

# HITEK POWER MSRF SERIES

## MASS SPECTROMETRY POWER SUPPLY MODULES



The HiTek Power<sup>®</sup> MSRF series consists of high-stability, reversible source modules that perform reliably even under short circuit or arc conditions. They offer fast reversible output voltage, medium ripple, and excellent repeatability.

### PRODUCT HIGHLIGHTS

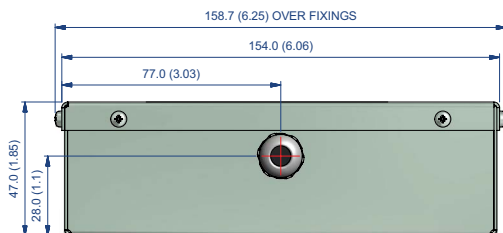
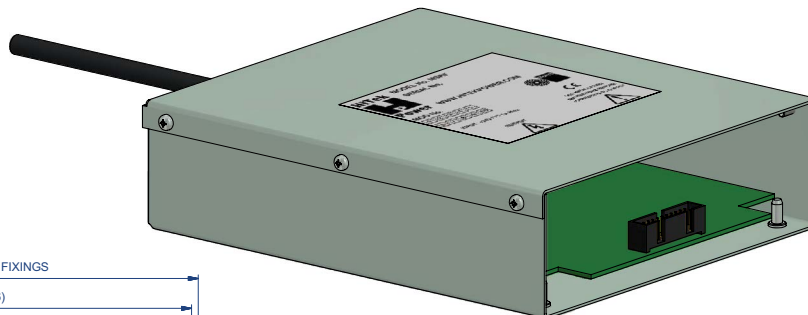
- Output power: 3.2 W
- Output voltage:  $\pm 2.5$  to  $\pm 10$  kV
- Ripple: < 400 mV to < 1 V
- Temperature coefficient: 10 or 25 ppm per °C
- High stability: < 0.01% per hour
- Reversible outputs
- Fast switching:
  - $\pm 2.5$  kV < 20 mS to 99%
  - $\pm 5$  kV < 20 mS to 99%
  - $\pm 8$  kV < 30 mS to 99%
  - $\pm 10$  kV < 30 mS to 99%
- Screened case for low magnetic radiation
- High reliability
- Differential programming input

## ELECTRICAL SPECIFICATIONS

Output Power	3.2 W, max
Output Voltage	±2.5 to ±10 kV
Output Current	0.3 to 0.5 mA
Input Voltage	+24 VDC, ±10%
Input Current	1 A max
Line Regulation	< 10 ppm for a 1 V input voltage change
Load Regulation	< 10 ppm for a 10 to 100% load change
Ripple	< 400 mV to < 1 V, 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 High > 3.5 V or open = Positive
Inhibit	Low < 0.8 V = Enabled High > 3.5 V or open = Inhibited
Stability	< 0.01% per hour, 0.05% in eight hours (after one hour warmup)
Temperature Coefficient	10 or 25 ppm per °C at max output voltage (tested with external voltage control)
Cooling	Convection cooled
Protection	The units are fully protected against over voltage, short circuit and intermittent arcs to ground.
Operating 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/EU 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.
Switching	Settle to 99%, ±2.5 kV < 20 mS, ±5 kV < 20 mS, ±8 kV < 30 mS, ±10 kV < 30 mS

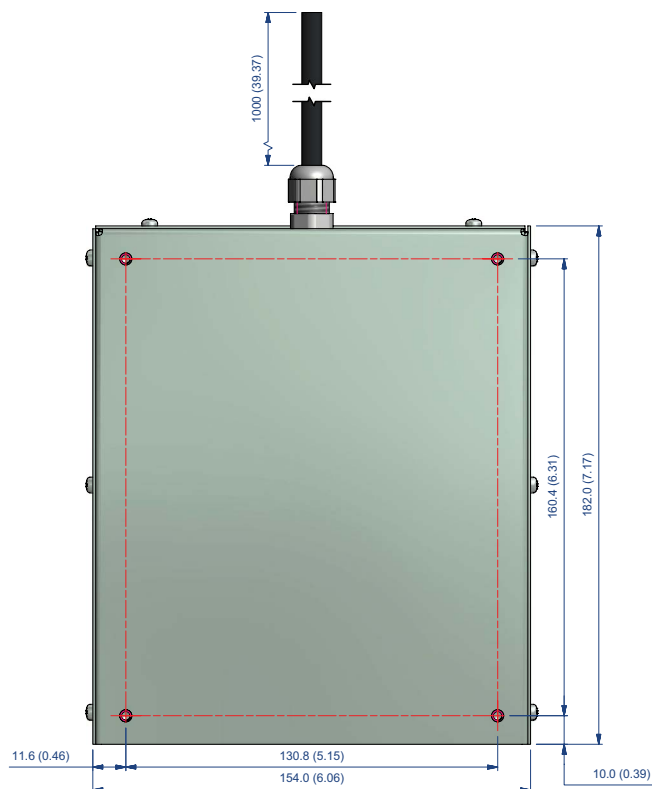
MECHANICAL SPECIFICATIONS

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 (3.3') of screened output cable
Connectors	Various options are available upon request.



MOUNTING: 4 OFF M3 BLIND FASTENERS; POSITION AS SHOWN

DIMENSIONS IN mm (in)



## INTERFACE

### 20-Way IDC Connector

+ 24 VDC INPUT SUPPLY	1
NOT CONNECTED	2
+24VDC INPUT SUPPLY	3
VOLTAGE MONITOR	4
+24 VDC INPUT SUPPLY	5
CURRENT MONITOR	6
+24 VDC INPUT SUPPLY	7
POSITIVE INPUT VOLTAGE CONTROL	8
+24 VDC INPUT SUPPLY	9
NEGATIVE INPUT VOLTAGE CONTROL	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
INHIBIT INPUT	20

### PRECISION | POWER | PERFORMANCE



**CAUTION:**  
High Voltage

Read and understand all documentation before you install, operate, or maintain Advanced Energy high voltage power supplies. Follow all safety instructions and precautions to protect against property damage and serious or possibly fatal bodily injury. Never defeat safety interlocks or grounds.



For international contact information, visit [advancedenergy.com](http://advancedenergy.com).

[sales.support@aei.com](mailto:sales.support@aei.com)  
+1 970 221 0108

Specifications are subject to change without notice. Not responsible for errors or omissions. ©2020 Advanced Energy Industries, Inc. All rights reserved. Advanced Energy®, AE®, and HiTek Power® are U.S. trademarks of Advanced Energy Industries, Inc.

