MULTISTAX RANGE

AC-DC Plug & Play Power Supply Series 400W-1200W

Outline Product Specification

The Multistax family of power supplies provides up to an incredible 1200W in an extremely compact 1U x 260 x 127mm package.

Boasting industry leading power density of 15W/in3 and efficiencies of up to 90%, the Multistax family employs an innovative plug & play architecture that allows users to instantly configure a custom power solution in less than 5 minutes!

Ultra high efficiencies and high power density are made possible through the combination of low loss technologies and the best field-proven technologies in planar magnetics and surface mount electronics. Significantly increased efficiency reduces system thermal load by more than 50%.

The MS1U family consists of 4 Multistax models ranging in power levels from 400W to 1200W. Each unit may be populated with up to 6 power modules selected from the table shown below.

All configurations carry full safety agency approvals, UL60950, EN60950 and are CE marked. For alternative power interfaces contact Powerstax.

FEATURES

- **UL2601-1 and EN60601-1 approved**
- **Less than 300µA leakage current**
- **4000VAC isolation**
- **Extra low profile: 1U height (40mm)**
- **Ultra high efficiency up to 90%**
- **Plug & Play Power**
  - **allows fast custom configuration**
  - **allow easy logistics**
- **Reduced system heat dissipation**
- **Few electrolytic capacitors (all long life)**
- **Visual LED indicators**
- **Series / Parallel of multiple outputs**
- **5V bias standby voltage provided**
- **Individual output control signals**

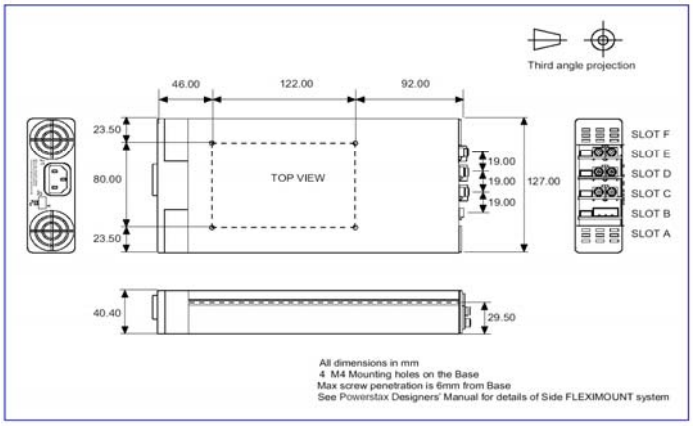
Power Units

Family	Model	Slots	Power	Width
MM1U	6A	6	400W	127mm
	6B	6	700W	127mm
	6C	6	1000W	127mm
	6D	6	1200W	127mm
MM1U	4A	4	200W	89mm
	4B	4	400W	89mm
	4C	4	600W	89mm

Power Modules

MODEL	Vmin	Vnom	Vmax	Imax	Watts*
Mx1	1.5	2.5	3.6	50A	125W
Mx2	3.2	5	6	40A	200W
Mx3	6	12	15	20A	240W
Mx4	12	24	30	10A	240W
Mx5	28	48	58	6A	288W
Mx7	5	24	28	5A	120W
Mx8 V1	5	24	28	3A	72W
V2	5	24	28	3A	72W

Mechanical Specification



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AC-DC Plug & Play Power Supply
MS1U Series 400W-1200W

Product Specification

Input

SPECIFICATION applies to configured units consisting of Power Modules plugged into the appropriate PowerUnit

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage Range	Universal Input	85 120		264 380	VAC VDC
Input Frequency Range		47		63	Hz
Power Rating MS1U - 6A				400	W
MS1U - 6B				700	W
MS1U - 6C	Derate linearly from 1000W at 100VAC to 850W at 85VAC			1000	W
MS1U - 6D	Derate linearly from 1200W at 120VAC to 850W at 85VAC			1200	W
Input Current MS1U - 6A	85VAC in 400W out		7.5		A
MS1U - 6B	85VAC in 700W out		9.5		A
MS1U - 6C, 6D	85VAC in 850W out		11.5		A
Inrush Current	230VAC @ 25°C			20	A
Undervoltage Lockout	Shutdown	70		78	VAC
Fusing MS1U - 6A	250V		F8A HRC		
MS1U - 6B	250V		F10A HRC		
MS1U - 6C, 6D	250V		F12A HRC		

