Size: 1.25in x 0.80in x 0.40in
(31.8mm x 20.3mm x 10.2mm)

FEATURES

- Wide 2:1 or 4:1 Input Voltage Range
- Industrial Standard DIP-24 Package
- Full Regulated Output Voltage
- I/O Isolation of 1500VDC
- No Minimum Load Requirement
- RoHS & REACH Compliant
- Over Load and Short Circuit Protection
- Remote On/Off Control
- Shielded Metal Case with Insulated Baseplate
- Designed-In Conducted EMI Meets EN55022 Class A & FCC Level A
- UL/cUL/IEC/EN 60950-1 Safety Approval

DESCRIPTION

The LANK 10W Series power modules are low-profile DC/DC converters that provide fully regulated single or dual outputs and operate over 2:1 or 4:1 input voltage ranges. The modules have a maximum power rating of 10W as well as high efficiency, continuous short circuit, and remote on/off control. The EN55022 level A conducted noise compliance minimizes design-in time and eliminates the need for external components. This series is RoHS and REACH compliant and has UL/cUL/IEC/EN 60950-1 safety approvals.

MODEL SELECTION TABLE

Single Output Models

Model Number[1]	Input Voltage Range	Output Voltage	Output Current	Input Current		Output Power	Maximum Capacitive Load	Efficiency (typ.)
				No Load (typ.)	Max Load (typ.)			
LANK1233W10	12VDC (9~18VDC)	3.3VDC	2700mA	20mA	853mA	10 Watts	1000µF	86%
LANK1205W10		5VDC	2000mA		980mA		1000µF	85%
LANK1251W10		5.1VDC	2000mA		1000mA		1000µF	85%
LANK1212W10		12VDC	833mA		947mA		470µF	88%
LANK1215W10		15VDC	666mA		935mA		330µF	89%
LANK2433W10	24VDC (18~36VDC	3.3VDC	2700mA	15mA	432mA	10 Watts	1000µF	86%
LANK2405W10		5VDC	2000mA		490mA		1000µF	85%
LANK2451W10		5.1VDC	2000mA		500mA		1000µF	85%
LANK2412W10		12VDC	833mA		468mA		470µF	88%
LANK2415W10		15VDC	666mA		468mA		330µF	89%
LANK2433UW10	24VDC (9~36VDC)	3.3VDC	2700mA	30mA	432mA	10 Watts	1000µF	86%
LANK2405UW10		5VDC	2000mA		490mA		1000µF	85%
LANK2451UW10		5.1VDC	2000mA		500mA		1000µF	85%
LANK2412UW10		12VDC	833mA		479mA		470µF	87%
LANK2415UW10		15VDC	666mA		478mA		330µF	87%
LANK2424UW10		24VDC	416mA		478mA		150µF	87%
LANK4833W10	48VDC (36~75VDC)	3.3VDC	2700mA	10mA	216mA	10 Watts	1000µF	86%
LANK4805W10		5VDC	2000mA		245mA		1000µF	85%
LANK4851W10		5.1VDC	2000mA		250mA		1000µF	85%
LANK4812W10		12VDC	833mA		239mA		470µF	87%
LANK4815W10		15VDC	666mA		237mA		330µF	88%
LANK4833UW10	48VDC (18~75VDC)	3.3VDC	2700mA	20mA	216mA	10 Watts	1000µF	86%
LANK4805UW10		5VDC	2000mA		245mA		1000µF	85%
LANK4851UW10		5.1VDC	2000mA		250mA		1000µF	85%
LANK4812UW10		12VDC	833mA		239mA		470µF	87%
LANK4815UW10		15VDC	666mA		236mA		330µF	87%
LANK4824UW10		24VDC	416mA		244mA		150µF	87%

