

## NV-Power

175/180/200 Watts, flexible power solution

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

### Key Market Segments & Applications

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

### 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	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	300µA max at 264Vac & 63Hz (normal condition, 500µA Single Fault Condition)		

#### AVAILABLE OUTPUTS

Channel 1	Adjustment Range	Channel 2 <sub>1</sub>	Adjustment Range	Channel 3	Adjustment Range	Channel 4 <sub>3</sub>	Adjustment Range
<b>5</b> 5V / 25A <sub>2</sub>	5 - 5.5V	<b>1</b> 1.8V / 15A	0.9 - 3.3V	<b>T</b> 12V / 5A	12 - 15V	<b>T</b> -12V / 1A	Fixed
		<b>2</b> 2.7V / 15A	2.5 - 3.3V			<b>F</b> -15V / 1A	Fixed
		<b>3</b> 3.3V / 15A	2.5 - 3.3V			<b>3H</b> -3.3V / 2A <sub>8</sub>	Fixed
		<b>0</b> Omit				<b>5H</b> -5V / 2A <sub>8</sub>	Fixed
<b>T</b> 12V / 15A	12 - 15V <sub>4</sub>	<b>5</b> 5V / 10A	3.3 - 5.5V	<b>G</b> 24V / 2.5A	18 - 24V	<b>TH</b> -12.1V / 2A <sub>8</sub>	Fixed
<b>F</b> 15V / 12A	12 - 15V <sub>5</sub>	<b>0</b> Omit		<b>0</b> Omit		<b>FH</b> -15V / 2A <sub>8</sub>	Fixed
<b>G</b> 24V / 7.5A	24 - 28V <sub>6</sub>	<b>5</b> 5V / 8A <sub>7</sub>	3.3 - 5.5V			<b>0H</b> Fan supply only	
		<b>0</b> Omit				<b>0</b> 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 'P' for positive output channel
4. 12 - 12.5V if 24V channel 3 fitted.
5. 14.5 - 15V if 24V channel 3 fitted.
6. 24 - 24.5V if 5V channel 2 fitted
7. 7A max if fitted with '-F' option.
8. 1.5A max if fitted with '-F' 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
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	Ch4	Global Option	Case Option
	↑	↑	↑	↑	↑	↑	↑

Number of outputs (excluding standby supply)

Ch1 - Ch4 Letter/number from above table to represent output voltage.

(Blank = no case)  
**-C** = U Chassis + Cover  
**-U** = U Chassis  
**-F** = End fan + case<sub>1</sub>

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

1. Needs 0H, 3H, 5H, TH or FH type channel 4. **The fan speed is temperature dependent, ensuring optimum cooling and lowest audible noise.**

Confirm availability of created product code with the factory

### QUICK SELECTOR - preferred configurations

Model	CH1	CH2	CH3	CH4	CH5	Global Option <sub>1</sub>
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. 1. see page 3 for details of global option  
 See over for additional variants available 'Build to Order'

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	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

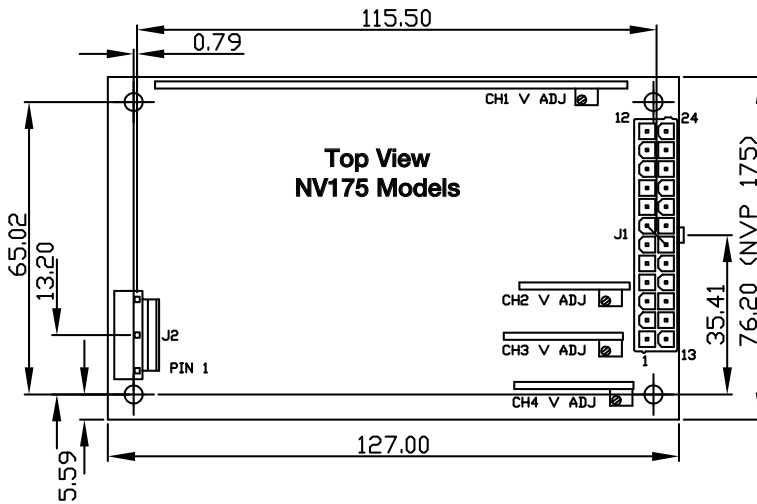
EMISSIONS EN61000-6-3:2001		
Radiated Electric Field	EN55022	(as per CISPR.22) Class A, Class B see app note for details
Conducted Emissions	EN55022	Class B (as per CISPR.22)
Conducted Harmonics	EN61000-3-2	Compliant
Flicker	EN61000-3-3	Compliant

