



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





The MSP series consists of high stability, unipolar source modules that perform reliably even under short-circuit or arc conditions. They are available either as positive or negative output voltage modules, and can be set by internal potentiometer, external voltage, or external potentiometer.

## 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: 0 to 10 W
- › Output voltage: 10 V to 20 kV
- › Ripple: < 10 to < 200 mV
- › Temperature coefficient: 10 or 25 ppm/°C
- › Stability: 0.002% (20 ppm) in 15 minutes, < 0.01% (100 ppm) in eight hours after warmup
- › Screened case for low magnetic radiation
- › High reliability
- › Versatile control options



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



## SPECIFICATIONS

<b>Output Power</b>	10 W, max, depending on model
<b>Output Voltage</b>	10 V to 20 kV, depending on model
<b>Output Current</b>	0.4 to 10 mA, depending on model
<b>Input Voltage</b>	+24 VDC $\pm$ 10%
<b>Input Current</b>	1 A, max, depending on model
<b>Line Regulation</b>	< 10 ppm for a 1 V input voltage change
<b>Load Regulation</b>	< 10 ppm for 10 to 100% load change
<b>Ripple</b>	< 10 to < 200 mV, depending on model
<b>Voltage Control</b>	0 to +10 V = 0 to 100 %, accuracy $\pm$ 2% Can also be controlled by internal or external potentiometer (See connection details below.)
<b>Current Control</b>	Fixed at approximately 110 to 130% of max
<b>Voltage Monitor</b>	0 to +10 V = 0 to 100%, accuracy $\pm$ 2%
<b>Current Monitor</b>	0 to +10 V = 0 to 100%, accuracy $\pm$ 2%
<b>Stability</b>	< 0.002% (20 ppm) in 15 minutes, < 0.01% (100 ppm) in eight hours (after one hour warmup)
<b>Temperature Coefficient</b>	10 or 25 ppm/ $^{\circ}$ C at max output voltage (tested with external voltage control)
<b>Cooling</b>	Convection cooled
<b>Protection</b>	The units are fully protected against short circuit and intermittent arcs to ground
<b>Operational Temperature</b>	10 to 50 $^{\circ}$ C (50 to 122 $^{\circ}$ F)
<b>Storage/Transport Temperature</b>	-20 to 85 $^{\circ}$ C (-4 to 185 $^{\circ}$ F)
<b>Operational Altitude</b>	Sea level to 2000 m (6500')
<b>Storage/Transport Altitude</b>	Sea level to 18000 m (59,055')
<b>Reliability</b>	MTBF > 50,000 hours
<b>Humidity</b>	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)
<b>Safety</b>	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.
<b>RoHS</b>	Meets the requirements of EU Directive 2011/65/EC on the Restriction of use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS).
<b>Construction</b>	A fabricated aluminum alloy case is used for good heat dissipation and screening.

## Mechanical Specifications

<b>Dimensions</b>	See <i>Output and Ordering Information</i> table, on page 4.
<b>Weight</b>	See <i>Output and Ordering Information</i> table, on page 4.
<b>Casing</b>	Aluminum, clear non-chrome passivate finish
<b>Output Cable</b>	Unterminated URM76; 1 m (3.3') of screened output cable
<b>Connectors</b>	Various options are available upon request.



## OUTPUT AND ORDERING INFORMATION

Model	Output Voltage	Output Current	Ripple (pk to pk)	Size	Weight
<b>MSP-102*</b>	10 V to 1 kV	10 mA	< 10 mV	147 mm x 98 mm x 47 mm (5.8" x 3.9" x 1.9")	0.8 kg (1.8 lb)
<b>MSP-252*</b>	10 V to 2.5 kV	4 mA	< 15 mV	147 mm x 98 mm x 47 mm (5.8" x 3.9" x 1.9")	0.8 kg (1.8 lb)
<b>MSP-502*</b>	25 V to 5 kV	2 mA	< 20 mV	147 mm x 98 mm x 47 mm (5.8" x 3.9" x 1.9")	0.8 kg (1.8 lb)
<b>MSP-103*</b>	50 V to 10 kV	1 mA	< 50 mV	200 mm x 98 mm x 47 mm (7.9" x 3.9" x 1.9")	1 kg (2.2 lb)
<b>MSP-153*</b>	75 V to 15 kV	0.66 mA	< 100 mV	200 mm x 98 mm x 47 mm (7.9" x 3.9" x 1.9")	1 kg (2.2 lb)
<b>MSP-203*</b>	100 V to 20 kV	0.4 mA	< 200 mV	210 mm x 120 mm x 46 mm (8.3" x 3.9" x 1.9")	1 kg (2.2 lb)

