HITEK POWER MSRD SERIES

MASS SPECTROMETRY POWER SUPPLY MODULES

The HiTek Power® MSRD series consists of high-stability, reversible source modules that perform reliably even under short-circuit or arc conditions. It pairs fast reversible bias output with a floating +3 kV, 400 µA detector output, offers a differential programming input, and can be set by an external voltage.

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.

PRODUCT HIGHLIGHTS

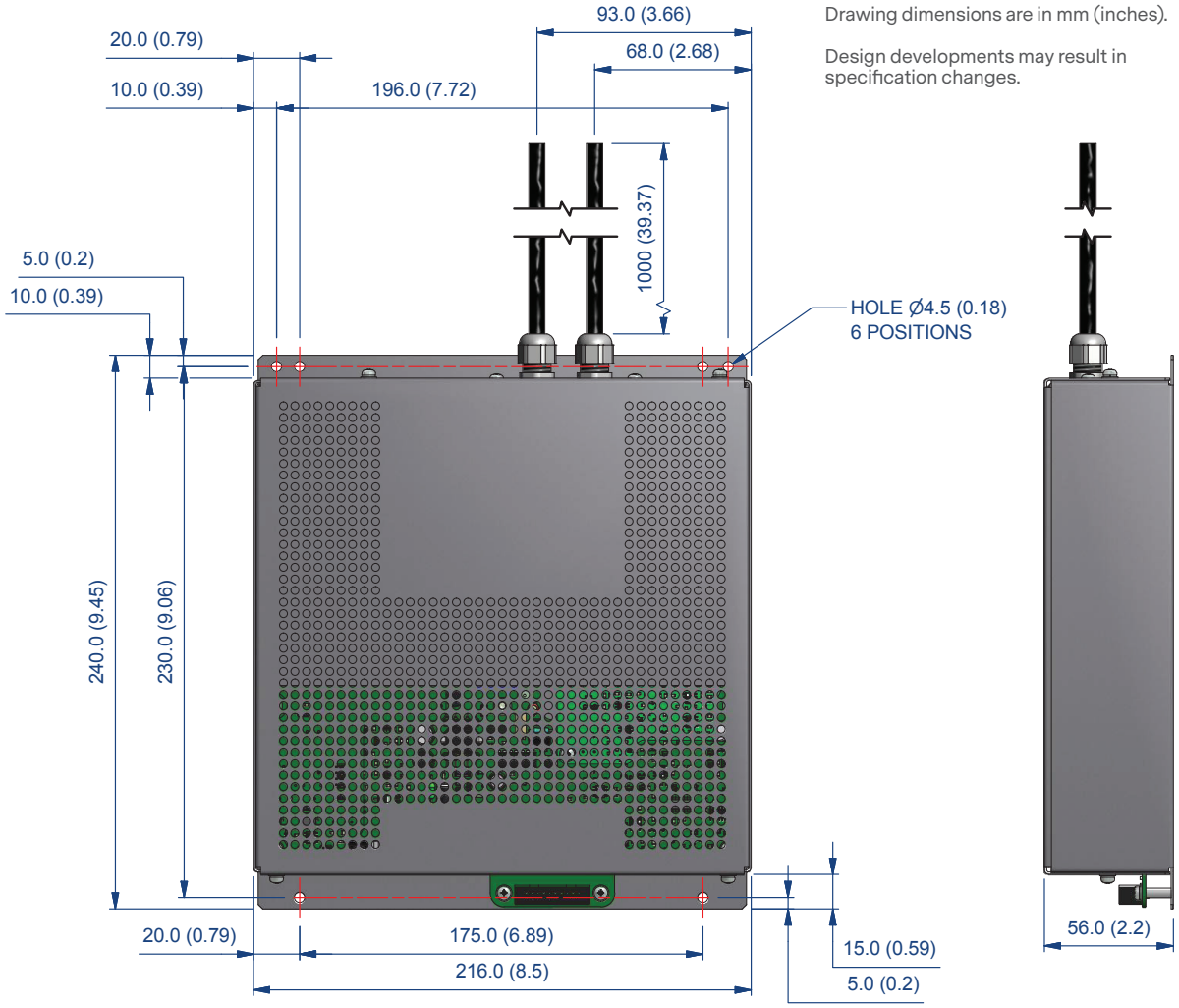
- Output power: 1.8 W, reversible
- Output voltage: 0 to ±12 kV (bias), 0 to +3 kV (detector)
- Ripple: < 200 mV (bias and detector)
- Temperature coefficient: 25 ppm/°C (bias), 300 ppm/°C (detector); lower values available
- Stability: 100 ppm (bias)
- Variable floating detector: 1.2 W
- Bias four quadrant output stage
- Bias controllable through zero
- High reliability

