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Product:

MCP4

Title:

Installation and User Guide

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1

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Change History

ISSUE	DATE	SECTION	CHANGE
A		All	Created from 81604-1
B			Revised for User Guide
1		All All 1 2.2 3.4.2 Appx 1	Template update MCP4N version removed Unit description drawing updated from HV input / output to +VE and -VE Marking indication substituted with Regulatory approvals HV cable braid connection recommendation clarified Drawing updated with +VE and -VE cables indication

Contents

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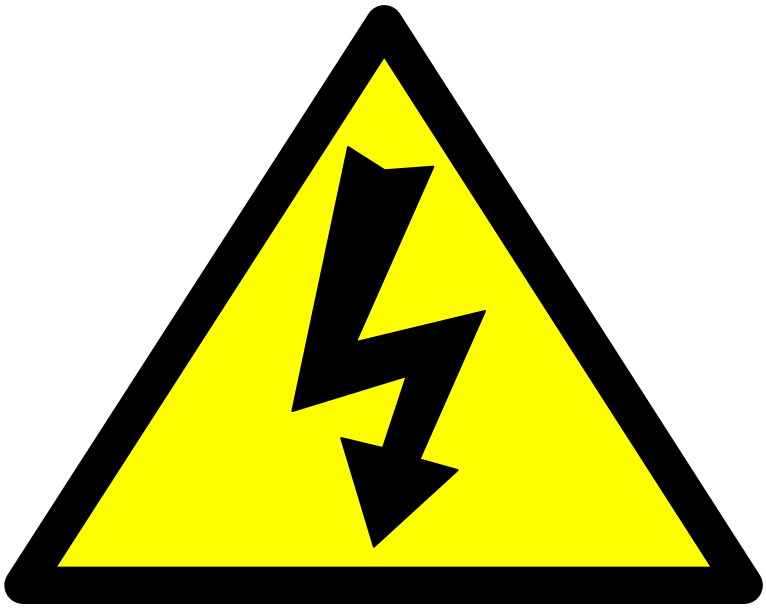
SAFETY



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

- Maintenance may require removing the Instrument cover with the power on
- Servicing should only be done by qualified personnel aware of the hazards
- Return to supplier for servicing

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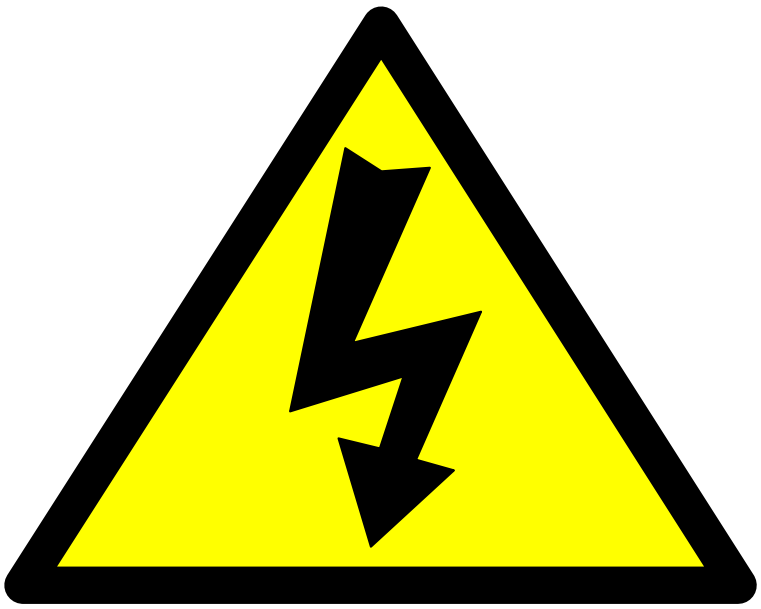
SÉCURITÉ



DANGER
HAUTE TENSION
RISQUE D'ÉLECTROCUTION

Observez une extrême prudence lorsque vous travaillez avec cet équipement

- Les alimentations haute tension doivent toujours être connectées au conducteur de protection.
- Ne pas toucher les connexions à moins que l'équipement soit éteint et que la capacité de la charge et de l'alimentation électrique ne soit mise à la terre.
- Prévoir un temps suffisant pour la décharge de la capacité interne de l'alimentation.
- Ne pas vous mettre à la terre ou travailler dans des conditions humides.

Sécurité d'entretien

- L'entretien ne doit être effectué que par un personnel qualifié et conscient des dangers.
- Il n'y a pas de piéce remplaçables par l'utilisateur dans l'unité, retourner au fournisseur pour l'entretien.

