

NEVO+1200M

MEDICAL DATASHEET

AC/DC Modular Configurable PSU



1200W

Powerful

6" x 6" x 1.61"

Small

1.2kg

Light

The ultimate 1200 Watt configurable solution

The NEVO+1200M modular power series is the smallest in its class and the ultimate power solution for demanding medical applications where size, power density and weight are vital factors.

This innovative power supply delivers up to 1200W from a 6" x 6" x 1.61" package weighing only 1.2kg when fully configured. The NEVO+1200M consists of an input module with up to eight output modules ranging from 75W dual output to 300W single output. These outputs can be fitted without restriction in any combination to create a power solution with up to sixteen isolated outputs. A low noise fan option is available for use in even the quietest of environments.



MAIN FEATURES & BENEFITS

- Powerful 1200 Watt
- Small 6" x 6" x 1.61", 21W/in³
- User & field configurable
- Up to 16 isolated outputs
- 300W dual slot output modules
- Wide output voltage adjust range
- Primary side remote on/off function
- Lightest modular design, weighs only 1,2kg when fully configured (1000W/kg)
- Instant fully safety approved power solutions based on proven technology
- Approved to latest safety standards: IEC/UL60601-3rd Ed & IEC/UL60601-1-2 4th Ed (EMC)
- Remote current/voltage programming
- Constant current & voltage operation
- Efficiency up to 90%
- Intelligent fan control for optimised airflow
- Parallel & series connection of modules
- Accurate current sharing
- Standby ≤ power 3 Watts
- 2 x Standard 5V 1A bias supply
- Low noise fan option
- Series tracker & I²C options
- Supplier & technology consolidation
- 24-hour samples from distribution
- Field replaceable
- Eliminate custom design costs
- Expert technical support
- 3 year warranty

APPLICATIONS

MEDICAL	LAB & ANALYSIS	DISPLAY	LED	LASER	ROBOTICS	COMM
• Test & Measurement equipment	• Laboratory & Analysis equipment	• Display	• LED lighting	• Retrofit of legacy PSUs	• Lasers	
• Robotics	• Avionics					
• Oil & Gas						
• Telecommunications						



SPECIFICATIONS

INPUT MODULE SPECIFICATIONS						
Parameter	Details	Min	Typical	Max	Units	
AC Input Voltage	Nominal range is 100VRMS to 240VRMS	85	264	VRMS		
AC Input Frequency	Contact factory for 400Hz operation.	47	63	Hz		
DC Input Voltage	Not covered by safety approvals. Contact Vox Power.	120	300	VDC		
Output Power Rating	De-rate linearly from 1200Watts at 120VRMS to 850Watts at 85VRMS		1200	Watts		
Input Current	1200Watts output at 120VRMS input		12	Amps		
Input Current Limit	Maintains power factor		14	Amps		
Inrush Current	265VRMS, 25°C (cold start)		40	Amps		
Fusing	Live line fused (5x20 Fast acting)		12.5	Amps		
Efficiency	See graphs		86	%		
No load Power consumption	All outputs fitted and disabled/enabled		32/46	Watts		
Standby Power	Latched off state, 120Vrms		2.5	Watts		
Power Factor			0.96	0.99		
Holdup	1200Watts output at 120VRMS input	17	20	mS		
UVP	Turn on under voltage protection	78	84	VRMS		
Over temperature	Internally monitored.	115	125	°C		
Reliability ⁽¹⁾	Input module Fan (2 Fans per unit)		1.62	FPMH		
Warranty	Standard terms and conditions apply		2.7	FPMH		
Size	154.5 (L) x 152.4 (W) x 41.0 (H). See diagram for tolerance details		3	Years		
Weight	720 + 60 per output module			mm		
				Grams		
Note 1. 30°C base & ambient, 100% load, SR332 Issue 2 Method I, Case 3, Ground, Fixed, Controlled						

