LAMBDA

- High Efficiency
- High Power Density (7.0W/in³)
- Designed for Distributed Power
- No minimum load
- Fits 1U applications
- Medical Approval
- 3 Year Warranty

NV-Power

350 Watts, Front End Power Solution

Key Market Segments & Applications

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

Features and Benefits

Feature	Benefit
◆ High Efficiency	◆ Minimises heat in system
◆ Low Profile	◆ Fits 1U applications
◆ High Power Density	◆ Less Space

NV350-FEP CONFIGURING

It is possible to create your own NV350-FEP configuration online at www.nv-power.com or by using the guide below.

1. Select required Cooling, Connection and Controls/Signals from the following table:

Output Power	**NF3**	350W				
Cooling	**S**	**S**tandard air - forward				
	R	**R**everse air				
	C	**C**ustomer air - no fan[1]				
Input Connection	**S**	**S**crew				
	I	IEC320[2]				
Leakage Current	**S**	**S**tandard <300µA	maximum leakage current, Normal Condition, 264Vac, 63Hz. <500µA Single Fault Condition			
Primary Option	**ES5V**	ac good,	psu enable,	5V/2A standby		
	ES12V	ac good,	psu enable,	12V/1A standby		
	IS5V	ac good,	psu inhibit,	5V/2A standby		
	IS12V	ac good,	psu inhibit,	12V/1A standby		

NF3	**S**	**S**	**S**	**ES5V**

1 - Thermocoupled sample recommended to ensure adequate cooling - consult sales
2 - Not with customer air Cooling

NV350-FEP CONFIGURING

2. Select output required from the Module Table below.
   Example - if you require 12V 29A :-
   a) select FE module and prefix with voltage eg **12FE**

   This will create a complete product description eg **NF3SSSES5V 12FE** which represents a two output NV350-FEP with Forward air, Screw i/p terminals, 300µA Leakage, ac good, PSU enable & 5V/2A aux supply
   Output 1 = 12V / 29.2A with screw terminals
   Output 2 = 12V / 0.5A with screw terminals
   Max 350W continuous output power

3. Contact Lambda to issue a part number.

OUTPUT MODULE (Type FE)

Output 1			Output 2			Total
Voltage Range	**Maximum Current**	**Maximum Power**	**Output Voltage**	**Maximum Current**	**Maximum Power**	**Max Output Power**
11.5 - 13.2 V	29.2A	350W	12 V	2A	24W	350W

INPUT

Input Voltage	90-264Vac
Input Frequency	47 - 63 Hz (up to 440Hz with reduced PFC)
Input Harmonics	EN61000-3-2 compliant
Inrush Current	<15A at 25°C and 264Vac (cold start)
Input Fuse	6.3A / 250Vac HBC Fast Acting (not user accessible)
Power Factor	0.97 (typical)
Leakage Current	<300µA at 264Vac & 63Hz, normal condition. <500µA Single Fault Condition.

OUTPUT

Voltage / Current	See module tables	
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	90%	Typical
Hold up	16ms min	at 90Vac and 100% rated power
Ripple and Noise	<1%	Pk-Pk, using EIAJ test method & 20MHz bandwidth
Voltage Accuracy	<1%	of set voltage (±5% for channel 2)
Remote Sense	Yes	Standard on single o/p + ch1 of dual modules, 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% load change 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 - 16V	
Over Current Protection (ch1)	110 - 150%	of rated current, hiccup mode. Module primary side protected
Short Circuit Protection	Yes	
Over Temperature Protection	Yes	Cycle ac off/on to reset Shutdown temperature varies according to ambient, o/p power & i/pV

ISOLATION			
Input to Output	Reinforced	4.3kV (dc)	Note: Basic for IEC/EN/UL/CSA60601-1
Input to Earth	Basic	2.3kV (dc)	
Output to Earth		200V (dc)	

