c UL us UL 62368-1 | CE Report EN 62368-1 BS | UK CA Report EN 62368-1 | CB IEC 62368-1 | RoHS

Size: 0.77in x 0.24in x 0.4in
(19.65mm x 6mm x 10.16mm)

FEATURES

- Fixed Input Voltage
- Unregulated Outputs
- High Efficiency
- Industry Standard Pin-Out
- No Load Input Current as Low as 8mA
- Continuous Short Circuit Protection
- I/O Isolation Test Voltage: 3KVDC
- RoHS Compliant
- IEC62368-1, UL62368-1, EN62368-1, and EN 62365-1 BS Safety Approvals

DESCRIPTION

The LANM series of isolated DC/DC converters offers 1 watt of output power in a compact 0.77” x 0.24” x 0.4” through hole package. This series consists of unregulated single and dual output models with a fixed input voltage. Each model features high efficiency, industry standard pin-out, and continuous short circuit protection. This series is also RoHS compliant and has IEC62368-1, UL62368-1, EN62368-1, and EN 62365-1 BS safety approvals.

MODEL SELECTION TABLE
Single Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current		Efficiency		Output Power	Maximum Capacitive Load	Certification
			Min.	Max.	Min.	Typ.			
LANM0909NSH	9VDC (8.1-9.9VDC)	9VDC	12mA	111mA	77%	81%	1W	470µF	-
LANM1203NSH	12VDC (10.8-13.2VDC)	3.3VDC	30mA	303mA	71%	75%	1W	2400µF	UL/EN/BS EN/IEC
LANM1205NSH		5VDC	20mA	200mA	76%	80%		2400µF	
LANM1209NSH		9VDC	12mA	111mA	76%	80%		1000µF	
LANM1212NSH		12VDC	9mA	83mA	76%	80%		560µF	
LANM1215NSH		15VDC	7mA	67mA	77%	81%		560µF	
LANM1224NSH		24VDC	5mA	42mA	77%	81%		220µF	
LANM1505NSH	15VDC (13.5-16.5VDC)	5VDC	20mA	200mA	76%	80%	1W	2400µF	UL/EN/BS EN/IEC
LANM1509NSH		9VDC	12mA	111mA	76%	80%		1000µF	
LANM1512NSH		12VDC	9mA	83mA	76%	80%		560µF	
LANM1515NSH		15VDC	7mA	67mA	77%	81%		560µF	
LANM1524NSH		24VDC	5mA	42mA	77%	81%		220µF	-
LANM2403NSH	24VDC (21.6-26.4VDC)	3.3VDC	30mA	303mA	69%	75%	1W	2400µF	UL/EN/BS EN/IEC
LANM2405NSH		5VDC	20mA	200mA	73%	79%		2400µF	
LANM2472NSH		7.2VDC	13mA	139mA	74%	80%		1000µF	-
LANM2409NSH		9VDC	12mA	111mA	74%	80%		1000µF	UL/EN/BS EN/IEC
LANM2412NSH		12VDC	9mA	83mA	75%	81%		560µF	
LANM2415NSH		15VDC	7mA	67mA	75%	81%		560µF	
LANM2424NSH		24VDC	5mA	42mA	75%	81%		220µF	

