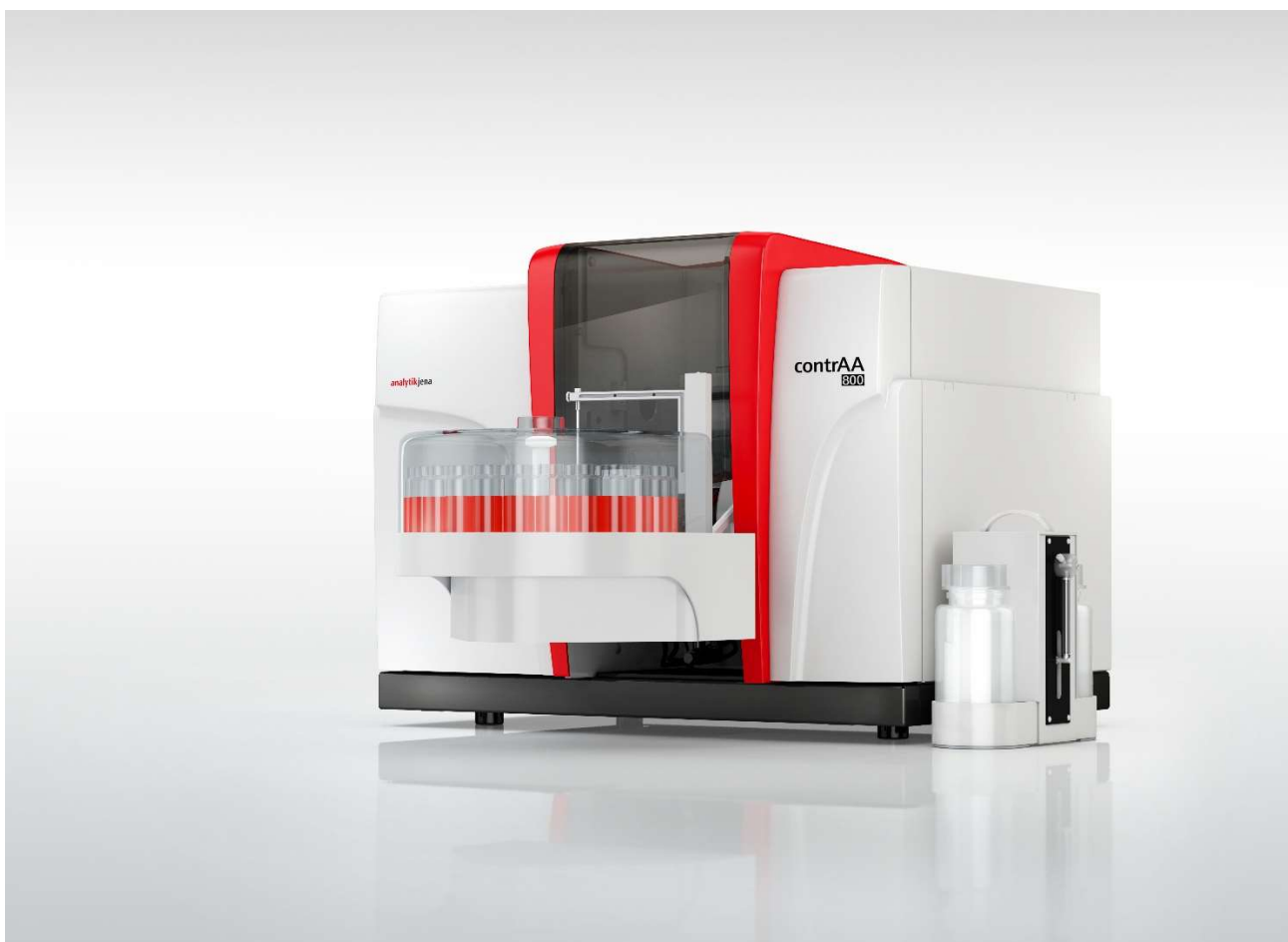


# contrAA 800

## Atomic Absorption Spectrometer



## Technical Data

### contrAA 800

## General

The contrAA 800 series is a family of small footprint benchtop atomic absorption spectrometers for advanced applicability in routine and research with a Xenon lamp (continuum source AAS, CS-AAS), a fast-sequential high-resolution (HR) spectrometer and simultaneous background correction (HR-CS-AAS). The contrAA 800 series covers the complete range of AAS applications from flame to graphite furnace to hydride mode on one instrumental platform, and furthermore enables direct analysis of solid samples (solidAA). An extensive range of accessories maximizes productivity, safety and ease of use for analytical routines.

