

## 350W Front End Power Supply.

Features	Benefits
• High Efficiency	Minimises heat in system
• Low Profile	Fits 1U Applications
• High Power Density	Requires less space
• Medical Approval	Simplifies use in medical systems
• 3 Year Warranty	Low cost of ownership

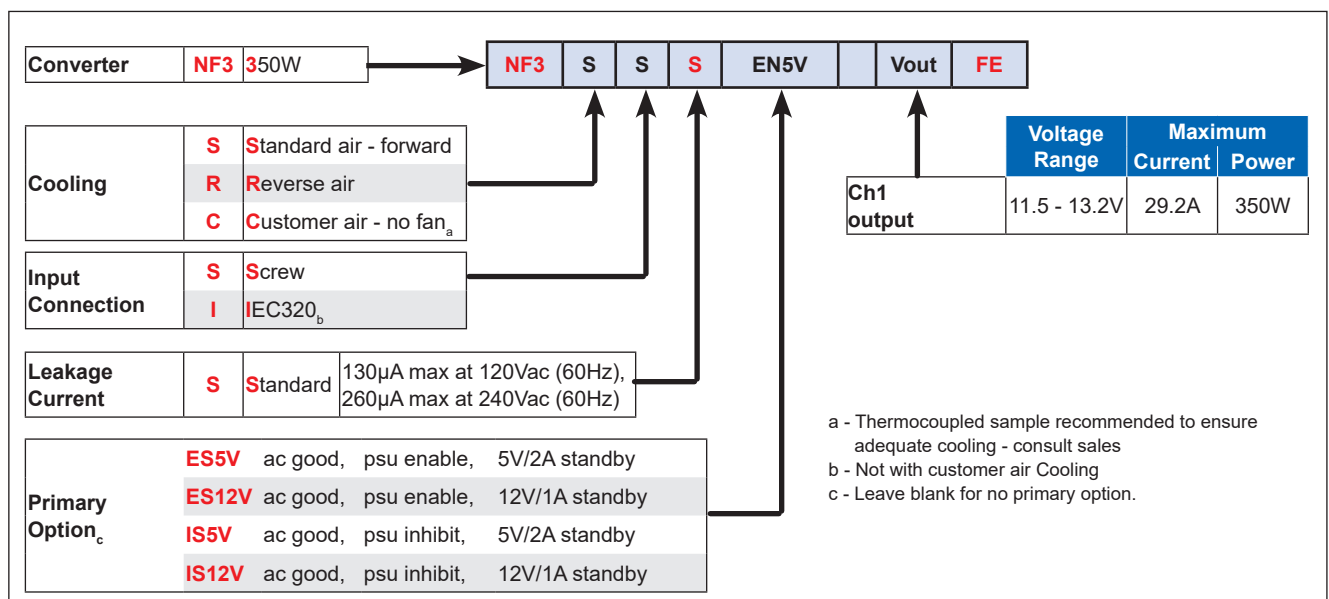


Input			
Input Voltage	90-264Vac	Input Frequency	47 - 63Hz (440Hz with reduced PFC - consult sales office)
Input Harmonics	EN61000-3-2 compliant	Inrush Current (cold start)	<30A  at 25°C and 264Vac
Input Fuse	6.3A HBC Fast acting (not user accessible)		
Earth Leakage Current	130µA at 120Vac (60Hz), 260µA max at 240Vac (60Hz) Worst case leakage current is less than 300µA at 264Vac, 63Hz (normal condition, 0.5mA Single Fault Condition)		

### How To Create A Product Description

It is possible to create your own NV-350FEP configuration online at [www.nv-power.com](http://www.nv-power.com) or by using the following guide.

1. Ensure total power requirement is 350W or less.
2. Select required Cooling, Connection and Controls/Signals from the following table.



3. Select output voltage required for ch1 and follow with 'FE' for the module type. Ensure the voltage is inside the allowable voltage range.
4. Note, Channel 2 is fixed at 12V / 2A
5. Contact TDK-Lambda to issue a part number.