MODEL SELECTION TABLE
Dual Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current		Efficiency		Output Power	Maximum Capacitive Load[1]	Certification
			Min.	Max.	Min.	Typ.			
LANM1203NDH	12VDC (10.8-13.2VDC)	±3.3VDC	±15mA	±152mA	71%	75%	1W	1200µF	UL/EN/BS EN/IEC
LANM1205NDH		±5VDC	±10mA	±100mA	76%	80%		1200µF	
LANM1209NDH		±9VDC	±5mA	±56mA	76%	80%		470µF	-
LANM1212NDH		±12VDC	±5mA	±42mA	77%	81%		220µF	UL/EN/BS EN/IEC
LANM1215NDH		±15VDC	±4mA	±34mA	77%	81%		220µF	
LANM1224NDH		±24VDC	±2mA	±21mA	76%	80%		100µF	
LANM1505NDH	15VDC (13.5-16.5VDC)	±5VDC	±10mA	±100mA	76%	80%	1W	1200µF	UL/EN/BS EN/IEC
LANM1509NDH		±9VDC	±5mA	±56mA	76%	80%		470µF	-
LANM1512NDH		±12VDC	±5mA	±42mA	76%	80%		220µF	UL/EN/BS EN/IEC
LANM1515NDH		±15VDC	±4mA	±34mA	77%	81%		220µF	
LANM1524NDH		±24VDC	±2mA	±21mA	77%	81%		100µF	-
LANM2403NDH	24VDC (21.6-26.4VDC)	±3.3VDC	±15mA	±150mA	72%	76%	1W	1200µF	-
LANM2405NDH		±5VDC	±10mA	±100mA	74%	80%		1200µF	UL/EN/BS EN/IEC
LANM2409NDH		±9VDC	±5mA	±56mA	74%	80%		470µF	-
LANM2412NDH		±12VDC	±5mA	±42mA	75%	81%		220µF	UL/EN/BS EN/IEC
LANM2415NDH		±15VDC	±4mA	±34mA	73%	79%		220µF	
LANM2424NDH		±24VDC	±2mA	±21mA	74%	80%		100µF	

SPECIFICATIONS

All specifications are based on Ta=25°C, Humidity <75%RH, Nominal Input Voltage, and Rated Output Load unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
INPUT SPECIFICATIONS						
Input Voltage Range				See Table		
Input Current	No Load	9V Input		8		mA
		12V Input		8		
		15V Input		8		
		24V Input		8		
	Full Load	9V Input		137	144	mA
		12V Input		112	118	
		15V Input		84	88	
		24V Input		56	59	
Reflected Ripple Current[2]				15		mA
Surge Voltage (1 sec. Max.)	9V Input		-0.7		12	VDC
	12V Input		-0.7		18	
	15V Input		-0.7		21	
	24V Input		-0.7		30	
Input Filter				Capacitance Filter		
Hot Plug				Unavailable		
OUTPUT SPECIFICATIONS						
Output Voltage				See Table		
Voltage Accuracy				See Output Regulation Curves (Fig. 1)		
Line Regulation	Input Voltage Change: ±1%	3.3VDC Output			1.5	-
		Others			1.2	
Load Regulation	10% - 100%	3.3VDC Output		15	20	%
		5VDC Output		10	15	
		Others		8	10	
Output Power				See Table		
Output Current				See Table		
Maximum Capacitive Load	Tested at input voltage range and full load			See Table		
Ripple & Noise[3]	20MHz bandwidth	24VDC Output		50	100	mVp-p
		Others		30	75	
Temperature Coefficient	Full Load			±0.02		%/°C
PROTECTION						
Short Circuit Protection				Continuous, Self-Recovery		
ENVIRONMENTAL SPECIFICATIONS						
Operating Temperature	Derating when operating temperature ≥100°C (See Fig. 2)		-40		105	**°C**
Storage Temperature			-55		125	**°C**
Case Temperature Rise	Ta=25°C			25		**°C**
Storage Humidity	Non-Condensing		5		95	%RH
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds				300	**°C**
Vibration				10-150Hz, 5G, 0.75mm, along X, Y, and Z		
MTBF	MIL-HDBK-217F@25°C		3500			kHours
GENERAL SPECIFICATIONS						
Efficiency				See Table		
Switching Frequency	Full Load, Nominal Input Voltage			260		kHz
Isolation	Input-Output electric strength test for 1 minute with a leakage current of 1mA max.		3000			VDC
Insulation Resistance	Input-Output resistance at 500VDC		1000			MΩ
Isolation Capacitance	Input-Output Capacitance at 100kHz/0.1V			20		pF
PHYSICAL SPECIFICATIONS						
Weight				0.07oz (2.1g) Typ.		
Dimensions (L x W x H)				0.77in x 0.24in x 0.4in (19.65mm x 6mm x 10.16mm)		
Case Material	Black Plastic			Flame Retardant & Heat Resistant (UL94 V-0)		
Cooling Method				Free Air Convection		
SAFETY CHARACTERISTICS						
Safety Approvals[4]				IEC62368-1, UL62368-1, EN62368-1, EN 62365-1		
Emissions[5]	CE	CISPR32/EN55032		Class B		
	RE	CISPR32/EN55032		Class B		
Immunity[5]	ESD IEC/EN61000-4-2	Air ±8kV, Contact ±6kV		Perf. Criteria B		

