



**HITEK POWER® MSRD SERIES**  
MASS SPECTROMETRY POWER SUPPLY MODULES





## MSRD SERIES

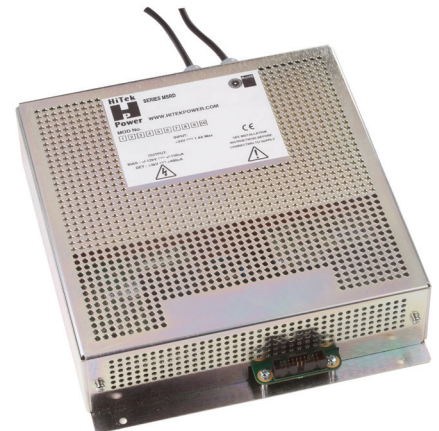
The MSRD series consists of high-stability, reversible source modules that perform reliably even under short-circuit or arc conditions. It pairs fast reversible bias output with a floating +3 kV, 400  $\mu$ A detector output, offers a differential programming input, and can be set by an external voltage.

## 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: 1.8 W, reversible
- › Output voltage: 0 to  $\pm 12$  kV (bias), 0 to +3 kV (detector)
- › Ripple: < 200 mV (bias and detector)
- › Temperature coefficient: 25 ppm/ $^{\circ}$ C (bias), 300 ppm/ $^{\circ}$ 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



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

SPECIFICATIONS	BIAS	DETECTOR
Output Power	1.8 W, max	1.2 W, max
Output Voltage	0 to $\pm 12$ kV	0 to +3 kV
Output Current	150 to 250 $\mu$ A (depending on model)	400 $\mu$ A
Input Voltage	+24 VDC $\pm 10\%$	
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 $\pm 2\%$	0 to +10 V for full scale accuracy $\pm 5\%$
Current Control	Fixed at 100 $\mu$ A above nominal	Fixed at 500 $\mu$ A
Voltage Monitor	0 to $\pm 10$ V for full scale accuracy $\pm 2\%$	0 to +10 V for full scale accuracy $\pm 5\%$
Current Monitor	0 to $\pm 10$ V for full scale accuracy $\pm 5\%$	--
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/ $^{\circ}$ C (lower values available upon request)	300 ppm/ $^{\circ}$ 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 $^{\circ}$ C (50 to 122 $^{\circ}$ F)	
Storage/Transport Temperature	-20 to 85 $^{\circ}$ C (-4 to 185 $^{\circ}$ 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 $^{\circ}$ C (88 $^{\circ}$ F), reducing linearly to 50% at 40 $^{\circ}$ C (104 $^{\circ}$ 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 Specification	
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.