ELECTRICAL SPECIFICATIONS

Specifications	Bias	Detector
Output Power	1.8 W, max	1.2 W, max
Output Voltage	0 to ±12 kV	0 to +3 kV
Output Current	150 to 250 µA (depending on model)	400 µA
Input Voltage	+24 VDC ±10%	
Input Current	1.4 A, max (depending on model)	
Line Regulation	< 1.2 V	< 3 V for a 5% input voltage change
Load Regulation	< 1.2 V	< 3 V for a 10 to 100% load change
Ripple	< 200 mV	< 200 mV
Voltage Control	0 to +10 V for full scale accuracy ±2%	0 to +10 V for full scale accuracy ±5%
Current Control	Fixed at 100 µA above nominal	Fixed at 500 µA
Voltage Monitor	0 to ±10 V for full scale accuracy ±2%	0 to +10 V for full scale accuracy ±5 %
Current Monitor	0 to ±10 V for full scale accuracy ±5%	–
Polarity Control	Bias output, < 1 V = negative output, > 3.5 V or open = positive output	
Inhibit	Bias and detector outputs < 1 V or open = off/inhibited, > 3.5 V = operating	
Stability	100 ppm	1000 ppm over a one hour period
Temperature Coefficient	25 ppm/°C (lower values available upon request)	300 ppm/°C (lower values available upon 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 aluminium alloy case is used for good heat dissipation and screening.	

MECHANICAL SPECIFICATIONS

Dimensions	240 mm x 216 mm x 56 mm (9.5″ x 8.5″ x 2.2″)
Weight	4.5 kg (9.9 lb)
Casing	Aluminum, clear non-chrome passivate finish
Output Cable	Unterminated URM76; 2 x 1 m (3.3″) of screened URM76 output cable
Connectors	Various options are available upon request.

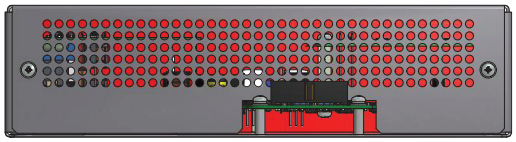


Drawing dimensions are in mm (inches).

Design developments may result in specification changes.

MOUNTING: 6 OFF M4 CLEARANCE HOLES IN BASE AS SHOWN.

DIMENSIONS IN mm (in).



INTERFACE

20-Way IDC Connector

Connections	
Pin	**Function**
1	+24 VDC Input Voltage
2	Not Connected
3	+24 VDC Input Voltage
4	Bias V Monitor
5	+24 VDC Input Voltage
6	Bias I Monitor
7	+24 VDC Input Voltage
8	Bias V Program (Positive Input)
9	+24 VDC Input Voltage
10	Bias V Program (Negative Input)
11	0 V Signal
12	Detector V Program (Positive Input)
13	0 V Input
14	Detector V Program (Negative Input)
15	0 V Input
16	Detector V Monitor
17	0 V Input
18	Polarity Select
19	0 V Input
20	Inhibit Input

OUTPUT AND ORDERING INFORMATION

Model	Bias Output	Detector Output	Ripple (Bias/Detector)	Bias Speed
MSRD-502	±5 kV, 250 µA	+3 kV, 400 µA	< 200 mV/< 200 mV	< 150 msec max to 99 %
MSRD-752	±7.5 kV, 200 µA	+3 kV, 400 µA	< 200 mV/< 200 mV	< 150 msec max to 99 %
MSRD-103	±10 kV, 175 µA	+3 kV, 400 µA	< 200 mV/< 200 mV	< 150 msec max to 99 %
MSRD-123	±12 kV, 150 µA	+3 kV, 400 µA	< 200 mV/< 200 mV	< 150 msec max to 99 %

ABOUT ADVANCED ENERGY

Since 1981, Advanced Energy (AE) has perfected how power performs for its customers. For both end users and OEMs, AE's comprehensive portfolio of standard and custom high voltage components precisely match system specifications to deliver unparalleled energy, quality, and performance. Through close customer collaboration, design expertise, application insight, and world-class support, AE creates successful partnerships and enables customers to push the boundaries of innovation and stay ahead of evolving market needs.

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.

Advanced Energy

For international contact information, visit advanced-energy.com.

HVSales@aei.com
+1.970.221.0108

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Advanced Energy:

MSRD-123 MSRD-103 MSRD-752