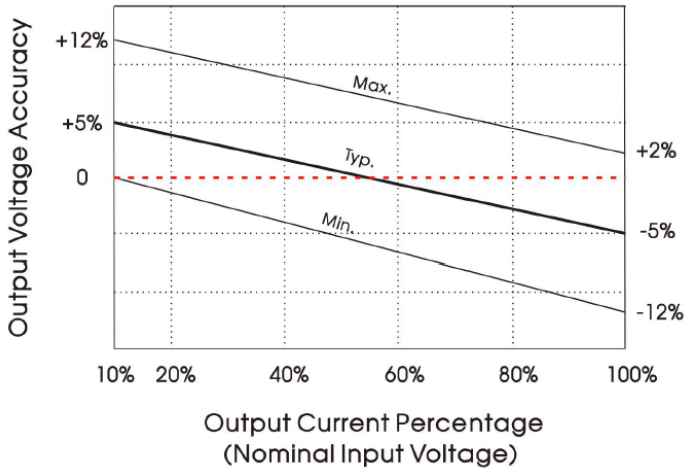
NOTES

1. The specified maximum capacitive load for positive and negative output is identical.
2. For reflected ripple current testing method and specific operation, please contact factory.
3. Parallel Cable method is used for ripple and noise test, please contact factory for more information.
4. This product is Listed to applicable standards and requirements by UL.
5. Refer to Fig. 4 for recommended Circuit Test.
6. If the product is not operated within the required load range, product performance cannot be guaranteed to comply with all parameters in in the datasheet.
7. Product customization is available, contact factory for more information.
8. Product should be classified according to ISO14001 and related environmental laws and regulations and should be handled by qualified units.

