Technical Data

# novAA 800 Series
# Atomic Absorption Spectrometer




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# 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 | ▪ Multiple sensors monitoring burner head, siphon system and gas management system (GMS)<br>▪ 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<br>▪ Nebulizer-Burner system with quick-lock for easy replacement |

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## Graphite furnace

| | |
|---|---|
| Function | ▪ Transversely heated graphite furnace atomizer (THGA)<br>▪ Stabilized Temperature Platform Furnace (STPF) for lowest interference and highest reproducibility<br>▪ Integrated autosampler operation and furnace USB camera |
| Furnace control | ▪ Temperature range from ambient temperature to 3,000 °C, programmable in intervals of 0.5 °C<br>▪ Heating rate up to 3,000 °C/s<br>▪ Real-time temperature control by internal sensor<br>▪ 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)<br>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<br>3 Steps | Flame<br>Flame | Oxidant<br>Additional oxidant |
| Compressed Air | Free from oil, grease, and particles | 400 - 600 kPa | Fixed<br>3 Steps<br>3 Steps | Flame<br>Flame<br>Graphite Furnace | Oxidant<br>Additional oxidant<br>Alternative gas<br>Spectrometer purge* |
| Argon | 4.8 | 600 - 700 kPa | 3 Steps<br>3 Steps | Graphite Furnace<br>Hydride system | Inert gas<br>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 | ▪ Operating system: Windows 11 (32-Bit or 64-Bit)<br>▪ RAM: min. 8 GB<br>▪ Memory: min. 256 GB, SSD recommended<br>▪ Graphic resolution: min. 1280 x 1024 px.<br>▪ 2x USB 2.0 |

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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<br>129 (15 mL)<br>+ 10 (50 mL) | 139 positions<br>129 (15 mL)<br>+ 10 (50 mL) | 108 positions<br>100 (1.5 mL)<br>+ 8 (5 mL) |
| | 54 positions<br>(50 mL) | 54 positions<br>(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)<br>Max. electrical load (incl. all accessories, for 1 s) | 150 VA<br>1,350 VA | 1,400 VA<br>10,400 VA | 1,400 VA<br>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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