Advanced Energy®

# HITEK POWER® MSRZ SERIES

## MASS SPECTROMETRY POWER SUPPLY MODULES



# MSRZ SERIES

MSRZ series reversible source modules provide a fast reversible output voltage with high stability, low ripple, and excellent repeatability for precision applications. They perform reliably even under short-circuit or arc conditions.

## MODULAR DESIGNS, CUSTOM SOLUTIONS

The modular design of AE high voltage products for mass spectrometry enables an array of performance features and combinations. From simple options, such as cable length and connector type, to complete custom designs, we deliver solutions that precisely fulfill your specific requirements.

## FEATURES

- Output power: 3.2 W
- Output voltage: ±1 to ±20 kV
- Ripple: < 40 to < 300 mV
- Temperature coefficient: 25 ppm/°C
- Stability: < 0.01% per hour, 0.05% in eight hours after warmup
- Reversible outputs
- Fast switching
- Four quadrant power stage
- Controllable through zero
- High reliability




## PROVEN POWER-CONVERSION TOPOLOGIES, CONTROL METHODS, AND MECHANICAL EXPERTISE

## SPECIFICATIONS

| | |
|---|---|
| Output Power | 3.2 W, max |
| Output Voltage | ±1 to ±20 kV |
| Output Current | 0.35 to 1 mA, depending on model |
| Input Voltage | +24 VDC ±10% |
| Input Current | 1 A, max, depending on model |
| Line Regulation | < 10 ppm for a 1 V input voltage change |
| Load Regulation | < 10 ppm for a 10 to 100% load change |
| Ripple | < 40 to < 300 mV, depending on model |
| Voltage Control | 0 to 10 V = 0 to 100%, accuracy ±2% |
| Current Control | Fixed at approximately 110 to 130% of max |
| Voltage Monitor | ±10 V = +100 to -100%, accuracy ±2% |
| Current Monitor | ±10 V = +100 to -100%, accuracy ±2% |
| Polarity Control | Low < 0.8 V = Negative<br>High > 3.5 V or open = Positive |
| Inhibit | Low < 0.8 V = Enabled<br>High > 3.5 V or open = Inhibited |
| Stability | < 0.01 % per hour, 0.05% in eight hours (after one hour warmup) |
| Temperature Coefficient | 25 ppm/°C at max output voltage (tested with external voltage control, 10 ppm available on request) |
| Cooling | Convection cooled |
| Protection | Units are fully protected against over-voltage, short circuit, and intermittent arcs to ground. |
| Operational Temperature | 10 to 50°C (50 to 122°F) |
| Storage/Transport Temperature | -20 to 85°C (-4 to 185°F) |
| Operational Altitude | Sea level to 2000 m (6500') |
| Storage/Transport Altitude | Sea level to 18,000 m (59,055') |
| Reliability | MTBF > 50,000 hours |
| Humidity | 80% max relative humidity up to 31°C (88°F), reducing linearly to 50% at 40°C (104°F); non-condensing (ref EN61010-1) |
| Safety | Meets the requirements of the Low Voltage Directive, 2006/95/EC by complying with BS EN61010-1:2010 when installed as a component part of compliant equipment. Units are CE marked accordingly. |
| RoHS | Meets the requirements of EU Directive 2011/65/EC on the Restriction of use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS). |
| Construction | A fabricated aluminum alloy case is used for good heat dissipation and screening. |
| Options | A control option can be supplied with a bipolar input voltage program of ±10 V without the polarity control signal. Please consult our Sales Team for part numbering for this option. |

## Mechanical Specification

| | |
|---|---|
| Dimensions | 159 mm x 182 mm x 47 mm (6.25" x 7.16" x 1.85") |
| Weight | 1.5 kg (3.3 lb) |
| Casing | Aluminum, clear non-chrome passivate finish |
| Output Cable | Unterminated URM76; 1 m (39.37") of screened output cable |
| Connectors | Various options are available upon request. |

## OUTPUT AND ORDERING INFORMATION

| Model No | Output voltage | Output current | Ripple (pk to pk) | Full Scale Speed |
|---|---|---|---|---|
| MSRZ-102 | ±1 kV | 1 mA | < 40 mV | < 20 msec to 99% |
| MSRZ-252 | ±2.5 kV | 0.5 mA | < 50 mV | < 30 msec to 99% |
| MSRZ-302 | ±3 kV | 0.4 mA | < 80 mV | < 40 msec to 99% |
| MSRZ-502 | ±5 kV | 0.4 mA | < 150 mV | < 40 msec to 99% |
| MSRZ-802 | ±8 kV | 0.4 mA | < 250 mV | < 45 msec to 99% |
| MSRZ-103 | ±10 kV | 0.3 mA | < 300 mV | < 50 msec to 99% |