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
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 3

SAFETY APPROVALS					
	Date	Amendments		Date	Amendments
EN 60950-1	2001		EN 61010-1	2001	
UL 60950-1	2003		IEC 61010-1*	2001	
CSA 22.2 No 60950-1	2003		IEC 60601-1	1988	
IEC 60950-1*	2001		EN 60601-1	1990	A1:1991, A2:1995
CE Mark	LV Directive 72/23/EEC(EN60950-1:2001)		UL 60601-1	2001	A1:1993, A2:1995, A13:1996
* CB certificate and Report available on request			Check with factory for status of approvals		

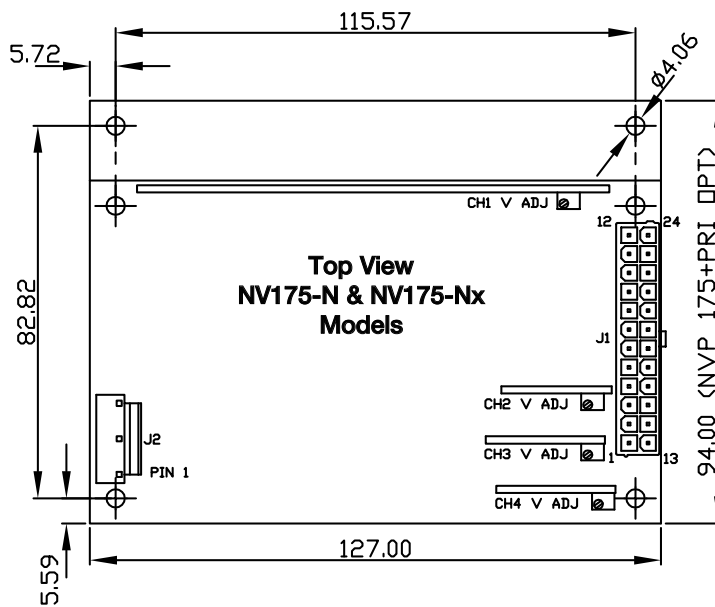
# OUTLINE & CONNECTION DRAWINGS

All drawings relate to both 175W and 180W versions



J2

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

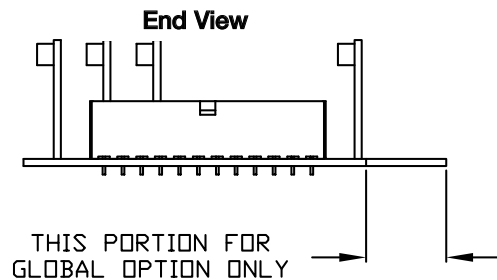
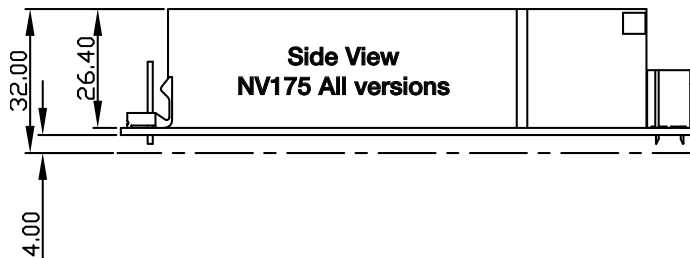


