

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 elements and mercury	optional	optional	optional
Emission mode	+	+	+

### 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, 10 cm (air/acetylene), 5 cm (air/acetylene and nitrous oxide/acetylene) with automatic burner head recognition, adjustment of height and angle (0-90°)
Nebulizer	Adjustable nebulizer with internal Pt/Rh 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"> <li>▪ Multiple sensors monitoring burner head, siphon system and gas management system (GMS)</li> <li>▪ Automatic ignition and shut down of flame, incl. in case of power outage or gas pressure drop</li> <li>▪ Nebulizer-Burner system with quick-lock for easy replacement</li> </ul>

#### Graphite furnace

Function	Transversely heated graphite furnace atomizer (THGA) by integrated autosampler operation
Furnace control	Temperature range from 0 °C to 3000 °C, programmable in intervals of 0.5 °C, heating rate up to 3000 °C/s, real-time temperature control by QPC sensor, self check system
Graphite tube	Pyrolytically coated graphite (wall or pin-platform) tubes, self-aligning, sample volume up to 50 µL

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### Optical bench

Spectrometer type	Czerny Turner setup, encapsulated, purgeable, focal length 350/389 mm, single-beam and/or double-beam mode
Monochromator	Holographic grating, rotatable (1800 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 <sub>2</sub> hollow cathode lamp
Detector	SiOSens solid state detector, wide range, linear read out 0.1-100%, low noise CSA, 5 V
Light source	8-fold hollow cathode lamp (HCL) changer, lamp base compatible with conventional HCL
Instrumental sensitivity	Flame: (Cu 324) 0.017 mg/L 1 %Abs using a 10 cm burner head (air/acetylene) Graphite furnace: (Pb 283) 0.79 µg/L 1 %Abs (for 20 µL, peak area evaluation)

### 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	320 - 480 kPa	Fixed	Flame	Oxidant
			4 steps	Flame	Additional oxidant
Compressed Air	Free of oil, grease and particles	400 - 600 kPa 600 - 700 kPa	Fixed	Flame	Oxidant
			4 steps	Flame	Additional oxidant
			4 steps	Graphite Furnace	Alternative gas <sup>a</sup> Spectrometer purge <sup>b</sup>
Argon	4.8	600 - 700 kPa	4 steps	Graphite Furnace	Inert gas
			3 steps	Hydride system	Carrier gas Spectrometer purge

a ... gas connection/port may also be used for Ar/H<sub>2</sub> or Ar/CH<sub>4</sub> addition

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

### Data system

Software	ASpect LS (Version 1.6 and higher) with optional 21 CFR Part 11 compliance, pre-configured analytical methods and reports, monitoring of quality parameters e.g. control charts, etc.
Requirements	<ul style="list-style-type: none"> <li>▪ Operating system: PC – Windows 7, 8.1 or 10 (32-Bit or 64-Bit)</li> <li>▪ PC: Graphic resolution 1280 x 1024 pixels or higher, mouse / trackball 2 USB 2.0 interface</li> </ul>

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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	-	-	incl.
novAA 800D – duo atomizer	+	+	incl.
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	PTFE/PFA
▪ 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 (number of positions /sample volume )	129 / 15 mL 10 / 50 mL 54 / 50 mL	129 / 15 mL 10 / 50 mL 54 / 50 mL	100 / 1.5 mL 8 / 5 mL
Automatic cleaning and rinsing cycles	+	+	+
Pre-configured cleaning control (blank level management)	+	+	+
Maximum dilution factor (single step)	-	500	800
Autocalibration from single/stock standards (automatic standard preparation)	-	+	+
Over-range Dilution	-	+	+
Automated standard addition calibrations	-	+	+
Spiking	-	-	+
Sample pre-concentration	-	-	+
Automatic dosing of modifiers, buffers, defoamers etc.	-	-	+

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### Hydride systems

Models, Specifications	HS 50	HS 55	HS 60
Elemental range	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 analysis	-	Upgradeable	Upgradeable
Autosampler	-	-	Optional
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

### Other accessories

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

### 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

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Power consumption (basic unit)	150 VA	1,400 VA	1,400 VA
Max. electrical load (incl. all accessories)	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 <sup>3</sup> /min (graphite furnace) and 5 m <sup>3</sup> /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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