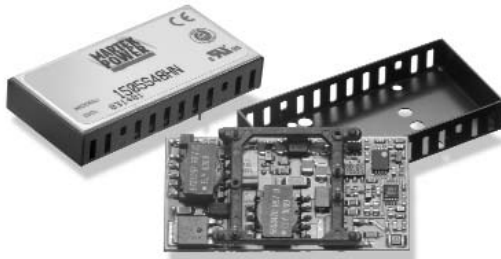


# 1500 HN series



www.martekpower.com

## Single Output DC/DC Converter



### DESCRIPTIONS

The 1500HN, single output power modules are 12 to 15 watt DC/DC converters available in a single output configuration providing 3.3 VDC to 15 VDC outputs in a compact, industry standard 1.0" X 2.0" X 0.375" package. These 400kHz, switching converters are available in 12, 24 and 48 VDC inputs making them one of the most versatile product lines in the market with efficiencies up to 89%. Advanced surface mount construction allows these converters to achieve outstanding thermal performance eliminating the need for thermal potting compounds and thereby enhancing manufacturing efficiency to reduce costs.

### 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 maximum
Load Regulation		±0.5		% Output voltage measured from FL to 10% load
Temperature Coefficient		±0.01		% per degree C
Ripple/Noise		60	100	mV p-p measured at 20 MHz bandwidth with external 1 µf capacitor
Output Voltage and Current				Refer to model selection chart
Load Transient Response		±2		% deviation of Vout voltage for a 25% load change for 200µS
Short Circuit Protection				Indefinite, Automatic Recovery
Overvoltage Protection		125		%; Clamp type (5VDC output set at 6.8VDC)

### FEATURES

- Up to 89% Efficiency
- Single Output, 15 watt converter
- Available in 12, 24 and 48 VDC Inputs
- Industry Standard 1.0" X 2.0" X 0.375" Package
- Remote On/Off, Input Over Voltage and Short Circuit Protection

### INPUT CHARACTERISTICS

	Min	Typ	Max	Units/Comments
Input Voltage				
12 VDC Input Models	9	12	18	VDC
24 VDC Input Models	18	24	36	VDC
48 VDC Input Models	36	48	75	VDC
Under Voltage Shut Down				
12 VDC Input Models		7.8		VDC
24 VDC Input Models		15.0		VDC
48 VDC Input Models		28.1		VDC
Minimum Input Current				
12 VDC Input Models		0		mA
24 VDC Input Models		0		mA
48 VDC Input Models		0		mA
Full Load Input Current				
12 VDC Input Models			1.63	A
24 VDC Input Models			0.78	A
48 VDC Input Models			0.39	A
Input Fuse Requirements				
12 VDC Input Models			3	Amps; Slow blow type
24 VDC Input Models			2	Amps; Slow blow type
48 VDC Input Models			1	Amps; Slow blow type
Efficiency by Model				
1503S12HN		78		%; FL Nominal Line
1505S12HN		82		%; FL Nominal Line
1512S12HN		86		%; FL Nominal Line
1515S12HN		86		%; FL Nominal Line
1503S24HN		80		%; FL Nominal Line
1505S24HN		84		%; FL Nominal Line
1512S24HN		86		%; FL Nominal Line
1515S24HN		87		%; FL Nominal Line
1503S48HN		80		%; FL Nominal Line
1505S48HN		84		%; FL Nominal Line
1512S48HN		86		%; FL Nominal Line
1515S48HN		89		%; FL Nominal Line
Switching Frequency	360	400	440	kHz; Factory set
Remote Shut Down	Off	0	0.80	VDC; Referenced to input
	On	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

