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# MS Series Installation and User Guide




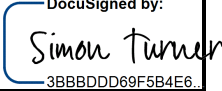
Document Number:

**80814-4**

Issue:

**2**

Date:

Issue	B	1	2
Date	15/04/10	23/07/18	09/08/21
Issuing Authority	Engineering	I-6027	10541H
Engineering Approval			DocuSigned by:  AF7FD42C3141450...
Sales/Marketing Approval			DocuSigned by:  3BBDDDD69F5B4E6.

## Change History

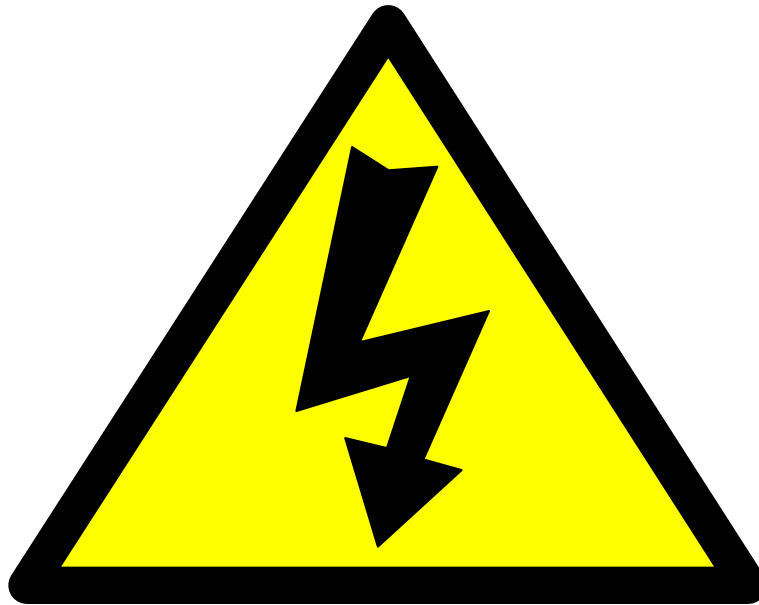
ISSUE	DATE	SECTION	CHANGE
A		All	Created from 80711-1
B		5.1	Mechanical outline of >100V units added
1		All	Changed to numeric issue
2		3 APPX1 All	Corrected Ripple values for MS0.3 Corrected floating values for units >MS1 Corrected dimension labels for units >MS1 Template Update

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# SAFETY



## DANGER HIGH VOLTAGE RISK OF ELECTROCUTION

### Observe extreme caution when working with this equipment

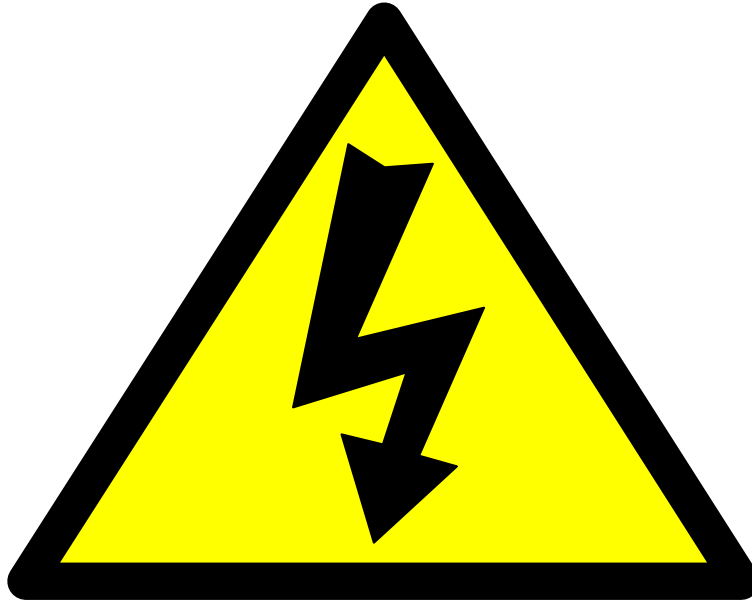
- High voltage power supplies must always be connected to protective earth
- Do not touch connections unless equipment is turned off and the capacitance of both the load and power supply are grounded
- Allow adequate time for discharge of internal capacitance of the power supply
- Do not ground yourself 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 pièce remplaçables par l'utilisateur dans l'unité, retourner au fournisseur pour l'entretien.