SIGNALS - Standard	
Ch1 Good	Open collector output, (emitter connected to Ch1 0V) 'On' indicates output is within 90% (±5%) of nominal
Ch1 Remote Sense - 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 - with Primary Option	
AC good collector AC good emitter	Uncommitted optocoupler. Turns on typically 5ms after ac is good and off typically 5ms before any channel falls below 95% of nominal
ES & IS Logic 0	TTL low enables (ES) or inhibits (IS) the entire psu including fan (except standby)
ES & 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° to 50° operational, -40° to 85°C storage (max 12 months) (-25°C to 85°C storage [max 6 months] for IEC inlet version)
Derating	50°C to 70°C derate each output by 2.5% per °C
Low Temperature Start-up	-20°C
Humidity	5-95% RH non condensing
Shock	±3 x 30*g* shocks in each plane, total 18 shocks 30*g* shock = 11ms (±0.5ms), half sine conforms to EN60068-2-27, EN60068-2-47, IEC68-2-27, IEC68-2-47, JIS C0041-1987.
Vibration	Single axis 10 - 500Hz at 2*g* (sweep and endurance at resonance) in all 3 planes
Altitude	3,000 metres operational (15,000 metres non operational)
Pollution	Degree 2, Material group 3

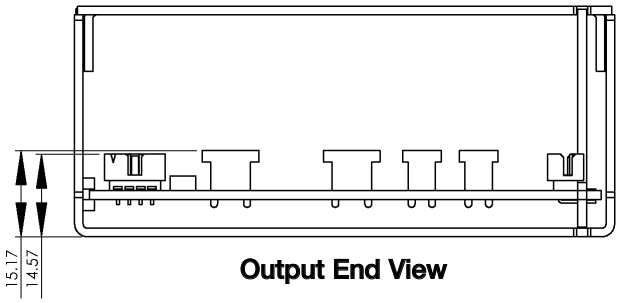
IMMUNITY EN61000-6-2:2002				Criteria
Electrostatic Discharge	EN61000-4-2:1995	Level 4	Air discharge 15kv Contact discharge 8kV	A
Electromagnetic Field	EN61000-4-3:2002	Level 3	tested to 12V/m	A
Fast / Burst Transient (AC Input)	EN61000-4-4:2004	Level 4	tested to 4.4kV	A
Fast / Burst Transient (DC Output)	EN61000-4-4:2004	Level 4	tested to 2.2kV	A
Surge Immunity	EN61000-4-5:1995	Level 3	Common mode to 2.2kV Differential mode to 1.1kV	A
Conducted RF Immunity	EN61000-4-6:1996	Level 3	tested to 12V	A
Power Frequency Magnetic Field	EN61000-4-8:1994	Level 4	Tested to 30A/m, 50/60Hz	A
Voltage Dips, Variation, Interruptions	EN61000-4-11:2004	Class 3		A/B
Voltage Fluctuations	EN61000-4-14:1999 + A1	Class 3	For 100 - 240V Nominal	A

SAFETY APPROVALS					
	Date	**Amendments**		**Date**	**Amendments**
EN 60950-1	2001		EN 61010-1	2001	
UL 60950-1	2003		IEC 61010-1*	2001	
CSA22.2 No 60950-1	2003		IEC 60601-1*	1988	A1: 1991, A2:1995
IEC60950-1*	2001		EN 60601-1a	1990	A1:1993, A2:1995, A13:1996
CE Mark	LV Directive 73/23/EEC (EN60950-1:2001)		EN 60601-1a		