## 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 %

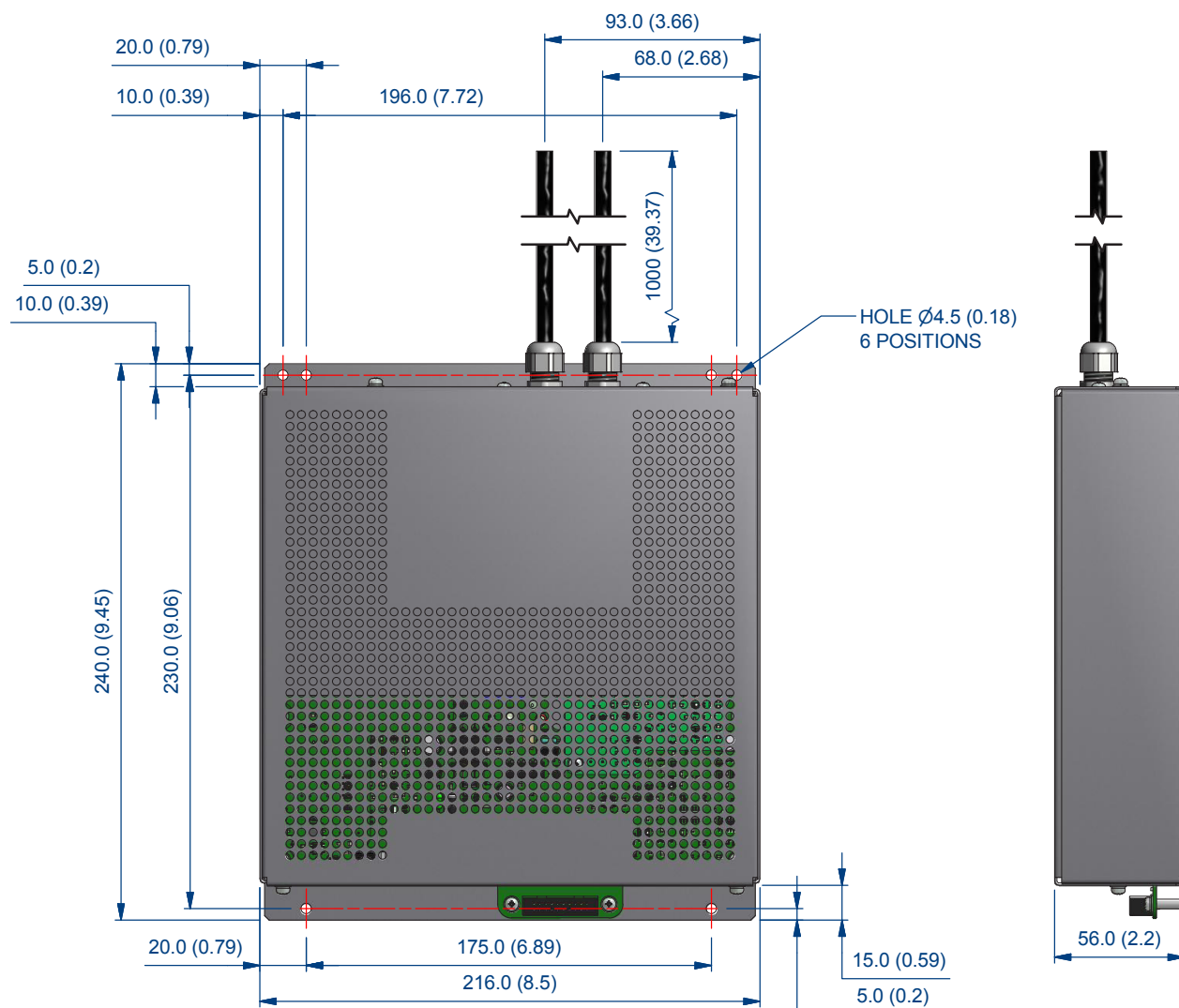
## INTERFACE CONNECTIONS

20-Way IDC Connector

+24 VDC INPUT VOLTAGE	1
NOT CONNECTED	2
+24 VDC INPUT VOLTAGE	3
BIAS V MONITOR	4
+24 VDC INPUT VOLTAGE	5
BIAS I MONITOR	6
+24 VDC INPUT VOLTAGE	7
BIAS V PROGRAM (POSITIVE INPUT)	8
+24 VDC INPUT VOLTAGE	9
BIAS V PROGRAM (NEGATIVE INPUT)	10
0 V SIGNAL	11
DETECTOR V PROGRAM (POSITIVE INPUT)	12
0 V INPUT	13
DETECTOR V PROGRAM (NEGATIVE INPUT)	14
0 V INPUT	15
DETECTOR V MONITOR	16
0 V INPUT	17
POLARITY SELECT	18
0 V INPUT	19
INHIBIT INPUT	20

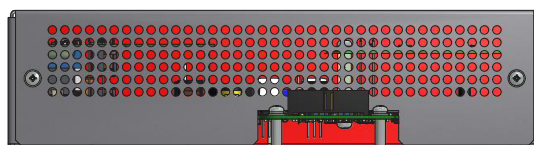
Drawing dimensions are in mm (inches).

Design developments may result in specification changes.



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

DIMENSIONS IN mm (in).





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