GLOBAL SIGNALS SPECIFICATIONS						
Parameter	Details	Min	Typical	Max	Units	
Bias Voltage	Two isolated Bias Outputs available	4.8	5	5.2	Volts	
Bias Current	Hiccup type current limit	0	1	1	Amps	
AC_OK Voltage	Low output level	0	0.2	1	Volts	
	High output level	3.5	4.5	5.2		
AC_OK Current		-10	20	mA		
Power Good Voltage	Low output level. internal 10kΩ pull down.	0	0	0	Volts	
	High output level. PNP open collector.	8	10	15		
Power Good Current	Open collector output. Current source only. All Slots.		20	mA		
Global Inhibit Voltage	Low input level	0	1	15	Volts	
	High input level	3	15			
Global Inhibit Current	5k input impedance.	0.6	3	mA		
Inhibit Voltage	Low input level. All slots.	0	1	15	Volts	
	High input level. All slots.	2.5	15			
Inhibit Current	10k input impedance. All slots.	0.25	1.5	mA		
Primary Bias voltage	Medically Isolated	4.8	5	5.2	Volts	
Primary Bias current	Hiccup type current limit		0.5	Amps		
Primary Remote On/Off	Negative Edge Triggered, Refer to User Manual		5	Volts		

OUTPUT MODULE SPECIFICATION SUMMARY												
MODEL	Output Voltage			Output Current	Rated Power	Peak Power	Load Reg.	Line Reg.	Cross Reg.	Ripple & Noise	FPMH ⁽¹⁾	Feature Set ⁽²⁾
	Min.	Nom.	Max.									
OP1	1.5V	5V	7.5V	25A	125W	187.5W	±50mV	±5mV	±10mV	50mV _{PP}	0.5	ABCDEFG
OP2	4.5V	12V	15V	15A	150W	225W	±100mV	±12mV	±24mV	120mV _{PP}	0.5	ABCDEF ^G
OP3	9V	24V	30V	7.5A	150W	225W	±150mV	±24mV	±48mV	240mV _{PP}	0.5	ABCDEF ^G
OP4	18V	48V	58V	3.75A	150W	217.5W	±300mV	±48mV	±96mV	480mV _{PP}	0.5	ABCDEF ^G
OP5	3.3V	12V	15V	5A	2x 75W	2x 75W	±50mV	±12mV	±24mV	240mV _{PP}	0.75	AFG
OPA2	4.5V	12V	15V	25A	300W	375W	±100mV	±12mV	±24mV	120mV _{PP}	0.5	ABCDEFGH
OPA3	9V	24V	30V	15A	300W	450W	±150mV	±24mV	±48mV	240mV _{PP}	0.5	ABCDEFGH
Note 1. Output module, 30°C base, 100% load, SR332 issue 2 Method I, Case 3, Ground, Fixed, Controlled												
Note 2. A = Remote Sense, B = External Voltage control, C = External constant current control, D = Current output signal, E = Current share, F = Over Voltage protection, G = Over temperature protection, H = Dual Slot module												
Note 3. Minimum Output levels achievable when using V-control and I-control may be >0 due to the minimum on-time of the PWM controllers.												

SAFETY SPECIFICATIONS						
Parameter	Details	Typical	Max	Units		
Isolation Voltages	Input to Output (2 MOPP). Do not perform test on assembled unit ⁽¹⁾ Input to Chassis (1 MOPP) Global signals (J2) to Output/Chassis Output to Output/Chassis (Standard modules)		4000 1500 250 250	VAC VAC VDC VDC		
Earth Leakage Current	Normal condition, 264Vac, 63Hz, 25°C	209	300	uA		
Touch Leakage Current	Output to Earth. Standard modules 264Vac, 63Hz, 25°C NC/SFC	13/209	20/250	uA		
Patient Leakage Current	Standard modules 264Vac, 63Hz, 25°C NC/SFC ⁽²⁾	-----	-----	uA		

Note 1. Testing an assembled unit to 4000V_{AC} may cause damage. Please refer to application note (APN-002) on Vox Power website or contact Vox Power representative.

