

Input Parameters

NOMINAL INPUT VOLTAGE RANGE	100 - 240V AC or 133 - 318VDC*
MAX. INPUT VOLTAGE RANGE	90 - 264V AC or 120 - 350VDC*
INPUT FREQUENCY	47- 63Hz
MAXIMUM INPUT CURRENT	3AAC or 2.2A _{dc}
INRUSH CURRENT	<40A

* For IEC/EN60601-1, 100 - 240Vac Nom. only

Outputs

Output Parameters

NV175 models as described below:

Unit Configuration Code

NVx-abode-f-g

where:

x = 1 for NV175

a = Number of Outputs :1,2,3 or 4

b = Channel 1 Output Voltage*: 5, T or G

c = Channel 2 Output Voltage*: 1,2,3,5 or 0

d = Channel 3 Output Voltage*: T,F,G or 0

e = Channel 4 Output Voltage*: 3H,5H,T,F, TH,FH followed by P for positive output or 0

f = Global Option: N for 5V version, N1 for 12V version and N2 for 13.5V version,N3 for 5V version with ATX compatibility, N4 for 12V version with ATX compatibility or nothing for no Global Option present.

g = U for chassis, C for U chassis and cover and cover or nothing for Open Frame.

* Table 1: Output Voltage Cross Reference	
Designation	Output Voltage
0	Omit Output
A	1.5
1	1.8
B	2
2	2.7
3, 3H	3.3
5, 5H	5
D	6.5
T	12
F	15
TH	12
FH	15
G	24

All channels are adjustable except for Channel 4 and Global Options in accordance with the following table:

Output Channel	Vout	Adjustment Range	Output Current
CH1	5	5 - 5.5	25A
	12	12-15.5	15A
	24	24-28.5	7.5
CH2	1.8	0.9 - 3.8	15A
	2.7	2.5 - 3.8	15A
	3.3	2.5 - 3.8	15A
CH2 (CH1 12V)	5	3.3-5.5	10A
CH2 (CH1 24V)	5	3.3-5.5	8A
CH3	12	12 - 15	5A
	15	12 - 15	5A
	24	18-24.5	2.5A
CH4	+/-3.3	Fixed	2A
	+/-5	Fixed	2A
	+/-12	Fixed	1A
	+/-15	Fixed	1A
	+/-12	Fixed	2A
Global Option	5	Fixed	2A
	5 (N3 ATX version)	Fixed	2A
	12	Fixed	1A
	12 (N4 ATX version)	Fixed	1A
	13.5	Fixed	1A

Channels 1 and 2 combined output currents must not exceed 25A

All NV175 PSUs can output 180W except 5V channel 1 models which can output 175W

The products listed in the following table are typical examples:

Model	CH1	CH2	CH3	CH4	Global Option
NV1-453FF	5V/25A	3.3V/15A	15V/5A	-15V/1A	No
NV1-4G5FFH-N3	24V/7.5A	5V/8A	15V/5A	15V/2A	5V/2A
NV1-350TT-N	5V/25A	-	12V/5A	-12V/1A	5V/2A
NV1-453TT-N1	5V/25A	3.3V/15A	12V/5A	-12V/1A	12V/1A
NV1-250T0-N2	5V/25A	-	12V/5A	-	13.5V/1A

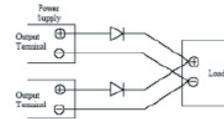
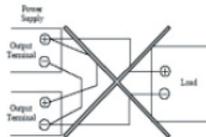
Modules Connected in Series or Parallel.

Module outputs can be connected in series. See section on output Limitations.

Module outputs cannot be paralleled to other modules in the same power supply or paralleled to other modules in another unit.

Paralleling of modules for redundant operation i.e. Output load does not exceed the load current of a single module. This can be achieved by isolating the outputs using orring diodes.

With this method remote sensing around these diodes is not allowed.



Output Limitations

- All outputs are SELV except under the following circumstance: Outputs connected in series are non-SELV if the total output voltage + 30% of the max. rated output voltage of the output with the highest rated voltage exceeds 60Vdc (the 30% addition allows for a single fault in any one individual channel).
- If the total voltage of outputs connected in series exceed the 60Vdc SELV limit then all outputs must be considered non-SELV.
- The total voltage of outputs connected in series must not exceed 160V.
- Outputs that are earthed in the end use equipment and have not been connected in series are SELV.
- Non-SELV outputs are hazardous and must not be made user accessible. They must be guarded or a deflector fitted during installation to avoid a service engineer making inadvertent contact with the output terminals, or dropping a tool onto them.
- All outputs have operational spacings to earth, and due consideration must be given to this in the end product design.
- Adjusting output voltage beyond the stated range may cause overvoltage protection (OVP) to operate, whereby the output will cycle on and off or latch off for channels 1 & 2. To reset for normal operation simply adjust the potentiometer to reduce the output voltage to within its range or cycle the input off then on if the unit has latched off.

