



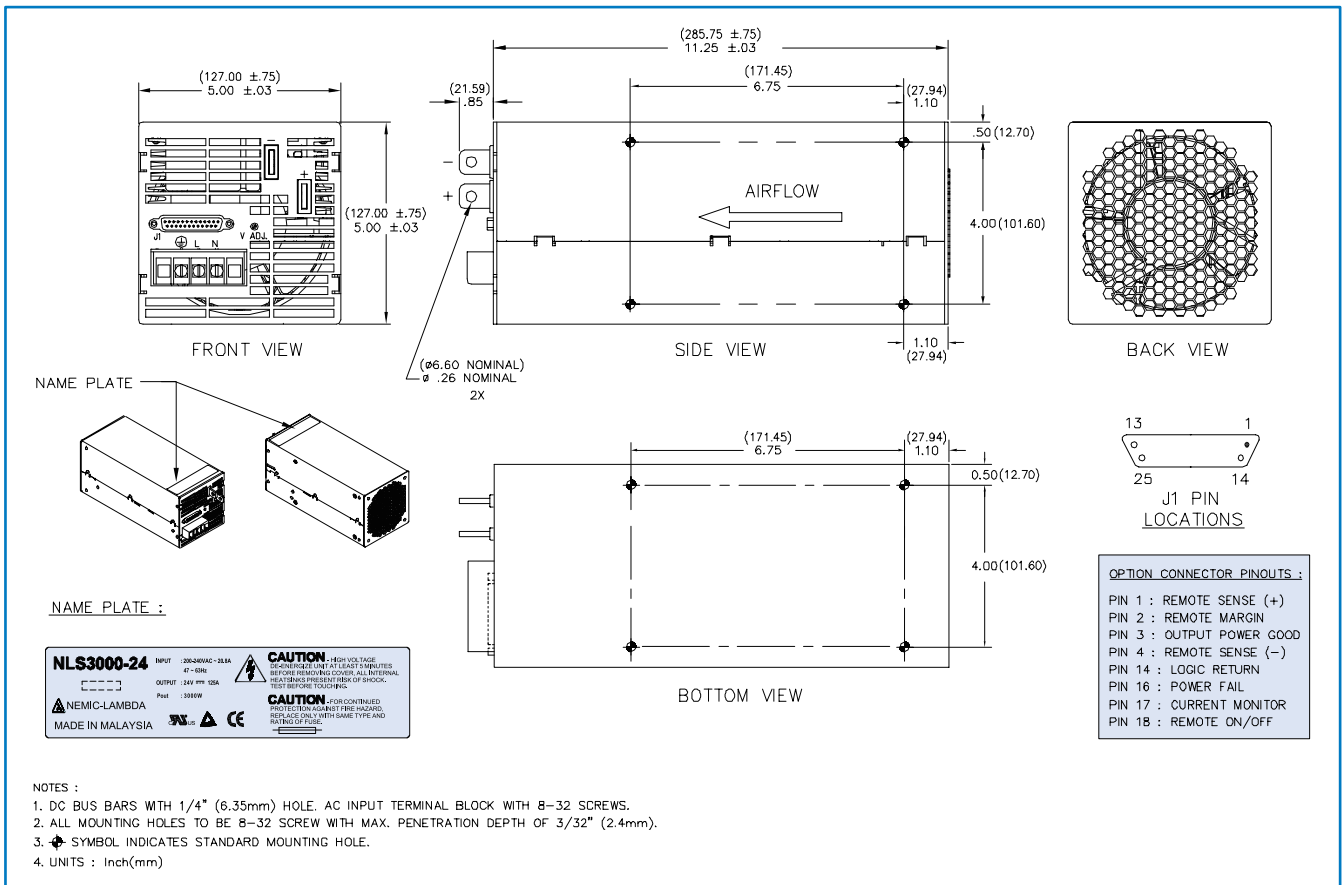
NEMIC-LAMBDA

Features

- Compact Size: 5" X 5" X 11.25" (127mm X 127mm X 286mm) Construction
- High Power Density - 10.7W per cubic inch
- Power Factor Corrected (0.99)
- OCP and OVP Protection
- International Standards Compliance

Applications

- Test Equipments
- Industrial Process Control Systems
- Telecommunication Systems
- Burn-In Equipments
- Suitable for Systems that employ Distributed Power Architectures