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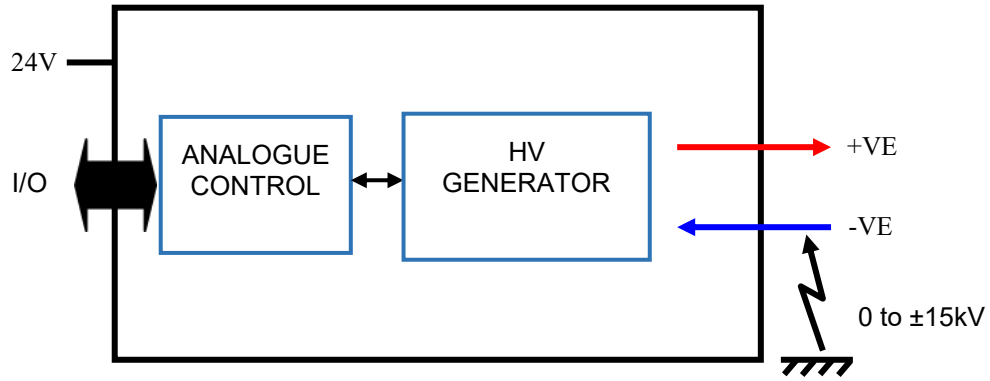
1 Unit Description

The MCP4 is a high voltage detector PSU for mass spectrometers and other scientific instruments. The output is isolated from ground to 15kV, such that it can be floated upon the HV output of an accelerator voltage or other high voltage source, as shown in the diagram below.

The unit has been designed to provide low noise and ripple, with particular design features to minimise crosstalk with the HV source upon which it is floated.



The units are provided with fixed HV input and output cables, specified in Section 3.4

1.1 HV Unit Ratings

The ratings are as follows:

HV Output:	0 to 4kVdc, 600µA (+VE with respect to -VE)
Input:	24Vdc +/-5%, 700mA (there is no operator changeable fuse)
Operating Temperature:	0°C to 50°C
Relative humidity rating:	5% to 90% (non-condensing)
Altitude:	Up to 3000m above mean sea level
Mass:	1.75 Kg
Dimensions:	242 x 139 x 46 mm (see layout in Appendix 1)

2 Safety

The unit's HV output is at a non-hazardous level to the requirements of EN61010-1. The conditions of this manual must be complied with to maintain safety. Operating the unit in a manner not specified in this manual may impair the protection against electric shock that the unit may normally provide.

Note: Although the HV generated by this unit itself is non-hazardous, it may become hazardous when connected to an external supply, depending upon the rating of the external supply.

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

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

- Dielectric Voltage Withstand Test, between live parts of the unit and the end product chassis.
- Permissible Limits Tests with the unit installed in the end product.
- Temperatures on power electronic components, transformer windings and accessible surfaces.

2.1 Meaning of Symbols

SYMBOL	MEANING IN ENGLISH	SENS EN FRANÇAIS
	Refer to manual before operating	Se référer au manuel avant utilisation
	Caution, possibility of electric shock	Attention! Risque de choc électrique
	Caution, hot surface	Attention! Surface chaude!

2.2 Regulatory Approval

The unit is designed to meet the requirements of EN 61010-1, UL 61010-1 and CAN/CSA-22.2 No. 61010-1. Please consult the factory for further approval information.

3 Installation of the HV Unit

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 panel and chassis for visible damage.

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

3.2 Mechanical Installation

The unit should only be used in a Pollution Degree 2 Installation Category II environment.

The unit is intended for use as a component and no surface of the unit should be accessible in the end product.

The Mechanical outline is shown in Appendix 1.

3.3 Electrical Installation

The units must be terminated safely befor6e operation. The case of the unit must be connected to the PE earth of the final system using the stud provided on the case.

The dc power input shall be provided by a SELV or Double insulated, UL recognised, DC power supply unit.

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3.4 HV Unit Interfaces

3.4.1. Control and Input power Connection

The unit is connected via an industry standard 9 Way D-Type Connector:

PIN	CONNECTION
1	VPROG
2	VPRG_RTN
3	ENABLE
4	ENABLE_RTN
5	Power GND
6	Signal GND
7	VMON
8	Not used
9	+24Vdc

3.4.2. HV Output Connection

CONNECTION	CONNECTOR TYPE	CABLE LENGTH
HV CABLE x 2 (+VE and -VE)	HRG58-20-2 HV COAX CABLE 20KV BRAIDED RED 4.95mm DIA	1150 ± 10mm

The cable braid is connected to chassis ground. It is recommended to use the braid as a HV return for a connected high voltage reference supply.

