



NV-Power Medical

180/200 Watts, flexible power solution

- Reinforced Input to Output Isolation for IEC60601
- Low Earth Leakage and Class B EMC
- Medical Approval
- High Efficiency
- High Power Density (9.3W/in³)
- Up to 3 outputs
- No minimum load
- Fits 1U applications
- 3 Year Warranty

Key Market Segments & Applications

Medical	Broadcast
Instrumentation	ATE
Automation	Industrial Computing
Security	Lifesciences/Laboratory
Network Servers and Routers	

Features and Benefits

Features

- High Efficiency
- Low Profile
- High Power Density

Benefits

- Minimises heat in system
- Fits 1U applications
- Less Space

INPUT			
Input Voltage	90 - 264Vac (100 - 240Vac nominal)	Input Frequency	45 - 63Hz
Input Harmonics	EN61000-3-2 compliant	Inrush Current	<40A at 25°C and 264Vac, (cold start)
Input Fuse	Fast acting (not user accessible)	Power Factor	0.97 typical
Earth Leakage Current	123µA max at 120Vac (60Hz), 257µA max at 240Vac (60Hz). Worst case leakage current is less than 300µA at 264Vac, 63Hz (normal condition, 500µA Single Fault Condition) Lower leakage versions available. Contact sales office for details		

ISOLATION			
Input to Output	Reinforced	4kV (ac)	type tested to 4kVac (equivalent to 5.7kVdc), production tested to 4.3kV (dc)
Input to Earth	Basic	2.3 kV (dc)	Output to Earth 200 V (dc)

QUICK SELECTOR - preferred configurations				
Model	CH1	CH3	CH4	
NV1-1T000-M	12V / 15A	-	-	
NV1-1G000-M	24V / 7.5A	-	-	
NV1-3G0TT-M	24V / 7.5A	12V / 5A	-12V / 1A	
NV1-3G0FF-M	24V / 7.5A	15V / 5A	-15V / 1A	

Above Units available on rapid delivery.

Additional variants available 'Build to Order' - see below

AVAILABLE OUTPUTS						
Channel 1	Adjustment Range	Channel 2	Channel 3 ₁	Adjustment Range	Channel 4 ₂	Adjustment Range
T 12V / 15A F 15V / 12A	12 - 15V ₃ 12 - 15V ₄	Not available	T 12V / 5A F 15V / 5A G 24V / 2.5A O Omit	12 - 15V 12 - 15V 18 - 24V	T -12V / 1A F -15V / 1A 3HP +3.3V / 2A ₆ 5HP +5V / 2A ₆ TH -12V / 2A ₆ FH -15V / 2A ₆ OH Fan supply only O Omit	Fixed Fixed Fixed Fixed Fixed Fixed
G 24V / 7.5A	24 - 28V ₅					

1. Follow letters in red by 'Y' for negative output channel 3.

2. Follow letters in red by 'P' for positive output channel 4.

3. 12 - 12.5V if 24V channel 3 fitted.

4. 14.5 - 15V if 24V channel 3 fitted.

5. 24 - 26V if 24V channel 3 fitted.

6. 1.5A max if fitted with '-F' option.

Other output options are available, please contact factory with your requirements.

OUTPUT SPECIFICATION		
Remote Sense	Yes	Channel 1 - Max 0.5V total line drop.
Total Regulation	1%	Including Line (for 90-264Vac input change), Load (for 0-100% load change) and Cross (for 0-100% load change on any other output) regulation
Ripple & Noise	1%	(or 50mV if higher) pk-pk, using EIAJ test method & 20MHz bandwidth
Voltage Accuracy	±1%	±4% for Channel 4 with 'T' or 'F' type outputs, +4%/-3% for all other Ch 3
Turn on Time	1.5s max	at 90 Vac & 100% rated output power
Efficiency	up to 90%	configuration dependent
Hold up	16ms min	at 90 Vac
Min Load	None	on any output
Transient Response	<4%	of set voltage for 50% load change (in 50µs within the range 25 - 100% load)
Recovery	<500µs	for recovery to 1% of set voltage
Short circuit protection	Yes	
Over Temperature protection	Yes	
Over Voltage Protection	Yes	See Application Notes for details
Ch1 Good Signal	Yes	Provides a Logic 'Low' signal after Channel 1 output is within 90% (±5%) of nominal.
Peak Output Power	200W	Single output units. Average output power must not exceed 180W over any 5 minute period.