SPECIFICATION

No.	Items	Unit	Model: NLS3000-24
			Vo
1	Nominal Output Voltage	V	24
2	Maximum Output Current	A	125
3	Minimum Output Current	A	0
4	Max Output Power	W	3000
5	Efficiency (typ) (*1)	%	83.5
6	Input Voltage & Frequency Range	-	180 ~ 264VAC, 47 ~ 63Hz
7	Input Current (max)	A	20.8
8	Inrush Current (typ) (*1)	A	30 @ Cold Start
9	Power Factor (typ) (*1)	-	0.99
10	PFHC	-	Built to meet EN61000-3-2
11	Output Voltage Adjust Range	V	21.6 ~ 25.2
12	Ripple/Noise (max) (*2)	% p-p	1
13	Line Regulation (max) (*3)	%	0.2
14	Load Regulation (max) (*4)	%	0.5
15	Temperature Coefficient (max) (*5)	% / °C	0.03
16	Over Current Protection (min) (*6)	%	105
17	Over Voltage Protection (*7)	V	28 ~ 32
18	Remote Sensing	-	Possible
19	Over Temperature Protection (*7)	-	Yes
20	Turn On Time (max) (*1, *8)	ms	1,000
21	Hold-up time (typ) (*1, *9)	ms	15
22	Remote ON/OFF (*10)	-	Yes
23	Remote Margin (*11)	%	± 5
24	Power Fail Signal (Loss Of AC) (*12)	-	Yes
25	Output Power Good (Loss Of DC Output) (*13)	-	Yes
26	Current Monitor (Output) (*14)	-	Yes
27	Operating Temperature, Humidity	°C, %RH	0~+50, 10~90 (Non-condensing)
28	Storage Temperature, Humidity	°C, %RH	-30~+85, 10~95 (Non-condensing)
29	Cooling	-	Internal Forced Air
30	Vibration	-	At no operation, 10 - 55Hz (Sweep for 1min) 14.7m/s ² constant, X, Y, Z 1hour each.
31	Shock (in package)	-	Less than 147.1m/s ²
32	EMI (Radiated & Conducted Emission)	-	Built to meet FCC Part 15, Level A EN55022, Level A
33	Safety Standard	-	UL1950, CSA22.2 No.950, EN60950 & CE (Low Voltage Directive)
34	Weight	g	< 5330
35	Size (W x H x D)	inch	5 x 5 x 11.25 (Refer to outline drawing)
		mm	127 x 127 x 286 (Refer to outline drawing)
36	Warranty	-	1 year

Note:

- *1. At Vin = 230VAC, maximum output power (unless otherwise specified) & Ta = 25°C.
- *2. Bandwidth of scope: 20MHz
- *3. From Vin = 180 ↔ 264Vac, constant load.
- *4. From 0% load ↔ 100% load, constant input voltage.
- *5. From Ta = 0 → 50°C, output will not change more than 1%.
- *6. Constant current limit with automatic recovery.
- *7. Output shut down & to be reset by AC re-cycle.
- *8. Measure from the time AC is turn on to output reach > 85%.
- *9. Measure from the time AC is turn off to output reach < 85%.
- *10. Less than 0.5V will inhibit the supply. 2V or more or open will enable the supply. Logic Return should be connected to negative output. TTL Low is disable & High is enable.
- *11. Allows 5% change in output. Connecting the margin pin to the positive side of output provides +5% change in output. Connecting the margin pin to the negative side of output provides -5% change in output.
- *12. Upon loss of AC line, signal goes from high to low, 5ms before output falls to 85%. TTL Low is Fault & High is OK.
- *13. Provides output logic high signal when DC output is present. When the DC output is not present, the output will drop to logic ground. TTL Low is Fault & High is OK.
- *14. The current monitor signal is referenced to the negative output. It is accurate to within ±10% of full load, from 10 to 100%. The analog signal 0V to 5V is proportional to the load when increased from no load to maximum load.

Instruction Manual

■ Before Using The Power Supply Unit

Be sure to take note of precautions and warnings indicated in this manual when using this product. Improper usage may lead to electric shock or fire. Be sure to read this instruction manual thoroughly before using this product.