Note 2. Not Applicable

INSTALLATION SPECIFICATIONS			
Parameter	Details	Parameter	Details
Equipment class	I	Flammability Rating	94V-2
Overvoltage category	II	Ingress protection rating	IP10
Material Group	IIIb (indoor use only)	ROHS compliance	2011/65/EU & 2015/863/EU
Pollution degree	2	Intended usage environment	Home Healthcare

ENVIRONMENTAL SPECIFICATIONS

Parameter	Details	Non-Operational		Operational		Units
		Min	Max	Min	Max	
Air Temperature	Operational limits subject to appropriate de-ratings	-40	+85	-20	70	°C
Humidity	Relative, non-condensing	5	95	5	95	%
Altitude		-200	5000	-200	3000	m
Air Pressure		52	106	69	106	kPa
Noise Level	Variable. Measured 1m from fan intake.	-	-	42	65	dBA
Shock	3000 bumps at 10G (16ms) half sine wave					
Vibration	1.5G 10 to 200Hz sine wave, 20G for 15min in 3 axes random vibration					

ELECTROMAGNETIC COMPLIANCE – EMISSIONS

Phenomenon	Basic EMC Standard	Test Details		Units
		Min	Max	
Radiated emissions, electric field	EN55011/32, FCC			Class A compliant (See note for Class B)
Conducted emissions	EN55011/32, FCC part 15, CISPR 32/11			Class B compliant
Harmonic Distortion	IEC61000-3-2			Compliant
Flicker & Fluctuation	IEC61000-3-3			Compliant

Note: To meet Class B radiated emissions the end user should add ferrites to I/P and O/P cables. Consult Vox Power for details.

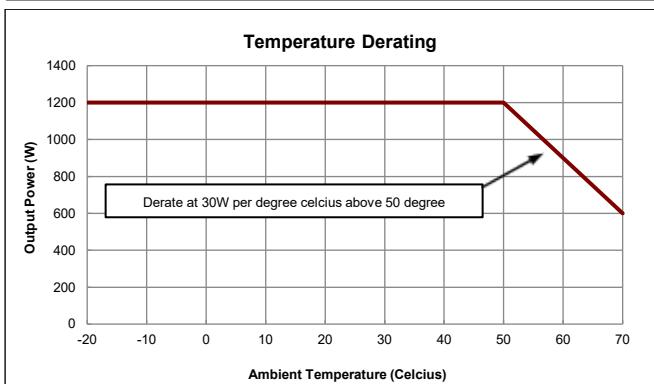
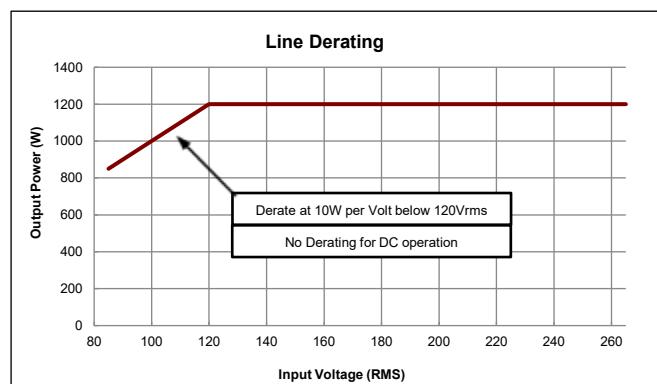
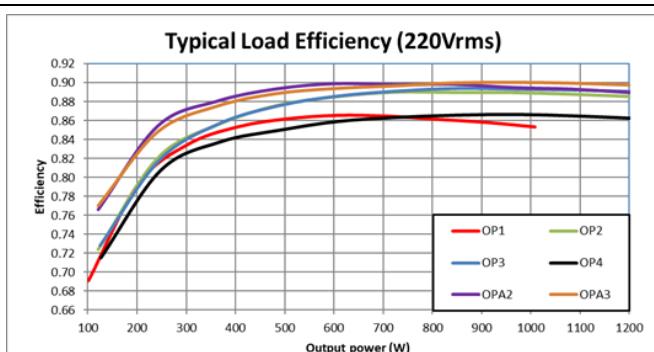
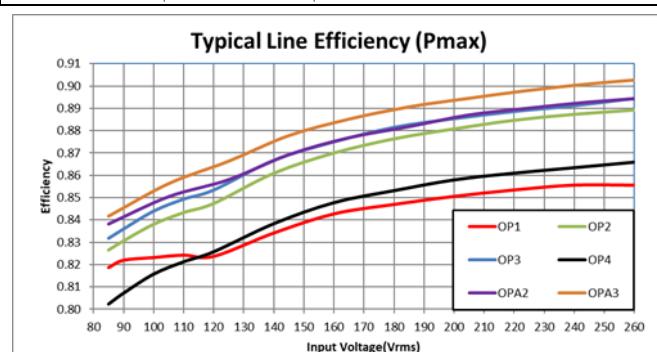
ELECTROMAGNETIC COMPLIANCE – IMMUNITY

