

1500 LN series



www.martekpower.com

Single Output DC/DC Converter



DESCRIPTIONS

The 1500LN, single output power modules are 8 to 15 watt DC/DC converters available in a single output configuration providing 2.0 VDC to 15 VDC outputs and are fully compatible to Tyco series LW010 and LW015 providing both positive and negative on/off logic. These 400kHz, switching converters are available 48 VDC inputs with efficiencies up to 88%. Offering pin for pin and full functionality to the Tyco LW series these converters are the only true second source available in the market.

OUTPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Output Voltage Set Point		±1		% Output voltage at nominal line & FL
Total Band Error	-2		+2	% Output voltage including line/load regulation setting
Line Regulation		±0.5		% Output voltage measured from min. input line to max.
Load Regulation		±0.5		% Output voltage measured from FL to no load
Temperature Coefficient		±0.01		% per degree C
Ripple/Noise		60	100	mV p-p measured at 20 MHz bandwidth with ext. 1 µf cap.
Output Voltage and Current				Refer to model selection chart
Load Transient Response		±2		% Deviation of output voltage for a 25% load change for 200µS
Short Circuit Protection				Indefinite, Automatic Recovery
Overvoltage Protection		135		%; Clamp type, (2.0 VDC output set at 3.3 VDC)

FEATURES

- Pin Compatible to Tyco LW010 and LW015
- Positive and Negative Logic
- Up to 88% Efficiency
- Industry Standard 1.0" X 2.0" X 0.375" Package
- Remote On/Off, Output Over Voltage and Short Circuit Protection

INPUT CHARACTERISTICS

	Min	Typ	Max	Units/Comments
Input Voltage	36	48	75	VDC
Under Voltage Lock out	33			VDC
Minimum Input Current	0			mA
Full Load Input Current			0.39 A (0.24 for 2.0VDC model)	
Input Fuse Requirements			1	Amps; Slow blow type
Efficiency by Model				
1502V0S48LN		72		%; FL Nominal Line
1503V3S48LN		80		%; FL Nominal Line
1505S48LN		84		%; FL Nominal Line
1512S48LN		87		%; FL Nominal Line
1515S48LN		88		%; FL Nominal Line
Switching Frequency	360	400	440	kHz; Factory set
Remote Shut Down (Optional)				
Positive Logic Off	0		0.80	VDC; Referenced to input
Positive Logic On	3.5			VDC or open; Referenced to input
Negative Logic On	0		0.80	VDC; Referenced to input
Negative Logic Off	3.5			VDC or open; Referenced to input
Input - Output Capacitance		1200		pF
Input Filter				LC type
Isolation Voltage		1500		VDC
Isolation Resistance	100			MOhms

