



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** | **Ch3₂** | **Ch4₃** | **Case Option** | **-M** | **Connector Option**

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

Number of outputs → **#o/p**

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

Medical with 4kVac (2 x MOPPs) input to output isolation → **-M**

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

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 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% (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 IIb

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	

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

**TDK-Lambda France SAS**

Tel: +33 1 60 12 71 65
 tlf.fr-powersolutions@tdk.com
 www.emea.lambda.tdk.com/fr

**Italy Sales Office**

Tel: +39 02 61 29 38 63
 tlf.it-powersolutions@tdk.com
 www.emea.lambda.tdk.com/it

**Netherlands**

tlf.nl-powersolutions@tdk.com
 www.emea.lambda.tdk.com/nl

**TDK-Lambda Germany GmbH**

Tel: +49 7841 666 0
 tlg.powersolutions@tdk.com
 www.emea.lambda.tdk.com/de

**Austria Sales Office**

Tel: +43 2256 655 84
 tlg.at-powersolutions@tdk.com
 www.emea.lambda.tdk.com/at

**Switzerland Sales Office**

Tel: +41 44 850 53 53
 tlg.ch-powersolutions@tdk.com
 www.emea.lambda.tdk.com/ch

**Nordic Sales Office**

Tel: +45 8853 8086
 tlg.dk-powersolutions@tdk.com
 www.emea.lambda.tdk.com/dk

**TDK-Lambda UK Ltd.**

Tel: +44 (0) 12 71 85 66 66
 tlu.powersolutions@tdk.com
 www.emea.lambda.tdk.com/uk

**TDK-Lambda Ltd.**

Tel: +9 723 902 4333
 tli.powersolutions@tdk.com
 www.emea.lambda.tdk.com/il-en

**TDK-Lambda Americas**

Tel: +1 800-LAMBDA-4 or 1-800-526-2324
 tla.powersolutions@tdk.com
 www.us.lambda.tdk.com

**TDK Electronics do Brasil Ltda**

Tel: +55 11 3289-9599
 sales.br@tdk-electronics.tdk.com
 www.tdk-electronics.tdk.com/en

**TDK-Lambda Corporation**

Tel: +81-3-6778-1113
 www.jp.lambda.tdk.com

**TDK-Lambda (China) Electronics Co. Ltd.**

Tel: +86 21 6485-0777
 tlc.powersolutions@tdk.com
 www.lambda.tdk.com.cn

**TDK-Lambda Singapore Pte Ltd.**

Tel: +65 6251 7211
 tls.marketing@tdk.com
 www.sg.lambda.tdk.com

**TDK India Private Limited, Power Supply Division**

Tel: +91 80 4039-0660
 mathew.philip@tdk.com
 www.sg.lambda.tdk.com