Phenomenon	Basic EMC Standard	Test Details		Units
		Min	Max	
Electrostatic discharge	IEC61000-4-2			Test level 4: 15kV air, 8kV contact
Radiated RF EM fields	IEC61000-4-3			Test Level 3: (10V/m, 80MHz-2.7GHz) sine wave AM 80% 1kHz
Proximity fields from RF wireless communications equipment	IEC61000-4-3			Test levels as per IEC60601-1-2:2014 Table 9
Electrical Fast Transients/bursts	IEC61000-4-4			Test Level 3: (2kV Power, 1kV I/O) 5kHz(ed3) & 100kHz(ed4)
Surges	IEC61000-4-5			Test Level 3: 1kV L-N, 2kV L-E
Conducted disturbances induced by RF fields	IEC61000-4-6			Test Level 3: 10V, 0.15 to 80MHz sine wave AM 80% 1kHz
Power Frequency Magnetic Fields	IEC61000-4-8			Test level 4: 30A/m 50Hz
Voltage Dips	IEC61000-4-11& SEMI-F47-0706 ⁽²⁾			0% 10ms, 0% 20ms, 80% 1s, 80% 10s, 90% continuous (Criterion A) 70% 0.5s, 40% 0.2s (Criterion A at 240V and Criterion B at 100V)
Voltage interruptions	IEC61000-4-11			0% 250/300 cycle as per IEC60601-1-2:2014 (Criterion B)

Notes: 1. Criterion A = No degradation of performance or loss of function.
Criterion B = Temporary degradation of performance or loss of function is allowed, provided the function is self-recoverable.
Criterion C = Temporary loss of function is allowed but requires operator intervention to recover.
2. Tested at nominal range (100V to 240V). Line deratings applied where appropriate.