Important safety instructions

General

This product range has been assessed and approved for both DC & AC input and designed to accept non- mains isolated DC input up to 240Vac mains.

Servicing

These products are not customer serviceable. Repairs may only be carried out by Lambda UK or their authorised agents. These products are not authorised for use as critical components in nuclear control systems, life support systems or equipment for use in hazardous environments without the express written approval of the Managing Director of Coutant Lambda Ltd.

Approval Limitations: Use in North America (AC units only)

When this product is used on 180VAC-250VAC mains with no neutral, connect the two live wires to L(live) and N (neutral) terminals on the input connector. In this instance double pole fusing is required

High Voltage Warning

Dangerous voltages present within the power supply. These products can be supplied with or without a case and the professional installer must protect service personnel from inadvertent contact with these dangerous voltages in the end equipment.

Safety Class of Protection

These products are designed for the following parameters : Material Group IIIa, Pollution Degree 2, Overvoltage Category II, Class 1 (earthed), Indoor use as part of an overall equipment such that the product is accessible to service engineers only.

Special Instructions for medical applications (IEC/EN/UL/CSA 60601-1)

- i) These products are designed for continuous operation within an overall enclosure, and must be mounted such that access to the mains terminals is restricted. See clause 16, IEC60601-1, EN60601-1 and UL/CSA 60601-1.
- ii) These products are NOT suitable for use in the presence of flammable anaesthetic mixtures with air or with oxygen, or with nitrous oxide.
- iii) These products are classed as ordinary equipment, type B and have a basic barrier between input and output according to IEC60601-1, EN60601-1 and UL/CSA 60601-1. They are NOT protected against the ingress of water.
- iv) Connect only apparatus complying with IEC60601-1, EN60601-1 and UL/CSA 60601-1 to the signal ports.
- v) Except for permanently installed equipment as defined in clause 57.6 of IEC60601-1, EN60601-1 and UL/CSA 60601-1, the overall equipment in which these products are installed must have double pole fusing (rated T3.15AH, 250V) on the input mains supply. The products themselves have single pole fusing (rated 3.15A, 250V T3.15 AH, HBC) in the live line.
- vi) Reference should be made to local regulations concerning the disposal of these products at the end of their useful life.
- vii) These products have not been assessed to IEC/EN60601-1-2 (EMC) but EMC test data is available from Lambda UK.

Special Instructions for IEC/EN/UL/CSA 61010-1

Whilst all individual outputs are classed as SELV outputs in accordance with IEC/EN/60950 (<60Vdc or 42.4V peak) serried combinations of these outputs may exceed these values and become hazardous output voltages. For IEC/EN61010-1 the equivalent limits are 70Vdc, 33Vrms or 46.7V peak. Provided these levels are not exceeded, the outputs are not considered hazardous for IEC/EN61010-1.

For IEC/EN60601-1, 100 - 240Vac Nom. only

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

If the earth terminal of the NV175 PSU is connected to the main incoming earth conductor of the end equipment, the installer must cover the NV175 earth symbol with a label bearing the earth symbol of IEC60417-5019.

Safety approvals - Pending

UL60950-1 and CSA22.2 No.60950-1 - UL Recognised. C-UL for Canada.

IEC / EN60950-1 - BSI Kitemark and CE mark.

CE marking when applied to any NV175 product, indicates compliance with the Low Voltage Directive (73/23EEC) as modified by the CE Marking Directive (93/68/EEC) in that it complies with EN60950-1.

IEC/EN/UL/CSA 61010-1 and IEC/EN/UL/CSA 60601-1 - BSI CB and Kitemark

UL/CSA 60601-1 - UL + C -UL approval

Input markings and symbols

	Alternating Current (AC)	+ Live - Neutral E Earth
	Direct Current (DC)	
	Danger, shock, hazard	
	Caution refer to supplementary	

Environmental parameters

Operation

Temperature: 0 to 65°C (derating 2.5%/°C above 50°C)
 Humidity: 5 to 95% RH, non-condensing
 Air Pressure 78kPa to 106kPa.
 Altitude: -200m to 3000m

Storage and Transportation

Temperature: -25°C to +85°C Humidity: 5% to 95% RH, non-condensing
 Air Pressure: 54kPa to 106kPa. Altitude: -200m to 5000m

Shock

+ / - 3 x 30G shocks in each plane, total 18 shocks. 30G shocks are 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 2G (sweep and endurance at resonance) in all 3 planes.