Output Specification		
Voltage / Current	See guide on previous page	
Turn on time	1.5s max	at 90Vac and 100% rated output power
Rise time	<50ms	to 90% of voltage, monotonic rise above 10%
Efficiency	up to 90%	
Hold up	16ms min	at 90Vac and 100% rated power
Ripple and Noise	<1% or 50mV if greater	pk-pk, using EIAJ test method & 20MHz bandwidth
Voltage Accuracy	<1%	of set voltage ( $\pm 5\%$ for channel 2)
Remote Sense	Yes	standard on ch1, max 0.5V total line drop
Minimum Load	No	on any output
Temperature Coefficient	<0.02%	of rated voltage per °C
Total Regulation	1%	Including:- Load Regulation for 0-100% and Line Regulation for 90-264Vac input change (<2% for channel 2)
Transient Response	<4%	of set voltage for 50% load change
Recovery	500µs	for recovery to 1% of set voltage
Over Voltage Protection (ch1)	15 - 17V	
Over Current Protection (ch1)	110-150%	of module current. Hiccup mode. Module primary side protected
Power Limit (duals)	110-150%	of max Power ch1 + ch2. Hiccup mode. Module primary side protected (DA module: 110-220% for channel 1, 110-170% for channel 2)
Short Circuit Protection	Yes	
Over Temperature Protection	Yes	cycle ac off/on to reset Shutdown temperature varies according to ambient, output power and input voltage.

Isolation		
Input to Output	Reinforced	2 x MOOPs (3rd edition 60601) 4.3kVdc (Basic for 2nd edition 60601)
Input to Earth	Basic	2.3kVdc
Output to Earth		200Vdc

Signals (all signals referenced to 0V of channel 1)	
Ch1 Good	Open collector output. 'On' indicates output is within 90% ( $\pm 5\%$ ) of nominal
Ch1 Remote sense +/-	Connections for remote sense. Up to 0.5V total line drop can be compensated. If remote sense is not required, do not connect either 'Sense -' or 'Sense +'

Global Interface Signals - units fitted with primary option	
AC good collector	Uncommitted optocoupler. See application note for timings.
AC good emitter	
EN/ES and IN/IS Logic 0	TTL low enables (ES) or inhibits (IS) the entire psu including fan (except standby)
EN/ES and IN/IS Logic 1	TTL high enables (ES) or inhibits (IS) the entire psu including fan (except standby)
Standby Supply	5V / 2A (2.5A peak) or 12V / 1A (1.2A peak)

Environment	
Temperature	0°C to 50°C operational, -40°C to 70°C storage (max 12 months).
Derating	50°C to 70°C derate total output power and each output current by 2.5% per °C
Low Temp Startup	-20°C
Humidity	5 - 95% RH non condensing
Shock	$\pm 3 \times 30g$ 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.
Vibration	Single axis 10 - 500 Hz at 2g (sweep and endurance at resonance) in all 3 planes
Altitude	3000 metres operational (5000m non operational)
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	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 Criteria B for dip to 40% for 5 cycles below 154Vac nominal input	A
Voltage Fluctuations	EN61000-4-14	Class 3	For 100 - 240V Nominal	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

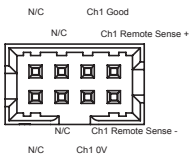
## Approvals / Accreditations

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/EN 61010-1	File E331788
CE Mark (EN60950-1)	LV Directive 2006/95/EC
CB certificate and Report available on request	<i>Please check with technical sales for status of approvals</i>
Designed and manufactured under the control of ISO9001 and ISO13485 (including risk management).	