HOW TO CREATE A PRODUCT CODE		
Number of outputs NV1- #o/p Ch1 0 Ch3₂ Ch4₃ Case Option -M Connector Option Ch1, Ch3, Ch4 Letter/number from table on pg 1 to represent output voltage. Medical with reinforced input to output isolation. (Blank = standard, vertical connector) R = Right angled connector (see handbook for 'R' connection and mechanical details) (Blank = no case) -C = U Chassis + Cover -U = U Chassis -F = End fan + case₁ -I = End fan + case + IEC inlet₁		
- Needs 0H, 3H, 5H, TH or FH type channel 4. The fan speed is temperature dependent, ensuring optimum cooling and lowest audible noise. - For Negative Output Channel 3, follow chosen letter by 'Y'. For example, TY channel 3 = -12V / 5A - For Positive Output Channel 4, follow chosen letter by 'P'. For example, TP channel 4 = +12V / 1A		
		Confirm availability of created product code with the factory

ENVIRONMENT	
Temperature	0°C to 50°C operational, -40°C to 70°C storage (max 12 months). Full load, with either '-F' option fitted or 2m/s air blown from input to output (approximately 10CFM)
Convection Rating	See Application note for details
Derating	50°C to 65°C derate each output by 2.5% per °C
Low Temp Startup	-20°C
Humidity	5 - 95% RH non condensing
Shock	±3 x 30g shocks in each plane, total 18 shocks 30g shock = 11ms (+/-0.5msec), half sine Conforms to EN60068-2-27, EN60068-2-47, IEC68-2-27, IEC68-2-47, JIS C0041-1987. Conforms to MIL-STD-810E/F, Method 516.5, Pro I, IV, VI
Vibration	Single axis 10 - 500 Hz at 2g (sweep and endurance at resonance) in all 3 planes Conforms to EN60068-2-6, IEC68-2-6 Conforms to MIL-STD-810E, Method 514.4, Pro I, Cat 1,9
Altitude	3,000 metres operational
Pollution	Degree 2, Material group IIIb

IMMUNITY EN61000-6-2:2001				Criteria
Electrostatic Discharge	EN61000-4-2	Level 4	Air discharge 15kV Contact discharge 8kV Not applicable to open frame units	A
Electromagnetic Field	EN61000-4-3	Level 3	(12V/m)	A
Fast / Burst Transient	EN61000-4-4	Level 4	(tested to 4.4kV)	A
Surge Immunity	EN61000-4-5	Level 3	Common mode - 2.2kV Differential - 1.1kV	A
Conducted RF Immunity	EN61000-4-6	Level 3	(12V)	A
Power Frequency Magnetic Field	EN61000-4-8	Level 4	(30A/m)	A
Voltage Dips, Variations, Interruptions	EN61000-4-11	Class 3	Criteria B for 5 sec interruption	A

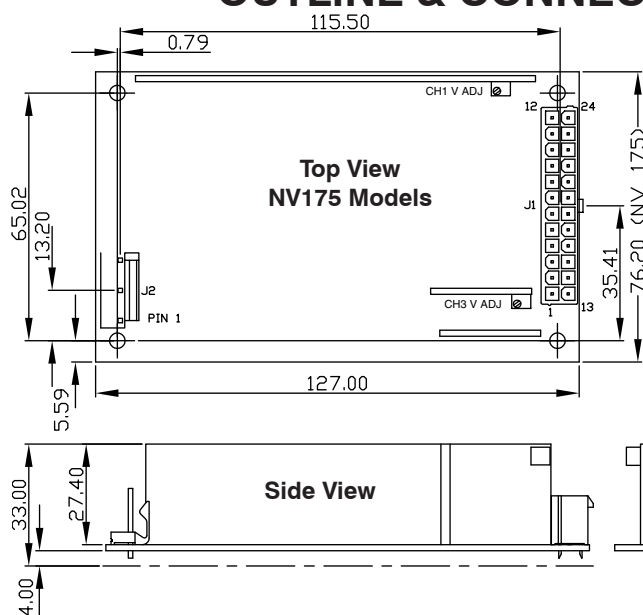
EMISSIONS EN61000-6-3:2001, EN60601-1-2:2001

Radiated Electric Field	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B (2005) see application note for details. Additional filtering required for IEC inlet version.
Conducted Emissions	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B (2005)
Conducted Harmonics	EN61000-3-2	Class A
Flicker	EN61000-3-3	Compliant - d _{max} only