Output

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage Range	Universal Input	85 120		264 380	VAC VDC
Input Frequency Range		47		63	Hz
Power Rating MS1U - 6A				400	W
MS1U - 6B				700	W
MS1U - 6C	Derate linearly from 1000W at 100VAC to 850W at 85VAC			1000	W
MS1U - 6D	Derate linearly from 1200W at 120VAC to 850W at 85VAC			1200	W
Input Current MS1U - 6A	85VAC in 400W out		7.5		A
MS1U - 6B	85VAC in 700W out		9.5		A
MS1U - 6C, 6D	85VAC in 850W out		11.5		A
Inrush Current	230VAC @ 25°C			20	A
Undervoltage Lockout	Shutdown	70		78	VAC
Fusing MS1U - 6A	250V		F8A HRC		
MS1U - 6B	250V		F10A HRC		
MS1U - 6C, 6D	250V		F12A HRC		

General

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage Range	Universal Input	85 120		264 380	VAC VDC
Input Frequency Range		47		63	Hz
Power Rating MS1U - 6A				400	W
MS1U - 6B				700	W
MS1U - 6C	Derate linearly from 1000W at 100VAC to 850W at 85VAC			1000	W
MS1U - 6D	Derate linearly from 1200W at 120VAC to 850W at 85VAC			1200	W
Input Current MS1U - 6A	85VAC in 400W out		7.5		A
MS1U - 6B	85VAC in 700W out		9.5		A
MS1U - 6C, 6D	85VAC in 850W out		11.5		A
Inrush Current	230VAC @ 25°C			20	A
Undervoltage Lockout	Shutdown	70		78	VAC
Fusing MS1U - 6A	250V		F8A HRC		
MS1U - 6B	250V		F10A HRC		
MS1U - 6C, 6D	250V		F12A HRC		

EMC

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage Range	Universal Input	85 120		264 380	VAC VDC
Input Frequency Range		47		63	Hz
Power Rating MS1U - 6A				400	W
MS1U - 6B				700	W
MS1U - 6C	Derate linearly from 1000W at 100VAC to 850W at 85VAC			1000	W
MS1U - 6D	Derate linearly from 1200W at 120VAC to 850W at 85VAC			1200	W
Input Current MS1U - 6A	85VAC in 400W out		7.5		A
MS1U - 6B	85VAC in 700W out		9.5		A
MS1U - 6C, 6D	85VAC in 850W out		11.5		A
Inrush Current	230VAC @ 25°C			20	A
Undervoltage Lockout	Shutdown	70		78	VAC
Fusing MS1U - 6A	250V		F8A HRC		
MS1U - 6B	250V		F10A HRC		
MS1U - 6C, 6D	250V		F12A HRC		

Environmental

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage Range	Universal Input	85 120		264 380	VAC VDC
Input Frequency Range		47		63	Hz
Power Rating MS1U - 6A				400	W
MS1U - 6B				700	W
MS1U - 6C	Derate linearly from 1000W at 100VAC to 850W at 85VAC			1000	W
MS1U - 6D	Derate linearly from 1200W at 120VAC to 850W at 85VAC			1200	W
Input Current MS1U - 6A	85VAC in 400W out		7.5		A
MS1U - 6B	85VAC in 700W out		9.5		A
MS1U - 6C, 6D	85VAC in 850W out		11.5		A
Inrush Current	230VAC @ 25°C			20	A
Undervoltage Lockout	Shutdown	70		78	VAC
Fusing MS1U - 6A	250V		F8A HRC		
MS1U - 6B	250V		F10A HRC		
MS1U - 6C, 6D	250V		F12A HRC		

NOTES

1. This product is not intended for use as a stand alone unit and must be installed by qualified personnel.
2. The specifications contained herein are believed to be correct at time of publication and are subject to change without notice.
3. All specifications at nominal input, full load, 25°C unless otherwise stated.

