

NV-Power

175/180/200 Watts, flexible power solution

- High Efficiency
- High Power Density (9.3W/in³)
- Up to 5 outputs
- No minimum load
- Fits 1U applications
- Medical Approval
- 3 Year Warranty
- Temperature controlled Fan Option

Key Market Segments & Applications

Instrumentation

Medical

Automation

Security

Network Servers and Routers

Broadcast

ATE

Industrial Computing

Lifesciences/Laboratory

Features and Benefits

Feature

- ◆ High Efficiency
- ◆ Low Profile
- ◆ High Power Density

Benefit

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

INPUT

Input Voltage	90 - 264Vac / 120 - 350Vdc	Input Frequency	45 - 63Hz (440Hz with reduced PFC - consult factory)
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)		

AVAILABLE OUTPUTS

Channel 1	Adjustment Range	Channel 2 ₁	Adjustment Range	Channel 3 ₃	Adjustment Range	Channel 4 ₄	Adjustment Range
5 5V / 25A ₂	5 - 5.5V	1 1.8V / 15A	0.9 - 2.5V	T 12V / 5A F 15V / 5A G 24V / 2.5A 0 Omit	12 - 15V 12 - 15V 18 - 24V	T -12V / 1A	Fixed
		2 2.7V / 15A	2.5 - 3.3V			F -15V / 1A	Fixed
		3 3.3V / 15A	2.5 - 3.3V			3H -3.3V / 2A ₉	Fixed
T 12V / 15A	12 - 15V ₅	5 5V / 10A ₁₀	3.3 - 5.5V	0 Omit	18 - 24V	5H -5V / 2A ₉	Fixed
F 15V / 12A	12 - 15V ₆	0 Omit				TH -12V / 2A ₉	Fixed
G 24V / 7.5A	24 - 28V ₇	5 5V / 8A ₈	3.3 - 5.5V	0 Omit		FH -15V / 2A ₉	Fixed
		0 Omit				0H Fan supply only	
		0 Omit				0 Omit	

1. 1.8V, 2.7V, 3.3V channel 2 only available with 5V Channel 1
2. Maximum combined output current from Ch1 & Ch2 = 25A
3. Follow letters in red by 'Y' for negative output channel 3.
4. Follow letters in red by 'P' for positive output channel 4.
5. 12 - 12.5V if 24V channel 3 fitted.
6. 14.5 - 15V if 24V channel 3 fitted.
7. 24 - 24.5V if 5V channel 2 fitted
8. 7A max with '-F' or '-I' option.
9. 1.5A max with '-F' or '-I' option.
10. 9A max with '-F' or '-I' option.

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

ISOLATION						
Input to Output	Reinforced	4.3kV (dc)	Note: Basic for IEC/EN/UL/CSA60601-1. Medical Reinforced version available, contact factory for details			
Input to Earth	Basic	2.3 kV (dc)	Output to Earth	200 V (dc)		

OUTPUT SPECIFICATION		
Remote Sense	Yes	Channels 1 & 2 - 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 4
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 with 12V, 15V or 24V (T, F or G). Average output power must not exceed 180W over any 5 minute period.

HOW TO CREATE A PRODUCT CODE

NV1-	#o/p	Ch1	Ch2	Ch3 ₂	Ch4	Global Option	Case Option	Connector Option
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Number of outputs (excluding standby supply) → #o/p

Ch1 - Ch4 Letter/number from table on pg 1 to represent output voltage.

Global Option: (Blank = standard, vertical connector)
-R = Right angled connector (see handbook for -R connection and mechanical details)

Case Option: (Blank = no case)
-C = U Chassis + Cover
-U = U Chassis
-F = End fan + case₁
-I = End fan + case + IEC inlet₁

Connector Option: (Blank = no option)
-N = 5V/2A
-N1 = 12V/1A
-N2 = 13.5/1A
-N3 = 5V/2A ATX compatible
-N4 = 12V/1A ATX compatible

- 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

Confirm availability of created product code with the factory

QUICK SELECTOR - preferred configurations						
Model	CH1	CH2	CH3	CH4	CH5	Global Option ₁
NV1-1T000	12V / 15A	-	-	-	-	No
NV1-1G000	24V / 7.5A	-	-	-	-	No
NV1-453TT	5V / 25A	3.3V / 15A	12V / 5A	-12V / 1A	-	No
NV1-453TT-N3	5V / 25A	3.3V / 15A	12V / 5A	-12V / 1A	5V / 2A	ATX (-N3)
NV1-453FF	5V / 25A	3.3V / 15A	15V / 5A	-15V / 1A	-	No
NV1-453FF-N3	5V / 25A	3.3V / 15A	15V / 5A	-15V / 1A	5V / 2A	ATX (-N3)
NV1-4G5TT	24V / 7.5A	5V / 8A	12V / 5A	-12V / 1A	-	No
NV1-4G5TT-N3	24V / 7.5A	5V / 8A	12V / 5A	-12V / 1A	5V / 2A	ATX (-N3)
NV1-4G5FF	24V / 7.5A	5V / 8A	15V / 5A	-15V / 1A	-	No
NV1-4G5FF-N3	24V / 7.5A	5V / 8A	15V / 5A	-15V / 1A	5V / 2A	ATX (-N3)