SAFETY APPROVALS

	Date	Amendments		Date	Amendments
EN 60950-1	2006		EN 61010-1	2001	
UL 60950-1	2007		IEC 61010-1*	2001	
CSA 22.2 No 60950-1	2003		IEC 60601-1*	1988	A1, A2
IEC 60950-1*	2005		EN 60601-1	1990	A1, A2, A13
CE Mark	LV Directive 2006/95/EC (EN60950-1)		UL 60601-1	2003	with revisions 2006
* CB certificate and Report available on request			Check with factory for status of approvals		

OUTLINE & CONNECTION DRAWINGS

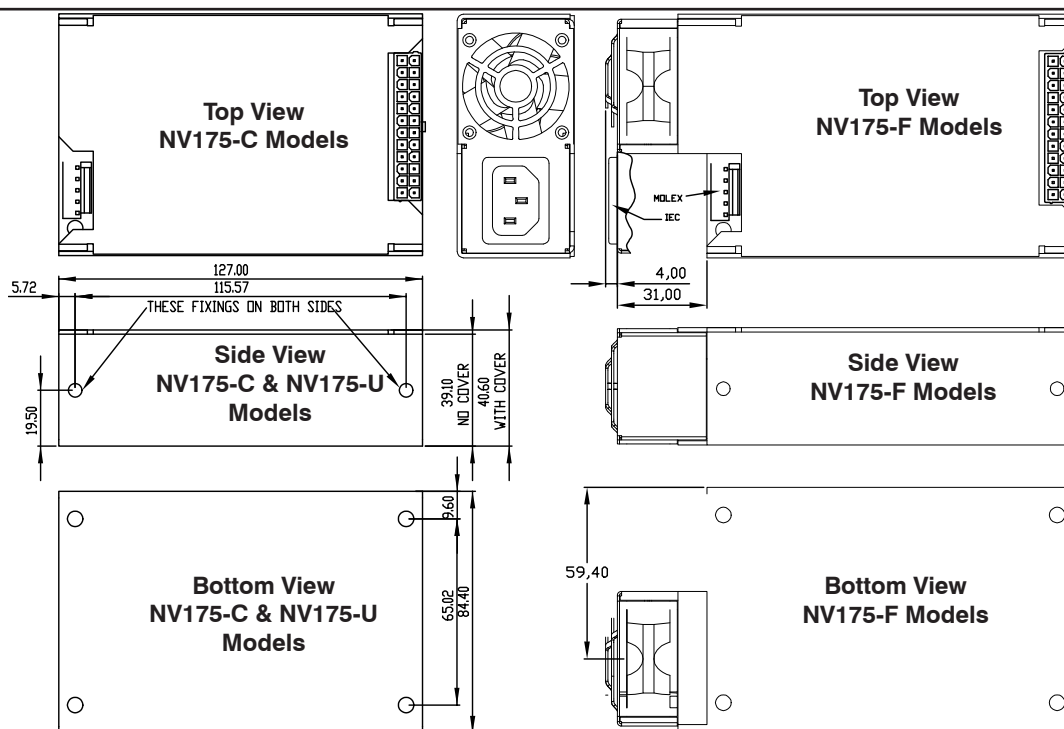


MATING PARTS (MOLEX OR EQUIVALENT)

CONN	HOUSING	PINS
J1	39-01-2245	44476-3112
J2	09-50-8051	08-52-0113

PIN	FUNCTION	PIN	FUNCTION
12	STANDBY +Ve	24	Do not connect
11	Do not connect	23	Do not connect
10	CH1 OUTPUT	22	CH1 POWER GOOD
9	CH1 OUTPUT	21	CH1 OUTPUT
8	CH1 OUTPUT	20	CH1 OUTPUT
7	+SENSE CH1	19	-SENSE CH1
6	0V COMMON	18	0V COMMON
5	0V COMMON	17	0V COMMON
4	Do not connect	16	0V COMMON
3	Do not connect	15	Do not connect
2	Do not connect	14	Do not connect
1	CH3 OUTPUT	13	CH4 OUTPUT

PIN	FUNCTION
1	EARTH
2	NDT CONNECTED
3	LIVE
4	NDT CONNECTED
5	NEUTRAL



Notes 1. All customer fixings M3

2. Maximum Penetration 4.5mm

3. Maximum torque 0.9Nm

4. All tolerances +/-0.5mm

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