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MULTISTAX SLIMLINE RANGE

1U High AC-DC Plug & Play Power Supply 200 - 600W

Outline Product Specification

The Multistax Slimline family of 1U high power supplies provides up to 600W in a low profile 1U x 260 x 89mm package. Providing up to 8 isolated outputs, the Slimline family is the most flexible power supply in its class and brings affordable configurable power to the 200-600W market.

The Multistax product boasts unrivalled power density saving valuable system space.

Combine with ultra high efficiencies, the Slimline family provides system designers with flexible instant solutions that significantly shorten and simplify system design-in time.

The range consists of 3 power unit models in 200W, 400W and 600W power levels. Each power unit may be populated with up to 4 power modules selected from the table shown below.

FEATURES

- ***Slimmest 400W configurable power***
- ***Extra low profile: 1U height (40mm)***
- ***All outputs fully floating***
- ***Ultra high efficiency, up to 89%***
- ***Plug & Play Power***
  - ***allows fast custom configuration***
  - ***allow easy logistics***
- ***FLEXIMOUNT Flexible mounting system***
- ***Few electrolytic capacitors (all long life)***
- ***Visual LED indicators***
- ***Series / Parallel of multiple outputs***
- ***5V bias standby voltage provided***
- ***Individual output control signals***

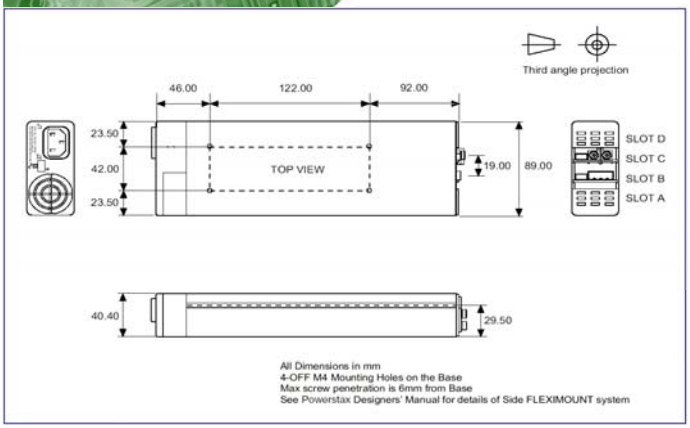
Power Units

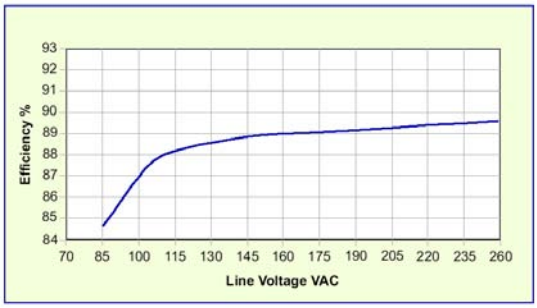
Family	Model	Slots	Power	Width
MS1U	4A	4	200W	89mm
	4B	4	400W	89mm
	4C	4	600W	89mm

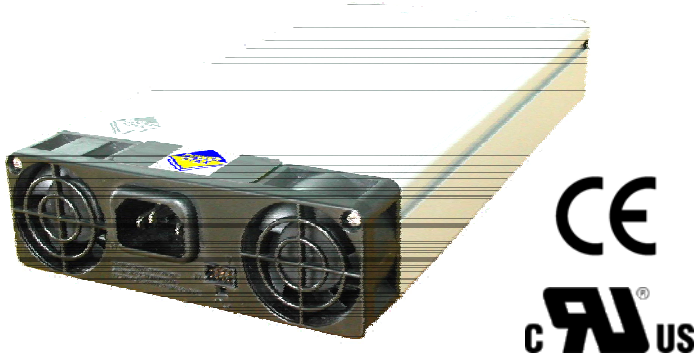
Power Modules

MODEL	Vmin	Vnom	Vmax	Imax	Watts*
Mx1	1.5	2.5	3.6	50A	125W
Mx2	3.2	5	6	40A	200W
Mx3	6	12	15	20A	240W
Mx4	12	24	30	10A	240W
Mx5	28	48	58	6A	288W
Mx7	5	24	28	5A	120W
Mx8 V1	5	24	28	3A	72W
V2	5	24	28	3A	72W