MODEL SELECTION TABLE

Dual Output Models

Model Number[1]	Input Voltage Range	Output Voltage	Output Current	Input Current		Output Power	Maximum Capacitive Load[2]	Efficiency (typ.)
				No Load (typ.)	Max Load (typ.)			
LANK1212DW10	12VDC (9~18VDC)	±12VDC	±416mA	20mA	945µF	10 Watts	220µF#	88%
LANK1215DW10		±15VDC	±333mA		935µF		150µF#	89%
LANK2412DW10	24VDC (18~36VDC)	±12VDC	±416mA	15mA	473µF	10 Watts	220µF#	88%
LANK2415DW10		±15VDC	±333mA		468µF		150µF#	89%
LANK2412DUW10	24VDC (9~36VDC)	±12VDC	±416mA	30mA	478µF	10 Watts	220µF#	87%
LANK2415DUW10		±15VDC	±333mA		478µF		150µF#	87%
LANK4812DW10	48VDC (36~75VDC)	±12VDC	±416mA	10mA	244µF	10 Watts	220µF#	87%
LANK4815DW10		±15VDC	±333mA		237µF		150µF#	88%
LANK4812DUW10	48VDC (18~75VDC)	±12VDC	±416mA	20mA	244µF	10 Watts	220µF#	87%
LANK4815DUW10		±15VDC	±333mA		244µF		150µF#	87%

SPECIFICATIONS

All specifications are based on Ta=25°C, Resistive Load, Nominal Input Voltage, and Rated Output Current 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	2:1 Input Range		12V Input Models	9	12	18	VDC
			24V Input Models	18	24	36	
			48V Input Models	36	48	75	
	4:1 Input Range		24V Input Models	9	24	36	
			48V Input Models	18	48	75	
Input Surge Voltage (1 sec. Max)	12V Input Models			-0.7		25	VDC
	24V Input Models			-0.7		50	
	48V Input Models			-0.7		100	
Start-Up Threshold Voltage	2:1 Input Range		12V Input Models			9	VDC
			24V Input Models			18	
			48V Input Models			36	
	4:1 Input Range		24V Input Models	7	8	9	
			48V Input Models	14	16	18	
Under Voltage Shutdown	2:1 Input Range		12V Input Models			8.5	VDC
			24V Input Models			17	
			48V Input Models			34	
	4:1 Input Range		24V Input Models			8.5	
			48V Input Models			17	
Input Filter	All models			Internal Pi Type			
OUTPUT SPECIFICATIONS							
Output Voltage				See Table			
Voltage Setting Accuracy					±1	±2	%Vnom.
Line Regulation	Vin=Min. to Max. @Full Load				±0.5	±1.0	%
Load Regulation	Io=0% to 100%				±0.5	±1.2	%
Voltage Balance	Dual Output, Balanced Loads				±1	±2.0	%
Output Power				See Table			
Output Current				See Table			
Minimum Load				No Minimum Load Requirement			
Maximum Capacitive Load				See Table			
Ripple & Noise	0-20MHz Bandwidth	2:1 Input Range	3.3V & 5V Output Models		80		mVp-p
			Other Outputs		100		
		4:1 Input Range	All Outputs			100	
Reflected Ripple Current	4:1 Input Range		24V Input Models		40		mA
			48V Input Models		30		
Transient Recovery Time	25% Load Step Change				300	600	µsec
Transient Response Deviation	25% Load Step Change				±3	±5	%
Temperature Coefficient					±0.01	±0.02	%/°C
REMOTE ON/OFF CONTROL							
Converter On				3.5V~12V or Open Circuit			
Converter Off				0~1.2V or Short Circuit (Pin 1 and Pin 2)			
Control Input Current (On)	Vctrl=5V					500	µA
Control Input Current (Off)	Vctrl=0V					-500	µA
Control Common				Referenced to Negative Input			
Standby Input Current						10	mA
PROTECTION							
Short Circuit Protection	Hiccup Mode, Automatic Recovery				0.7		Hz
Over Load Protection	Hiccup		2:1 Input Range	110	150		%
			4:1 Input Range		150		
ENVIRONMENTAL SPECIFICATIONS							
Operating Temperature	2:1 Input Range			-40		+85	°C
	4:1 Input Range		Natural Convection	-40		+85	
Storage Temperature				-50		+125	°C
Case Temperature						+105	°C
Humidity (non-condensing)						95	% rel. H
Lead Temperature	1.5mm from case for 10Sec.					260	°C
Cooling	4:1 Input Range			Natural Convection[3]			
MTBF (calculated)	MIL-HDBK-217F@25°C, Ground Benign			1,000,000			Hours