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## 1 Unit description

The MS modules are designed to be mounted directly to a printed circuit board mounting and are designed to be small and light weight. The modules are mounted within an aluminium enclosure which when combined with a ground plane on the PCB eliminates radiated interference.

The unit is controlled by a single voltage programming input and is powered by a 12V DC input.

## 2 Input

Voltage: +12VDC +/- 1V

Current: 0.65A maximum

## 3 Output

MODEL TYPE	MAXIMUM O/P VOLTAGE	MAXIMUM O/P CURRENT	RIPPLE PK-PK @ MAX O/P CURRENT
MS0.3*12/C	300V	10mA	50mV
MS0.5*12/C	500V	6mA	50mV
MS0.75*12/C	750V	4mA	75mV
MS1*12/C	1000V	3mA	100mV
MS1.5*12/C	1500V	2 mA	150mV
MS2*12/C	2000V	1.5 mA	200mV
MS2.5*12/C	2500V	1.2 mA	250mV
MS3*12/C	3000V	1mA	300mV

Where \* is **N** or **P** depending on polarity

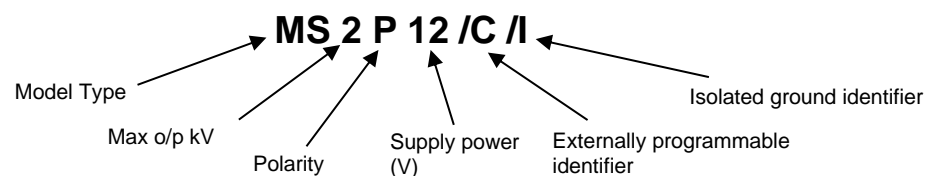
### Options:

**/I** Output isolated from ground.

For models <= 1000V output, the output can be floated on 40V max.

For models > 1000V output, the output can be floated on 100V max.

The part number for a given unit describes its characteristics:



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## 4 Environmental

<b>Operating Temperature:</b>	0°C to +50°C
<b>Storage Temperature:</b>	-35°C to +85°C
<b>Humidity:</b>	0% to 90% Non Condensing

## 5 Controls

### 5.1 5V Reference

The 5V ref pin supplies a 5V reference signal for external use. Up to 1mA can be drawn from this pin. Accuracy 1%, temperature co-efficient 50ppm/°C.

### 5.2 Remote Control




0 - 5V on the CTRL pin programmes 0 to 100% output voltage.

Voltages between 5V and 12V on the control input will not damage the unit.

Negative voltages greater than -0.5V will cause permanent damage.

## 6 Safety

### 6.1 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!

### 6.2 Regulatory Approval

Designed to meet IEC/UL 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use; CAN/CSA-C22.2 No.61010-1. CE marked to EN 61010-1. RoHS compliant.

As the unit is designed for incorporation within the user's system it is not tested against any specific EMC standards. The user will need to take sensible EMC precautions when designing the unit in and verify the overall system EMC performance against any relevant standards.

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## 7 Installation of the HV Unit

### 7.1 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.

### 7.2 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 – Mechanical Outline.

#### 7.2.1. Weight

Models  $\leq$  1000V output :  $<80g$

Models  $>1000V$  output :  $<160g$

#### 7.2.2. Chassis

Aluminium case

#### 7.2.3. Inputs / Outputs

Via PCB Pins for 1mm diameter hole, length  $<10mm$  from base of unit. Pin out details shown in Appendix 1 – Mechanical Outline

### 7.3 Electrical Installation

The units must be terminated safely before 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.