Mechanical Specification







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1U High AC-DC Plug & Play Power Supply
MS1U Series 400W-1200W

Product Specification

Input

SPECIFICATION applies to configured units consisting of power modules plugged into the appropriate power unit

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage Range	Universal Input	85 120		264 380	VAC VDC
Input Frequency Range		47		63	Hz
Power Rating MS1U - 6A				400	W
MS1U - 6B				700	W
MS1U - 6C	Derate linearly from 1000W at 100VAC to 850W at 85VAC			1000	W
MS1U - 6D	Derate linearly from 1200W at 120VAC to 850W at 85VAC			1200	W
Input Current MS1U - 6A	85VAC in 400W out		7.5		A
MS1U - 6B	85VAC in 700W out		9.5		A
MS1U - 6C, 6D	85VAC in 850W out		11.5		A
Inrush Current	230VAC @ 25°C			20	A
Undervoltage Lockout	Shutdown	70		78	VAC
Fusing MS1U - 6A	250V		F8A HRC		
MS1U - 6B	250V		F10A HRC		
MS1U - 6C, 6D	250V		F12A HRC		

Output

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage Range	Universal Input	85 120		264 380	VAC VDC
Input Frequency Range		47		63	Hz
Power Rating MS1U - 6A				400	W
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MS1U - 6C	Derate linearly from 1000W at 100VAC to 850W at 85VAC			1000	W
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Inrush Current	230VAC @ 25°C			20	A
Undervoltage Lockout	Shutdown	70		78	VAC
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EMC

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Undervoltage Lockout	Shutdown	70		78	VAC
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MS1U - 6B	250V		F10A HRC		
MS1U - 6C, 6D	250V		F12A HRC		

Environmental

Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage Range	Universal Input	85 120		264 380	VAC VDC
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MS1U - 6C, 6D	85VAC in 850W out		11.5		A
Inrush Current	230VAC @ 25°C			20	A
Undervoltage Lockout	Shutdown	70		78	VAC
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3. All specifications at nominal input, full load, 25°C unless otherwise stated.

MULTISTAX RANGE

1U High AC-DC Plug & Play Power Supply Series

Product Specification

The *Power Module* family of plug-in DC output modules are for use with the MS1U series of *Power Units*. Compatible with the entire range, the Power Modules convert the intermediate bus voltage provided by the Power Unit to your specific output voltage requirements. Each *Power Module* can be simply plugged into, removed and exchanged to ensure that you have the most flexible power supply at your fingertips.

The *Power Module* family comprises 8 models providing output voltages from 1.5 to 58V. The feature-rich *Power Modules* provide a suite of output signals and user configurable functions increasing design-in flexibility. User configurable functions include local and remote adjustment, adjustable current limit, alternative current limiting technique and inhibit/enable functions.

Employing high efficiency DC-DC conversion techniques, *Power Modules* have minimal power losses, while the use of planar magnetics and surface mount components minimise the size, making the MS1U series the smallest power supply in the industry.

Power Modules

MODEL	Vmin	Vnom	Vmax	Imax	Imin	Watts*	Type
Mx1	1.5	2.5	3.6	50A	0A	125W	A
Mx2	3.2	5	6	40A	0A	200W	A
Mx3	6	12	15	20A	0A	240W	A
Mx4	12	24	30	10A	0A	240W	A
Mx5	28	48	58	6A	0A	288W	A
Mx7	5	24	28	5A	0A	120W	AB
Mx8 v1	5	24	28	3A	0A	72W	B**
v2	5	24	28	3A	0A	72W	

Power Module Connector Details

Pin	Type A (Mx1-5)	Type AB (Mx7)	Type B (Mx8)
1	+Sense	not used	-pg(V2)
2	-Sense	not used	+pg(V2)
3	V trim	not used	inhibit(V2)
4	I trim	common	common(V2)
5	+inhibit/enable	-pg	-pg(V1)
6	-inhibit/enable	+pg	+pg(V1)
7	+power good	inhibit	inhibit(V1)
8	-power good	common	common(V1)

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Product Specification

Voltage Adjustment - Local

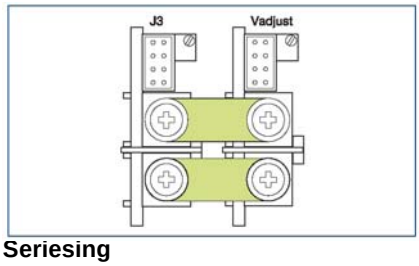
The multi-turn potentiometer that adjusts each output within the specified range may be accessed via the output panel of the power supply. Clockwise rotation increases output voltage. Resolution is approximately 5% of nominal voltage (Vnom) per turn.