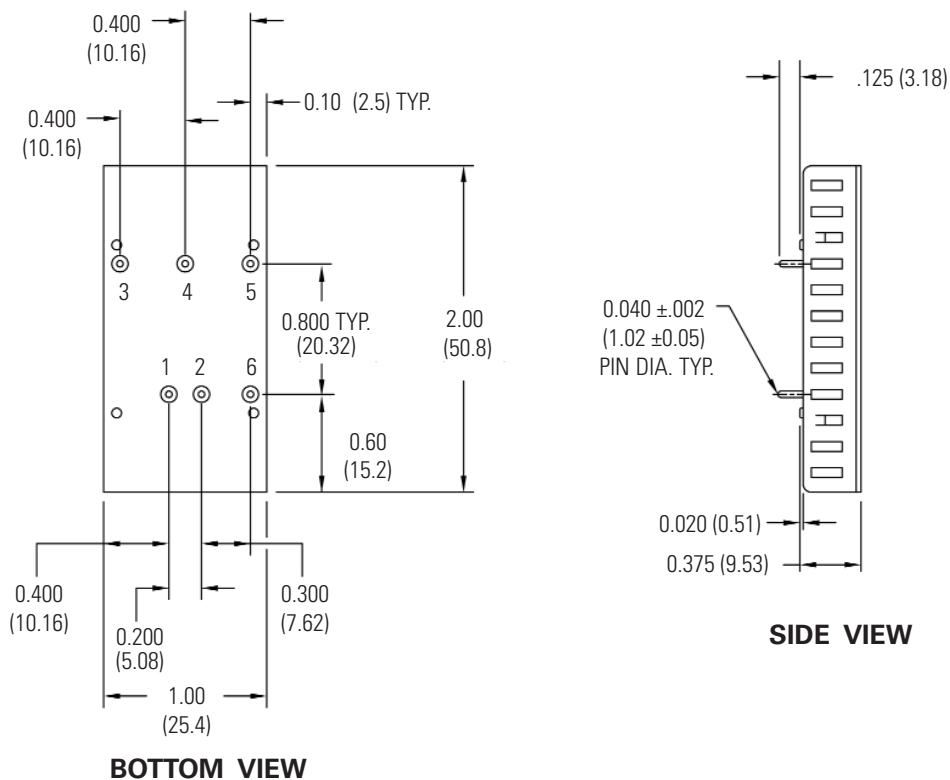
## MODEL SELECTION CHART

	Input Voltage (VDC)	Output Voltage (VDC)	Full Load Output Current (A)
1503S12HN	12	3.3	3.5
1505S12HN	12	5.0	3.0
1512S12HN	12	12.0	1.25
1515S12HN	12	15.0	1.00
1503S24HN	24	3.3	3.5
1505S24HN	24	5.0	3.0
1512S24HN	24	12.0	1.25
1515S24HN	24	15.0	1.00
1503S48HN	48	3.3	3.5
1505S48HN	48	5.0	3.0
1512S48HN	48	12.0	1.25
1515S48HN	48	15.0	1.00

## 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" X 2.0" X 0.375"
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	NO PIN
5	- Vout
6	*REMOTE ON/OFF

### Notes:

- Unless otherwise specified dimensions are in inches (mm).  
Tolerances: X.XX = ±0.02 (0.5)  
X.XXX = ±0.010 (0.25)
  - Controlling dimension in inches.
  - Case is vented on 2" long sides only.
- \* Optional - present on -R Models only.

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

# How To ORDER

**HOW TO ORDER**

**15 XX S / XX HN**

Wattage

Output Voltage

Input Voltage

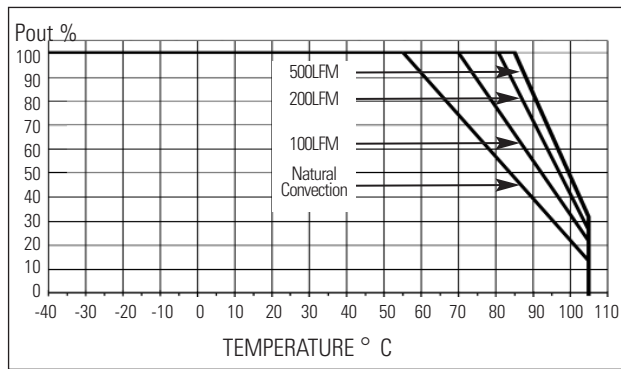
Single Output

Hi-Density, Non-Encap

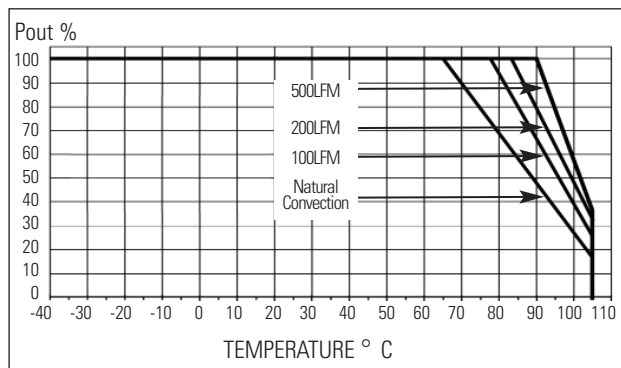
**R Options:** To add the remote on/off feature to the converter please add a "R" at the end of the part number. An additional pin (pin#6) will be added to the converter. Consult mechanical drawing for location.