■ Warning and Caution

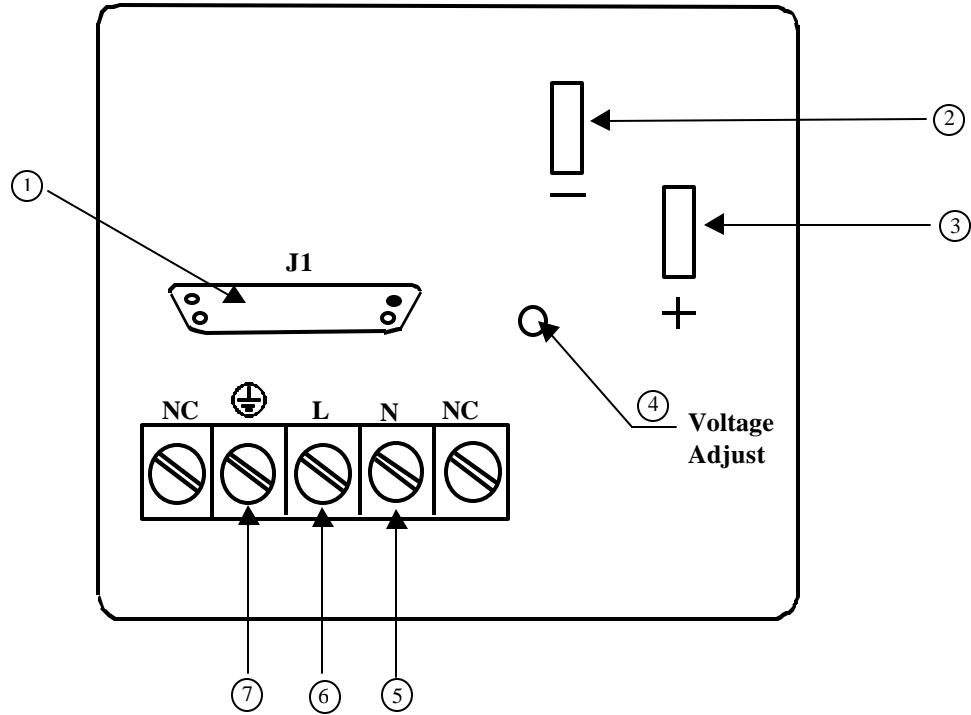
- Do not modify nor remove cover.
- Do not touch the internal components, they may have high voltage or high temperature. You may get electrical shock or burned.
- The output voltage and current of the power supply is hazardous to untrained personnel. Exercise caution when connecting and energizing the power supply.
- When the unit is operating, keep your hands and face away from it; you may get injured by an accident.
- This power supply is intended for use in commercial and industrial controlled environments and is designed to meet UL requirements for Pollution Degree 2. A reasonably dust-proof enclosure is recommended.
- Never operate the unit under over current or shorted conditions for long time which could result in damage or insulation failure. There is no possibility for fire or burning.
- Confirm connections to input/output terminals and signal terminals are correct as indicated in the instruction manual.
- The information in this document is subject to change without prior notice. For actual design-in, please refer to the latest publications of data sheet, etc., for the most up-to date specifications of the unit.
- No part of this document may be copied or reproduced in any form, or by any mean without prior written consent of Nemic-Lambda


■ Note : CE Marking

CE Marking, when applied to a product covered by instruction manual indicates compliance with the low voltage directive in that it complies with EN60950

DWG. No. : PA170-04-01		
APPD	CHK	DWG

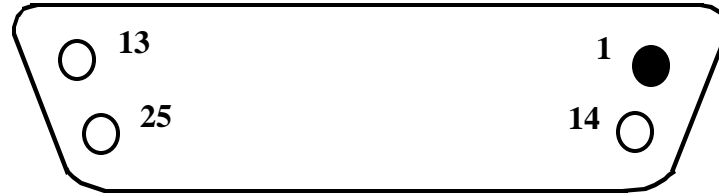
1. Front Panel Explanation



- (1) J1 : RS-232 Connector
- (2) - : - Output terminal (DC output bus bars with ¼” through hole, M6 screw)
- (3) + : + Output terminal (DC output bus bars with ¼” through hole, M6 screw)
- (4) Voltage Adjust : Output voltage adjust trimmer(The output voltage rises when a trimmer is turned clockwise.)
- (5)  : Safety Earth (Frame ground)
- (6) AC input terminal L : Live Line (Fuse in line)
- (7) AC input terminal N : Neutral line

Note : The airflow exits at the connector end of the supply.

2. J1 Connector Pinouts



J1 Pin Locations

Pin 1 : Remote Sense (+) - Regulating the DC voltage at the load

Pin 2 : Margin - Allow $\pm 5\%$ change in output voltage

Pin 3 : DC OK - Loss of AC line, this alarm signal goes from high to low

Pin 4 : Remote Sense (-) - Regulating the DC voltage at the load

Pin 5 ~ 13 : No Connection

Pin 14 : Logic Return - Signal Ground

Pin 15 : No Connection


Pin 16 : Power Fail Signal - Provides output logic high signal when DC output is present