SPECIFICATIONS

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
GENERAL SPECIFICATIONS						
Efficiency			See Table			
Switching Frequency				330		kHz
I/O Isolation Voltage	60 Seconds		1500			VDC
	1 Second		1800			
I/O Isolation Resistance	500VDC		1000			MΩ
I/O Isolation Capacitance	100kHz, 1V			1000	1500	pF
PHYSICAL SPECIFICATIONS						
Weight			0.61oz (17.3g)			
Dimensions (L x W x H)			1.25in x 0.80in x 0.40in (31.8mm x 20.3mm x 10.2mm)			
Case Material			Metal with Non-Conductive Baseplate			
Pin Material	2:1 Input Range		Tinned Copper			
	4:1 Input Range		Copper Alloy with Gold Plate over Nickel Subplate			
SAFETY CHARACTERISTICS						
Safety Approvals	UL/cUL 60950-1 recognition (CSA Certificate)[4] IEC/EN 60950-1 (CB Report)					
EMI	Conduction	EN55022, FCC Part 15	Class A			
EMS	EN 55024					
	ESD	EN61000-4-2 Air±8kV, Contact ±6kV	A			
	Radiated Immunity	EN61000-4-3 10V/m	A			
	Fast Transient[5]	EN61000-4-4 ±2kV	A			
	Surge[5]	EN61000-4-5 ±1kV	A			
	Conducted Immunity	EN61000-4-6 10Vrms	A			

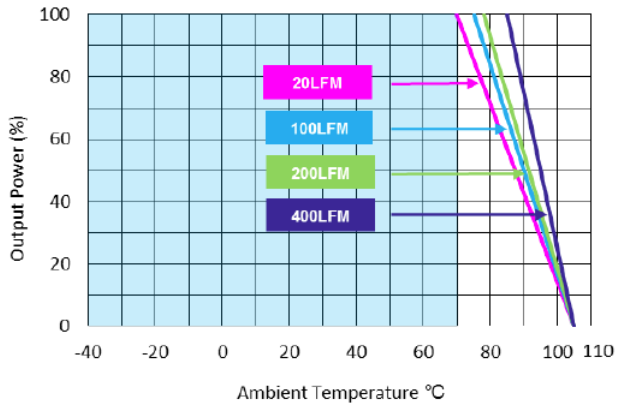
NOTES

1. Model numbers with “U” indicate models with a 4:1 input voltage range. Ex: LANK2433UW10
2. # for each output
3. “Natural Convection” is about 20LFM but is not equal to still air (0 LFM).
4. This product is Listed to applicable standards and requirements by UL.
5. To meet EN61000-4-4 & EN61000-4-5, an external capacitor across the input pins is required. Suggested capacitor: 220µF/100V
6. Transient recovery time is measured to within 1% error band for a step change in output load of 75% to 100%.
7. It is recommended to protect the converter by a fast blow fuse in the input supply line.
8. Other inputs and outputs voltages may be available, please contact factory.