## 8 Soldering Requirements

Flow soldering: Solder temperature: 250 degree C

Endurance time:  $\leq$  8 seconds

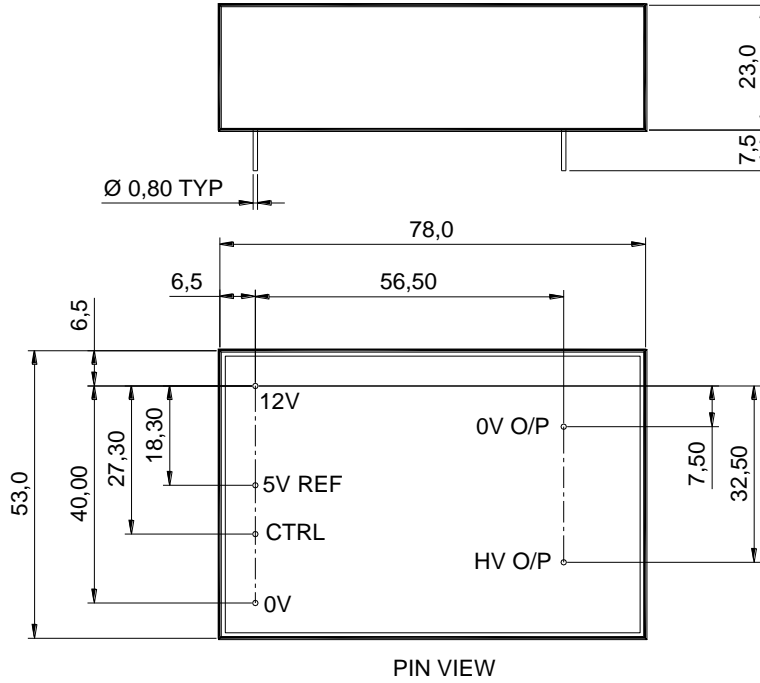
Manual soldering: Solder temperature: 350 degree C

Endurance time:  $\leq$  3 seconds

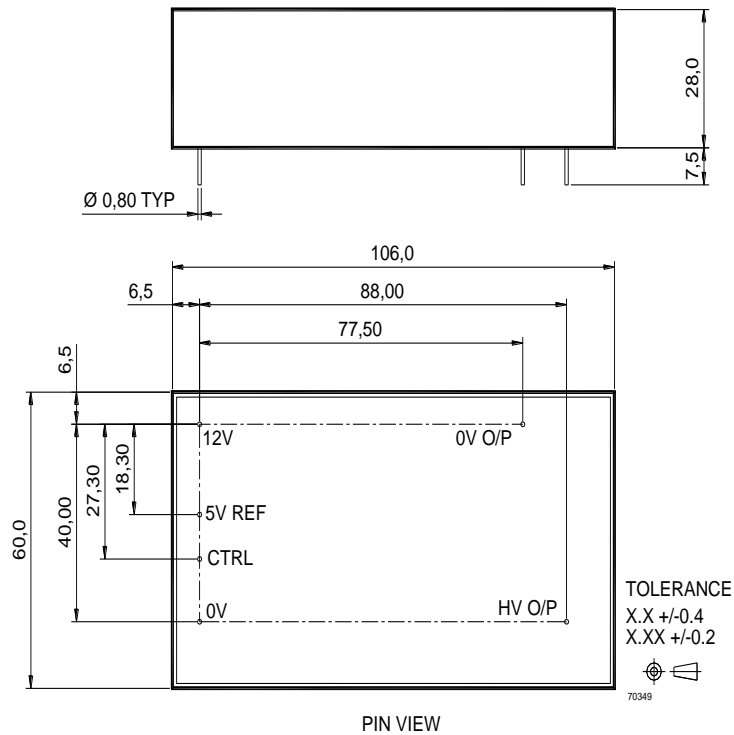
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## Appendix 1 – Mechanical Outline

Models <= 1000V output



Models >1000V output



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