**Due to advances in technology, specifications subject to change without notice.*

TYPICAL PERFORMANCE CURVES

3.3VDC Output
Output Regulation Curve



Others
Output Regulation Curve

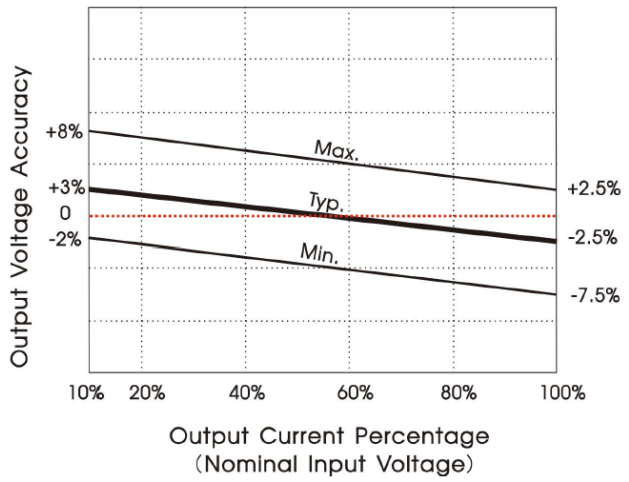


Fig. 1

Temperature Derating Curve

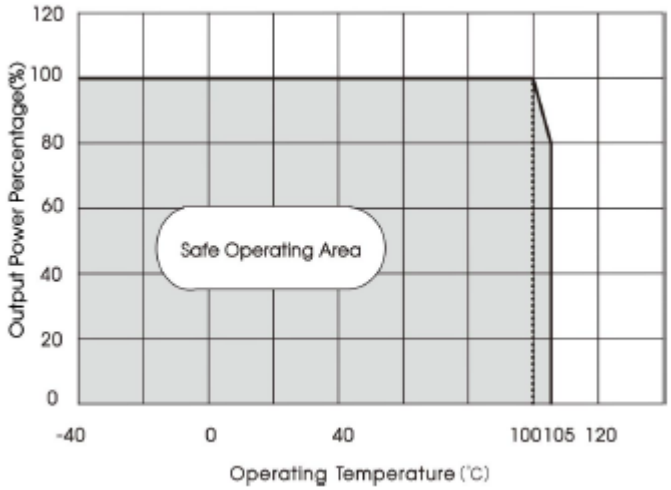
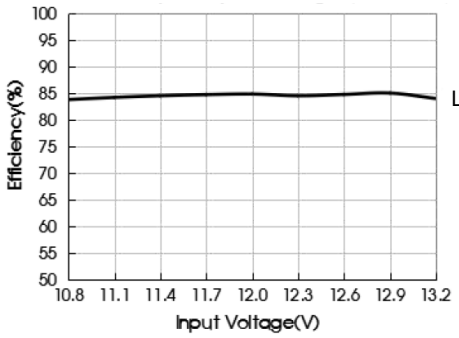


Fig. 2

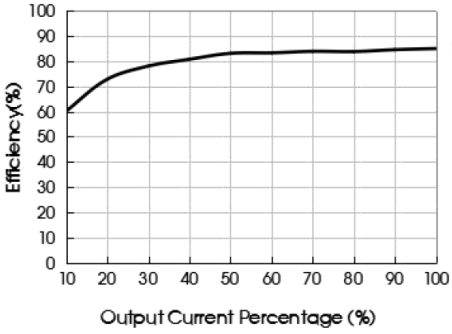
EFFICIENCY GRAPHS

Efficiency vs. Input Voltage (Full Load)



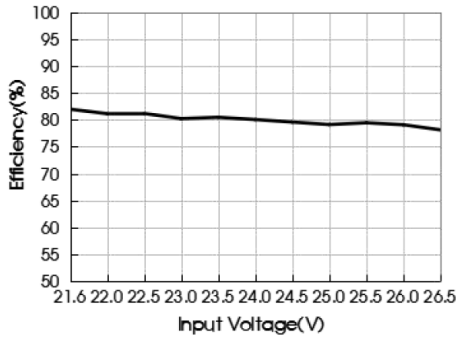
LANM1205NSH

Efficiency vs. Output Load (Vin=12V)



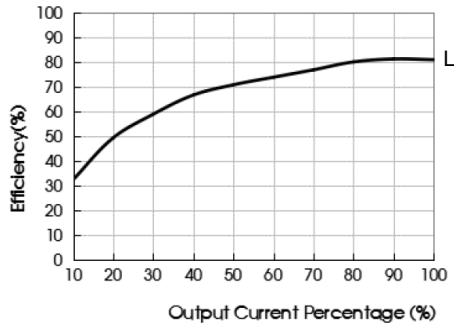
LANM1205NSH

Efficiency vs. Input Voltage (Full Load)



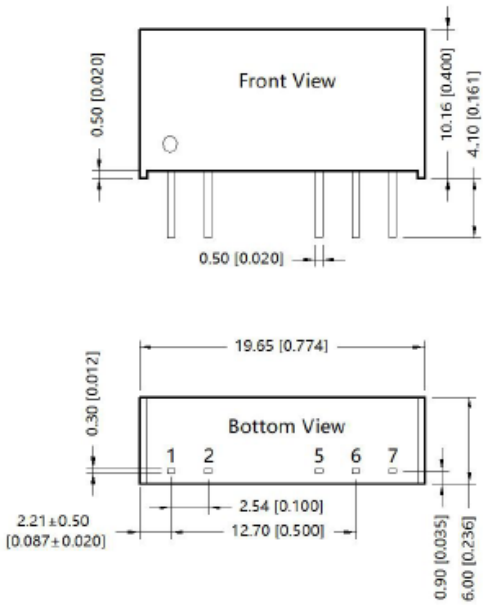
LANM2405NSH

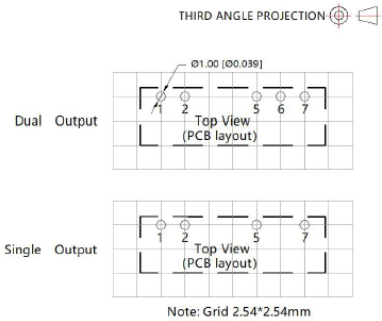
Efficiency vs. Output Load (Vin=24V)