Above Units available on rapid delivery. Additional variants available 'Build to Order' - see above

1. see page 3 for details of global option

GLOBAL SIGNALS (-N, -N1 and -N2 Option Models)	
Remote on/off	TTL logic level high inhibits all outputs (except Standby)
Power Good	Open collector output (referenced to PSU 0V). Turns on to indicate ac supply is good and output 1 is within regulation.
Standby Supply	Isolated supply, not affected by remote on/off -N option = 5V / 2A (2.5A peak) -N1 Option = 12V / 1A -N2 Option = 13.5V / 1A

GLOBAL SIGNALS (-N3 and -N4 Option Models)	
ATX Remote on/off	TTL logic level high or open circuit will inhibit all outputs (except Standby)
ATX Power Good	Logic high indicates ac supply is good and output 1 is within regulation.
Standby Supply	Common 0V with power supply. Not affected by ATX remote on/off -N3 Option = 5V / 2A -N4 Option = 12V / 1A.

IMMUNITY EN61000-6-2:2001				Criteria
Electrostatic Discharge	EN61000-4-2	Level 3	Air discharge 8kV Contact discharge 4kV 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

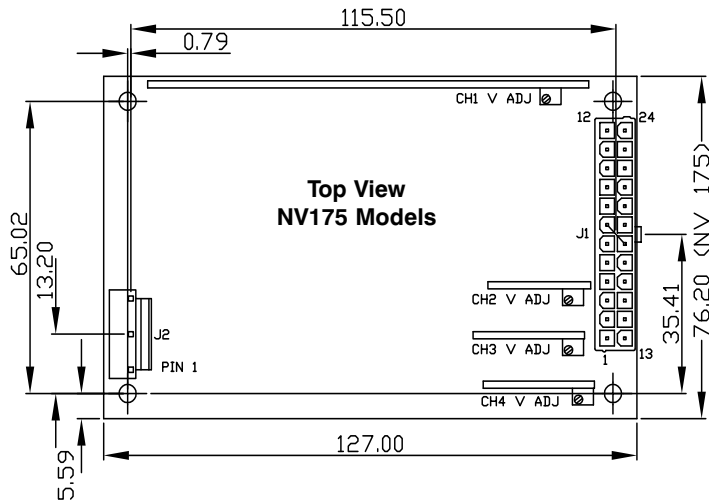
EMISSIONS EN61000-6-3:2001, EN60601-1-2:2001			
Radiated Electric Field	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B see application note for details	
Conducted Emissions	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B	
Conducted Harmonics	EN61000-3-2	Class A	
Flicker	EN61000-3-3	Compliant - d _{max} only	

ENVIRONMENT	
Temperature	0 to 50°C operational, -40°C to 85°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 to 70°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 514.4, Pro I, Cat 1,9
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 516.5, Pro I, IV, VI
Altitude	3,000 metres operational
Pollution	Degree 2, Material group IIIb

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	
IEC 60950-1*	2005		EN 60601-1	1990	A1, A2
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