## Models

Application range	contrAA 800 F	contrAA 800 G	contrAA 800 D
Flame	☑		☑
Graphite furnace		☑	☑
Hydride elements and mercury	■	■*	■
Solid AA		■	■
Emission mode	☑	☑	☑

☑ included, ■ optional, \*HydrEA analysis

## Optics

Spectrometer type	<ul style="list-style-type: none"> <li>Fast-sequential echelle set-up (focal length 380 mm) in single-beam configuration,</li> <li>Quartz-coated reflecting optics in a dust-free and light-proof encapsulation and purgeable with inert gas for maximum protection against dust and corrosive vapors</li> </ul>
Double monochromator	High resolution double monochromator with quartz prism and rotatable grating
Spectral resolution	0.002 nm at 200 nm (FWHM value $\leq 3.8$ pm for As 193.7 nm)
Wavelength range	185-900 nm (continuous wavelength coverage up to 72 elements enabling access to all alternative absorption lines and molecular absorption lines e.g. PO, CS, GaF)
Wavelength reproducibility	0.4 pm
Background correction	Automatic baseline correction (ABC), correction of structured background by reference measurement and/or correction of spectral interferences (CSI)
Detector	CCD Array detector (200 pixels) with high quantum efficiency, increased UV sensitivity and low signal-to-noise ratios
Light source	<ul style="list-style-type: none"> <li>Water-cooled Xenon short arc lamp, continuum light source for fast interchange of elements/absorption lines (method parameter) without lamp exchange</li> <li>Alignment-free lamp replacement by the user</li> </ul>
Instrumental sensitivity	Flame: (Cu 324) 0.015 mg/l 1%Abs using a 10 cm burner head (air/acetylene) Graphite furnace: (Pb 283) 0.66 µg/l 1%Abs (for 20 µL, peak area evaluation)

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### Atomizer – Dual Atomizer Concept

#### Dual atomizer concept

Design	All atomizers mounted in one sample compartment
Interchange	Automatic atomizer interchange (contrAA 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 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), included autosampler operation, integrated furnace USB camera, suitable for direct analysis of solid samples (solid AA)
Furnace control	Temperature range from 0 °C to 3000 °C, programmable in intervals of 0.5 °C, heating rate up to 3000 °C/s, automatic Self Check System
Graphite tube	Pyrolytically coated graphite (wall or pin-platform) tubes, self-aligning, sample volume up to 50 µL
Cooling	Included water chiller with 2.5 L/min flow rate, free of sediments, 30-40 °C temperature range

### 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, particles	400-600 kPa 600-700 kPa	Fixed	Flame	Oxidant
			4 steps	Flame	Additional oxidant
			2 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 Spectrometer purge

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

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### Data system

Software	ASpect CS (version 2.2 and higher) with optional 21 CFR Part 11 compliance, pre-configured analytical methods and reports, monitoring of quality parameters e.g. QC 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>

### Accessories

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

Models, Specifications	AS-F	AS-FD	AS-GF
contrAA 800F – flame	+	+	-
contrAA 800G – graphite furnace	-	-	incl.
contrAA 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	PTFE/MFA
▪ 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)	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	-	-	+

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### Hydride systems

Models, Specifications and Analytical Parameters	HS 50	HS 55	HS 60
Elemental range	Arsenic (As), Selenium (Se), Mercury (Hg), Antimony (Sb), Bismuth (Bi), Tellurium (Te) and Tin (Sn)		
contrAA 800F – flame	+	+	+
contrAA 800G – graphite furnace	-	+*	+*
contrAA 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

\*HydrEA upgrade kit is required

### SolidAA – accessory for direct analysis of solids, oils and waxes

	solid SSA 6	solid SSA 600
Function	<ul style="list-style-type: none"> <li>▪ Hand-operated tool</li> <li>▪ Sample platform submitted to graphite furnace manually (no weighing or sample preparation)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Software-controlled autosampler with integrated liquid dosing unit (for chemical sample preparation and calibration from liquid standards)</li> <li>▪ Robotic arm transports sample platform from sample tray, to microbalance, to liquid dosing unit and graphite furnace etc.</li> </ul>
Platform material	Pyrolytically coated graphite, trough dimension (W x D x H) 8 mm x 3.5 mm x 1.3 mm	
Sampler tray positions	-	42, upgradeable to 84 with second sample tray
Micro balance	-	Integrated, up to 10 g ± 0.001 mg
Typical sample weight	0.05 mg-3 mg	0.05 mg-3 mg
Dosing volume	-	2-50 µL
Size (W x D x H) in mm	-	270 x 600 x 380 for basic unit 90 x 270 x 270 for liquid dosing module
Weight Net	-	16 kg for basic unit 3.5 kg for liquid dosing module

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**Other accessories**

Accessory	Application	Function
Scraper	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

**Physical Data basic unit**

	contrAA 800F	contrAA 800G	contrAA 800D
Size (W x D x H) in mm	780 x 775 x 625	780 x 775 x 625	780 x 775 x 625
Weight net	140 kg	170 kg	170 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)	460 VA	2,100 VA	2,100 VA
Max. electrical load (incl. all accessories, <1s)	650 VA	20,450 VA	20,450 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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