# DERATING CURVES

**MODEL 1500HN Single 3.3V & 5V**



**MODEL 1500HN Single 12 & 15V**

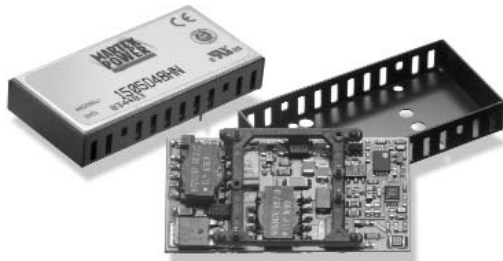


# 1500 HN series



www.martekpower.com

## Dual Output DC/DC Converter



### DESCRIPTIONS

The 1500HN, dual output power modules are 15 watt DC/DC converters available in a dual output configuration providing both digital and analog outputs in a compact, industry standard 1.0" X 2.0" X 0.375" package. These 400kHz, switching converters are available in 12, 24 and 48 VDC inputs making them one of the most versatile product lines in the market with efficiencies up to 85%. Advanced surface mount construction allows these converters to achieve outstanding thermal performance eliminating the need for thermal potting compounds and thereby enhancing manufacturing efficiency to reduce costs.

### 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 external 1 µf capacitor
Output Voltage and Current				Refer to model selection chart
Load Transient Response		±2		% deviation of Vout voltage for a 25% load change for 200µS
Short Circuit Protection				Indefinite, Automatic Recovery
Output Voltage Trim Range		±10		% Output voltage. Place ext. resistor between pins 9 - 6 to trim down. Between pins 9 - 5 to trim up
Overvoltage Protection		260		%; Clamp type

### FEATURES

- Up to 85% Efficiency
- Dual Output, Up To 15 watt converter
- Available in 12, 24 and 48 VDC Inputs
- Industry Standard 1.0" X 2.0" X 0.375" Package
- Remote On/Off, Input Over Voltage and Short Circuit Protection

### INPUT CHARACTERISTICS

	Min	Typ	Max	Units/Comments
<b>Input Voltage</b>				
12 VDC Input Models	9	12	18	VDC
24 VDC Input Models	18	24	36	VDC
48 VDC Input Models	36	48	75	VDC
<b>Under Voltage Shut Down</b>				
12 VDC Input Models		7		VDC
24 VDC Input Models		15		VDC
48 VDC Input Models		28		VDC
<b>Minimum Input Current</b>				
12 VDC Input Models		0		mA
24 VDC Input Models		0		mA
48 VDC Input Models		0		mA
<b>Full Load Input Current</b>				
12 VDC Input Models			1.60	A
24 VDC Input Models			0.77	A
48 VDC Input Models			0.38	A
<b>Input Fuse Requirements</b>				
12 VDC Input Models			4	Amps; Slow blow type
24 VDC Input Models			3	Amps; Slow blow type
48 VDC Input Models			2	Amps; Slow blow type
<b>Efficiency by Model</b>				
1505D12HN		80		%; FL Nominal Line
1512D12HN		82		%; FL Nominal Line
1515D12HN		82		%; FL Nominal Line
1505D24HN		83		%; FL Nominal Line
1512D24HN		84		%; FL Nominal Line
1515D24HN		84		%; FL Nominal Line
1505D48HN		84		%; FL Nominal Line
1512D48HN		85		%; FL Nominal Line
1515D48HN		85		%; FL Nominal Line
Switching Frequency	360	400	440	kHz; Factory set
Remote Shut Down	Off	0	0.80	VDC; Referenced to input
	On	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