\* Please add the required suffix to the model number:

P: Positive polarity

N: Negative polarity

e.g. MSP-502P for a positive unit

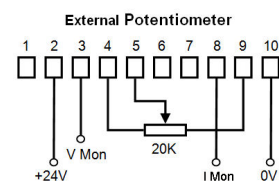
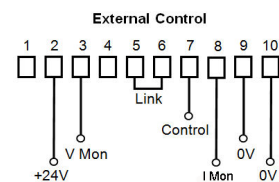
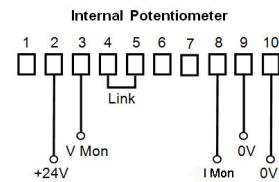
## INTERFACE CONNECTIONS

Molex KK Series 3003 0.2" 10-Way Connector,  
Mating Half Shell 10-01-1104 and Crimps 08-50-0108.

NOT CONNECTED	1
+24 VDC INPUT SUPPLY	2
VOLTAGE MONITOR	3
CONTROL LINK (+10 V REF)	4
CONTROL LINK	5
CONTROL LINK	6
VOLTAGE CONTROL	7
CURRENT MONITOR	8
SIGNAL GROUND	9
0 V INPUT	10

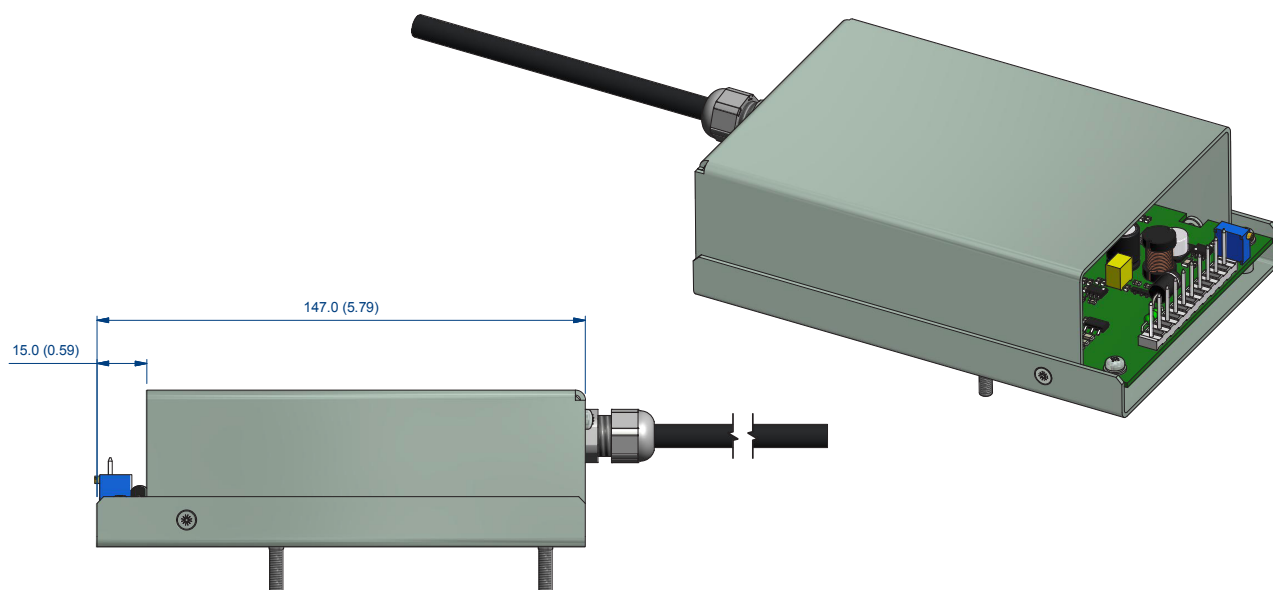
## CONTROL LINK DIAGRAM

If the current monitor option is fitted,  
an external resistor of less than 50K  
with a clamp device or link must be  
fitted between pins 8 and 9.