AGENCY APPROVALS

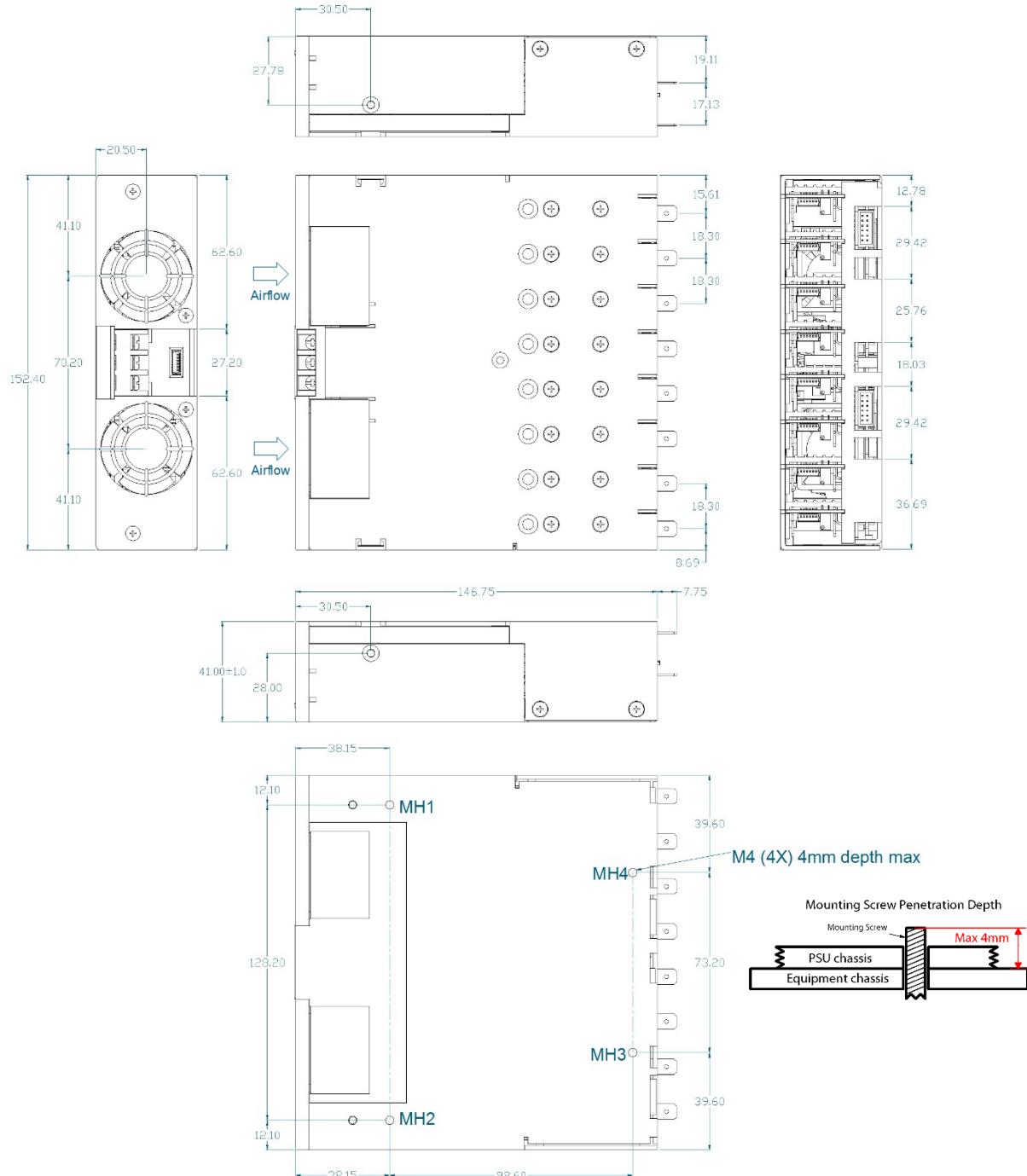
Standard	Details	File
IEC 60601-1:2005 + CORR1 2006 + CORR2: 2007 + A1:2012	Medical electrical equipment Part 1: General requirements for basic safety and essential performance	UL: E316486
EN60601-1:2006 + A11:2011 + A1:2013 + A12:2014	Medical electrical equipment Part 1: General requirements for basic safety and essential performance	
CAN/CSA-C22.2 No. 60601-1 (2008)	Medical Electrical Equipment Part 1: General Requirements for Basic Safety and Essential Performance	
ANSI/AAMI ES60601-1 (2005 + C1:09 + A2:10)	Medical Electrical Equipment Part 1: General Requirements for Basic Safety and Essential Performance	
CE MARK	LVD 2014/35/EU, EMC 2014/30/EU, RoHS 2011/65/EU	
CB certificate and report available on request		



MECHANICAL DIMENSIONS AND MOUNTING SCREWS

LOCATION	DETAILS	PENETRATION	TIGHTENING
MOUNTING	M4	4mm max, including chassis	0.5 NM
OUTPUT MODULES	M3 x 5, Countersink Posi, 16 Places	Defined by screw	0.5 NM
CHASSIS LID AND FACEPLATE	M3 x 5, Countersink Posi, 9 Places M3 x 30, Countersink Posi, 2 Places	Defined by screw	0.5 NM

Torque settings are for general reference only. The torque settings shown are the insert manufacturers recommended values.



