

600W Rack mount

HVAC-DC power supplies

The 600W WJ series is a high quality, high performance, high reliability & high stability high voltage power supply with low ripple & noise, being air insulated it facilitates a lower cost of ownership, as well as being lighter compared to competing products & though various output control options, input voltages, low output discharge currents makes integrating this power supply into a new system or tool simple.

It has been designed for electrical design engineers & system integration engineers in a wide range of industries including Ion implant, E-beam welding & E-beam additive manufacturing & many other application specific markets who are challenged with limited high voltage integration experience & tight timelines.



Features

- ▶ Output voltages 0-70kVDC to 0-125kVDC
- ▶ 3U 19" rack mount
- ▶ RS232/USB control & monitor standard, Ethernet is optional
- ▶ Output voltage & current regulated
- ▶ Low ripple <0.03% RMS of rated voltage at full load
- ▶ Voltage & current monitor outputs
- ▶ Single phase AC input
- ▶ Efficiency >85%
- ▶ Air Insulated
- ▶ Short circuit, arc & overload protection
- ▶ CE marked for EMC, low voltage (LVD) & RoHS directives
- ▶ Operating temperature: -20°C to +40°C
- ▶ 3 year warranty

Applications



- ▶ Ion implant
- ▶ E-beam/Ion beam
- ▶ Industrial technology
- ▶ Capacitor charging
- ▶ High voltage bias

Dimensions

132.54 x 482.6 x 520.7 mm (5.25" x 19" x 20.5")
3U 19" rack mount

Models & ratings

| Positive polarity | Negative polarity | Reversible polarity | Output voltage | Output current | Max. stored energy | Output cable ⁽³⁾ |
|-------------------|-------------------|---------------------|----------------|----------------|--------------------|-----------------------------|
| WJ70P8.6 | WJ70N8.6 | WJ70R8.6 | 0 - 70kV | 0 - 8.6mA | 8.0J | DS2121 |
| WJ80P7.5 | WJ80N7.5 | WJ80R7.5 | 0 - 80kV | 0 - 7.5mA | 9.0J | DS2121 |
| WJ100P6 | WJ100N6 | WJ100R6 | 0 - 100kV | 0 - 6.0mA | 11.0J | DS2121 |
| WJ125P5 | WJ125N5 | WJ125R5 | 0 - 125kV | 0 - 5.0mA | 15.0J | DS2121 |

Notes:

1. Detachable, 3.5m (10ft), shielded high voltage coaxial cable (see models & ratings for cable type), 1.8m (6ft) NEMA 5-15 line cord, 1.8m (6ft) NEMA 6-15 line cord, 3m (10ft) null modem cable and 3.5m (10ft) USB cable are provided.

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|-----------------|---|---------|---------|-------|--|
| Input voltage | 102 | | 132 | V RMS | Single phase. User selectable via rear panel switch. Shipped set for 198 to 264. |
| | 198 | | 264 | V RMS | |
| Input frequency | 48 | | 63 | Hz | |
| Input connector | C14 connector per IEC60320 with mating line cord. | | | | |

Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|-----------------------------------|--|---------|---------|-------|--|
| Output voltage range | 0 | | 125 | kV | See models and ratings table. |
| Output current range | 0 | | 8.6 | mA | See models and ratings table. |
| Polarity | Available with either positive, negative or reversible polarity with respect to chassis ground. | | | | |
| Output control | Continuous, stable adjustment, from 0 to rated voltage or current by panel mounted optical rotary encoder or by external +10V signals. | | | | |
| Static voltage load regulation | ±0.005 | | | % | For specified line variations. |
| | 0.005 | | | % | For no load to full load variations. |
| Dynamic voltage regulation | For load transients from 10% to 99% and 99% to 10%, typical deviation is less than 2% of rated output voltage with recovery to within 1% in 500 us and recovery to within 0.1% in 1 ms. | | | | |
| Stability | | 0.01 | | % | Per hour after 30 min. warm up. |
| | | 0.05 | | % | Per 8 hours. |
| Temperature coefficient | | 0.01 | | %/°C | |
| Voltage rise time constant | | 400 | | ms | For all models using either HV enable or remote programming control |
| Voltage decay time constant | | 400 | | ms | With a 15% resistive load. |
| Ripple | 0.1 | | | % RMS | At full load. |
| Optical rotary encoder resolution | | 0.025% | | % | With Fine Adjustment mode selected. |
| | | 0.25% | | % | With Coarse Adjustment mode selected (default). |
| Repeatability | | | 0.1 | % | |
| Current regulation | 0.1 | | | % | When in current regulation mode, for short circuit to rated output voltage, at any load. |
| Arc count | Internal circuitry senses the number of arcs caused by external load discharges. If the rate of consecutive arcs exceeds approximately one arc per second for five arcs, the supply will turn off for approximately 5 seconds to allow clearance of the fault. After this period the supply will automatically return to the programmed kV value with the rise time constant indicated. If the load fault still exists, the above cycle will repeat. | | | | |
| Arc quench | An arc quench feature provides sensing of each load arc and quickly inhibits the HV output for approximately 20ms after each arc. | | | | |
| Slow start | Adjustable ramp time from 0 to 30 seconds. Output ramps from 0V to programmed voltage level. | | | | |

Notes:

- Specifications apply from 5% to 100% rated voltage.
- Operation is guaranteed down to 0 voltage with a slight degradation of performance.

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|---|--|---|---------|-------|--------------------|
| Efficiency | 85 | | | % | At full load. |
| HV insulating medium | Outputs are air insulated. | | | | |
| External interlock | Open = OFF, closed = ON. Normally latching except for blank front panel version where it is non-latching | | | | |
| Remote HV enable/disable | 0 to 1.5V = OFF; 2.5 to 15V = ON | | | | |
| Voltage accuracy | 0.5% of setting +0.2% of rated | | | | |
| Voltage monitor | 0 to +10V, equivalent to 0 to rated voltage, with an accuracy of 0.5% of reading +0.2% of rated. Output impedance is 10kΩ. | | | | |
| Current monitor | 0 to +10V, equivalent to 0 to rated current, with an accuracy of 1% of reading +0.1% of rated. Output impedance is 10kΩ. | | | | |
| RS232/USB/Ethernet programming & monitor accuracy | Resolution | 0.025% of full scale for both the voltage and the current programs. 0.1% of full scale for both the voltage and the current monitors. | | | |
| | Remote setting accuracy | Voltage setting accuracy is better than 0.5% of setting +0.2% of rated. | | | |
| | Remote reading accuracy | Voltage reading accuracy is 0.5% of reading +0.2% of rated. Current reading accuracy is 1% of reading +0.1% of rated. | | | |

Environmental

| Characteristic | Minimum | Typical | Maximum | Units | Notes & conditions |
|-----------------------|---|---------|---------|-------|--------------------|
| Operating temperature | -20 | | +40 | °C | |
| Storage temperature | -40 | | +85 | °C | |
| Protection | Automatic current regulation protects against all overloads, including arcs and short circuits. Thermal switches and RPM sensing fans protect against thermal overload. Fuses, surge-limiting resistors, and low energy components provide ultimate protection. | | | | |
| RoHS | Restriction of the use of Hazardous Substances | | | | |

EMC: emissions

| Phenomenon | Standard | Test level | Notes & conditions |
|------------|-------------|------------|--------------------|
| Conducted | EN61000-6-4 | | |
| Radiated | EN61000-6-4 | | |

EMC: immunity

| Phenomenon | Standard | Test level | Notes & conditions |
|----------------|------------------|------------|--------------------|
| Conducted | EN61000-6-2:2005 | | |
| Radiated | EN61000-6-2:2005 | | |
| Line harmonics | EN61000-3-2 | | |

Safety approvals

| Certification | Standard | Notes & conditions |
|---------------|----------------------------------|--------------------|
| EN | EN61010/IEC61010 | Safety |
| CE | Meets all applicable directives | |
| UKCA | Meets all applicable legislation | |

Notes:

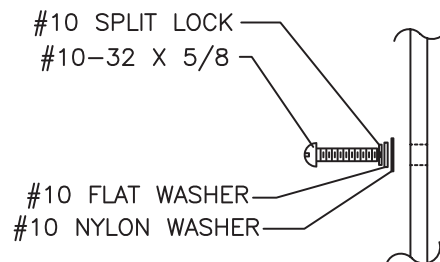
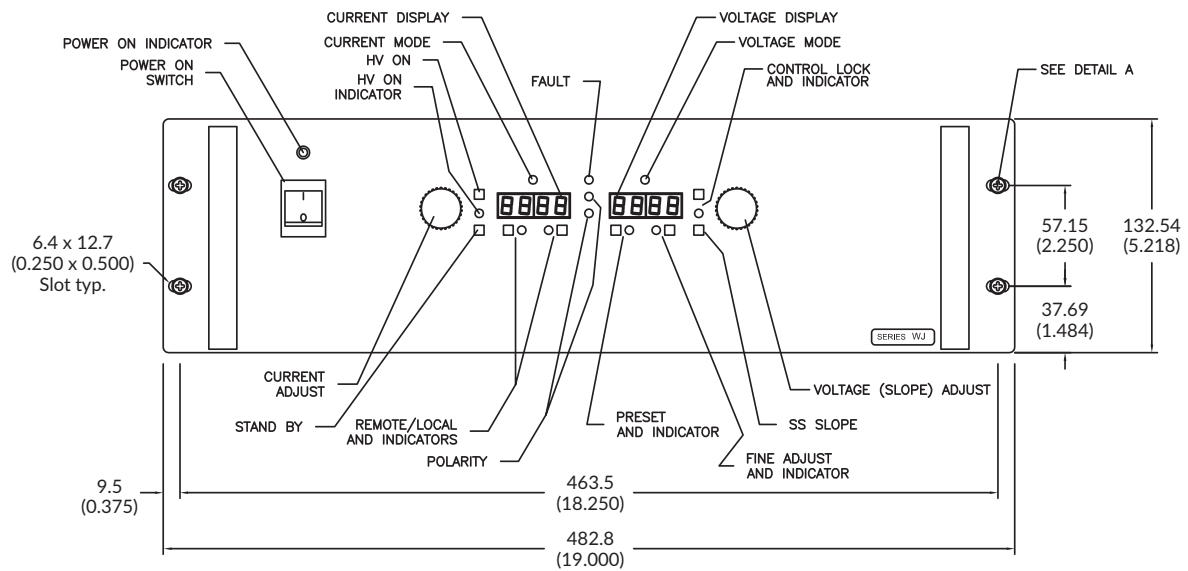
1. Full compliance with European Directives for WJ Series models ordered with F22 option.
2. Specifications apply from 5% to 100% rated voltage.
3. Operation is guaranteed down to 0 voltage with a slight degradation of performance.

Options

| Symbol | Description |
|--------|--|
| A | 100/200VAC \pm 10%, 48 to 63Hz. Selectable. Shipped set for 200VAC. |
| F22 | Required for CE Compliance - 230VAC Power Factor Corrected. AC input line rated for 198 to 264VAC, 48 to 63Hz, 800VA maximum. Active correction circuitry achieves an input line current harmonic content well below the maximum specified in EN61000-3-2. (AC Line voltage selector switch removed.) One NEMA 6-15 cord provided. |
| NC | Blank front panel, power switch and indicator only. |
| ZR | Zero start interlock. Voltage control, local or remote, must be at zero before the HV will enable. |
| 5VC | 0 to 5V voltage and current program/monitor. |
| AC | Arc Count Only |
| AQ | Arc Quench Only |
| ETH | Virtual RS-232 COM port over Ethernet network. (Requires compatible OS (eg Windows) for COM drivers) |

