



Medical



Industrial



Test



Broadcast



Comms



Renewable

180-200W Configurable Medical power supply.

Features	Benefits
• High Efficiency	Minimises heat in system
• Low Profile	Fits 1U Applications
• Low Earth Leakage and Class B EMC	Simplifies system design, reduces cost
• 2 x MOPPs isolation	Simplifies system design
• 3 Year Warranty	Low cost of ownership



Input			
Input Voltage	90-264Vac (100 - 240Vac nominal)	Input Frequency	45 - 63Hz
Input Harmonics	EN61000-3-2 compliant	Power Factor	0.97 typical
Input Fuse	Fast acting (not user accessible)	Inrush Current	<40A at 25°C and 230Vac (cold start)
Earth Leakage Current	123µA at 120Vac (60Hz), 257µA max at 240Vac (60Hz) Worst case leakage current is less than 300µA at 264Vac, 63Hz (normal condition, 0.5mA Single Fault Condition) Lower leakage versions available, contact sales office for details		

Isolation			
Input to Output	2 x MOPPs (3rd edition 60601) 4kVac	type tested to 4kVac (equivalent to 5.7kVdc), production tested to 4.3kVdc	
Input to Earth	1.5kVac, 2.3kVdc	Output to Earth	200Vdc

QUICK SELECTOR - example configurations				Additional variants available, see "How to Create a Product Description"
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	

How To Create A Product Description

Confirm availability of created product with TDK-Lambda

NV1-

#o/p

Ch1

0

Ch3₂

Ch4₃

Case Option

-M

Connector Option

Blank standard, vertical connector
R Right angled connector (see handbook for 'R' connection and mechanical details)

Medical with 4kVac (2 x MOPPs) input to output isolation

Blank no case
-C U chassis + cover
-U U chassis
-F End fan + case₁
-I End fan + case + IEC inlet₁

Number of outputs

Ch1, Ch3, Ch4 Letter / number from 'Available Outputs' table to represent output voltage

- 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.

Available Outputs

Other output options are available, please contact sales office with your requirements

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 with '-F' or '-I' option.

Output Specification

Turn on time	1.5s max	at 90Vac and 100% rated output power
Efficiency	up to 90%	configuration dependent
Hold up	16ms min	at 90Vac
Ripple and 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 channel 4.
Remote Sense	Yes	Channel 1. Max 0.5V total line drop
Minimum Load	No	on any output
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.
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
Over Voltage Protection	Yes	See Application Notes for details
Short Circuit Protection	Yes	
Over Temperature Protection	Yes	
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
Ch1 Good Signal	Yes	Provides a Logic 'Low' signal after Channel 1 output is within 90% (±5%) of nominal

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)
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	3000 metres operational (4000m for NV1-1G000-M for 60601-1 3rd edition)
Pollution	Degree 2, Material group IIIb

Immunity EN61000-6-2:2005, EN60601-1-2:2007

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	ac input tested to 4.4kV dc output tested to 2.2kV	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 and dips to 40% for 5 cycles below 154Vac nominal input	A

