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	Inrush Current	<40A at 25°C and 230Vac (cold start)
Input Fuse	Fast acting (not user accessible)		
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 x MOOP (3rd edition 60601) 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	$Ch3_2$	$Ch4_3$	Case Option	-M	Connector Option

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

Number of outputs

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

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

Blank no case
-C U chassis + cover
-U U chassis
-F End fan + $case_1$
-I End fan + case + IEC $inlet_1$

1. Needs 0H, 3H, 5H, TH or FH type channel 4.
   The fan speed is temperature dependent, ensuring optimum cooling and lowest audible noise.
2. For negative output channel 3, follow chosen letter by 'Y'. For example, TY channel 3 = -12V / 5A.
3. 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	12 - 15V[3] 12 - 15V[4]	Not available	T	12V / 5A	12 - 15V	T	-12V / 1A	Fixed
F	15V / 12A			F	15V / 5A	12 - 15V	F	-15V / 1A	Fixed
				G	24V / 2.5A	18 - 24V	3HP	+3.3V / 2A[6]	Fixed
				0	Omit		5HP	+5V / 2A[6]	Fixed
G	24V / 7.5A	24 - 28V[5]					TH	-12V / 2A[6]	Fixed
							FH	-15V / 2A[6]	Fixed
							0H	Fan supply only	
							0	Omit	

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% (or 50mV if greater)	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. 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

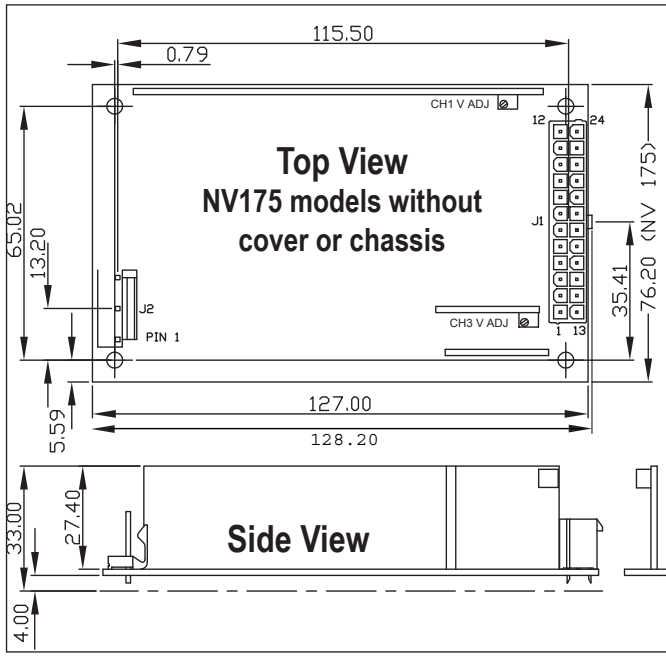
Immunity EN61000-6-2:2005, EN60601-1-2:2007

				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, EN55032	(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, EN55032	(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	Notes
IEC/EN 62368-1, UL62368-1 / CSA 22.2 No 62368-1	File E135494
IEC/EN 60950-1, UL60950-1 / CSA 22.2 No 60950-1	File E135494
IEC/EN 60601-1, UL/CSA 60601-1, ANSI/AAMI ES60601-1 CAN/CSA-C22.2 No 60601-1-08	File E349607
IEC/EN61010	Designed to meet
CE Mark (EN62368-1)	Low Voltage Directive (LVD), electromagnetic compatibility (EMC) and Restriction of Hazardous Substances (RoHS)
CB certificate and Report available on request	*Please check with technical sales for status of approvals*
Designed and manufactured under the control of ISO9001 and ISO13485 (including risk management).	



Mating Parts (Molex or Equivalent)