Mechanical details

Front view



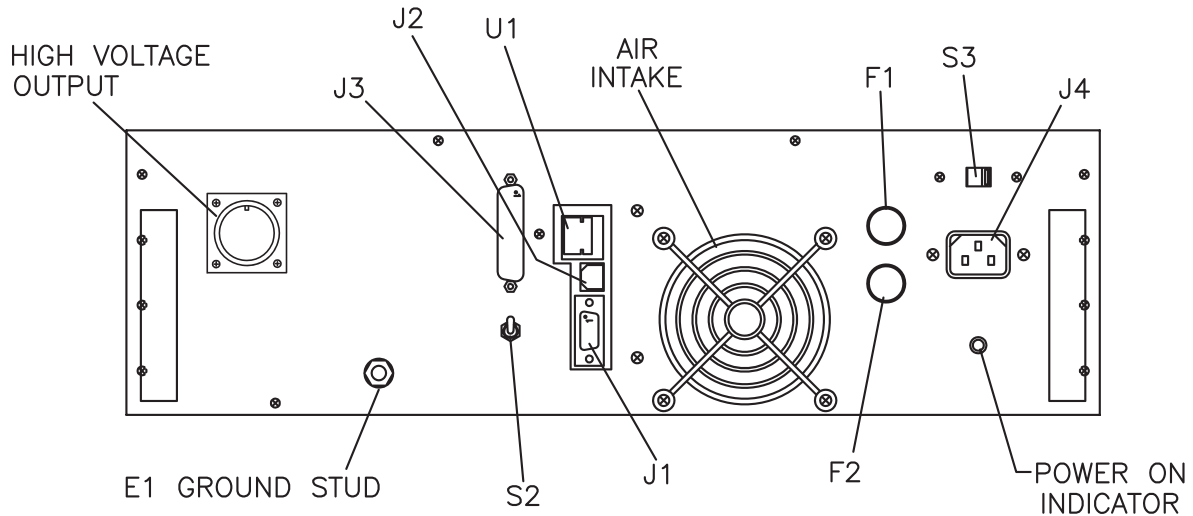
DETAIL A

Notes:

- All dimensions shown in mm (inches).
- Weight: 10kg (22lbs) approx.

Mechanical details

Rear view



| J1 | |
|-----|----------|
| Pin | Function |
| 1 | DCD |
| 2 | RX |
| 3 | TX |
| 4 | DTR |
| 5 | COMMON |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |

| J2 | |
|-----|----------|
| Pin | Function |
| 1 | +5V |
| 2 | D- |
| 3 | D+ |
| 4 | COMMON |