Pin 17 : Current Monitor - Signal referenced to negative output

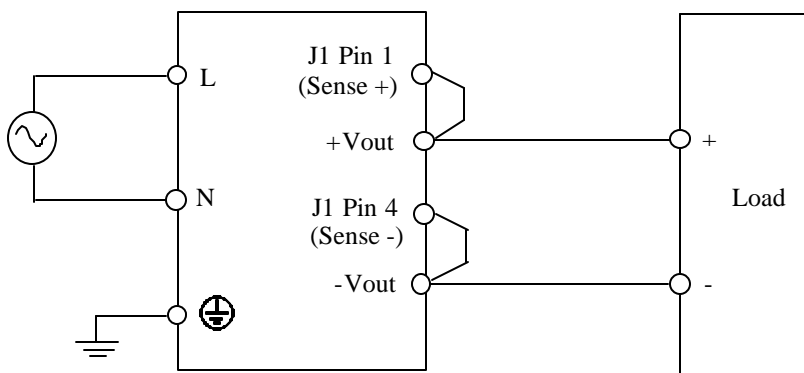
Pin 18 : Logic Inhibit - Remote on/off

Pin 19 ~ 25 : No Connection

3.1. Terminal Connection Method

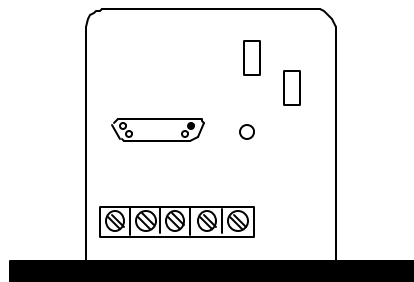
- Input must be off when making connection.
- Connect  terminal to ground terminal of the equipment.
- The output load line and input shall be separated and twisted to improved noise sensitivity.

Basic Connection



Connect Sense(+) to “+” output terminal and Sense(-) to “-“ output terminal with a twisted or shielded pair of wire to avoid potential noise interference.

3.2. Standard Mounting Direction



4. Functions and Precautions

4-1. Input Voltage Range

Input Voltage range is single phase 180 ~ 264VAC (47 ~ 63Hz). Input voltage which is out of specification may cause unit damage.

4-2. Output Voltage Range

V.ADJ trimmer on the front panel can adjust the output within the range. Output voltage range is within +5% ~ -10% of nominal output voltage. The output voltage will be increased if the trimmer is turned clockwise. Note that overvoltage protection (OVP) function may trigger if the output voltage is increased excessively.

4-3. Over Voltage Protection (OVP)

OVP set point is a percentage of nominal output voltage value. When output voltage exceed OVP set point, output voltage shut down. The input shall be removed for a few minutes and recycle the AC for recovery of the output.

4-4. Over Current Protection (OCP)

OCP function operates when the output current exceeds 105% of maximum DC rated output current specification. The output will be automatically recovered when short circuit or overload condition are released immediately. Inhibit to operate the unit over current or shorted conditions for a long time, which could result in damage of power supply.

4-5. Over Temperature Protection (OTP)

This function operates and shuts down the output when the ambient or temperature of inside power supply rises excessively. To restore the output after it is shut off by OTP, it is necessary to shut off the input , and turn on the input again after the unit cools down.

4-6. Power Fail Signal/AC Power Fail

Upon loss of AC line, this alarm signal goes from high to low, 5ms before the output drop <85%. Internal pull up (1k) to 5V is provided.

4-7. Remote Sense Lines

This function compensates voltage drop of wiring from output terminals to load terminals. Connect Sense(+) to “+” output terminal and Sense(-) to “-“ output terminal. For applications that require long output bus cables or if the load is at a distance from the power supply, it is recommended that the remote sense leads shall be connected at the load to compensate the drop in output cables for up to 0.5V. Sense(+) to “+” load and Sense(-) to “-“ load. If remote sensing terminals are opened, the output may rise up to 105% (max) of the nominal output voltage.

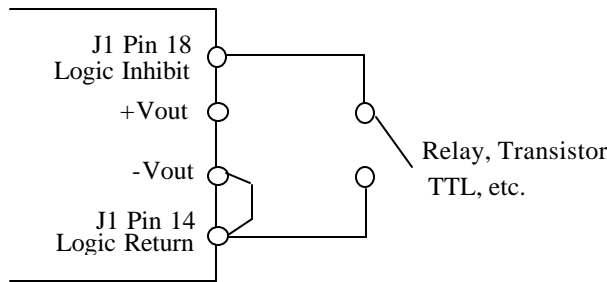
4-8. Remote ON/OFF Control or Logic Inhibit

Without turning the input supply on and off, the output can be enables and disabled using this function. Initial inrush current and fan operation are unaffected by the inhibit line as the AC input power remains connected at all times. The standards for this function are as follows.