Cooling

The following method must be used for determining the safe operation of PSUs in end equipment. The components listed in the following table must not exceed the temperatures given. To determine the component temperatures the heating tests must be conducted in accordance with the requirements of EN60950-1:2001 Clause 4.5. Consideration should also be give to the requirements of other safety standards.

Test requirements include: PSU to be fitted in its end-use equipment and operated under the most adverse conditions permitted in the end-use equipment handbook/specification and which will result in the highest temperatures in the PSU. To determine the most adverse conditions consideration should be given to the end use equipment maximum operating ambient, the PSU loading and input voltage, ventilation, end use equipment orientation, the position of doors & covers, etc. Temperatures should be monitored using type K fine wire thermocouples (secured with cyanoacrylate adhesive, or similar) placed on the hottest part of the component (out of any direct airflow) and the equipment should be run until all temperatures have stabilised.

Circuit Ref.	Description	Max Temperature (Deg. C)
L3,L7	Common mode choke winding	130(140)
C1,C4	X capacitors	100
C6,C12	Capacitor	105
L2	Boost choke winding	130
C7	Electrolytic capacitor	70 (105)
T1,T2	Transformer winding	130
TX701	Global option transformer	90
L5	Channel 1 output choke	125
XL401	Output choke	125
XL501 or XL601	Channel 3 and 4 choke	125
IC1*	Channel 4 Voltage regulator	110
Various	All other electrolytic capacitors	90 (105)

*1A channel 4 only
 See components to be monitored diagram

Higher temperature limits (in brackets) maybe used but product life may be reduced.

Level of insulation

Dielectric Strength testing is carried out as follows:
 Primary mains circuit to earth - 2.25 - 2.35kVDC
 ..*Primary mains circuits to secondary:4.25-4.35kVDC.
 Outputs to earth are isolated to 200VDC.
 *Important Note: This test is not possible with Y capacitors fitted to the unit as damage to these capacitors will occur.It is also necessary to short circuit the outputs together and to earth

General installation instructions

- The NV175 family of component power supplies is designed for use within other equipment or enclosures which restrict access to authorised competent personnel only. For safe installation and operation of this product, carefully follow the instructions listed below.
- i) These products are normally supplied open frame, but can be supplied (-C version) with a U chassis with cover. The unit covers/chassis are designed to protect only skilled personnel from hazards and must not be made user accessible.
 - ii) These products are Class 1 and must therefore be reliably earthed and professionally installed in accordance with the prevailing electrical wiring regulations and the safety standards covered herein.
 - iii) These products are IPX0, and therefore chemicals/solvents, cleaning agents and other liquids must not be used.
- ii) Potentiometers should be adjusted using Bourns tool H91.

Mechanical parameters

DO NOT USE MOUNTING SCREWS WHICH PENETRATE THE UNIT BY MORE THAN 4.5 MM.
 Weight 450gms max.