LANM2405NSH

MECHANICAL DRAWINGS





Pin-Out

Pin	Single	Dual
1	Vin	Vin
2	GND	GND
5	0V	-Vo
6	No Pin	0V
7	+Vo	+V0

Note:
Unit: mm[inch]
Pin Section Tolerances: ±0.10 [±0.004]
General Tolerances: ±0.25 [±0.010]

DESIGN REFERENCE

1. Typical Application

Input and/or output ripple can be further reduced by connecting a filter capacitor from the input and/or output terminal to ground as shown in Fig. 3.
Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values, refer to Table 1.

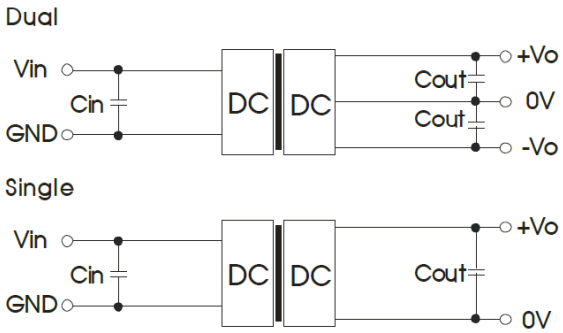


Fig. 3

Table 1: Recommended Input and Output Capacitor Values

Vin	Cin	Single Output	Cout	Dual Output	Cout
9VDC	2.2µF/25V	3.3VDC	10µF/16V	±3.3VDC	4.7µF/16V
12VDC	2.2µF/25V	5VDC	10µF/16V	±5VDC	4.7µF/16V
15VDC	2.2µF/25V	7.2VDC	2.2µF/16V	±9VDC	1µF/16V
24VDC	1µF/50V	9VDC	2.2µF/16V	±12VDC	1µF/16V
-	-	12VDC	2.2µF/25V	±15VDC	0.47µF/25V
-	-	15VDC	1µF/25V	±24VDC	0.47µF/25V
-	-	24VDC	1µF/50V	-	-

2. EMC Compliance Circuit

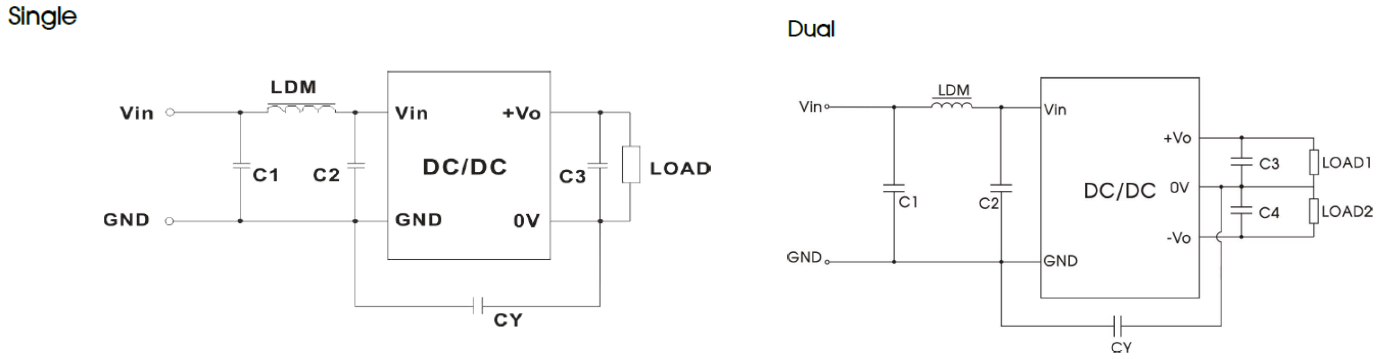


Fig. 4

Table 2: EMC Recommended Circuit Value Table

Emissions	C1/C2	4.7µF/50V
	CY	270pF/3kVDC
	C3/C4	Refer to Cout in Table 1
	LDM	6.8µH

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001: 2015 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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