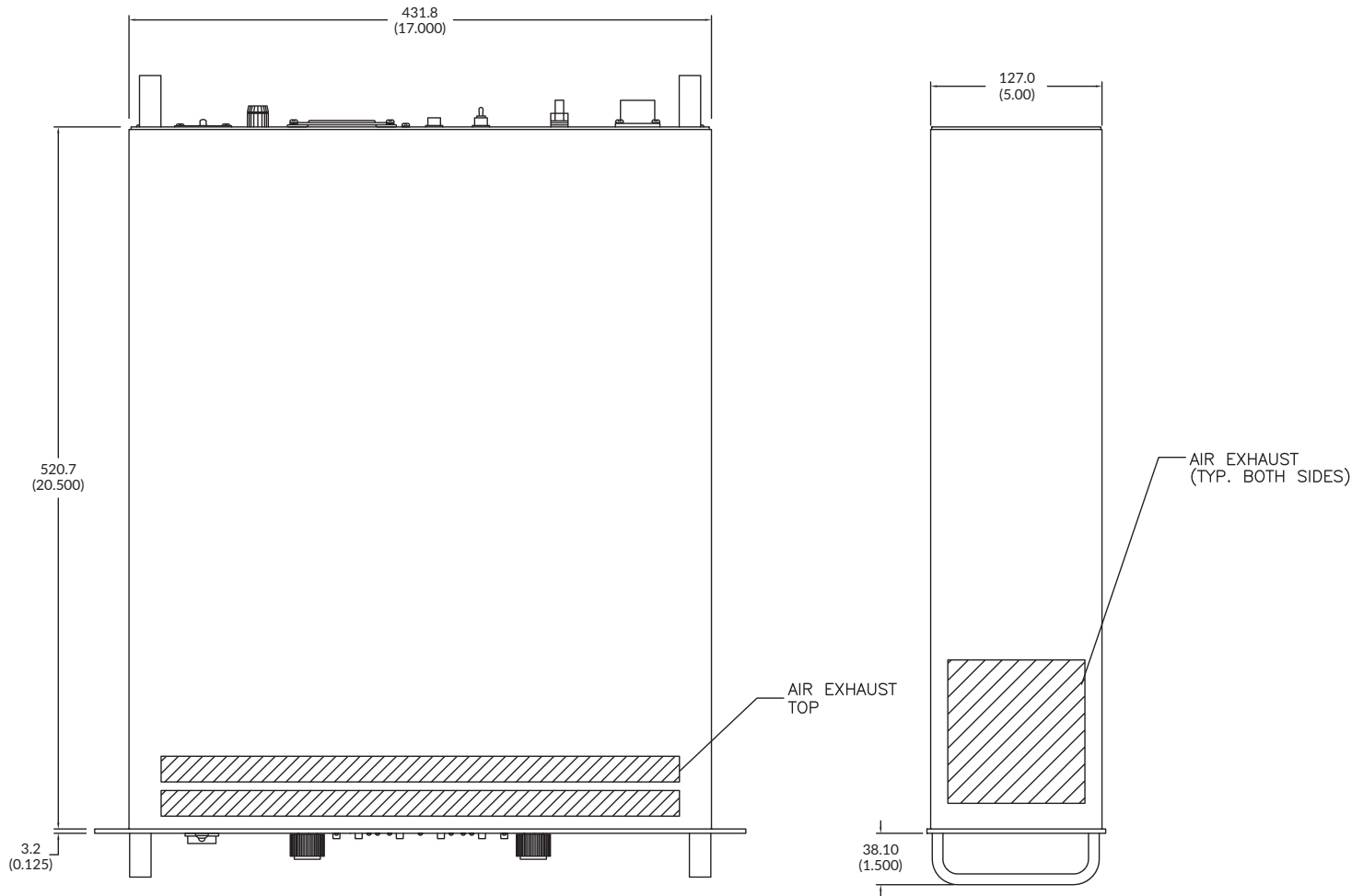
| U1 Option | |
|-----------|----------|
| Pin | Function |
| 1 | TXD+ |
| 2 | TXD- |
| 3 | RXD+ |
| 4 | E POWER+ |
| 5 | E POWER+ |
| 6 | RXD- |
| 7 | E POWER- |
| 8 | E POWER- |

| J4 | |
|---|--|
| Input receptacle C14 per: IEC60320 (PFC, shown) | |
| Input receptacle C20 per: IEC60320 (Non-PFC) | |
| S2 | |
| CL/CT select | |
| S3 | |
| 115/230VAC selector | |
| JHV1: HV output | |
| Type MS3102A-18 | |

| J3 | | | | | |
|-----|------------------------|-----|-----------------|-----|--------------|
| Pin | Function | Pin | Function | Pin | Function |
| 1 | GROUND | 10 | CURRENT MONITOR | 19 | RESERVED |
| 2 | COMMON | 11 | COMMON | 20 | HV ENABLE |
| 3 | INTERLOCK | 12 | REFERENCE | 21 | HV STATUS |
| 4 | RESERVED | 13 | RESERVED | 22 | FAULT STATUS |
| 5 | RESERVED | 14 | RESERVED | 23 | MODE STATUS |
| 6 | REMOTE VOLTAGE PROGRAM | 15 | REMOTE HV ON | 24 | ARC STATUS |
| 7 | REMOTE CURRENT PROGRAM | 16 | REMOTE HV ON | 25 | GROUND |
| 8 | COMMON | 17 | RESERVED | | |
| 9 | VOLTAGE MONITOR | 18 | RESERVED | | |

Mechanical details

Front & side view



Notes:

1. All dimensions shown in mm (inches).
2. Weight: 10kg (22lbs) approx.

Specifications subject to change without notice.