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High Voltage Power Supplies

MXR20PN24 and MXR30PN24

SAFETY AND INSTALLATION INSTRUCTIONS

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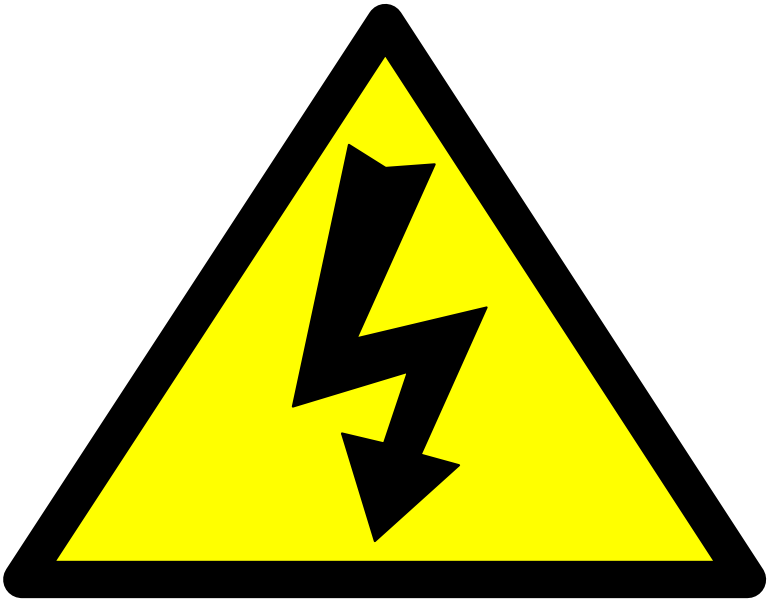
SAFETY



DANGER
HIGH VOLTAGE
RISK OF ELECTROCUTION

Observe extreme caution when working with this equipment

- **High voltage power supplies must always be connected to protective earth**
- **Do not touch connections unless equipment is turned off and the capacitance of both the load and power supply are grounded**
- **Allow adequate time for discharge of internal capacitance of the power supply**
- **Do not ground yourself or work under wet or damp conditions**

Servicing Safety

- **No maintenance is required**
- **Servicing should only be done by qualified personnel aware of the hazards**
- **If in doubt, return to supplier for servicing**

CHANGE HISTORY

Section	Reason for Change	Issue
All	Created from 80888-1 issue B	A
1	HV output cable paragraph added.	B

Contents

1 Unit Description

The HV power units MXR20PN24 and MXR30PN24 consist of one chassis containing the high voltage power supply

The chassis dimensions for all units: 240 x 215 x 52mm.

Units mass for all units is 4kg.

The units provide outputs rated as follows:

MXR20 ±20kVdc 300µA max

MXR30 ±30kVdc 300µA max

The units are designed for operation from 24Vdc ± 5%. The maximum rated input current is 1.25A. There is no external fuse.

The operating temperature range is 10°C to +50°C. Relative humidity rating (RH)% is 0% to 85% (non-condensing). Altitude 0 to 2000m above mean sea level

All control and monitoring is accomplished via either analogue or serial communication interfaces:
Analogue for MXR20PN24 and MXR30PN24
Serial for MXR20PN24/DCC and MXR30PN24/DCC.
See section 4 for interface details.

A variant of these units is also available, with an HV output cable, UL style 3873.
The suffix of LLxxxx will be added to the model type. (xxxx will be a number indicating the output length of that lead, in mm)

2 Safety

The HV outputs of the units are considered hazardous and the conditions of this manual must be complied with to maintain safety.

The protection against electric shock provided by the units may be impaired if the units are not operated in accordance with the instructions in this manual.

The units are contained in an earthed case with a screened HV output cable and the HV output cable must be terminated safely before the units are operated.

This unit must be sourced with a double insulated or SELV 24 V dc supply.

The unit shall be properly bonded to the main protective earthing termination in the end product.

The units have been evaluated for use in a Pollution Degree 2, Installation Category II environment.

Consideration should be given to conducting the following tests with the unit installed in the end product:

a. Permissible Limits Tests with the unit installed in the end product.

b. Temperatures on accessible surfaces.

The units have not been the subject of a risk analysis; this should be done in the end product application.

Explanation of Symbols

 This symbol on the unit means “read the manual before powering the equipment”.

 This symbol on the unit means “Caution; risk of electric shock”.

 This symbol denotes the protective earth terminal.

3 Installation

3.1 Initial Inspection

Inspect the package exterior for evidence of damage due to handling in transit. Notify the carrier and Spellman immediately if damage is evident. Do not destroy or remove any of the packing material used in a damaged shipment.
After unpacking, inspect the units for visible damage.

Note: Failure to comply with the above could compromise the safe operation of the units and invalidate the warranty.

3.2 Mechanical Installation

The MXR units must be fitted in the end product and secured in position using screws.
The units must not be used in an environment with a level of pollution worse than Pollution Degree 2.
The units are intended for use as a component and no surface of the units should be accessible in the end product.

3.3 Electrical Installation

The units should only be connected to a Category II environment, the units are not intended for connection to the mains. The power for the units should be sourced from a UL recognised double insulated or SELV 24 V dc supply.
The units shall be properly bonded to the main protective earthing termination in the end product via the chassis.

The input and output connectors are not intended for field connections and should only be connected to internal wiring in the end product. All external circuits connected to High Voltage outputs shall be Double/Reinforced insulated from any accessible parts.

4 Interface

4.1 MXR (analogue control)

4.1.1 Input connections are via a 12 way Molex KK5.08 series connector, part number 10-08-1121.

Input connector pin assignment table

Pin	Assignment	Type	Comments
1	IMON	analogue output	Rout = 10kOhm
2	+24V DC	power input	+24Vdc ±5%
3	VMON	analogue output	Rout=10kOhm
4	NC		
5	NC		
6	NC		
7	VSET	analogue input	Rin>1MOhm
8	POL SET	digital input	TTL: Low = positive HV; High/open = negative HV
9	SGND	signal ground	analogue ground
10	+24V DC RET	power input	ground return for +24V
11	NC		
12	POL STATUS	digital output	positive HV: 0V source 1.5kOhm negative HV: +24V source 2.2kOhm

4.1.2 The HV output is via a GES HB30 high voltage receptacle.

4.2 MX20R…/DCC (serial control)

4.2.1 24V power input connections are via a 2 way Molex Mini-fit Jr connector, Part Number 39-30-1021.

Power connector pin assignments table

Pin	Signal Name
1	+24V DC
2	Ground return for +24V

4.2.2 Control connections are via a 10 way ‘IDC Ribbon cable’ connector. Take care in choosing suitable ground connection for pin 2.

Input connector pin assignments table

Pin .	Signal	Level/ Range
1	Transmit data (output) with respect to pin 2	Serial
2	Serial signal ground return (if required)	RTN
3	Receive data (input) with respect to pin 2	Serial
4	NC	
5	NC	
6	NC	
7	Opto-isolator input – [0mA = INHIBIT]	3V3 @ 6mA
8	Opto-isolator signal return	5V @ 10mA
9	Polarity Change Signal opto-isolator input - [0mA = -VE]	3V3 @ 6mA
10	Polarity Change Signal opto-isolator signal return	5V @ 10mA

4.2.3 High Voltage output is via a GES HB30 high voltage receptacle.