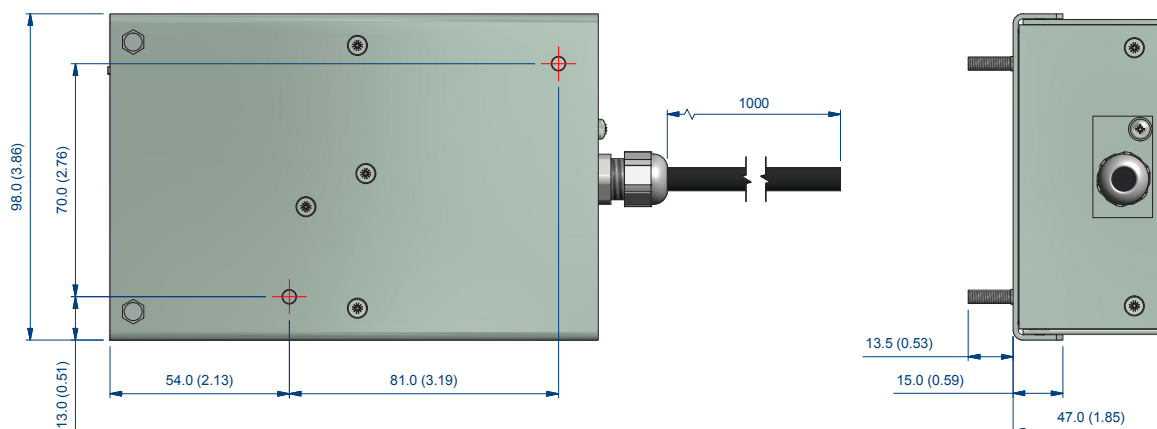
**MSP-102**  
**MSP-252**  
**MSP-502**

Drawing dimensions are in mm (inches).  
Design developments may result in specification changes.



MOUNTING: 2 OFF M4 STUDS; LENGTH AND POSITION AS SHOWN

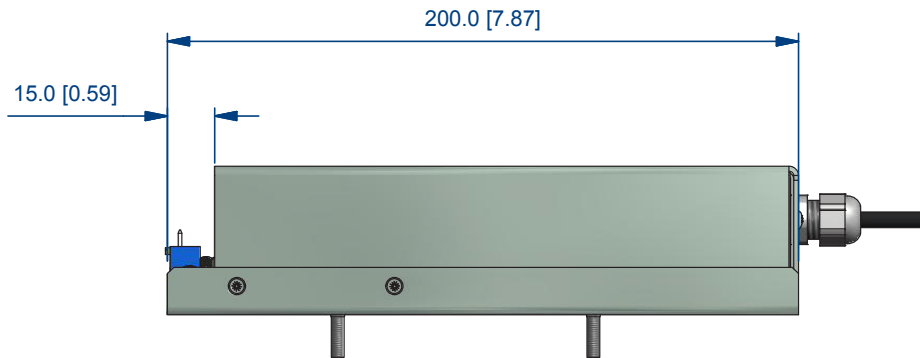
DIMENSIONS mm (in)



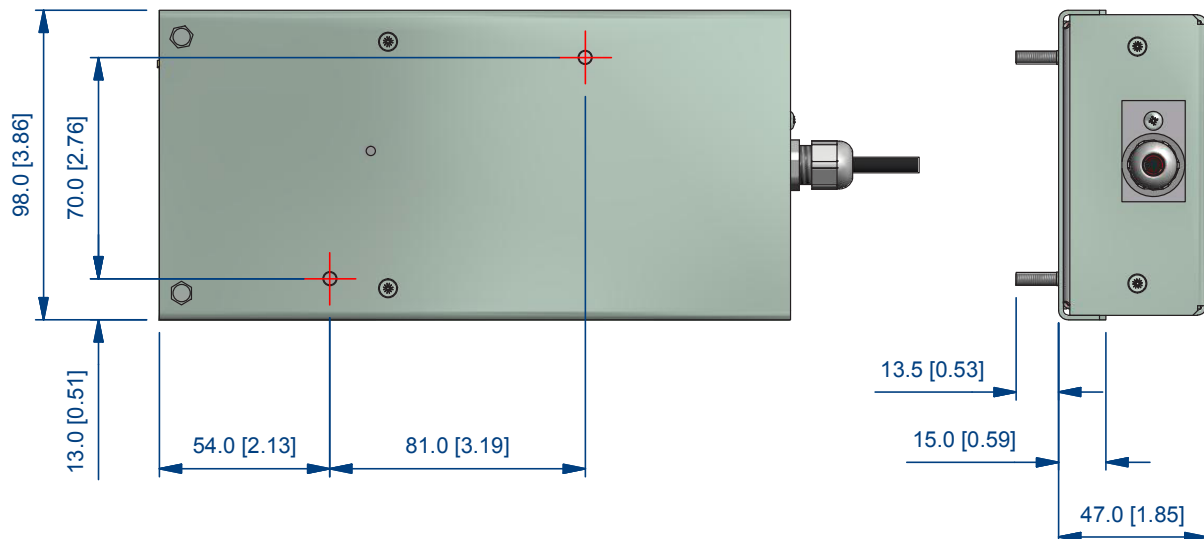


# MSP-103 MSP-153

Drawing dimensions are in mm (inches).  
Design developments may result in specification changes.



