



ELECTRON CYCLOTRON RESONANCE ION SOURCE

IS.ECR-020

D-Pace

Neutron Therapeutics-licensed¹ ECR ion source.

- Yields 30 mA of H⁺
- Three solenoid configurations provides multiple optimizable plasma confinement scenarios
- Yields high beam currents of 1+ charge state ions
- Compact, cost-effective ECR Ion Source



Ion Source Test Stand

ION	Beam Current (mA)	Beam Energy (keV)
H ⁺	30	40-50
H ₂ ⁺	3	40-50
D ⁺	30 (est.) ³	40-50
He ⁺	30	40-50
He ⁺⁺	0.5 ²	80-100

*Commercially Available Ions, Currents,
and Kinetic Energies*

SPECIFICATION: IS.ECR-020

ION SOURCE CHARACTERISTICS

Particle Types	H ⁺ , H ₂ ⁺ , He ⁺ , He ⁺⁺ , D ⁺
Frequency	2.45 GHz
Source Aperture Diameter	8 mm
Beam Current Stability	± 1% over 24 hours

NOMINAL BEAM CHARACTERISTICS FOR H⁺

Divergence (5RMS)	± 35 mrad
Emittance (5RMS)	140 mm-mrad
Normalized Emittance (5RMS, 95% beam)	1.29 mm-mrad
Distribution	Gaussian

POWER SUPPLIES

Microwave Generator	450 A, 1.8 kW
Max Bias Supply	250 mA, 40 kV
Suppression System	12 mA, 5 kV
Solenoid (each)	140 A, 12 V

VACUUM SYSTEM SPECIFICATIONS

Turbo Pump	2100 l/s Flange ISO250F
Roughing Pump	170 m ³ /hr

GAS FLOW

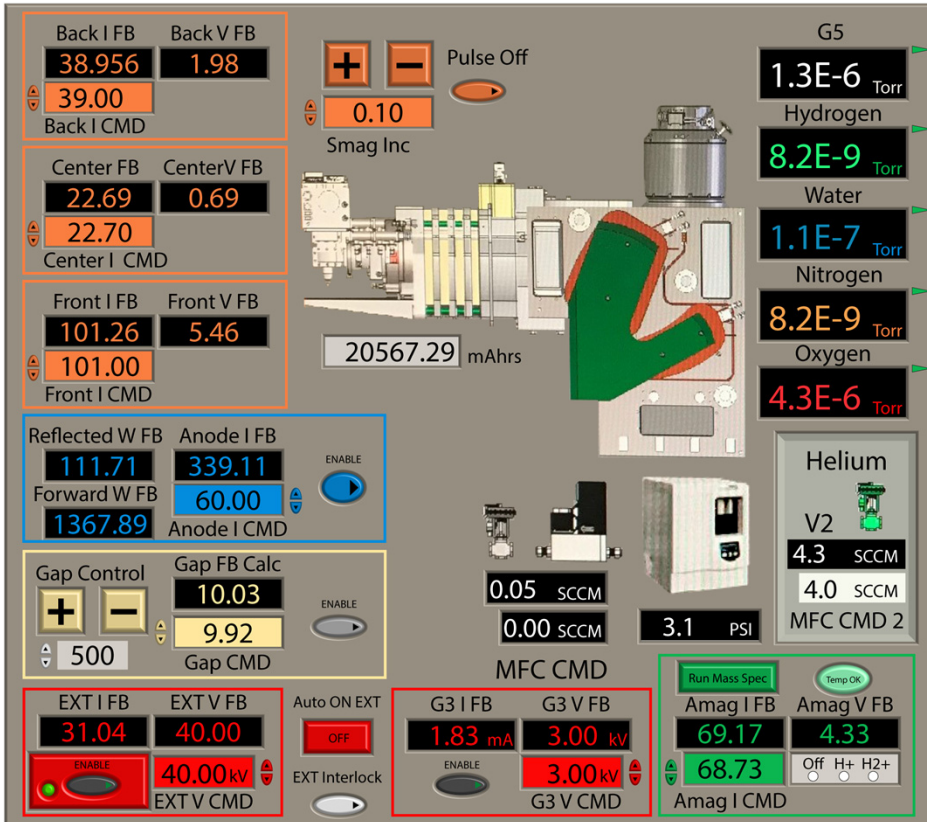
Mass Flow Controller	0-5 sccm of H ₂
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CONTROLS

Control PLC	PLC, Ethernet Interface
User Interface Options	D-Pace standalone or OPC command library for customer integration
High Voltage Interlocks	HV grounding relay with access control locks

COOLING WATER, DEIONIZED, 20°C (>1.0 MOhm.cm)

Extraction Assembly	5.0 LPM, 70 PSI (480 kPa)
Magnetron Head	>1.9 LPM, 70 PSI (480 kPa)
Plasma Chamber	6.0 LPM, 70 PSI (480 kPa)
Waveguide	6.0 LPM, 70 PSI (480 kPa)
Heat Exchange Assembly	6.0 LPM, 70 PSI (480 kPa)
Solenoid Magnet Assembly	10 LPM, 30 PSI (205 kPa)



Ion Source System control panel with He⁺ 21.5 mA tune data

The IS.ECR-020 Ion Source system includes the following:

- Ion source & vacuum box
- Vacuum system & gauges
- Power supplies, PLC controls & software
- Interlocks and HV grounding system
- User interface & Ethernet-based remote controls
- Ion source stand and microwave generator stand
- Water flow gauges and interlocks
- Mass flow controller for feed gasses
- RF amplifier & impedance matching systems

Optional:

- Contact us about steering, solenoid/quadrupole focusing system downstream of source
- High-voltage Faraday cage / enclosure
- Water de-ionization and cooling system
- Sliding Faraday cup
- UniBEaM fiber optic beam profile monitor
- TRIUMF-licensed emittance scanner
- Mass spectrometer with slits
- Personnel access control interlocks

Enquire about other negative and positive ion beams from this source.

1. ECR technology is licenced from Neutron Therapeutics
2. 0.5 electrical mA (0.25 particle mA)
3. Estimate - Unable to measure due to neutrons released from D-D reaction in Faraday Cup.