General

- Atomic absorption spectrometers series for highest efficiency in routine analysis with hollow cathode lamps (Line-Source AAS, LS-AAS) and deuterium background correction
- Three benchtop models on one instrumental platform for flame, graphite furnace, and hydride application
- Wide range of performance-enhancing accessories maximize productivity, safety, and ease of use

Models

Application range	novAA 800 F	novAA 800 G	novAA 800 D
Flame	☑		☑
Graphite furnace		☑	☑
hydride and cold vapour technique	■	■*	■*
Emission mode	☑		☑

☑ included, ■ optional, *HydrEA analysis

Atomizer

Dual atomizer concept

Design	All atomizers mounted in one sample compartment
Interchange	Swivel-mounted atomizer interchange by hand (novAA 800 D)

Flame

Burner	Coded Titanium burner head, 100 mm (air/acetylene), 50 mm (air/acetylene and nitrous oxide/acetylene) with automatic burner head recognition, stepless burner rotation (0-90°), and automatic height adjustment (5-15mm)
Nebulizer	Adjustable nebulizer with internal ceramic capillary and acid-resistant ceramic impact bead
Spray chamber	PPS spray chamber with flow spoiler for aqueous and organic solutions
Safety and handling	<ul style="list-style-type: none"> ▪ Multiple sensors monitoring burner head, siphon system and gas management system (GMS) ▪ Automatic ignition and extinguishment of flame, incl. in case of power outage or gas pressure drop in combination with emergency flushing of the system with compressed air ▪ Nebulizer-Burner system with quick-lock for easy replacement

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Graphite furnace

Function	<ul style="list-style-type: none"> ▪ Transversely heated graphite furnace atomizer (THGA) ▪ Stabilized Temperature Platform Furnace (STPF) for lowest interference and highest reproducibility ▪ Integrated autosampler operation and furnace USB camera
Furnace control	<ul style="list-style-type: none"> ▪ Temperature range from ambient temperature to 3,000 °C, programmable in intervals of 0.5 °C ▪ Heating rate up to 3,000 °C/s ▪ Real-time temperature control by internal sensor ▪ Self-check system
Graphite tube	Pyrolytically coated graphite (wall or pin-platform) tubes, self-aligning, sample volume up to 50 µL for standard tubes, up to 40 µL for PIN-platform tubes

Optical bench

Spectrometer type	Czerny Turner setup, encapsulated, purgeable, focal length 350/389 mm, single-beam and/or double-beam mode (flame atomization)
Monochromator	Holographic grating, rotatable (1,800 lines/mm)
Slit width	0.2, 0.3, 0.5, 0.8, 1.2 nm (automatic selection)
Wavelength range	185–900 nm
Wavelength reproducibility	0.005 nm
Background correction	Deuterium background correction by D ₂ hollow cathode lamp (HCL)
Detector	SiOSens solid state detector, wide range, linear read out 0.1-100%, low noise CSA, 5 V
Light source	8-fold HCL turret including automatic RFID recognition, lamp base compatible with standard HCL type
Instrumental sensitivity	Flame: (Cu 324 nm) 0.020 mg/L 1 %Abs using a 100 mm burner head (air/acetylene) Graphite furnace: (Pb 283 nm) 0.80 µg/L 1 %Abs (for 20 µL, peak area evaluation)

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Gas Management System (GMS)

Gas type	Purity	Pressure	Settings	Atomizer technique	Usage
Acetylene	2.6	80 - 160 kPa	Steps in 5 L/h	Flame	Fuel gas
Nitrous oxide	2.5	400 - 600 kPa	Fixed	Flame	Oxidant
			3 Steps	Flame	Additional oxidant
Compressed Air	Free from oil, grease, and particles	400 - 600 kPa	Fixed	Flame	Oxidant
			3 Steps	Flame	Additional oxidant
			3 Steps	Graphite Furnace	Alternative gas Spectrometer purge*
Argon	4.8	600 - 700 kPa	3 Steps	Graphite Furnace	Inert gas
			3 Steps	Hydride system	Carrier gas

* ...Optional with air purge kit (separate module)