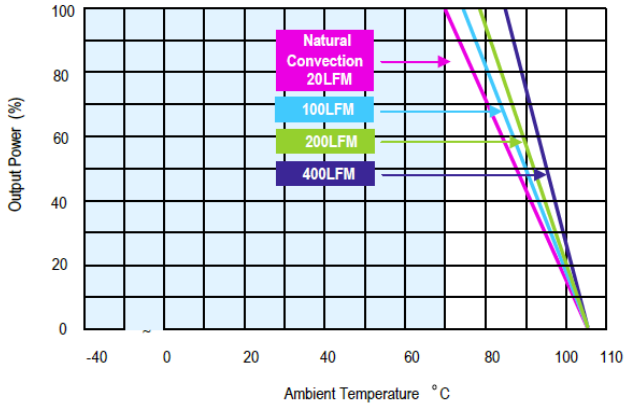
**Due to advances in technology, specifications subject to change without notice.*

DERATING CURVES

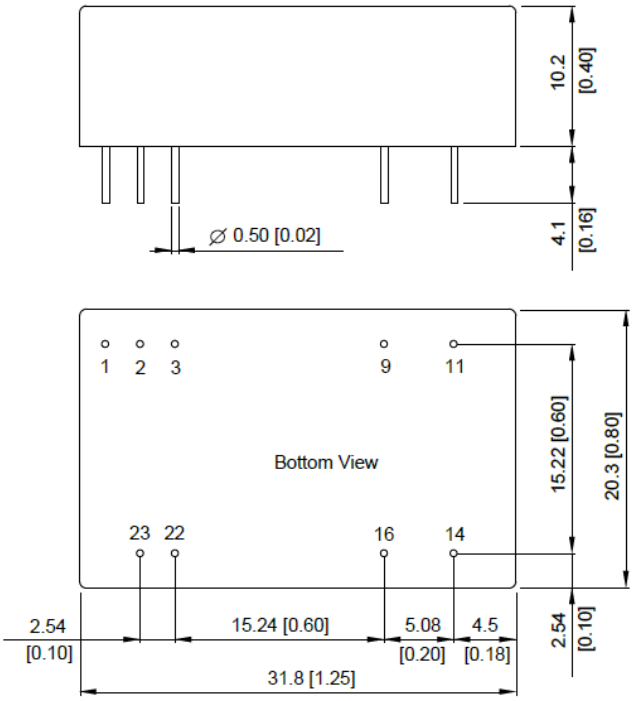
2:1 Input Voltage Range



4:1 Input Voltage Range



MECHANICAL DRAWINGS



Pin Connections

Pin	Single Output	Dual Output
1	Remote On/Off	Remote On/Off
2	-Vin	-Vin
3	-Vin	-Vin
9	No Pin	Common
11	NC	-Vout
14	+Vout	+Vout
16	-Vout	Common
22	+Vin	+Vin
23	+Vin	+Vin

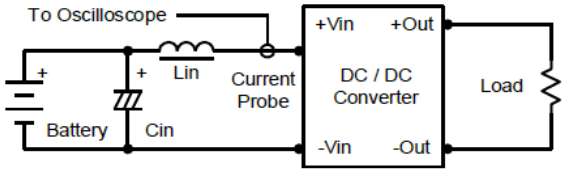
NC: No Connection

Notes:
All dimensions in mm (inches)
Tolerances: X.X±0.5 (X.XX±0.02)
X.XX±0.25 (X.XXX±0.01)
Pin Diameter Ø 0.5 ±0.05 (0.02±0.002)

TEST SETUP

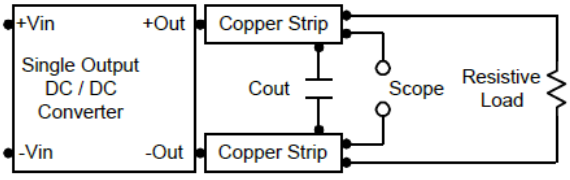
Input Reflected-Ripple Current Test Setup (4:1 Input Voltage Range Only)

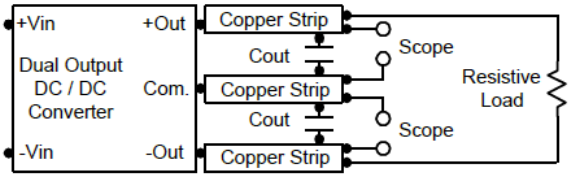
Input reflected-ripple current is measured with an inductor Lin (4.7µH) and Cin (220µF, ESR < 1.0Ω at 100KHz) to simulate source impedance. Capacitor Cin, offsets possible battery impedance. Current ripple is measured at the input terminals of the module, measurement bandwidth is 0-500KHz.