All drawings relate to both 175W and 180W versions

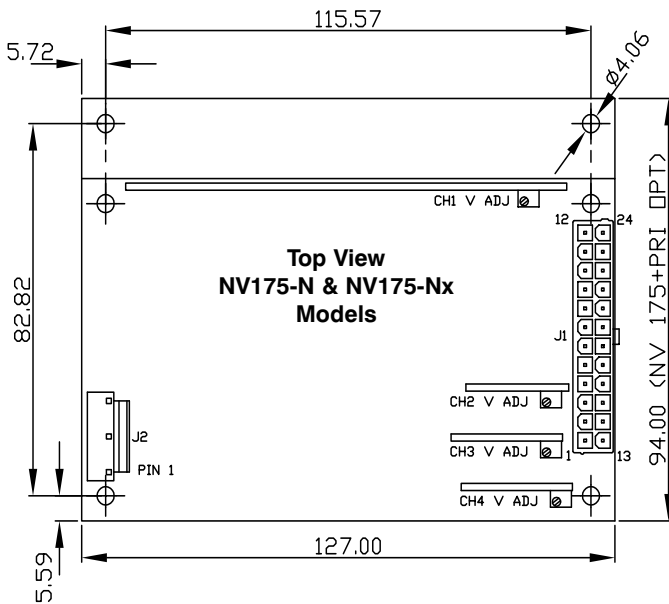


J2

PIN	FUNCTION
1	EARTH
2	NOT CONNECTED
3	LIVE
4	NOT CONNECTED
5	NEUTRAL

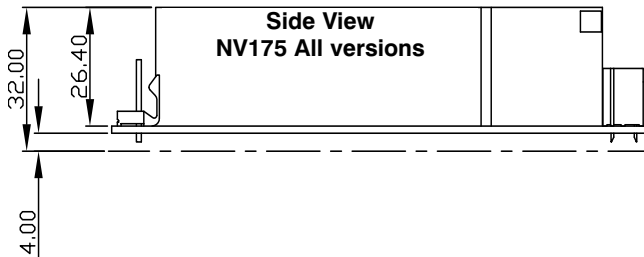
J1

PIN	FUNCTION	PIN	FUNCTION
12	STANDBY +Ve	24	STANDBY RETURN
11	POWER GOOD	23	REMOTE ON/OFF
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	CH2 OUTPUT	16	0V COMMON
3	CH2 OUTPUT	15	CH2 OUTPUT
2	+SENSE CH2	14	-SENSE CH2
1	CH3 OUTPUT	13	CH4 OUTPUT

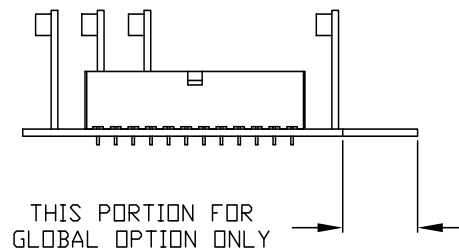


MATING PARTS (MOLEX OR EQUIVALENT)