Emissions EN61000-6-3:2007, EN60601-1-2:2007

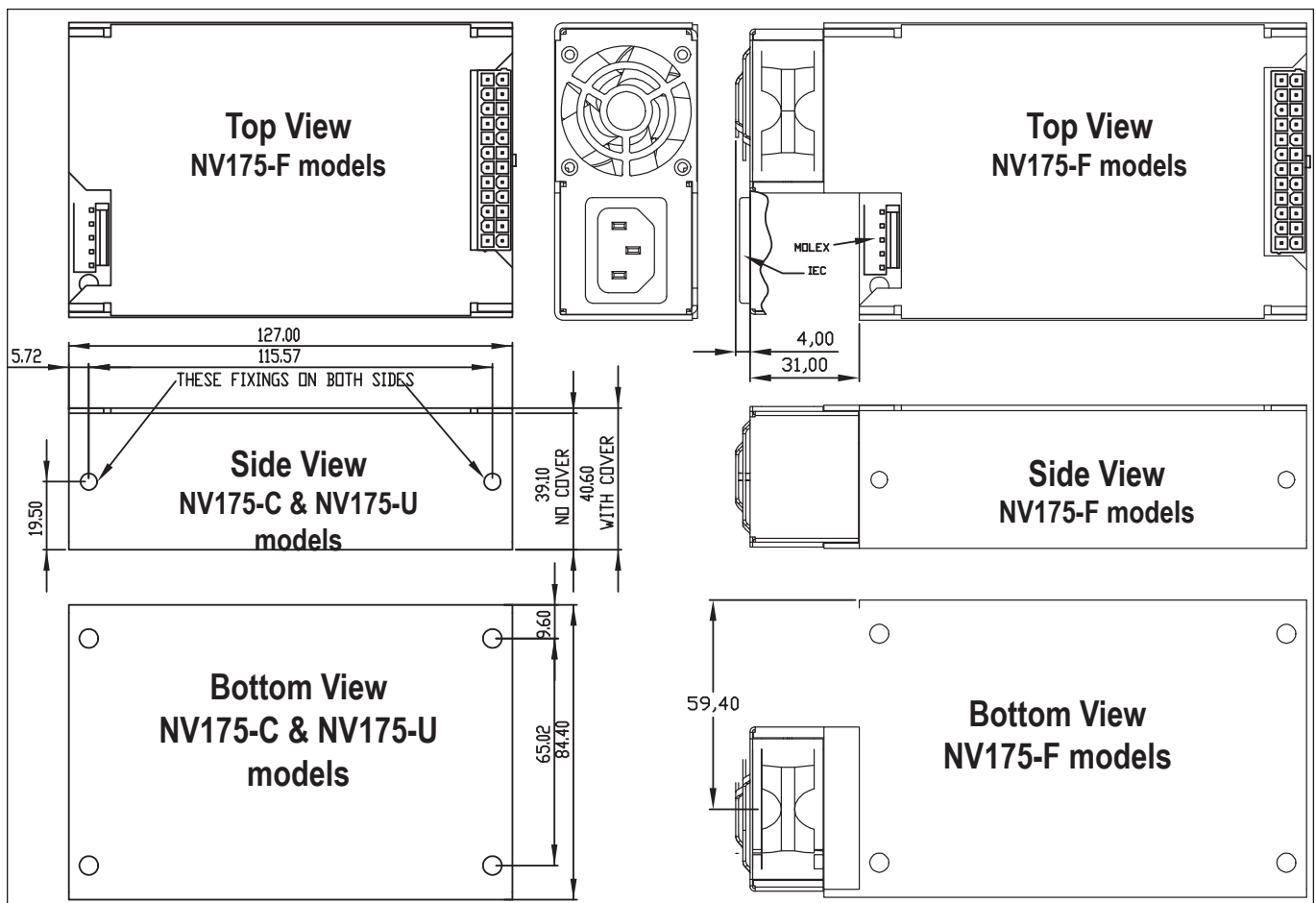
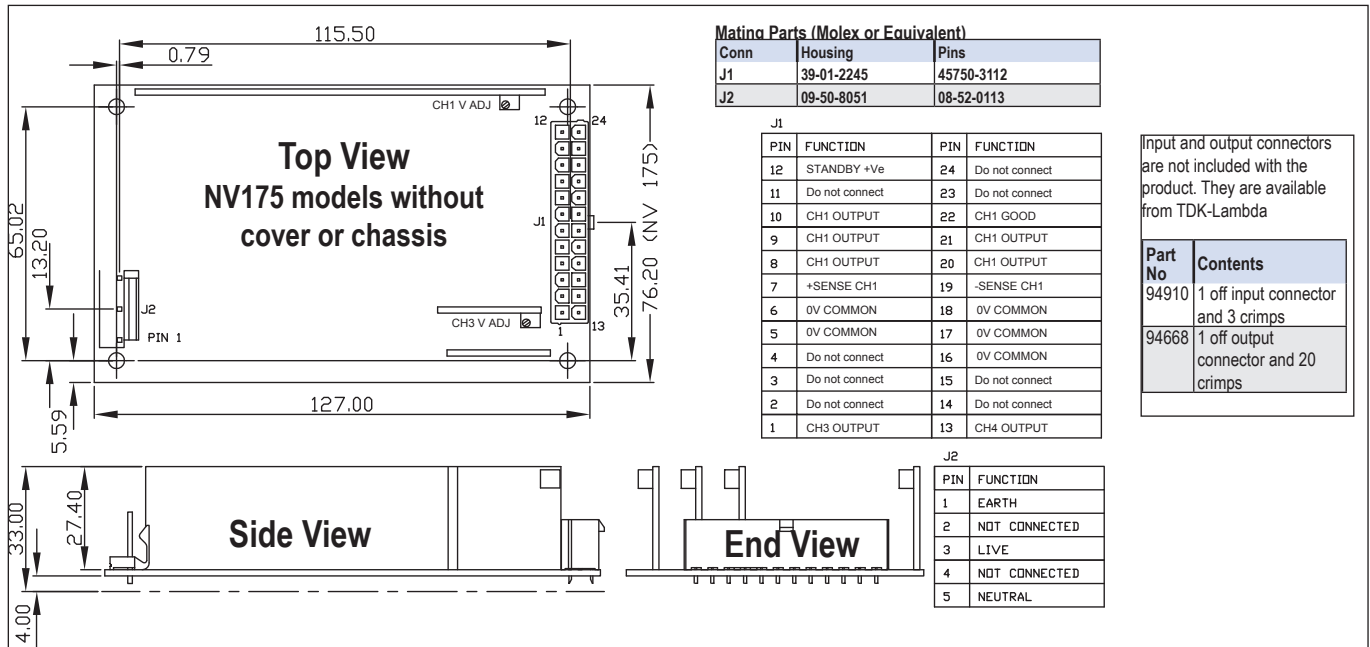
Radiated Electric Field	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B see application note for details. Additional filtering required for IEC inlet version.
Conducted Emissions	EN55011, EN55022	(as per CISPR.11/22) Class B, FCC47 part 15 subpart B
Conducted Harmonics	EN61000-3-2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

Approvals / Accreditations

IEC/EN 60950-1, UL60950-1 / CSA 22.2 No 60950-1
 IEC/EN 60601-1, UL/CSA 60601-1, ANSI/AAMI ES60601-1
 CAN/CSA-C22.2 No 60601-1-08
 IEC/EN61010
 CE Mark (EN60950-1)
 CB certificate and Report available on request
 Designed and manufactured under the control of ISO9001 and ISO13485 (including risk management).

Notes

File E135494
 File E349607
 Designed to meet
 LV Directive 2006/95/EC
 Please check with technical sales for status of approvals



Notes: 1. All customer fixings M3

2. Maximum thread penetration 4.5mm

3. Maximum torque 0.9Nm

4. All tolerances +/-0.5mm



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