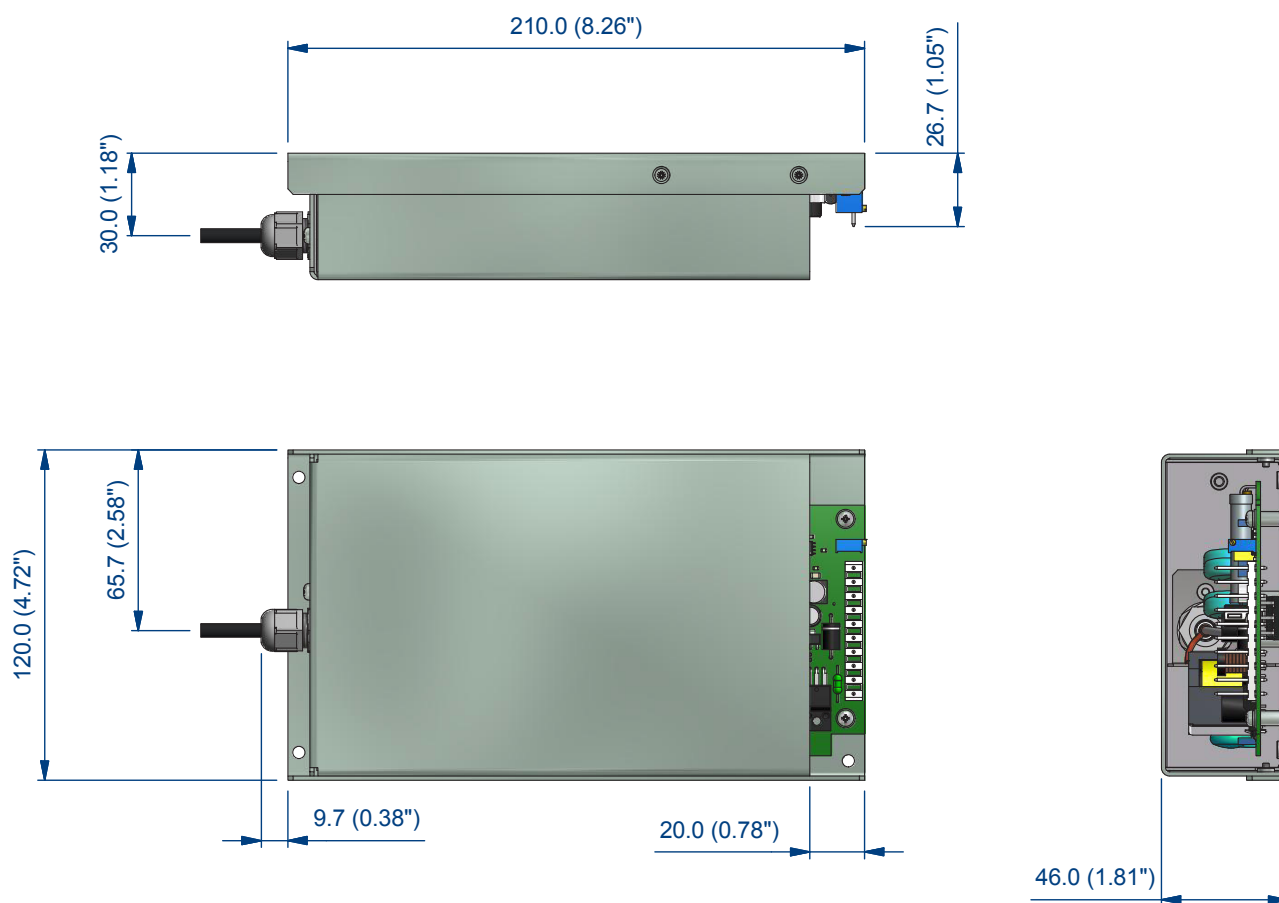
MOUNTING: 2 OFF M4 STUDS; LENGTH AND POSITION AS SHOWN  
DIMENSIONS mm (in)



# MSP-203

Drawing dimensions are in mm (inches).

Design developments may result in specification changes.





**For international contact information, visit**  
[advanced-energy.com](http://advanced-energy.com).