Connection details

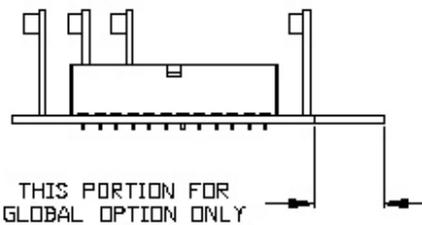
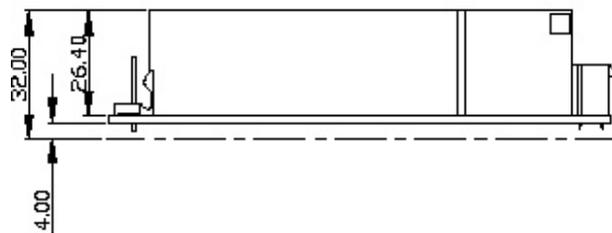
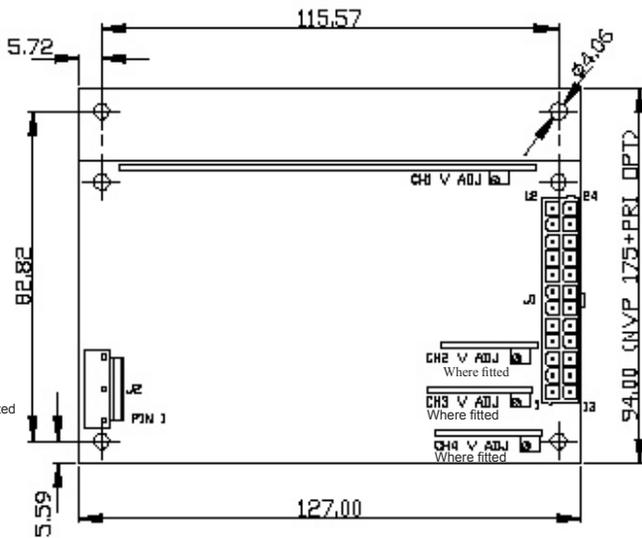
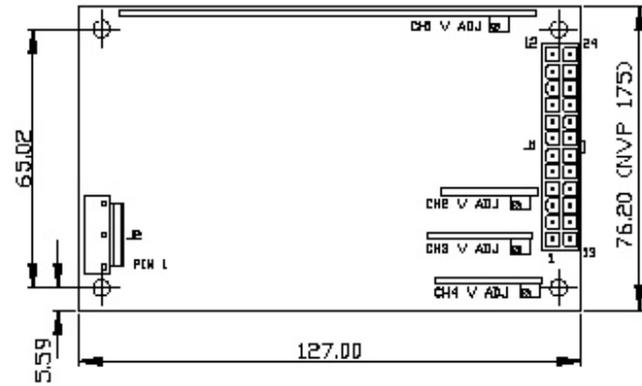
Input Connections

Molex 3 pin header 7A/250V MAX.

Fuse

Internal fuse (F1): T3.15AH, 250V, 5x20mm.

NVP 175/NVP 175 + GLOBAL OPTION
 CUSTOMER OUTLINE & CONNECTION DRAWING
 REVISION 9 07.07.05 (PROVISIONAL)



Pin	Function
1	Earth
2	Not Connected
3	Live
4	Not Connected
5	Neutral

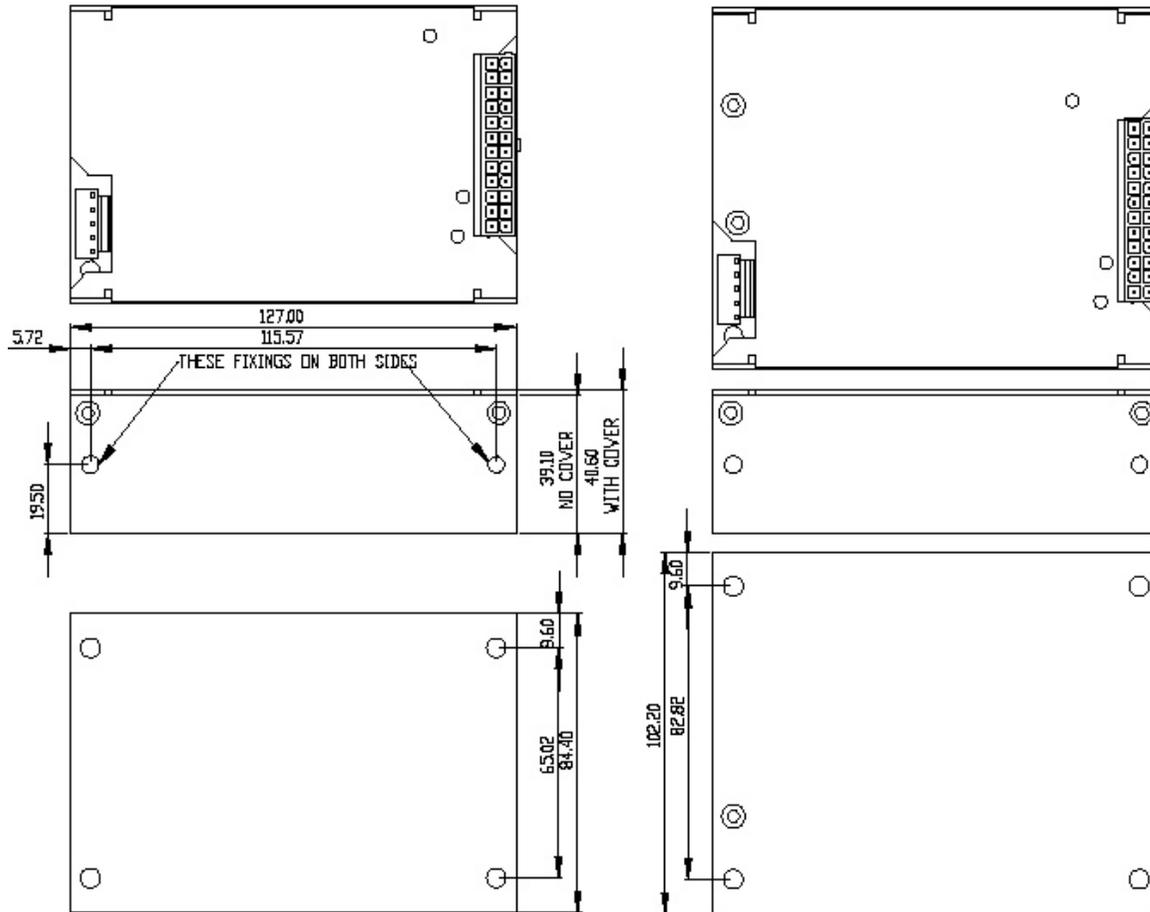
Pin	Function	Pin	Function
12	STANDBY +VE	24	STANDBY RETURN
11	POWER GOOD	23	REMOTE ON/OFF
10	CH1 OUTPUT	22	CH1 POWER GOOD
9	CH1 OUTPUT	21	CH1 OUTPUT
8	CH1 OUTPUT	20	CH1 OUTPUT
7	+SENSE CH1	19	-SENSE
6	0V COMMON	18	0V COMMON
5	0V COMMON	17	0V COMMON
4	CH2 OUTPUT	16	0V COMMON
3	CH2 OUTPUT	15	CH2 OUTPUT
2	+SENSE CH2	14	-SENSE CH2
1	CH3 OUTPUT	13	CH4 OUTPUT