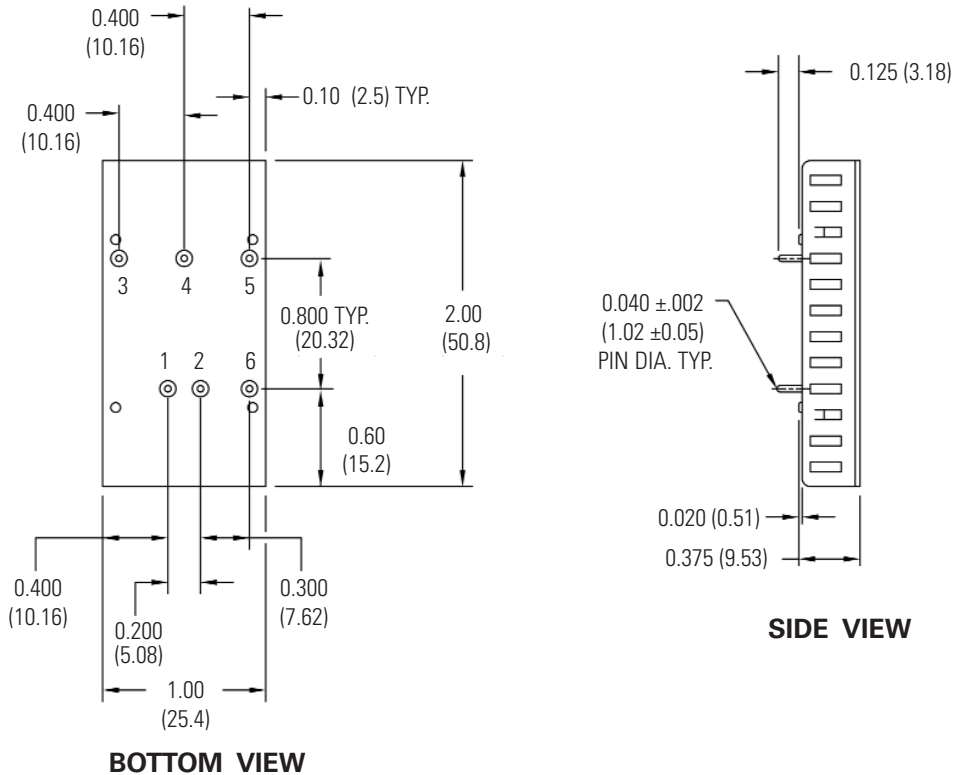
MODEL SELECTION CHART

	Input Voltage (VDC)	Output Voltage (VDC)	Full Load Output Current(A)
1502V0S48LN	48	2.0	4.0
1503V3S48LN	48	3.3	3.5
1505S48LN	48	5.0	3.0
1512S48LN	48	12.0	1.25
1515S48LN	48	15.0	1.0

GENERAL CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Operating Temp. Range	-40		+105	°C; measured at baseplate
Storage Temp. Range	-55		+125	°C; measured at baseplate
Material Flammability				UL94V-0
Altitude: Operating			10,000	Feet
Non-Operating			40,000	Feet
Relative Humidity	5		95	% Humidity, non-condensing
Weight			16	Grams
Size				1.0" X2.0" X0.375"
Case Material				Black coated aluminum
Agency Approvals				UL/CUL1950, TUV, EN60950

OUTLINE DRAWING



PIN OUT CHART

PINS	FUNCTION
1	+ VIN
2	- VIN
3	+ VOUT
4	*TRIM
5	- VOUT
6	*REMOTE ON/OFF

* = Optional features

Notes:

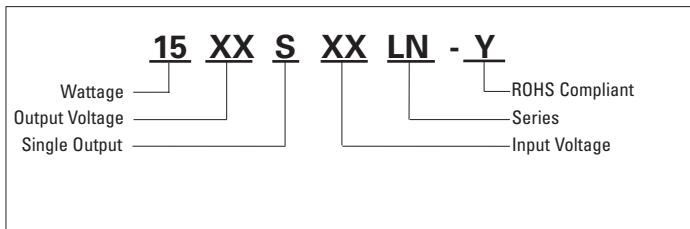
- Unless otherwise specified dimensions are in inches (mm).
Tolerances Inches mm
X.XX = ±0.02 X.X = ±0.5
X.XXX = ±0.010 X.XX = ±0.25
- Controlling dimension in inch.
- Case is vented on 2" long sides only.

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified. External, low ESR, 10 microfarad (minimum) capacitor across output is recommended for operation.

HOW TO ORDER

OPTIONAL FEATURES

HOW TO ORDER



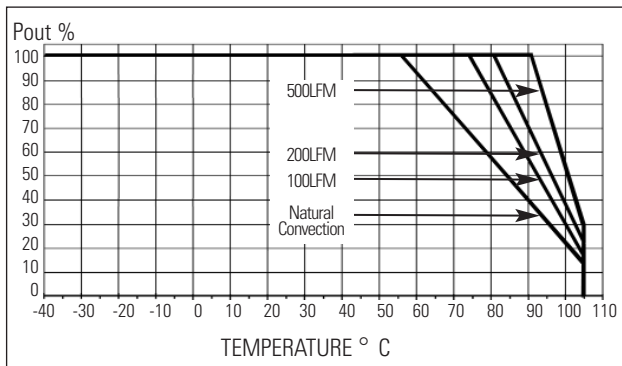
-4 Option, Positive Logic: To add the remote on/off feature to the converter please add a "-4" at the end of the part number. An additional pin (pin #6) will be added to the converter. Consult mechanical drawing for location.

-1 Option, Negative Logic: To add the remote on/off feature to the converter please add a "-1" at the end of the part number. An additional pin (pin #6) will be added to the converter. Consult mechanical drawing for location.