4 Operation of the HV Unit

4.1 Control and Monitor Signals

The following signals are used to control and monitor the HV unit:

Control, Monitor signal	Attribution	Pin	Type	Level
Voltage program control	VPROG	1	Vdc	0-10V corresponding to 0- 4kV Full Scale
Enable control	ENABLE	3	TTL	Hi = Enable (>2V). Imax=19mA or Vmax=11V
Voltage output monitor	VMON	7	Vdc	0-10V corresponding to full scale HV output

4.2 LED Indicator

Parameter	Type	Description
HV Enabled	LED	ON= +5V typically

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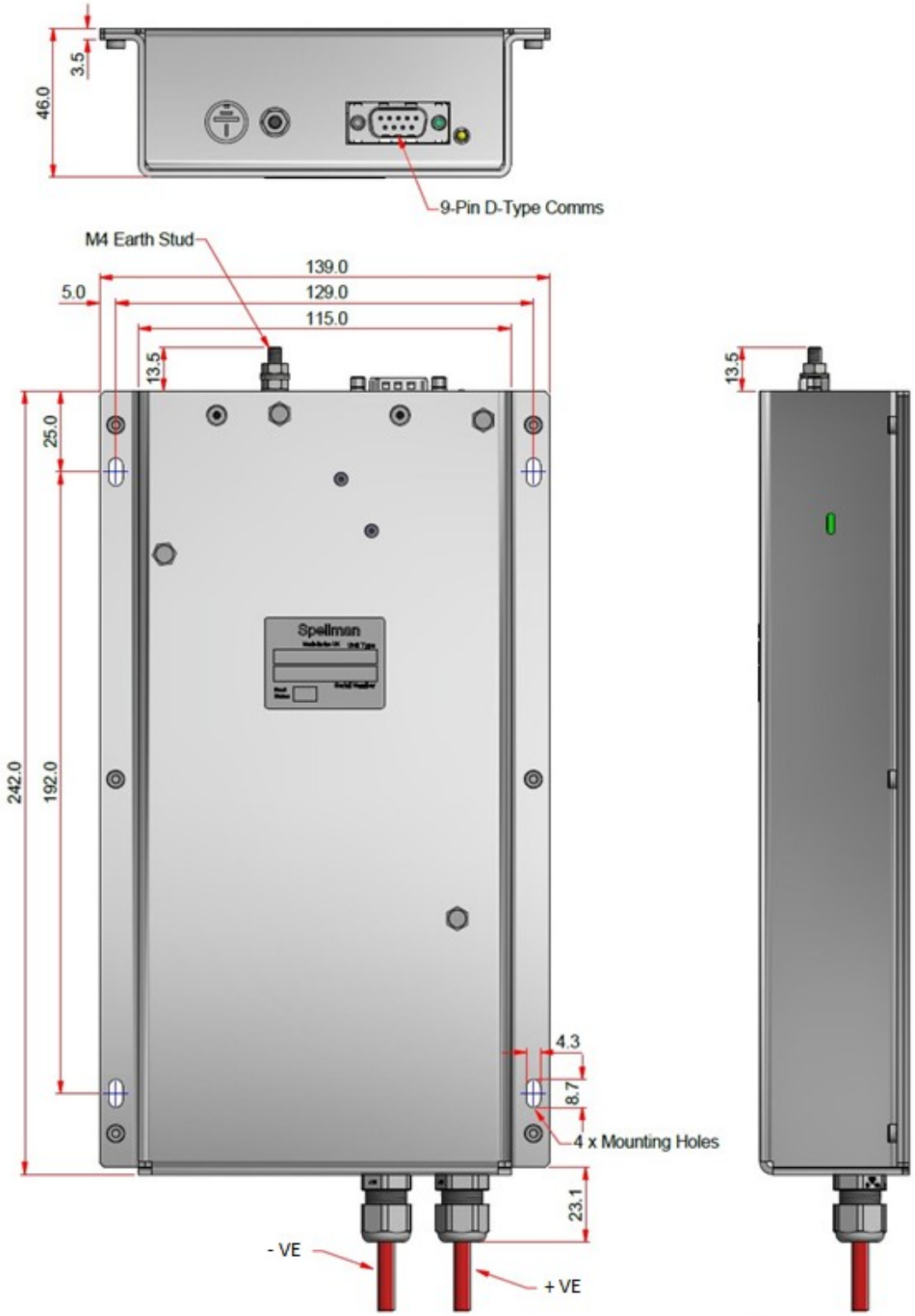
Appendix 1 – Mechanical Outline



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