

## Specification Sheet

Simultaneous ICP Emission Spectrometer

# ICPE-9800 Series

ICPE-9810/ICPE-9820



\* Peristaltic pump is option (P/N S211-92430-41)

The ICPE-9800 series offers two models, ICPE-9810 provides an axial view of the plasma and the ICPE-9820 Dual view system provides axial and radial viewing. Dual view capability allows measurements to switch automatically between high-sensitivity axial view and high-accuracy radial view, enabling quantitation of a wide dynamic range.

## Hardware

Instrument	ICPE-9810 (P/N S211-87700-58)	ICPE-9820 (P/N S211-92900-58)
ICP observation	Vertical torch Axial view	Vertical torch Axial / radial view
ICP system	Torch: Mini-torch (quartz) Nebulizer: Coaxial (glass) Chamber: Cyclone chamber (glass) Drain: Gravity fed Peristaltic Pump (option): 4 channels 12 - roller pump head	
Gas controller	PC controlled Range of Flow rates: Plasma gas    0 to 20 L/min (0.5 L/min step) Auxiliary gas  0 to 1.5 L/min (0.05L/min step) Carrier gas    0 to 1.5 L/min (0.01 L/min step) Purge gas (Axial view) about 0.5 L/min ECO mode: Plasma gas    5 L/min Auxiliary gas  0.6 L/min	

RF Generator	Frequency: 27 MHz RF power: Max. 1.6 kW (0.2 kW step) RF device: Transistor Output stability: Within $\pm 0.3\%$ Efficiency: 75% or better
Spectrometer	Echelle Optics: Range of wavelength: 167 nm to 800 nm Dispersion elements: Echelle grating 79 line/mm Prism Reciprocal dispersion: 0.21 nm/mm at 200 nm 0.68 nm/mm at 600 nm Resolution: $\leq 0.005$ nm at 200 nm Temperature: thermal controller (38°C) Atmospheric removal system: Rotary vacuum pump $\leq 10$ Pa
Device	CCD (charge coupled device) detector Pixel number: 1024 $\times$ 1024 pixels (1-inch) Pixel size : 20 $\mu\text{m}$ $\times$ 20 $\mu\text{m}$ Cooling control: Peltier device

# Software

P/N S211-49136-92 (English version), P/N S211-49136-93 (Chinese version)

Measurement sample	300 samples max per data file Pasting sample information from clipboard / excel into sample tables
Qualitative analysis	Analysis with built in database Auto selecting wavelength for each sample
Quantitative analysis: Calibration curve method / Standard addition method	<p>Continuous analysis using multiple methods</p> <p>Measuring wavelength</p> <ul style="list-style-type: none"> <li>Multi wavelengths for each element</li> <li>Auto selection of wavelength optimal wavelength</li> <li>User definable wavelength registration</li> </ul> <p>Correction</p> <ul style="list-style-type: none"> <li>BG correction / IEC (Inter Element Correction) / Internal-standard correction / Drift correction /</li> <li>Weight correction / Dilution correction</li> </ul> <p>Calibration</p> <ul style="list-style-type: none"> <li>1 - 3 order regression</li> <li>Quantitative lower limit display</li> </ul> <p>Print</p> <ul style="list-style-type: none"> <li>Setting of print items</li> <li>Auto printing analytical results at measurement</li> <li>Batch print (Analytical condition, calibration curve and analytical results etc.)</li> </ul> <p>Copy / Paste Functionality</p> <ul style="list-style-type: none"> <li>Analysis value, profile, and working curve, etc. can be copied to other applications by using Windows clipboard function</li> </ul> <p>Data save</p> <ul style="list-style-type: none"> <li>All wavelength Echelle mode</li> <li>Only selected wavelength mode</li> </ul> <p>Data export</p> <ul style="list-style-type: none"> <li>"CSV" or "Tab delimited text" export functionality</li> <li>Auto exporting analytical results</li> <li>Batch export</li> </ul> <p>Re-calculation</p> <ul style="list-style-type: none"> <li>Addition of analytical element and wavelengths (post analysis)</li> <li>Auto Re-calculation after method changes (integration wavelength region / BG point / internal standard element etc.)</li> <li>Auto Re-calculation after changing calibration conditions (order / calibration curve coefficients etc.)</li> </ul> <p>QA/QC (option)</p> <ul style="list-style-type: none"> <li>Judgment and re-correction for calibration curve / IEC (Inter Element Correction)</li> <li>Judgment, re-correction and re-measurement for drift correction during measurement</li> <li>Recovery rate / Dilution rate / re-measurement etc.</li> </ul> <p>21 CFR Part 11 compliant (option)</p> <ul style="list-style-type: none"> <li>Requires "CLASS-Agent" for 21 CFR Part 11.</li> <li>Agent connection kit, CLASS-Public Agent and Microsoft® SQL Server 2014 Standard Edition are necessary.</li> </ul>
User support	<ul style="list-style-type: none"> <li>• Development assistant</li> <li>• Diagnosis assistant</li> </ul>
Equipment control	<ul style="list-style-type: none"> <li>• Monitor display for equipment status</li> <li>• Control vacuum pump</li> <li>• Plasma on / off</li> <li>• Automatic plasma off after analysis</li> <li>• Auto sampler (option) control</li> </ul>

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