### Connection Guidelines

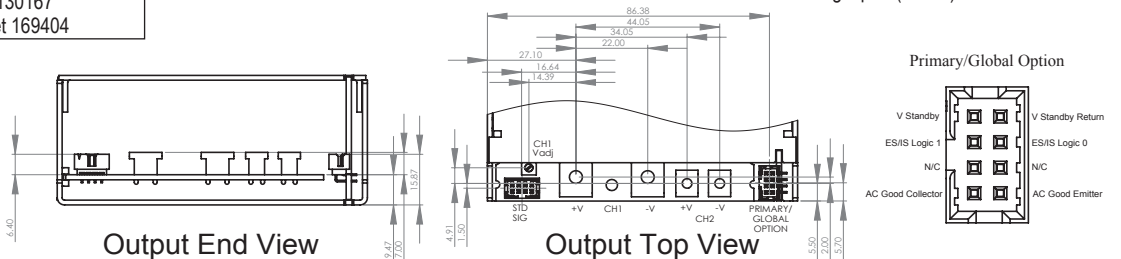
Ring Tags: Up to 50A. AMP PIDG terminals  
 Red: M3 36151, M4 320551, M5 130660  
 Blue: M3 320561, M4 320560, M5 130663  
 Yellow: M4 320568, M5 130167  
 Crimp tool: 16900 Die set 169404

### Standard Signals

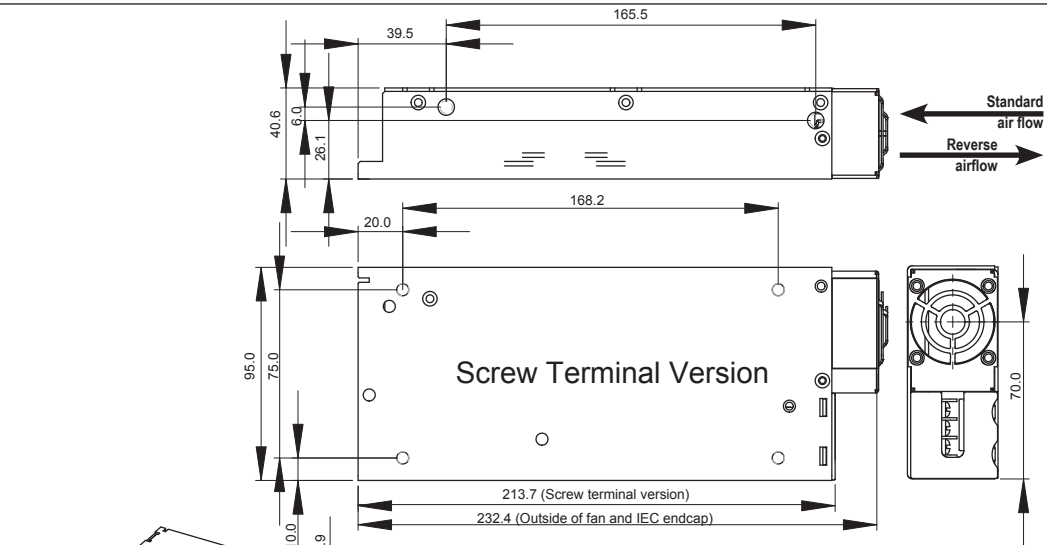


## OUTPUT CONNECTIONS

Housing: Molex 51110-0860  
 Crimp pin: 50394  
 Hand crimp tool: 69008-0959  
 1 housing + 8 crimps available as a single part (94158) from TDK-Lambda