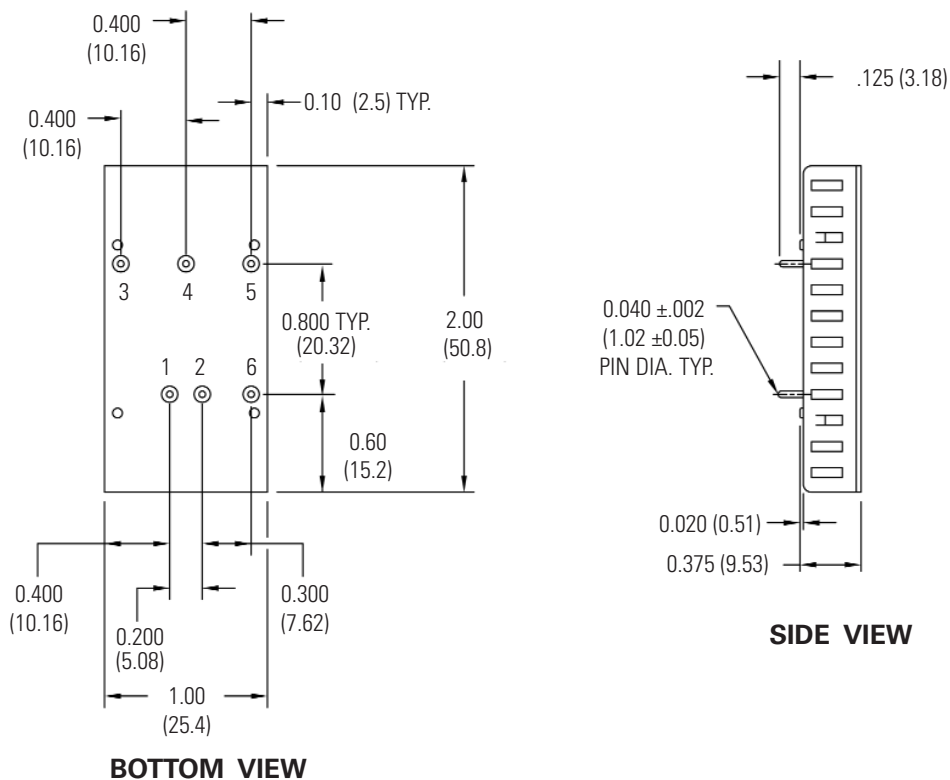
## MODEL SELECTION CHART

	Input Voltage (VDC)	Output Voltage (VDC)	Full Load Output Current (A)
1505D12HN	12	±5	±1.500
1512D12HN	12	±12	±0.625
1515D12HN	12	±15	±0.500
1505D24HN	24	±5	±1.500
1512D24HN	24	±12	±0.625
1515D24HN	24	±15	±0.500
1505D48HN	48	±5	±1.500
1512D48HN	48	±12	±0.625
1515D48HN	48	±15	±0.500

## 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			22	Grams
Size				1.0" X 2.0" X 0.375"
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	COMMON
5	- Vout
6	*REMOTE ON/OFF

### Notes:

- Unless otherwise specified dimensions are in inches (mm).  
Tolerances: X.XX = ±0.02 (0.5)  
X.XXX = ±0.010 (0.25)
  - Controlling dimension in inches.
  - Case is vented on 2" long sides only.
- \* Optional - present on -R Models only.

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

# How To ORDER

**HOW TO ORDER**

**15 XX D / XX HN**

Wattage ———

Output Voltage ———

Input Voltage ———

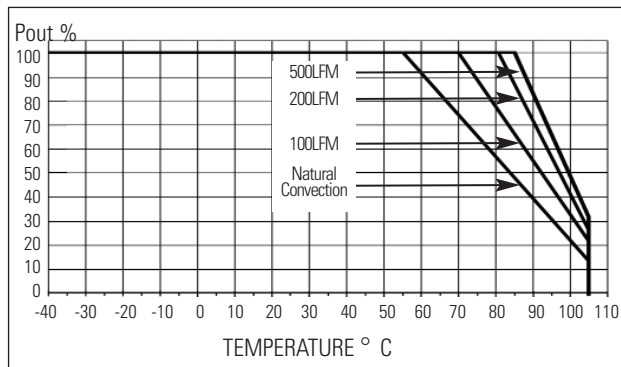
Dual Output ———

Hi-Density, Non-Encap

**R Options:** To add the remote on/off feature to the converter please add a "R" 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 1500HN Dual 3.3V & 5V**



**MODEL 1500HN Dual 12 & 15V**