Voltage Adjustment - Remote (resistive / electronic)

The output voltage may be adjusted or trimmed by means of an external resistor or potentiometer network connected to the Vtrim pin. Linear Electronic programming is also possible and may be implemented according to the formula Vout = K Vcontrol. See Powerstax MS1U series Designers' Manual for full details.

Paralleling

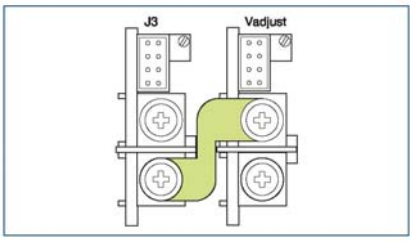
To achieve increased current capacity, simply parallel outputs using the standard parallel links. Powerstax 'wireless' sharing ensures that current hogging is not possible.



Standard parallel links can be supplied. To order, please use part number XP1.

Seriesing

To achieve increased output voltages, simply series outputs using standard series links, paying attention to the requirements to maintain SELV levels if required in your system.



Standard serial links can be supplied. To order, please use part number XS1.

Remote Sensing

When the load is remote from the power supply, the remote sense pins may be used to compensate for drops in the power leads. Where the power cabling contributes significant dynamic impedance, see MS1U series Designers' Manual.

Bias Voltage

A SELV isolated 5V (always on) bias voltage rated at 250mA is provided on J2 to facilitate miscellaneous control functions.

Current Limit Adjustment

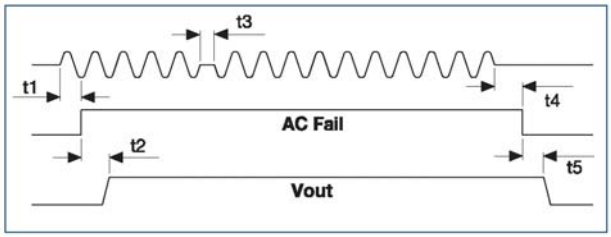
The output current limit setting may be adjusted (downwards only) by means of an external resistor connection to the I trim pin.

Inhibit/Enable

Inhibiting may be implemented either globally or on a per module basis (Power Unit or Power Module inhibiting). Reverse logic (Enabling) may also be implemented, see MS1U series Designers' Manual.

AC Fail

Open collector signal indicating that the input voltage has failed or is less than 80Vac. This signal changes state giving 5mS of warning before loss of output regulation. See MS1U series Designers' Manual for full specifications.

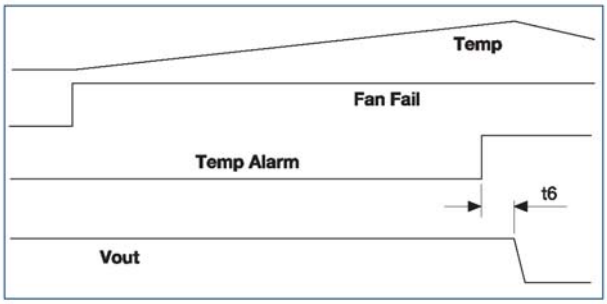


Temperature Alarm (Option 01)

Open collector signal indicating excessive Power Unit temperatures due to fan failure or operation beyond ratings. This signal is activated at least 10ms prior to system shutdown.

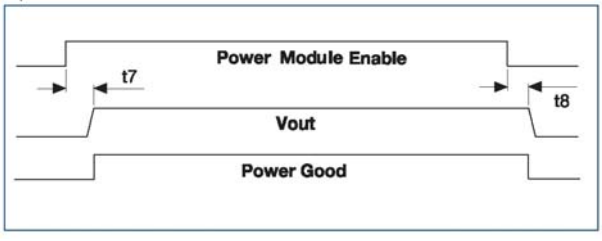
Fan Fail (Option 01)

Open collector signal indicating that at least one of the system fans have failed. This does not cause system shutdown.