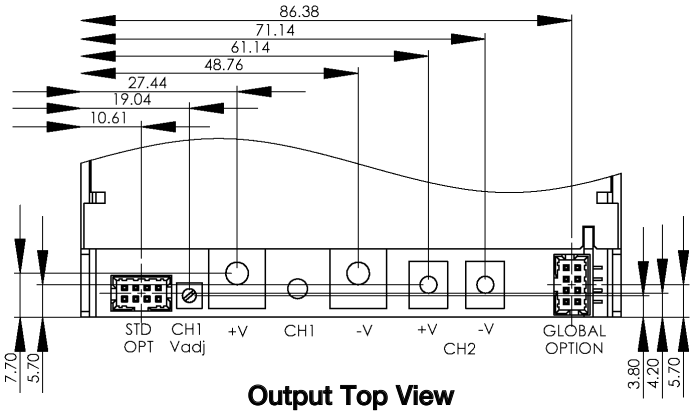
* CB Certificate and report available on request
a - Medical Approval pending. Check with Technical Sales for status
a - Not applicable to IEC320 input version

EMISSIONS EN61000-6-3:2001		
Radiated Electric Field	EN55022:1998	Class B (as per CISPR.22) see application note for details
Conducted Emissions	EN55022:1998	Class B
Conducted Harmonics	EN61000-3-2:2001	Class A
Flicker	EN61000-3-3:1995 + A1	Compliant - d_{max} only.

OUTPUT CONNECTIONS



Output End View

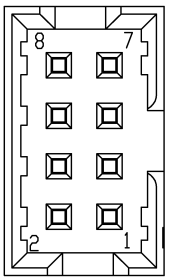


Output Top View

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

Signal Connection



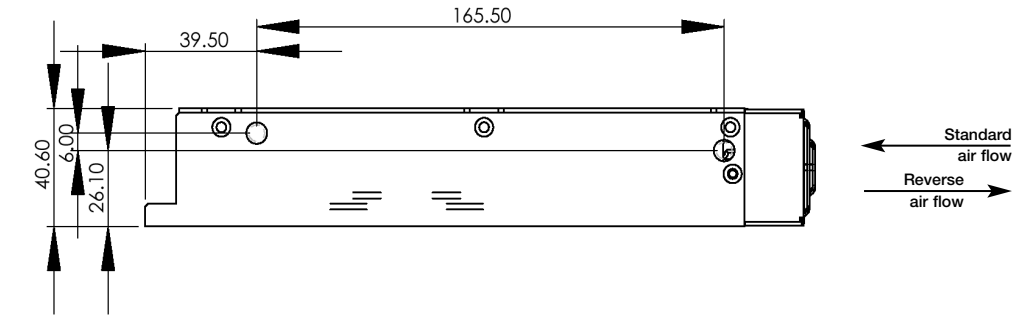
Housing: Molex 51110-0860
Crimp pin: 50394
Hand crimp tool: 69008-0959