J1

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

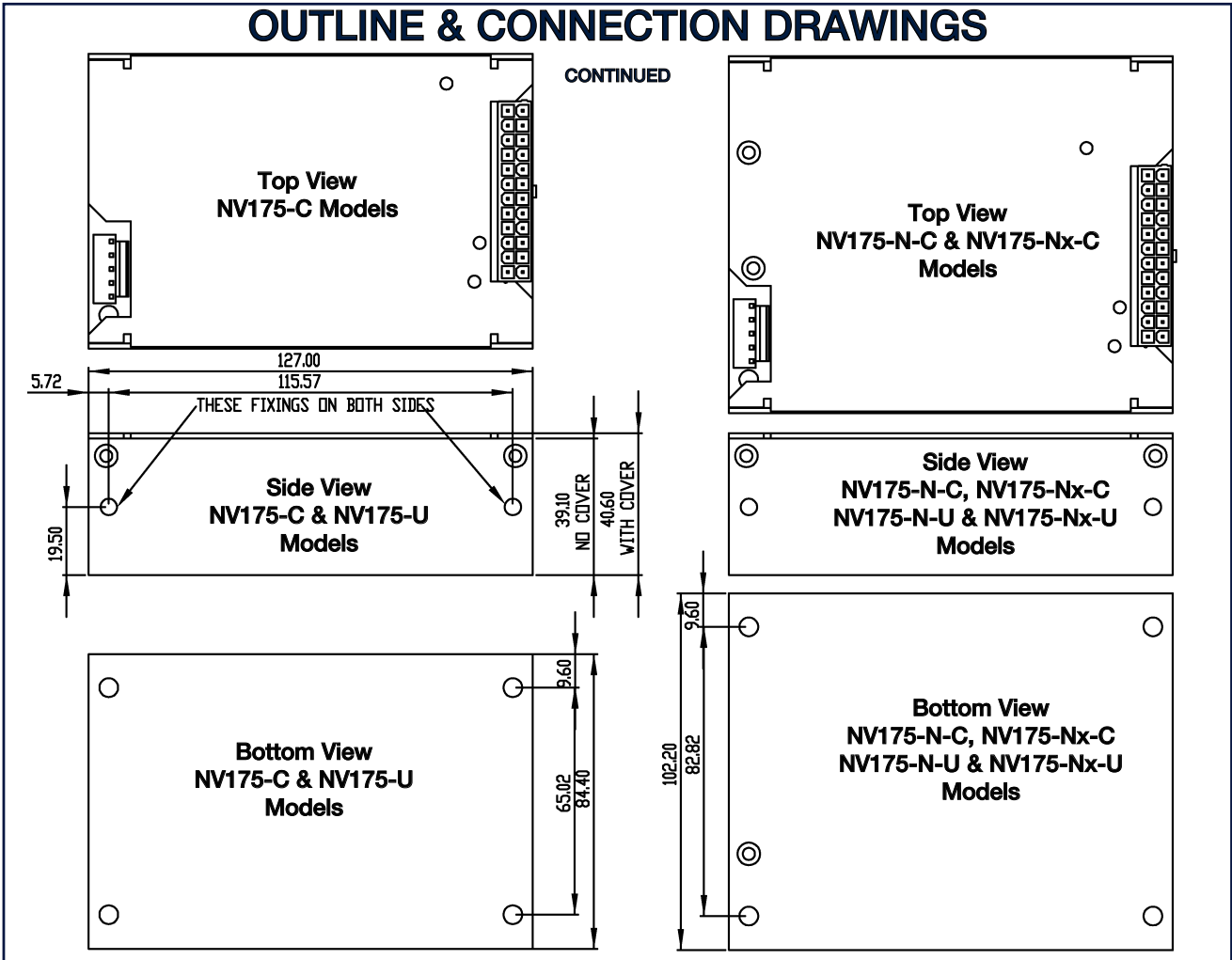
MATING PARTS (MOLEX OR EQUIVALENT)