Power Good

Opto-isolated output signal indicates that the Power Module is operating correctly and output voltage is within normal band. Opto transistor ON = Good.



Indication LEDs

Each Power Module has a visual indicator to identify that it is operating within normal ratings. Very useful for system diagnosis.

MULTISTAX RANGE

1U High AC-DC Plug & Play Power Supply Series

Product Specification

How to Order

Configured Units may be specified and ordered using the part numbering system shown below.

Accessories may be ordered directly using the part numbers shown.

Part Part No.
Left Slot Cover XB1
Inner Slot Cover XB2
Right Slot Cover XB3
Series Link XS1
Parallel Link XP1

Power Units may be ordered directly using the model number shown in the tables followed by the appropriate option code suffix. E.g. MS1U-6B-01 is the part number for 6 slot 700W Power Unit with thermal signals.

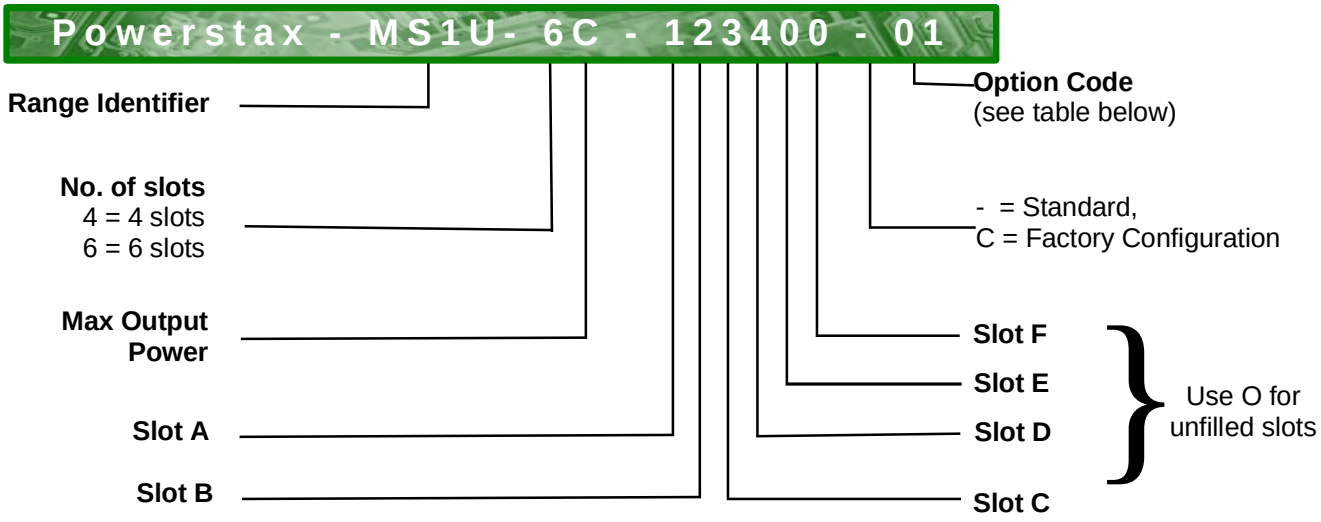
Power Modules may be ordered directly using the model numbers shown in the Power Module table. E.g. Mx2 is the part number for a 5V 40A module.

MS1U Option Codes

01 Thermal Signals
02 Reverse Fan (not available on 1200W models)

Preset Units

Units are shipped with nominal output voltages unless presetting is specified.
Powerstax can preset units to your exact requirements, through use of appropriate parallel and series links and through voltage adjustment to specific preset levels. Contact Powerstax plc for more details.



Eg; Product ref: Multistax MS1U 6C-123400-01

Multistax MS1U 6C-123400-01 specifies the following 1000W industrial power supply.

- 2.5V @ 50A 5V @ 40A 12V @ 20A 24V @ 10A
- Thermal signals suite fitted to Power Unit. **Note** that unused slots fitted with appropriate slot covers.

Powerstax plc
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