



Spellman's MI1.5PN24 is a well-regulated, high performance DC-DC converter featuring a floating 1.5kV @ 6.5mA output, it has an operational range 300V-1500V. The output is isolated; this allows connection to loads of +Ve, -Ve or switchable polarity and for pulse currents to be contained within prescribed paths, reducing noise and interference signatures. The MI1.5PN24 low output ripple specification makes it ideal for use with pulsers in Mass Spectrometry applications. This module is packaged in a shielded metal enclosure and the high voltage output is provided via two captive cables. The MI1.5PN24 has a large, high quality capacitance and rugged output network, this allows high energy pulsed loads to be powered continuously without significant voltage drop or damage to the unit circuitry. The unit has remote 0-10Vdc = 0-100% rated voltage programming and voltage monitor. A TTL compliant Enable signal provides simple control of the high voltage output.

TYPICAL APPLICATIONS

Mass spec pulsers
Pulsed load requirements

SPECIFICATIONS

Input Voltage:

+24Vdc, $\pm 10\%$. Protected against reverse connection

Input Current:

725mA maximum at 1500V @ 6.5mA

Output Voltage:

300V to 1.5kV, continuously variable over entire output range

Polarity:

Positive or negative, isolated to 1.5kV

Load Current:

6.5mA, maximum

Power:

9.75 watts, maximum

Regulation:

Line: <0.5% for line change of $\pm 10\%$
Load: <0.1% for zero to full load

Stability:

Better than 300ppm/hour after 1 hour warm up. 100ppm/hour after 2 hour warm up at constant operating conditions. Typically, 50ppm/hour after 1 hour and 15ppm/hour after 2 hours.

Temperature Coefficient:

<100ppm/ $^{\circ}\text{C}$, typically 25ppm/ $^{\circ}\text{C}$

- **Floating, Programmable 1.5kV Output**
- **Well Regulated, Low Ripple**
- **Low Z Output Network for Pulsed Load Applications**
- **Compact Design**

Ripple:

<75mV peak to peak at full load when either end is grounded.

Output Current Limit:

The module will have an output current limit of 9mA. The module is capable of withstanding an indefinite short circuit or overload on its output and will recover automatically once the short circuit is removed.

Supply Voltage Dynamic Rejection:

< than 20mV for an input step of 1 volt
(within the range of +24Vdc, +10%/-2%)

Settling Time:

500 milliseconds maximum under all conditions.

Output Capacitance:

>400nF – Connected directly between POSITIVE to NEGATIVE output nodes

Environmental:

Temperature Range:

Operating: +15 $^{\circ}\text{C}$ to +50 $^{\circ}\text{C}$

Storage: -40 $^{\circ}\text{C}$ to 70 $^{\circ}\text{C}$

Humidity: 5% to 95% RH @ 40 $^{\circ}\text{C}$ non-condensing

Cooling:

Convection cooled

Interface Connector:

20 pin IDC male connector

High Voltage Output Connectors:

Two Varex CA166 (Connectronics SCID compatible) right angle connectors, 10 inches (254mm) long. The +Ve cable will have a RED band and "POS" printed on the cable. The -Ve cable will have a BLUE band and "NEG" printed on the cable. High voltage outputs are floating.

Star Ground Network:

+24Vdc Return is central; case, analog input ground and digital ground are returned through a 100 Ω resistor in parallel with a 0.001 μF capacitor to the +24Vdc Return.

Dimensions:

4.53"L x 3.74"W x 1.54"D (115mm X 95mm X 39.2mm)

Weight:

0.66lbs. (0.3kg)

Regulatory Approvals:

The unit is CE marked. The unit has been designed to meet the requirements of EN61010, UL1950 and CSA 22.2 No. 950.

EMC:

As the unit is a component it will not be tested as a stand alone unit to meet the EMC directive. The user will need to follow sensible EMC precautions in using the unit.

INTERFACE CONNECTOR – 20 PIN IDC MALE CONNECTOR

PIN	SIGNAL	SIGNAL PARAMETERS
1	Voltage Control Return	Analog Ground
2	Voltage Control*	0Vdc to +10Vdc = 0 to 1.5kV (differential Input) Zin = 100kΩ. Protected against inputs of <11 volts and reverse voltages.
3	Voltage Control Return	Analog Ground
4	N/C	No Connection
5	Voltage Control Return	Analog Ground
6	N/C	No Connection
7	Voltage Control Return	Analog Ground
8	N/C	No Connection
9	Voltage Control Return	Analog Ground
10	Voltage Monitor	+2Vdc to +10Vdc = 300 volts to 1.5kV, ±1%, Zout = 1kΩ
11	N/C	No Connection
12	Enable	TTL: Low = HV ON. Referenced to +24Vdc Return.
13	N/C	No Connection
14	N/C	No Connection
15	N/C	No Connection
16	N/C	No Connection
17	+24Vdc Return	Power Return (Power Ground)
18	+24Vdc Power	+24Vdc @ 725mA
19	+24Vdc Return	Power Return (Power Ground)
20	+24Vdc Power	+24Vdc @ 725mA

*At voltage programming voltages less than 2 volts, parameters in this specification may not be met.

How to Order:

Standard: PART NO.: Mi1.5PN24

DIMENSIONS: in. [mm]