Conn	Housing	Pins
J1	39-01-2245	44476-3112
J2	09-50-8051	08-52-0113

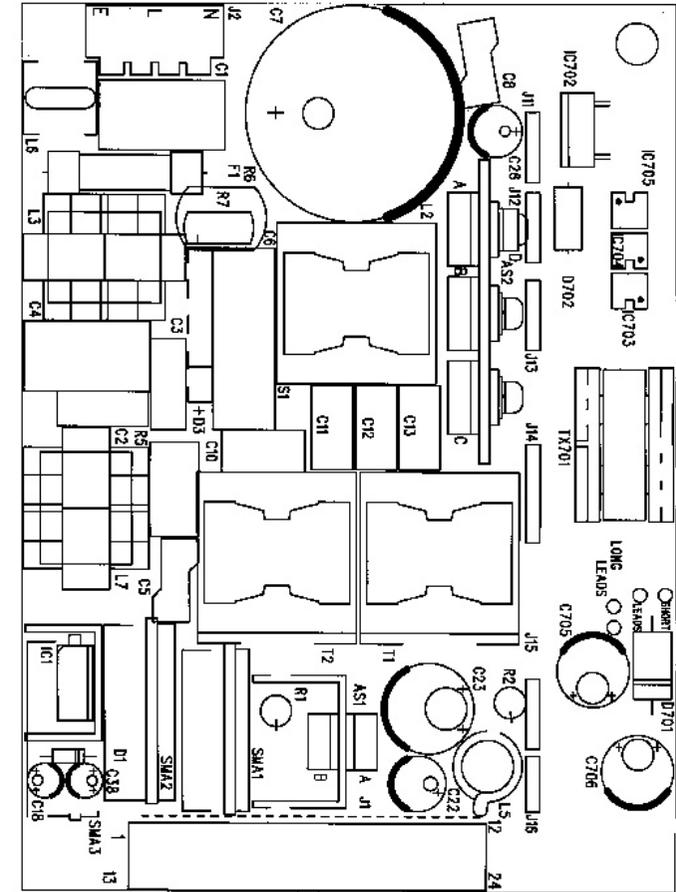
NV175 WITH OPTIONAL CASE

WITHOUT GLOBAL OPTION

WITH GLOBAL OPTION



- NOTES
 1 ALL CUSTOMER FIXINGS M3
 MAXIMUM PENETRATION 4.5mm
 MAXIMUM TORQUE 0.9Nm
 2 ALL TOLERANCES +/-0.5mm



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NV175 Components to be Monitored

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