

**MI 441**

PRODUCT SPECIFICATION SHEET

**ICP-MS**



|                                   |   |
|-----------------------------------|---|
| <b>System Application</b>         | Computer controlled fully automatic, data workstation based ICP-OES system ppb analysis, simultaneous multi-elemental analysis with exceptional sensitivity and stability of diverse range of samples for soil, plant and water. The instrument has the facility for assigning the same wavelength of an element in both axial and radial mode.   |
| <b>System Operation</b>           | Computer controlled Solid State RF Generator. Auto start from switch or computer keyboard. Automatic detector system controlled by multitasking windows based operating software with build-in diagnostics. High speed data acquisition system, quality control protocols, calibration auto optimization and auto tuning of system with status display. After plasma ignition, system gets optimized within 30 minutes & be ready for analysis. |
| <b>RF System</b>                  | Solid state, auto start RF generator (40/27 MHz) without any consumable part. Computer controlled from 1000-1350 watt.  |
| <b>Sample Introduction System</b> | Corrosion resistant to various acids and aqua regia, capillary nozzle tip with guaranteed flow rate of fine aerosol mist and controlled sample uptake flow.   |
| <b>Spray Chamber</b>              | Corrosion resistant to most acids like aqua regia, HCL, Nitric Acid including hydrofluoric acid etc. Glass cyclonic spray chamber/scott spray chamber.  |
| <b>Plasma Torch</b>               | Easily demountable Quartz Torch for Plasma. The computer controlled plasma torch adjustment /alignment for optimal analysis. Torch Design is Several multiple loops or Flat Plate) of an induction coil with three concentric tubes, central tube to inject sample aerosol and carrier gas introduction, middle tube for plasma gas (argon) and outermost tube for auxiliary gas. Corrosion Resistant Torch to all acids including aqua regia.  |
| <b>Neutral Plasma</b>             | Capable to produce electrically neutral plasma fully controllable through PC.   |
| <b>Plasma Gas Control</b>         | Computer controlled Plasma Gas (Argon).   |
| <b>Gas Consumption</b>            | Typical gas consumption around 15 liter per minute including purge gas.   |
| <b>Range</b>                      | Range 8-20 LPM.   |
| <b>Safety Interlock</b>           | Monitoring and display of plasma gas pressure, sample compartment door closure, water flow, plasma stability, interlock status for user safety and system protection, the system constantly monitors water flow, argon pressures & plasma stability and displays the interlock status on the computer if an interlock is interrupted, the plasma will immediately and safely shut down.   |
| <b>Plasma Ignition</b>            | Computer controlled plasma ignition. Software has capability to ignite plasma automatically at user determined time to warm up the system prior to analysis.  |
| <b>Cooling System</b>             | A water or coolant re-circulating cooling system (Chiller) is provided with approximately 4 L/minute and temperature range in between 15 °C to 25 °C.   |

|  |  |
|--|--|
| <b>Peristaltic Pump</b>                | Computer controlled 4 multi-channel Pump operation is auto fast for rapid rinse out, wash out and analysis time.   |
| <b>DETECTOR</b>                        | High performance Solid State CCD/CID Detector with echelle based optical system with Spectral range of 167 to 852 nm. The system has integration time of 12 second.  |
| <b>Resolution</b>                      | <0.007nm @ 200nm. System has facility to run in radial, axial, mixed viewing (Radial & Axial) modes in a single run, Attenuated views or synchronous dual view or less effective length.   |
| <b>Optics</b>                          | The optic system has a beam blocker to protect the optical components from the extreme UV region when no data acquisition is taking place.   |
| <b>Sensitivity</b>                     | Capable to quantify from ppb to percent without dilution.  |
| <b>Hydride Generation</b>              | Compatible hydride generation assembly for ultra-trace analysis of hydride assembly forming metallic elements such as As, Se, Hg, etc.   |
| <b>Auto Sampler</b>                    | Compatible with all sample introduction systems, fully integrated with ICP software and high quality auto-sampler tubes 180.   |
| <b>Data Work Station</b>               | Programme facility with multitasking software displaying method sample and analysis status.  |
| <b>Application Software (Features)</b> | Software provides automated simultaneous background correction and spectral interference correction in sample analysis. Instrument has multi-level calibrations, automatic data acquisition & processing, calculation of data & report formatting Quality control protocols including preparation blanks, multiple quality control standards, calibration check, spike recoveries and QC limits and storage of complete spectrum of elements for further reference. Provision for statistical analysis, printer/plotter function and battery backup for memory protection. Real time graphics with ability to display transient and continuous signal profile controls whole ICP system, sample introduction, calibration, quantitative analysis, method of standard addition data acquisition, data retrieval and reporting, auto optimization of plasma parameter customizable instrumen status display. There is Flexibility to export data to excel file from instrument software. |

