Advanced Energy®

HITEK POWER® MSRF SERIES

MASS SPECTROMETRY POWER SUPPLY MODULES



The 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.

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: ±2.5 to ±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:
  ±2.5 kV < 20 mS to 99%
  ±5 kV < 20 mS to 99%
  ±8 kV < 30 mS to 99%
  ±10 kV < 30 mS to 99%
- Screened case for low magnetic radiation
- High reliability
- Differential programming input



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

PHYSICAL SPECIFICATIONS

Output Power	3.2 W, max
Output Voltage	±2.5 to ±10 kV, depending on model
Output Current	0.3 to 0.5 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	< 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.

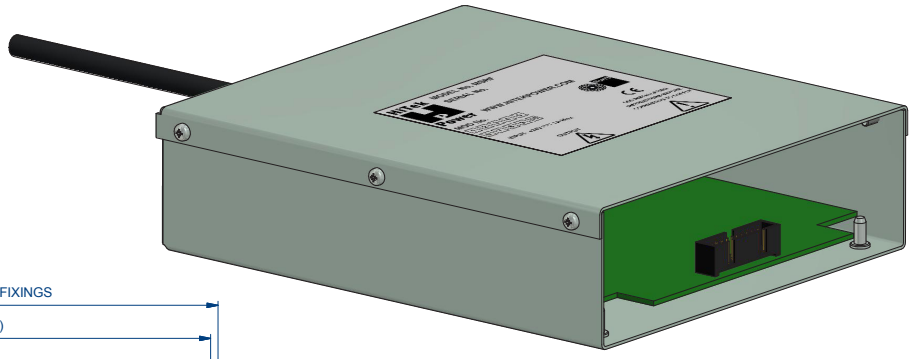
INTERFACE CONNECTIONS

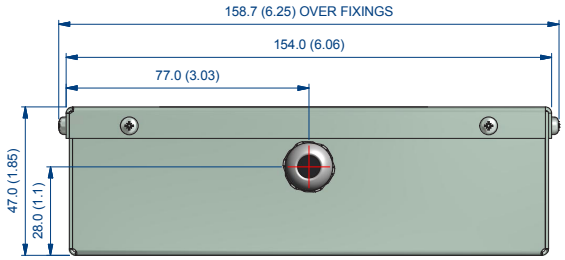
20-Way IDC Connector

+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
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

Drawing dimensions are in mm (inches).

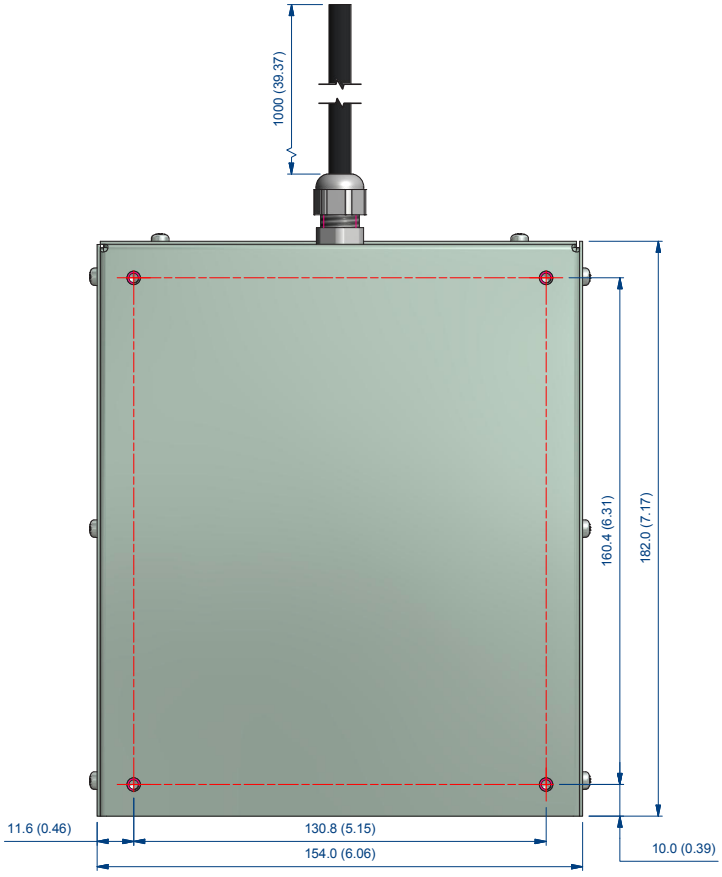
Design developments may result in specification changes.

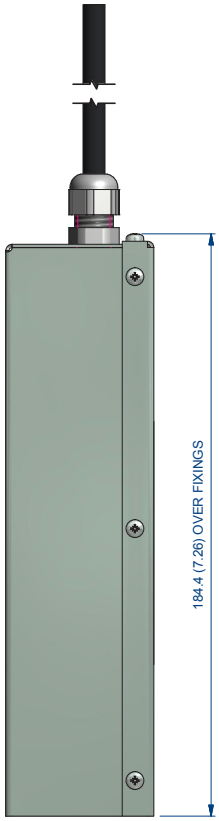




MOUNTING: 4 OFF M3 BLIND FASTENERS; POSITION AS SHOWN

DIMENSIONS IN mm (in)





OUTPUT AND ORDERING INFORMATION

Model	Output Voltage	Output Current	Ripple (pk to pk)	Full Scale Speed
MSRF-252	±2.5 kV	0.5 mA	< 400 mV	< 20 msec to 99%
MSRF-502	±5 kV	0.4 mA	< 700 mV	< 20 msec to 99%
MSRF-802	±8 kV	0.4 mA	< 800 mV	< 30 msec to 99%
MSRF-103	±10 kV	0.3 mA	< 1 V	< 30 msec to 99%

Advanced Energy®

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

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