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

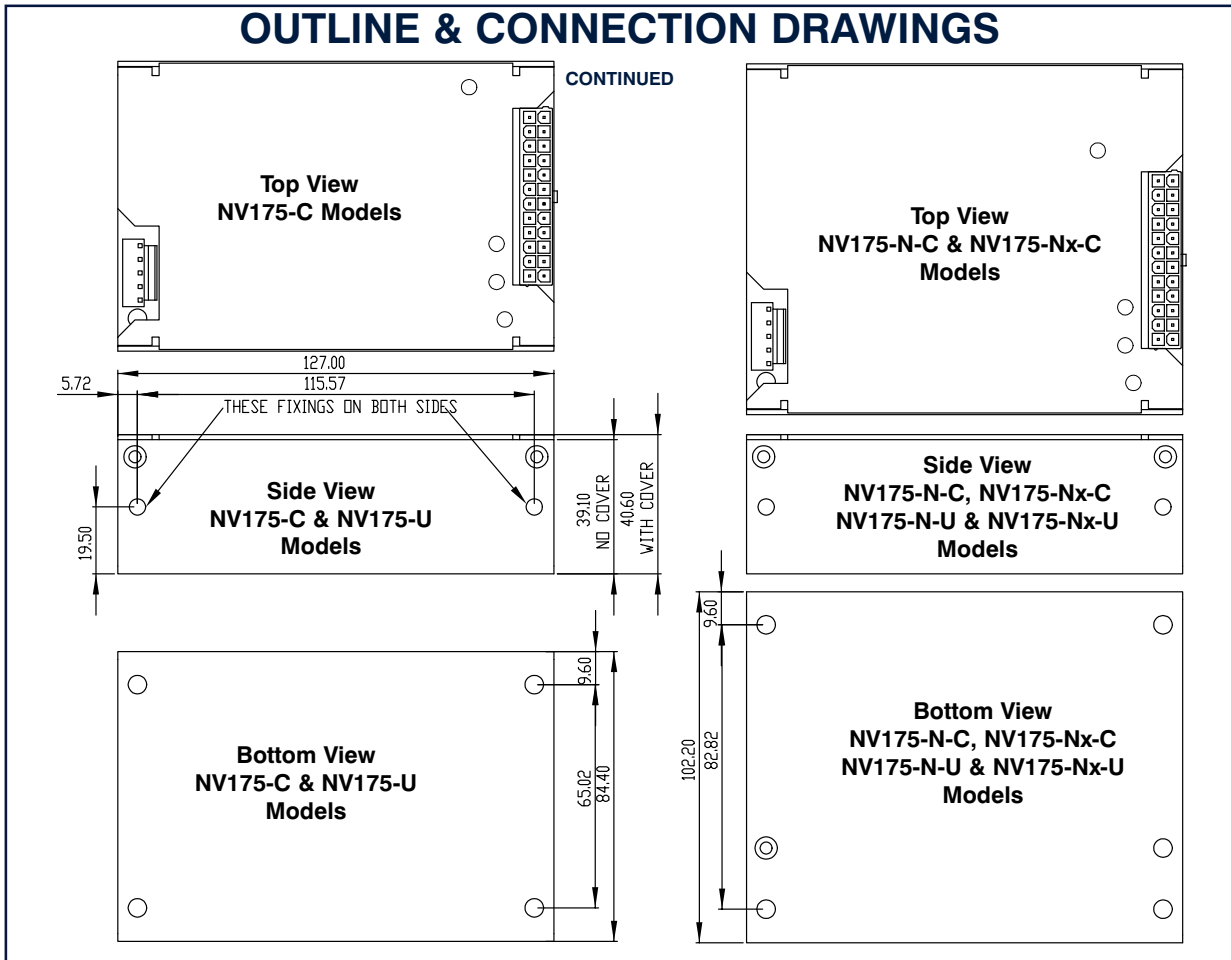


End View



Notes 1. All customer fixings M3 2. Maximum Penetration 4.5mm 3. Maximum torque 0.9Nm 4. All tolerances +/-0.5mm

OUTLINE & CONNECTION DRAWINGS

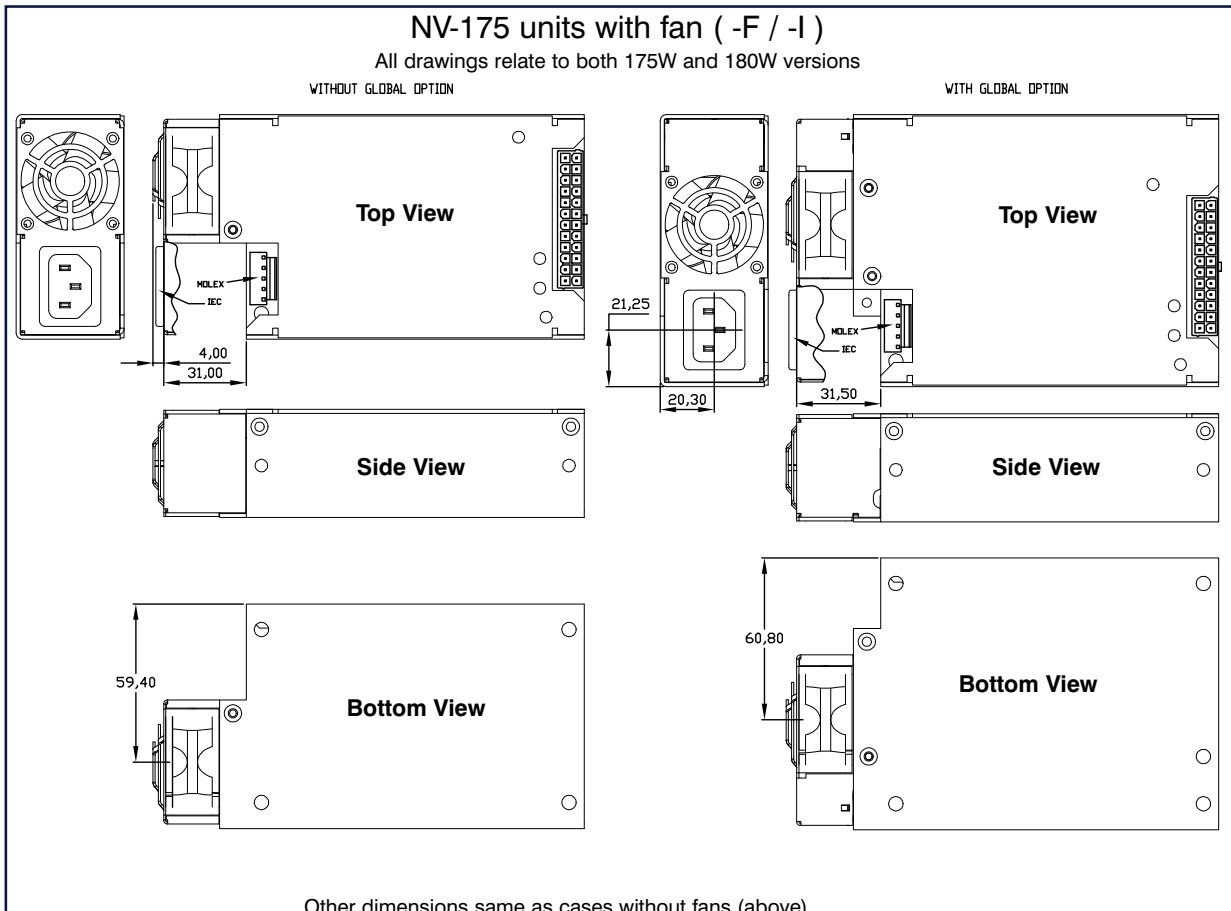


NV-175 units with fan (-F / -I)

All drawings relate to both 175W and 180W versions

WITHOUT GLOBAL OPTION

WITH GLOBAL OPTION



Other dimensions same as cases without fans (above)

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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