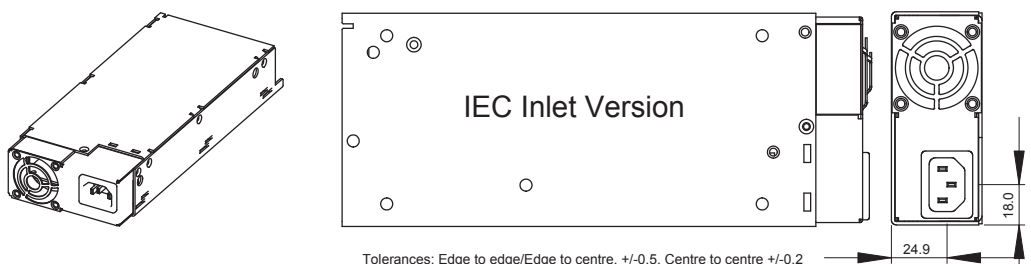


## Screw Terminal Version



Customer fixings M4. Maximum screw penetration 4.5mm. Maximum torque 1.5Nm

## IEC Inlet Version



Tolerances: Edge to edge/Edge to centre, +/-0.5. Centre to centre +/-0.2



## TDK-Lambda France SAS

3 Avenue du Canada  
 Parc Technopolis  
 Bâtiment Sigma  
 91940 les Ulis  
 France  
 Tel: +33 1 60 12 71 65  
 Fax: +33 1 60 12 71 66  
[france@fr.tdk-lambda.com](mailto:france@fr.tdk-lambda.com)  
[www.fr.tdk-lambda.com](http://www.fr.tdk-lambda.com)



## Italy Sales Office

Via dei Lavoratori 128/130  
 20092 Cinisello Balsamo (MI)  
 Italy  
 Tel: +39 02 61 29 38 63  
 Fax: +39 02 61 29 09 00  
[info.italia@it.tdk-lambda.com](mailto:info.italia@it.tdk-lambda.com)  
[www.it.tdk-lambda.com](http://www.it.tdk-lambda.com)



## Netherlands

[info@nl.tdk-lambda.com](mailto:info@nl.tdk-lambda.com)  
[www.nl.tdk-lambda.com](http://www.nl.tdk-lambda.com)



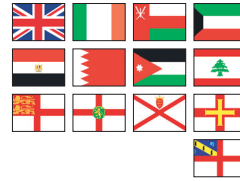
## TDK-Lambda Germany GmbH

Karl-Bold-Strasse 40  
 77855 Achem  
 Germany  
 Tel: +49 7841 666 0  
 Fax: +49 7841 5000  
[info.germany@de.tdk-lambda.com](mailto:info.germany@de.tdk-lambda.com)  
[www.de.tdk-lambda.com](http://www.de.tdk-lambda.com)



## Austria Sales Office

Aredstrasse 22  
 2544 Leobersdorf  
 Austria  
 Tel: +43 2256 655 84  
 Fax: +43 2256 645 12  
[info@at.tdk-lambda.com](mailto:info@at.tdk-lambda.com)  
[www.de.tdk-lambda.com](http://www.de.tdk-lambda.com)



## TDK-Lambda UK Ltd.

Kingsley Avenue  
 Ilfracombe  
 Devon EX34 8ES  
 United Kingdom  
 Tel: +44 (0) 12 71 85 66 66  
 Fax: +44 (0) 12 71 86 48 94  
[powersolutions@uk.tdk-lambda.com](mailto:powersolutions@uk.tdk-lambda.com)  
[www.uk.tdk-lambda.com](http://www.uk.tdk-lambda.com)



## TDK-Lambda Ltd.

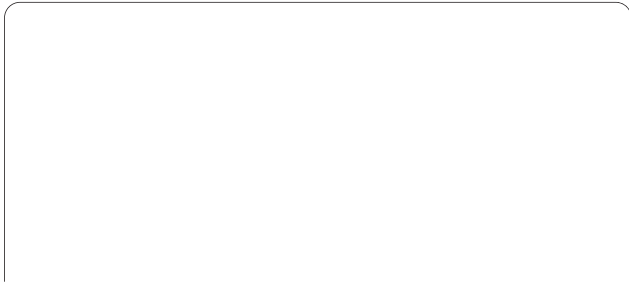
Kibbutz  
 Givat Hashlosha 48800  
 Israel  
 Tel: +9 723 902 4333  
 Fax: +9 723 902 4777  
[info@tdk-lambda.co.il](mailto:info@tdk-lambda.co.il)  
[www.tdk-lambda.co.il](http://www.tdk-lambda.co.il)



## C.I.S.

**Commercial Support:**  
 Tel: +7 (495) 665 2627  
**Technical Support:**  
 Tel: +7 (812) 658 0463  
[info@tdk-lambda.ru](mailto:info@tdk-lambda.ru)  
[www.tdk-lambda.ru](http://www.tdk-lambda.ru)

### Local Distribution



### Local Distribution