Conn	Housing	Pins
J1	39-01-2245	45750-3112
J2	09-50-8051	08-52-0113

J1

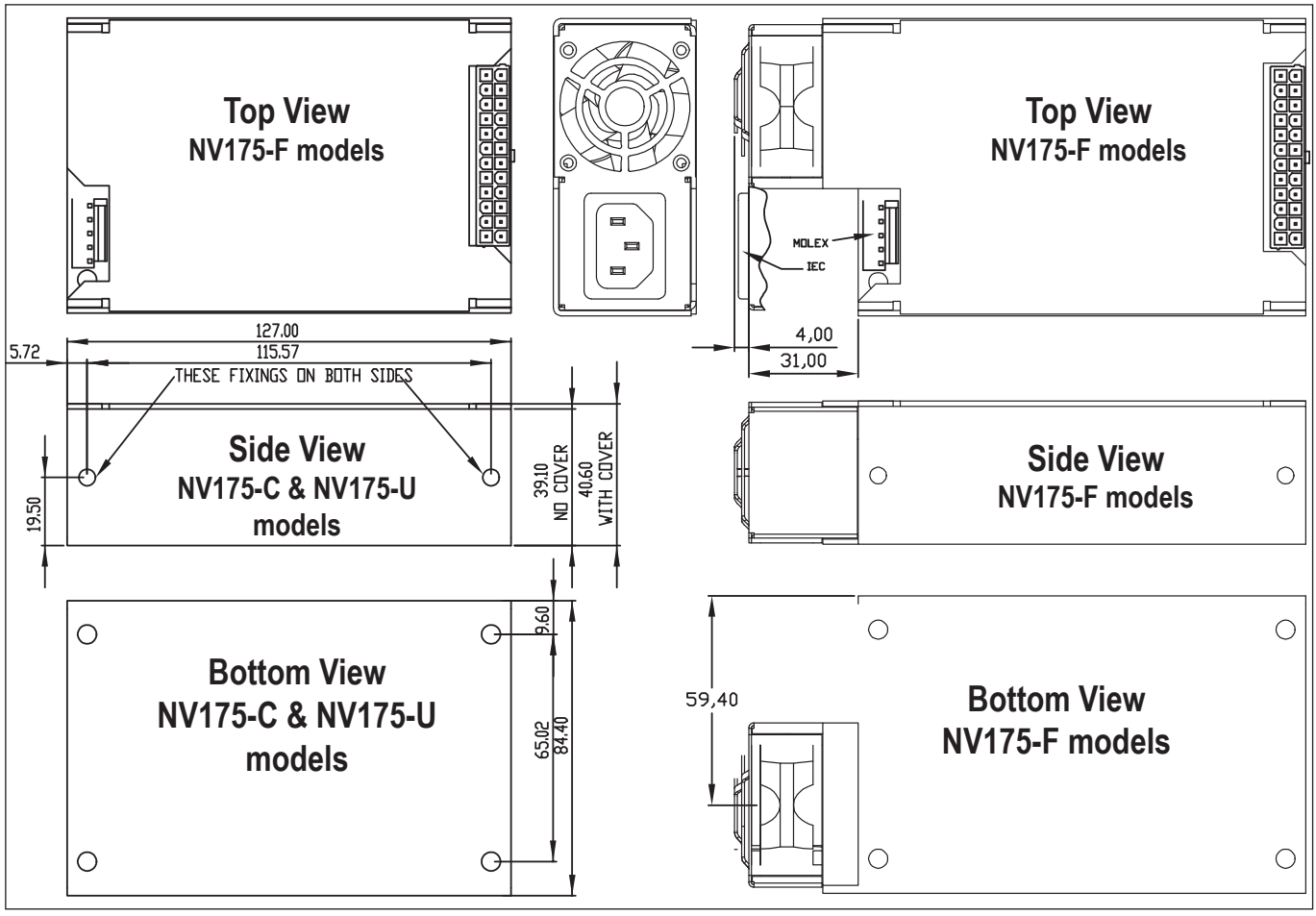
PIN	FUNCTION	PIN	FUNCTION
12	STANDBY +Ve	24	Do not connect
11	Do not connect	23	Do not connect
10	CH1 OUTPUT	22	CH1 GOOD
9	CH1 OUTPUT	21	CH1 OUTPUT
8	CH1 OUTPUT	20	CH1 OUTPUT
7	+SENSE CH1	19	-SENSE CH1
6	0V COMMON	18	0V COMMON
5	0V COMMON	17	0V COMMON
4	Do not connect	16	0V COMMON
3	Do not connect	15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

J2

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

Input and output connectors are not included with the product. They are available from TDK-Lambda

Part No	Contents
94910	1 off input connector and 3 crimps
94668	1 off output connector and 20 crimps



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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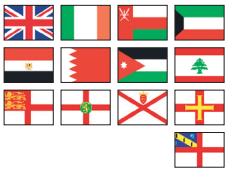

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Errors and omissions excepted

For additional information, please visit
https://product.tdk.com/en/power