Peak-to-Peak Output Noise Measurement Test

Use a Cout 0.47µF ceramic capacitor. Scope measurement should be made by using a BNC socket, measurement bandwidth is 0-20MHz. Position the load between 50mm and 75mm from the DC/DC Converter.





TECHNICAL NOTES

Remote On/Off

Positive logic remove on/off turne the module on during a logic high voltage on the remote on/off pin, and off during a logic low. To turn the power module on and off, the user must supply a switch to control the voltage between the on/off terminal and the –Vin terminal. The switch can be an open collector or equivalent. A logic low is 0V to 1.2V. A logic high is 3.5V to 12V. The maximum sink current at the on/off terminal (Pin 1) during a logic low is -100µA.

Overload Protection

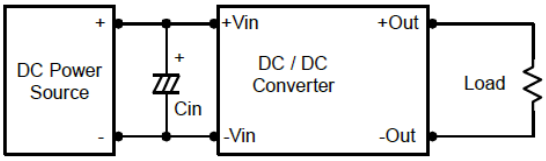
To provide protection in a fault (output overload) condition, the unit is equipped with internal current limiting circuitry and can endure current limiting for ar unlimited duration. At the point of current-limit inception, the unit shifts from voltage control to current control The unit operates normally once the output current is brought back into its specified range.

Overvoltage Protection

The output overvoltage clamp consists of control circuitry, which is independent of the primary regulation loop, that monitors the voltage on the output terminals. The control loop of the clamp has a higher voltage set point than the primary loop. This provides a redundant voltage control that reduces the risk of output overvoltage.

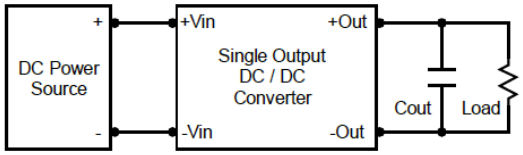
Input Source Impedance

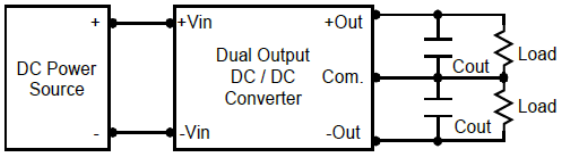
The power module should be connected to a low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module. In applications where power is supplied over long lines and out put loading is high, it may be necessary to use a capacitor at the input to ensure startup. By using a good quality low Equivalent Series Resistance (ESR < 1.0Ω at 100KHz) capacitor of a 12µF for the 12V, 4.7µF for the 24V input devices and a 2.2µF for the 48V device, capacitor mounted close to the power module helps ensure stability of the unit.



Output Ripple Reduction

A good quality low ESR capacitor placed as close as practicable across the load will give the best ripple and noise performance. To reduce output ripple, it is recommended to use 3.3µF capacitors at the output.



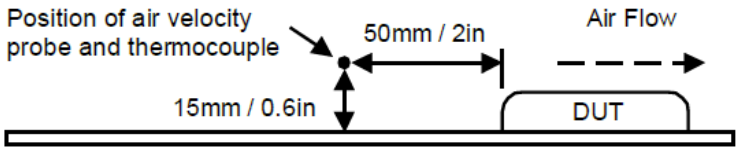


Maximum Capacitive Load

This series has limitation of maximum connected capacitance on the output. The power module may operate in current limiting mode during start-up, affecting the ramp-up and the startup time. Maximum capacitance can be found in the data sheet.

Thermal Conditions

Many conditions affect the thermal performance of the power module, such as orientation, airflow over the module, and board spacing. To avoid exceeding the maximum temperature rating of the components inside the power module, the case temperature must be kept below 105°C. The derating curves are determined from measurements obtained in a test setup.



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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