Data system

Software	ASpect LS (Version 1.7 and higher) with optional 21 CFR Part 11 compliance, pre-configured analytical methods, and reports, monitoring of quality parameters, e.g. control charts.
Requirements	<ul style="list-style-type: none"> ▪ Operating system: PC – Windows 7, 8.1 or 10 (32-Bit or 64-Bit) ▪ PC: Graphic resolution 1280 x 1024 pixels or higher, mouse/trackball 2 USB 2.0 interface

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Accessories

Auto Sampler Range (for liquid samples, with round sample tray)

Models, Specifications	AS-F	AS-FD	AS-GF
novAA 800F – flame	■	■	
novAA 800G – graphite furnace			☑
novAA 800D – duo atomizer	■	■	☑
HS 60 – flow injection hydride system	■	■	
Dimensions (W x D x H) in mm	340 x 460 x 350	340 x 460 x 350	250 x 380 x 550
Dilution unit	-	350 x 165 x 310	-
Weight	6.5 kg	10 kg	7.2 kg
Cannula			
▪ Fluid contact material	Pt / Rh	Pt / Rh	PFA-M
▪ Number of channels	1	2	1
▪ Internal diameters	0.6 mm	0.6 / 1.2 mm	0.65 mm
▪ Minimal pipetting volume (one step)		50 µL	1 µL
Tray options with number of positions (sample volume)	139 positions 129 (15 mL) + 10 (50 mL)	139 positions 129 (15 mL) + 10 (50 mL)	108 positions 100 (1.5 mL) + 8 (5 mL)
	54 positions (50 mL)	54 positions (50 mL)	
Automatic cleaning and rinsing cycles	☑	☑	☑
Maximum dilution factor (single step)		500	800
Auto calibration from single/stock standards (automatic standard preparation)		☑	☑
Over-range dilution		☑	☑
Automated standard addition calibration		☑	☑
Spiking			☑
Sample pre-concentration			☑
Automatic dosing of modifiers, buffers, etc.			☑

☑ included, ■ optional

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Hydride systems

Models, Specifications	HS 50	HS 55	HS 60
Accessible elements	Arsenic (As), Selenium (Se), Mercury (Hg), Antimony (Sb), Bismuth (Bi), Tellurium (Te) and Tin (Sn)		
novAA 800F – flame	■	■	■
novAA 800G – graphite furnace		■	■
novAA 800D – duo atomizer	■	■	■
Heating regime of hydride cuvette	Flame	Electro thermal	Electro thermal
Reaction mode	Batch	Batch	Flow
Enrichment by gold trap		Upgradeable	Upgradeable
HydrEA mode		Upgradeable*	Upgradeable*
Autosampler			■
Size (W x D x H) in mm	270 x 190 x 210	360 x 280 x 370	360 x 240 x 370
Weight Net	2 kg	14 kg	14 kg

☑ included, ■ optional, *HydrEA upgrade kit is required

Other accessories

Accessory	Application	Function
Scraper for flame mode	Flame	automatic cleaner of burner head for safe nitrous oxide operation
Segmented flow star SFS 6.0	Flame	Switching valve technology for stable flame conditions, injection mode, and reduced carry over
Air purge kit	Spectrometer	Maximum protection against dust and vapor
Chiller	Graphite furnace	Water chiller with 2.5 L/min flow rate, free of sediments, 30 - 40 °C temperature range

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Physical data (basic unit)

	novAA 800 F	novAA 800 G	novAA 800 D
Size (W x D x H) in mm	820 x 770 x 600	820 x 770 x 600	820 x 770 x 600
Net weight	95 kg	125 kg	130 kg
Supply voltage	230 V/110V	230 V	230 V
Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Fuse protection	16 A	35 A	35 A
Power consumption (basic unit)	150 VA	1,400 VA	1,400 VA
Max. electrical load (incl. all accessories, for 1 s)	1,350 VA	10,400 VA	10,400 VA
Ambient temperatures/ humidity	+5 °C to +40 °C / 90% (at +40 °C) non-condensing		
Exhaust rates	Minimum exhaust rates of 1 m ³ /min (graphite furnace) and 5 m ³ /min (flame)		
Technical standards and guidelines	Complies with standards for safety and electromagnetic compatibility for CE marking (LVD 2014/35/EU; EMC 2014/30/EU; RoHS 2011/65/EU), ISO 9001 compliant		

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