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



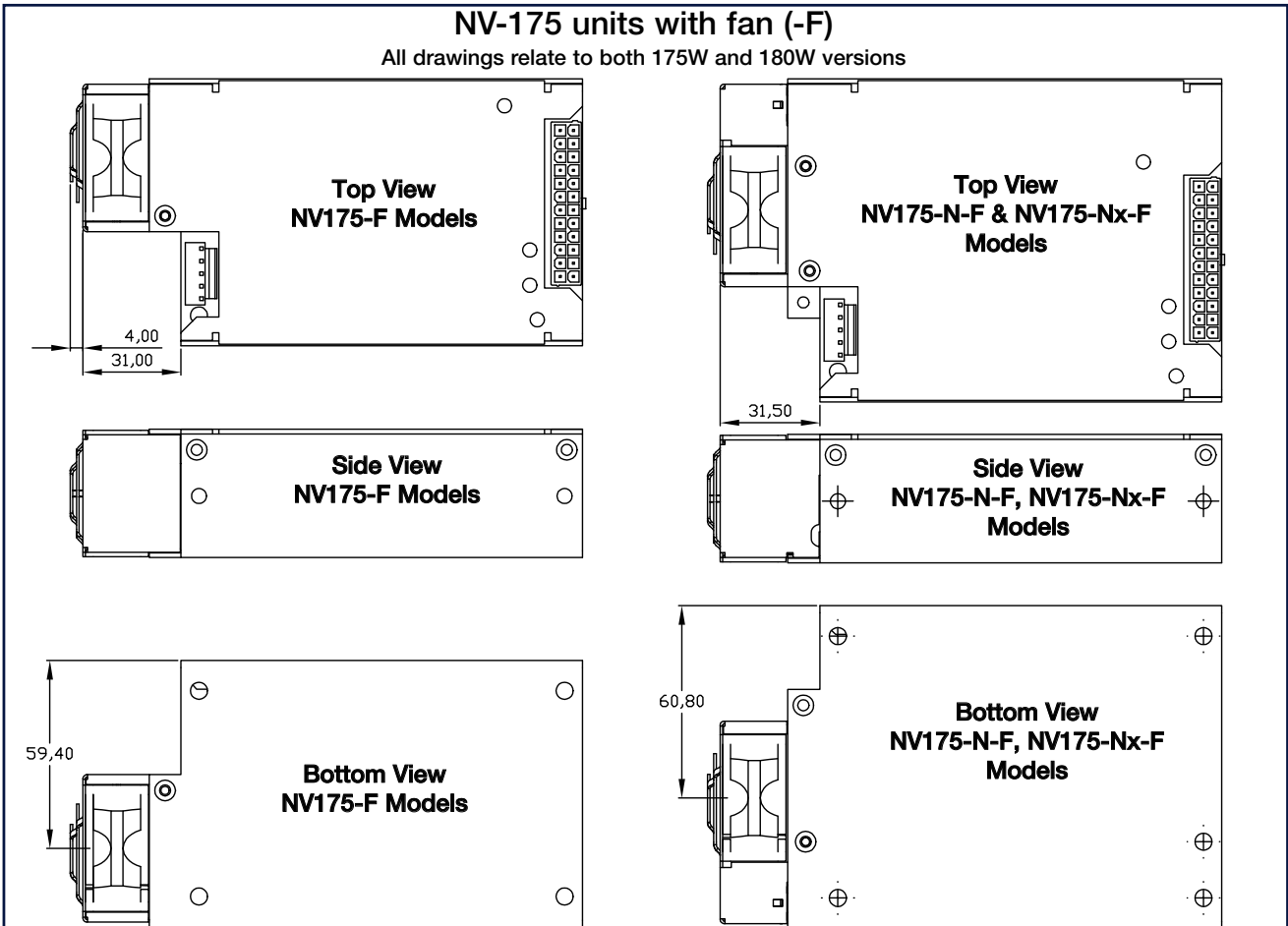
Notes 1. All customer fixings M3      2. Maximum Penetration 4.5mm      3. Maximum torque 0.9Nm      4. All tolerances +/-0.5mm

# OUTLINE & CONNECTION DRAWINGS



## NV-175 units with fan (-F)

All drawings relate to both 175W and 180W versions



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

## NV-POWER SERIES (NV-175)

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