- (1) TTL compatible.
- (2) Logic return should be connected to negative output.
- (3) A switch or relay or a transistor can be used as an ON/OFF switch.

Control Mode is shown below.

CNT Level to Logic Return	Output Status
Open or H (2V ~ 5V)	ON
Short or L (0V ~ 0.5V)	OFF



4-9. Current Monitor

The current monitor is an analog signal (0 ~ 5VDC) which is linearly proportional to the output current. 0 VDC for no load and 5VDC for full rated load (with respect to negative output). It is accurate to within ±10% from 10% to 100% load. The output impedance is 10k ohms.

4-10. Power Supply Fail/DC OK

When the DC output is present, this signal will provides output logic high signal. This option will drop to logic ground when the DC output is not present

4-11. Margin/Program

By connecting the margin pin to the positive side of the output provides +5% change in the output. There will be -5% change in the output when the margin pin is connected to negative side of the output.

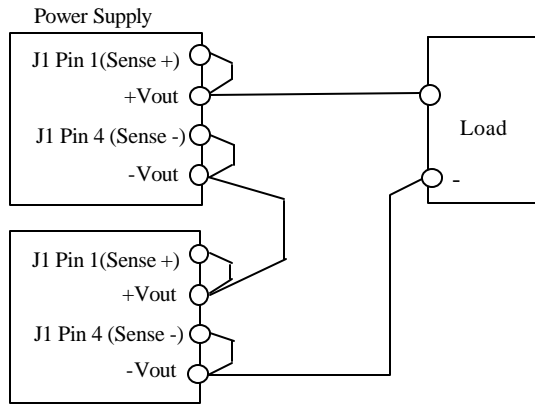
4-12. Output Ripple & Noise

Use a normal probe with 20MHz bandwidth scope to measure the ripple and noise. Upon measurement of the ripple voltage, make sure that the oscilloscope probe leads are not too long. In the case that the load lines are long, ripple will become larger and a electrolytic capacitor, film capacitor, etc. placed across the load terminals may be necessary.

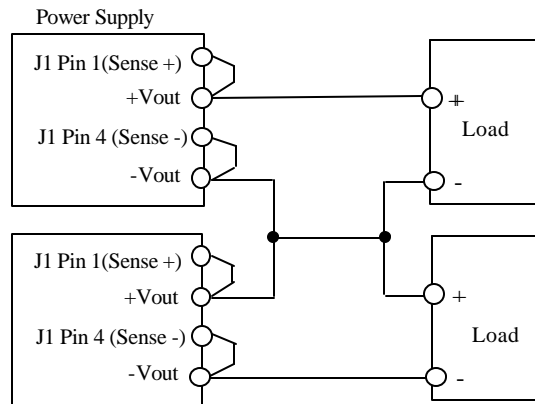
4-13. Series Operation

For series operation, either method (A) or (B) is possible.

Method(A)



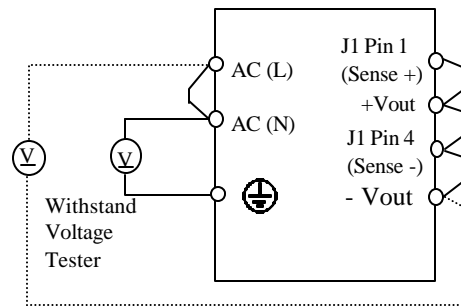
Method (B)



5. Withstand Voltage

This series is designed to withstand 2.121kVDC between primary to FG(chassis) and primary to secondary for 5 seconds. When testing withstand voltage, set current limit of withstand voltage test equipment at 10mA. The applied voltage must be gradually increased from zero to testing value and then gradually decreased for shut down.

- Primary ~ FG (chassis) (solid line)
2.121kVDC 5sec. (10mA)
- Primary ~ Secondary (dotted line)
2.121kVDC 5sec. (10mA)



6. Wiring Method

- The output load line and input line shall be separated and twisted to improve noise sensitivity.
- The sensing lines shall be twisted and separated from output lines.
- Use all lines as thick and short as possible to make lower impedance.
- Noise can be reduced by attaching a capacitor to load terminal.
- For safety and EMI considerations, connect \oplus terminal to the mounting set ground terminal.

7. Before concluding that the unit is at fault...

Before concluding that the unit is at fault, make the follow checks.

- Check if the rated input voltage is connected.
- Check if the wiring of input and output is correct.
- Check if the wire material is not too thin.
- Check if the output voltage control (Voltage Adjust) is properly adjusted.
- If use function of Remote ON/OFF control, Check if the Remote ON/OFF control connector is opened.
- Check if the output current and output wattage do not over specification.