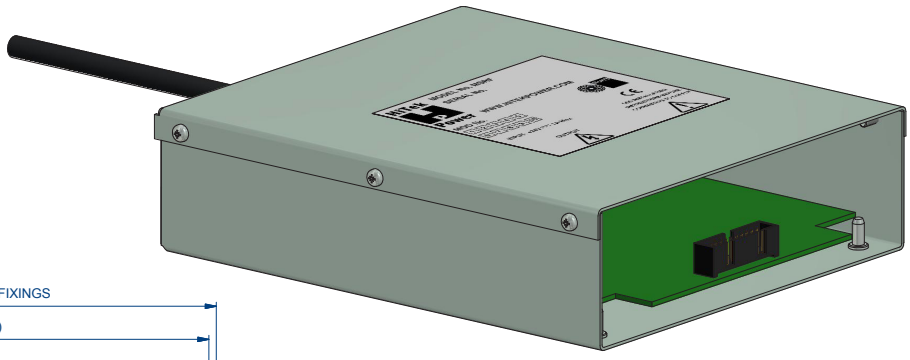
## INTERFACE CONNECTIONS

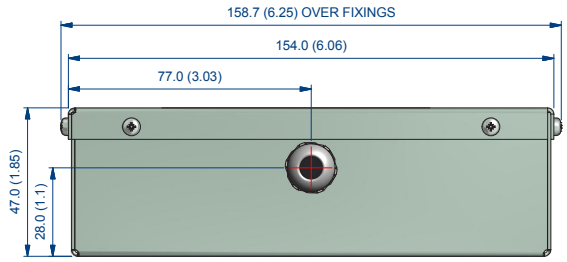
20-Way IDC Connector

| | |
|---|---|
| +24 VDC INPUT SUPPLY | 1 |
| NOT CONNECTED | 2 |
| +24 VDC INPUT SUPPLY | 3 |
| VOLTAGE MONITOR | 4 |
| +24 VDC INPUT SUPPLY | 5 |
| CURRENT MONITOR | 6 |
| +24 VDC INPUT SUPPLY | 7 |
| VOLTAGE CONTROL | 8 |
| +24 VDC INPUT SUPPLY | 9 |
| CONTROL RETURN | 10 |
| 0 V INPUT | 11 |
| 0 V INPUT | 12 |
| 0 V INPUT | 13 |
| SIGNAL GROUND | 14 |
| 0 V INPUT | 15 |
| NOT CONNECTED | 16 |
| 0 V INPUT | 17 |
| POLARITY SELECT | 18 |
| 0 V INPUT | 19 |
| NOT CONNECTED | 20 |

Drawing dimensions are in mm (inches).

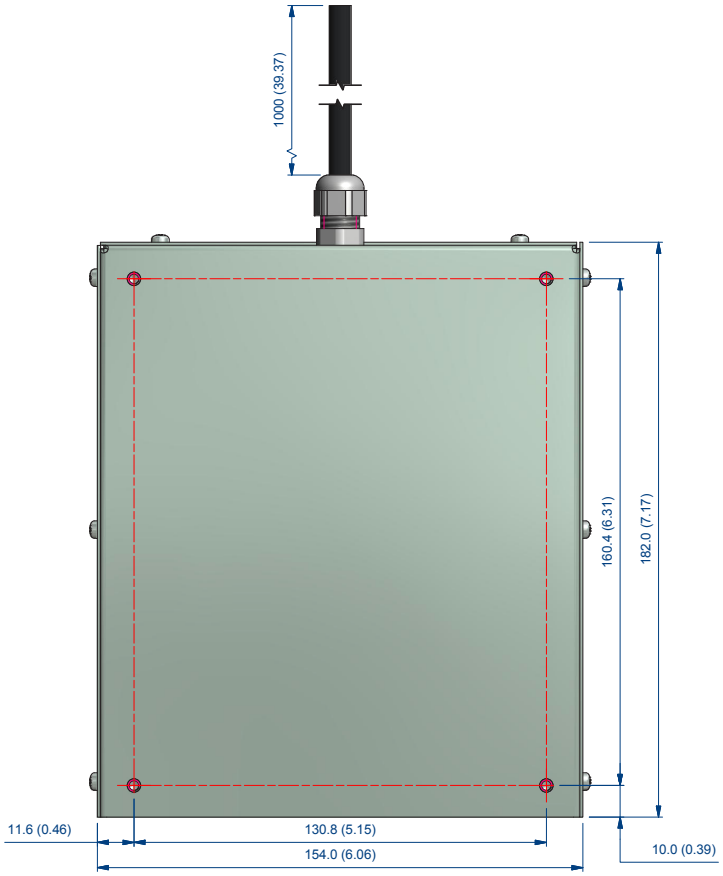
Design developments may result in specification changes.

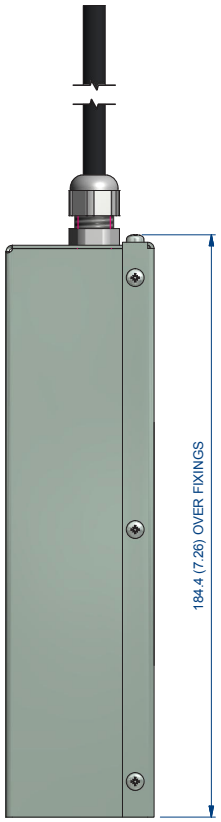





MOUNTING: 4 OFF M3 BLIND FASTENERS; POSITION AS SHOWN

DIMENSIONS IN mm (in)



**Advanced Energy Industries, Inc.**
HiTek Power Ltd.®
Hawthorn Road
Littlehampton
West Sussex
BN17 7LT
United Kingdom

**+44 0 1903 712400**

sales.support-HTP@aei.com
**advanced-energy**.com

ENG-HV-MSRZ-230-01 11.15

Specifications are subject to change without notice. ©2015 Advanced Energy Industries, Inc. All rights reserved. Advanced Energy®, AE®, HiTek Power®, and HiTek Power Ltd.® are U.S. trademarks of Advanced Energy Industries, Inc.