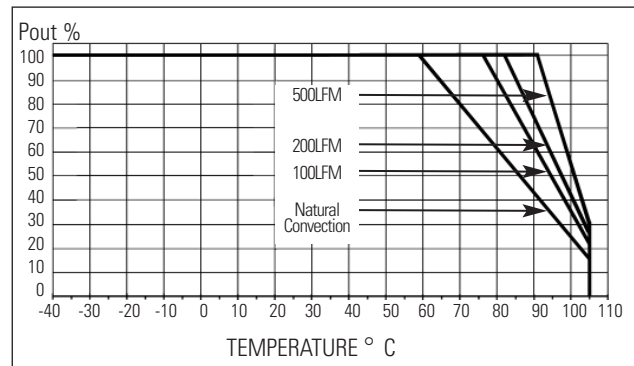
-9 Option, Output Voltage Trim: To add the output voltage trim feature to the converter please add a "-9" at the end of the part number. An additional pin (pin #4) will be added to the converter. Consult mechanical drawing for location.

DERATING CURVES

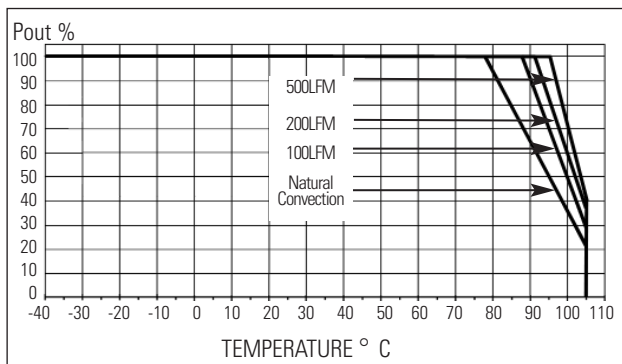
MODEL 1500LN Single 2V



MODEL 1500LN Single 3.3V & 5V



MODEL 1500LN Single 12 & 15V



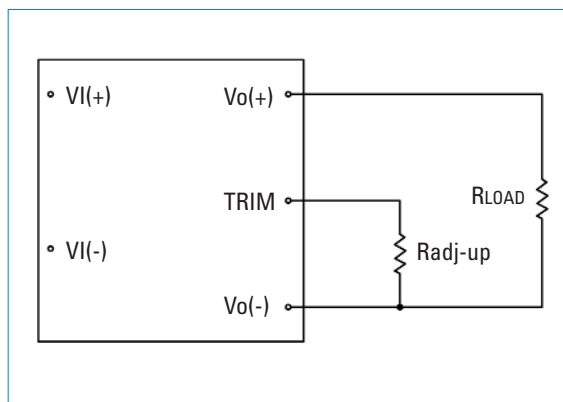
OUTPUT VOLTAGE ADJUSTMENT (1500LN SINGLE SERIES)

The converter's output voltage may be trimmed to 110% (125% for the 2 Volt output) of the nominal voltage between the Vo(+) and Vo(-) pins.

TRIM UP

Trim output voltage up by connecting an external resistor between Pins 5 and 4. Use the following equation, unknown variables are referenced in TABLE 3.

$$R_{\text{adj-up}} = \left(\left[\frac{GL}{[V_{o, \text{adj}} - L] - K} \right] - H \right) \Omega$$



TRIM DOWN

Trim output voltage down by connecting an external resistor between Pins 4 and 3. Use the following equation, unknown variables are referenced in TABLE 3.

$$R_{\text{adj-down}} = \left(\left[\frac{(V_{o, \text{adj}} - L) G}{[V_{o, \text{nom}} - V_{o, \text{adj}}]} \right] - H \right) \Omega$$

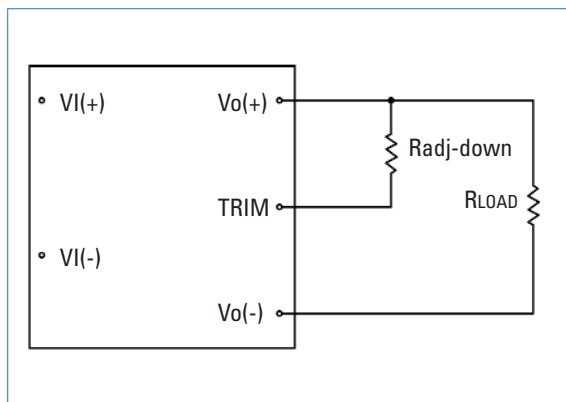


TABLE 3

Output Voltage	G	H	K	L
5V	5110	2050	2.5	2.5
12V*	10,000	5110	9.5	2.5
15V	10,000	5110	12500	2.5
2V*	5110	2050	0.76	1.23
3.3V*	5110	2050	0.75	2.5