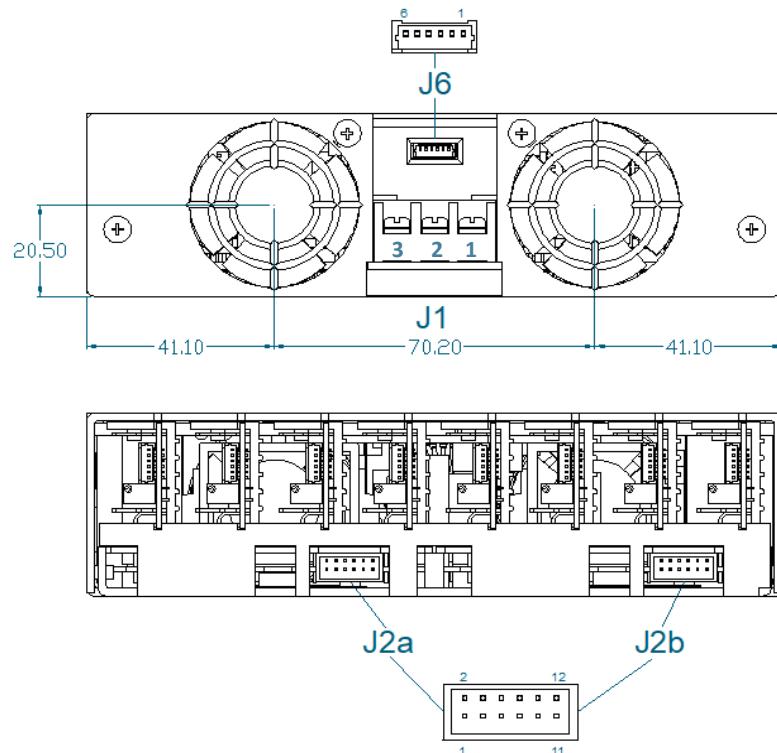
TOLERANCES unless otherwise stated - All dimensions in mm and according to DIN 2768-1/-2 CLASS C
Airflow direction cannot be reversed

CONNECTORS

PINOUTS	
J1	
Circuit	Details
1	Live
2	Earth
3	Neutral

J2a/b	
Circuit	Details
1	Power Good
2	Inhibit
3	Power Good
4	Inhibit
5	Power Good
6	Inhibit
7	Power Good
8	Inhibit
9	Global Inhibit
10	AC OK
11	+5V 1A Bias Supply
12	COM

J6	
Circuit	Details
1	Common
2	+5V 500mA Bias
3	Shut Down
4	Reserved
5	Reserved
6	Reserved



REF.	DETAILS	MANUFACTURER	HOUSING	TERMINAL
J1	MAINS INPUT: 3 Pin, Barrier, 6-32 Steel Screws, 0.67NM or 6IN LB Torque Cable 14-18AWG, 300V, 16A, 105°C, use appropriately rated fork or ring terminal.	MOLEX	N/A	SNBL2-3.7
J2a/b	GLOBAL SIGNALS: 12 Pin, 2mm, without Friction Lock, 24-30 AWG	MOLEX	511101251	503948051
J6	INPUT BIAS: OUTPUT SIGNALS: 6 Pin, 1.25mm, with Friction lock, 28-32 AWG	MOLEX	510210600	500588000

Notes

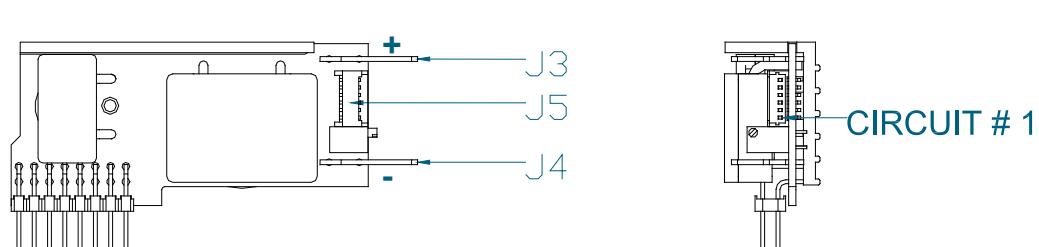
1. Direct equivalents may be used for any connector parts.
2. All cables must be rated 105°C min, equivalent to UL1015