## Features

|                                |   |
|--------------------------------|---|
| <b>Manual</b>                  | Operation and maintenance manual for each unit.   |
| <b>Application Notes</b>       | Application Notes (hard bound and CD-ROM) for elemental analysis in water for non-ferrous samples and chemicals.        |
| <b>Service Manual</b>          | Service Manual with set of required tools for each system/Unit.   |
| <b>Spare Part Catalogue</b>    | one   |
| <b>Trouble Shooting Charts</b> | Trouble Shooting Charts for all sub units.  |
| <b>Operation Kit</b>           | Operation kit comprising all required items, pump tubing's, work coils etc for startup/regular operation of instrument. |

### Consumables

|                           |   |                   |
|---------------------------|---|-------------------|
| Dust Cover                | : | For all sub units |
| Sample intake tubes       | : | 10 sets           |
| Pump Waste tube           | : | 10 numbers        |
| Torch                     | : | 2 numbers         |
| Nebulizer Aqueous         | : | 2 numbers         |
| Injector                  | : | 2 numbers         |
| Spray Chamber             | : | 2 numbers         |
| Nebulizer Teflon Tube Set | : | 2 numbers         |
| Cones                     | : | 4 sets            |
| Ceramic tip               | : | 4 sets            |
| RF coil                   | : | 6 sets            |

## Local Supplies

|                 |  |
|-----------------|--|
| <b>Supplies</b> | Stainless Steel Hood and Duct, UPS, AC, Multi Element Standards and Computer supplied as per user requirement. |
| <b>Warranty</b> | Comprehensive warranty with spares for 2 years from the date of installation of the instrument.                |

# ELICO®

An ISO 9001:2018 | 14001 | 27001 Certified Company

[www.elico.co](http://www.elico.co)

B-90, A.P.I.E., Sanathnagar, Hyderabad 500 018, Telangana., India  
Tel +91 40 44451234 Fax +91 40 23771639 [info@elico.co](mailto:info@elico.co)

Celebrating 60 years of our Journey

[www.elico.co/60years](http://www.elico.co/60years)

#### Ahmedabad

[ahm@elico.co](mailto:ahm@elico.co)  
+91 98241 75321

#### Bengaluru

[blr@elico.co](mailto:blr@elico.co)  
+91 99000 28741

#### Bhopal

[bpl@elico.co](mailto:bpl@elico.co)  
+91 99930 96876

#### Bhubanewswar

[bbr@elico.co](mailto:bbr@elico.co)  
+91 99371 12105

#### Chennai

[chn@elico.co](mailto:chn@elico.co)  
+91 98402 65797

#### Cochin

[kel@elico.co](mailto:kel@elico.co)  
+91 81291 84400

#### Delhi

[del@elico.co](mailto:del@elico.co)  
+91 98710 06104

#### Guwahati

[gau@elico.co](mailto:gau@elico.co)  
+91 91211 77451

#### Hyderabad

[hyd@elico.co](mailto:hyd@elico.co)  
+91 99896 25457

#### Kolkata

[kol@elico.co](mailto:kol@elico.co)  
+91 91211 77452

#### Lucknow

[lku@elico.co](mailto:lku@elico.co)  
+91 91980 01666

#### Mumbai

[mum@elico.co](mailto:mum@elico.co)  
+91 77100 96111

#### Patna

[pat@elico.co](mailto:pat@elico.co)  
+91 91211 77450

#### Visakhapatnam

[vtz@elico.co](mailto:vtz@elico.co)  
+91 99899 94532