1500 LN series



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Dual Output DC/DC Converter



DESCRIPTIONS

The 1500LN, dual output power modules are 15 watt DC/DC converters available in a dual output configuration providing 5.0 VDC to 15 VDC outputs and are fully compatible to Tyco series LW010 and LW015 providing both positive and negative on/off logic. These 400kHz, switching converters are available in 48 VDC inputs with efficiencies up to 88%. Offering pin for pin and full functionality to the Tyco LW series these converters are the only true second source available in the market.

OUTPUT CHARACTERISTICS

	Min	Typ	Max	Unit/Comments
Output Voltage Set Point		±1		% Output voltage at nominal line & FL
Total Band Error	-3		+3	% Output voltage including line/load regulation setting
Temperature Coefficient		±0.01		% per degree C
Ripple/Noise		60	100	mV p-p measured at 20 MHz bandwidth with ext. 1 µf cap.
Output Voltage and Current				Refer to model selection chart
Load Transient Response		±2		deviation of output voltage for a 25% load change for 200µS
Short Circuit Protection				Indefinite, Automatic Recovery
Overvoltage Protection		260		%; Clamp type

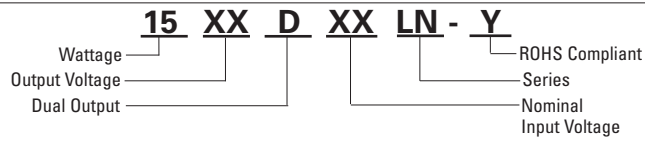
FEATURES

- Pin Compatible to Tyco LW010 and LW015
- Positive and Negative Logic
- Up to 88% Efficiency
- Industry Standard 1.0" X 2.0" X 0.375" Package
- Remote On/Off, Output Over Voltage and Short Circuit Protection

INPUT CHARACTERISTICS

	Min	Typ	Max	Units/Comments
Input Voltage	36	48	75	VDC
Under Voltage Lock out	33			VDC
Minimum Input Current	0			mA
Full Load Input Current			0.38	A
Input Fuse Requirements			1	Amps; Slow blow type
Efficiency by Model				
1505D48LN		84		%; FL Nominal Line
1512D48LN		87		%; FL Nominal Line
1515D48LN		88		%; FL Nominal Line
Switching Frequency	360	400	440	kHz; Factory set
Remote Shut Down (Optional)				
Positive Logic Off		0	0.80	VDC;Referenced to input
Positive Logic On		3.5		VDC or open;Referenced to input
Negative Logic On		0	0.80	VDC;Referenced to input
Negative Logic Off		3.5		VDC or open;Referenced to input
Input - Output Capacitance		1200		pF
Input Filter				LC type
Isolation Voltage		1500		VDC
Isolation Resistance		100		MOhms

HOW TO ORDER

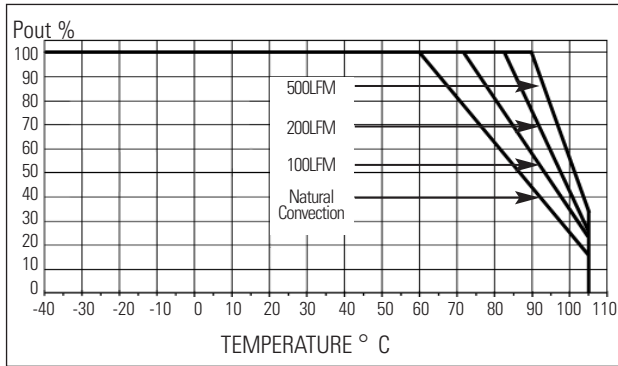


-4 Option, Positive Logic: To add the remote on/off feature to the converter please add a "-4" at the end of the part number. An additional pin (pin #6) will be added to the converter. Consult mechanical drawing for location.

-1 Option, Negative Logic: To add the remote on/off feature to the converter please add a "-1" at the end of the part number. An additional pin (pin #6) will be added to the converter. Consult mechanical drawing for location.

DERATING CURVES

MODEL 1500LN Dual Series ±5V



MODEL 1500LN Dual Series ±12 & 15V