Standard Signals

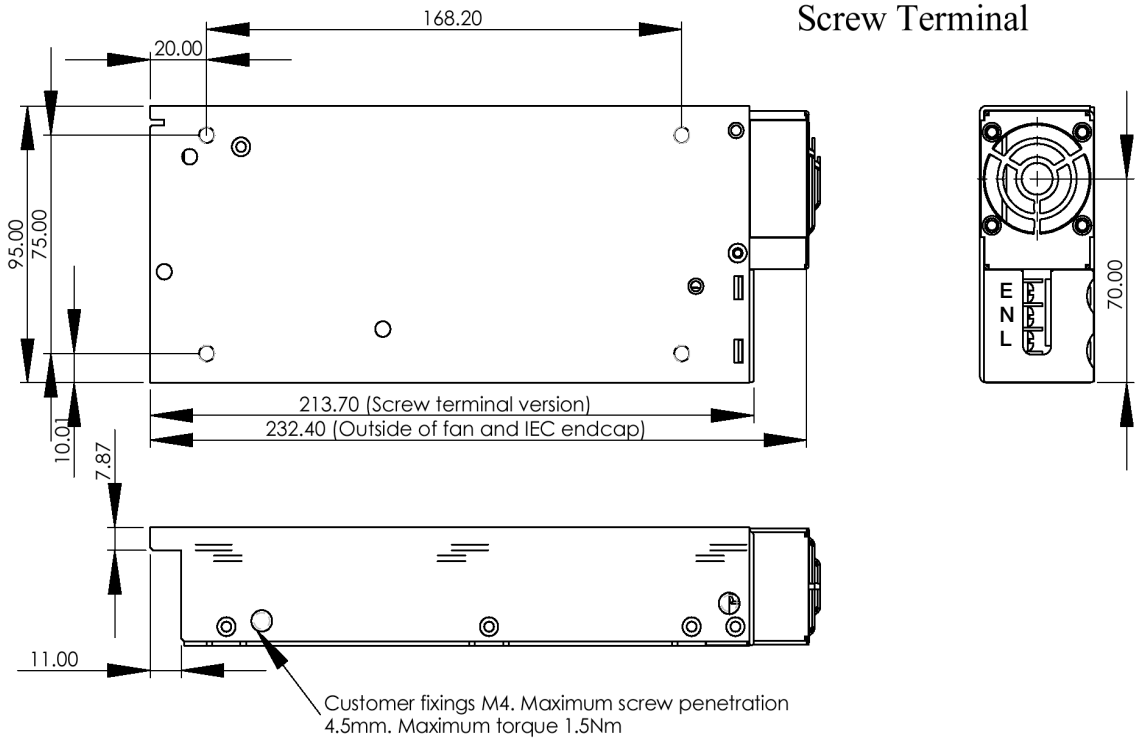
1	Do not connect
2	Do not connect
3	Do not connect
4	Do not connect
5	Ch1 0V
6	Ch1 Output Good
7	Ch1 Remote Sense –
8	Ch1 Remote Sense +

Primary Option Signals

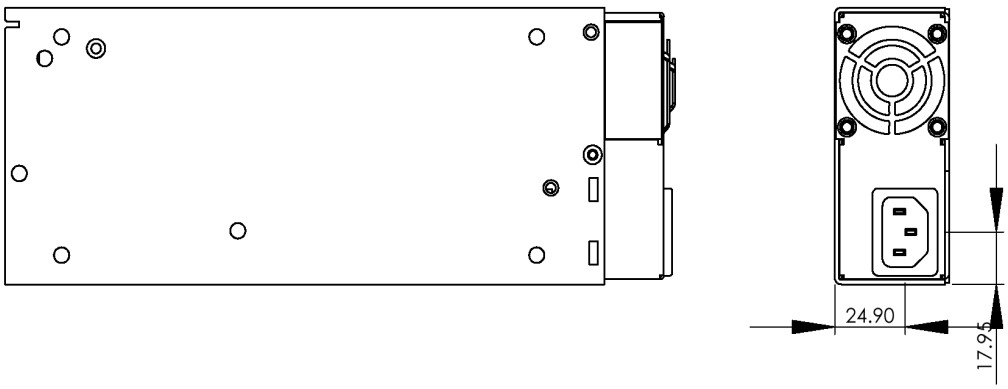
1	+V Standby
2	0V Standby
3	ES & IS Logic 1
4	ES & IS Logic 0
5	Do not connect
6	Do not connect
7	AC Good Collector
8	AC Good Emitter



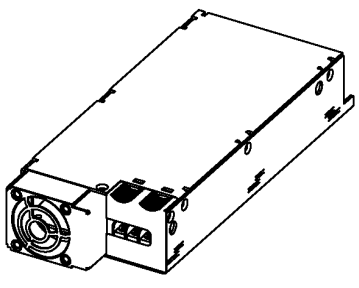
Screw Terminal



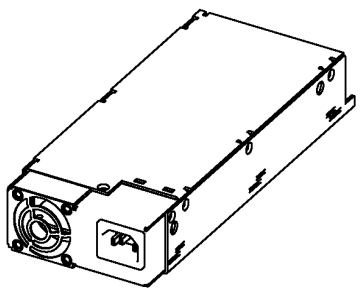
IEC Inlet



Screw terminal



IEC terminal



NOTES
1) Tolerances:
Edge to edge/Edge to centre, +/-0.5
Centre to centre +/-0.2

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