SINGLE OUTPUT MODULE CONNECTORS

PINOUTS	
J3	
Circuit	Details
1	Positive output

J4	
Circuit	Details
1	Negative output

J5	
Circuit	Details
1	-Sense
2	+Sense
3	Voltage control
4	Current control / share / out
5	COM
6	+5V local bias supply

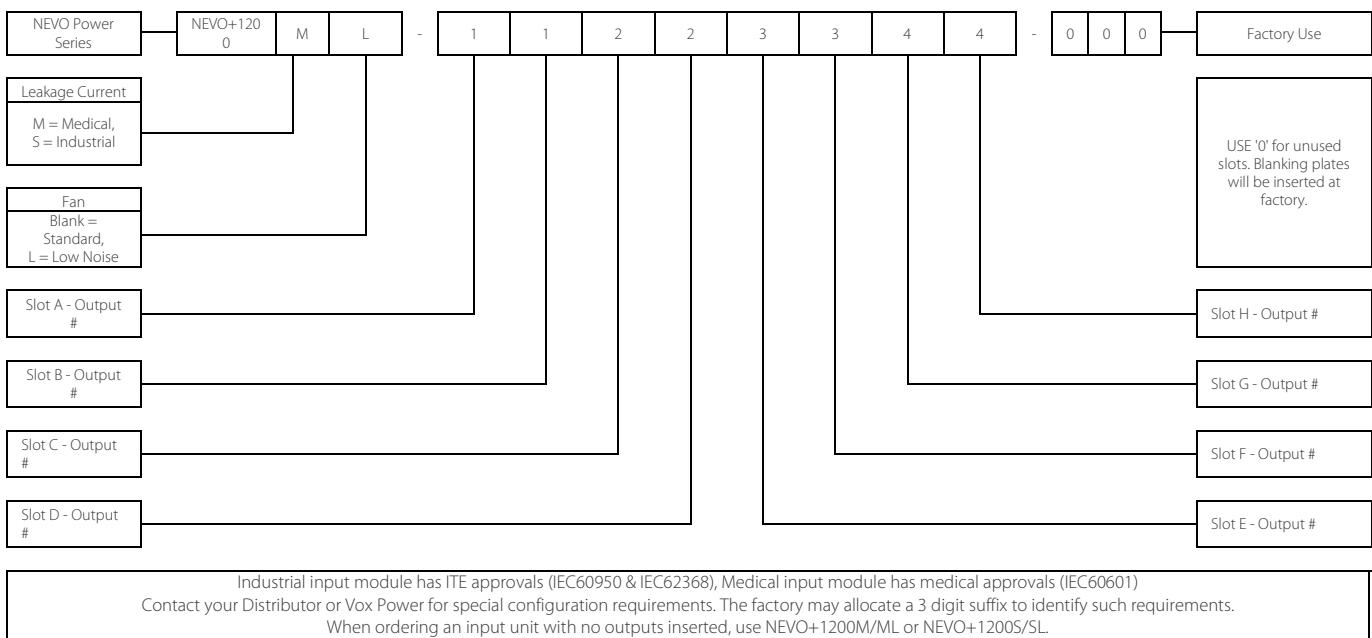


REF.	DETAILS	MANUFACTURER	HOUSING	TERMINAL
J1	MAINS INPUT: 3 Pin, 5.08mm, with Friction Lock, 18-24 AWG	MOLEX	10013036	0008701031
J2	GLOBAL SIGNALS: 12 Pin, 2mm, without Friction Lock, 24-30 AWG	MOLEX	511101251	0503948051
J3/4(1)	OUTPUT POWER TERMINAL: TAB SIZE 6.35mmx0.8mm	VARIOUS		VARIOUS
J5	OUTPUT SIGNALS: 6 Pin, 1.25mm, with Friction lock, 28-32 AWG	MOLEX	0510210600	0500588000

Notes

1. Terminal and wire current rating must exceed maximum short circuit output current. E.g. Output 1 = 25A*1.25 = 31.25Amps
2. Direct equivalents may be used for any connector parts
3. All cables must be rated 105°C min, equivalent to UL1015

PART NUMBERS AND ORDERING INFORMATION



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