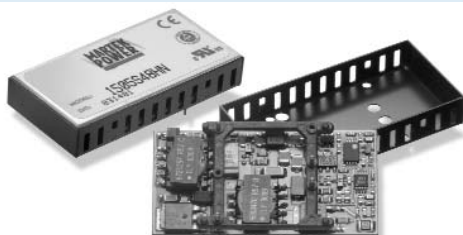




# 1000 HN series

## Single Output DC/DC Converter



### DESCRIPTIONS

The 1000HN, single output power modules are 12 to 15 watt DC/DC converters featuring a 4 - 1 input range and 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 87%. 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 (Balanced Loads)
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
Oversvoltage Protection		125		%; Clamp type (5VDC output set at 6.8VDC)

Martek Power reserves the right to change specifications without notice.

### FEATURES

- Up to 87% Efficiency
- Single Output, 10 watt converter
- Available in 12, 24 and 48 VDC Inputs 4 - 1 Input Range
- 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	9	24	36	VDC
48 VDC Input Models	18	48	75	VDC
<b>Under Voltage Shut Down</b>				
12 VDC Input Models		7.8		VDC
24 VDC Input Models		7.8		VDC
48 VDC Input Models		15.0		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			1.07	A
24 VDC Input Models			0.44	A
48 VDC Input Models			0.27	A
<b>Input Fuse Requirements</b>				
12 VDC Input Models			3	Amps; Slow blow type
24 VDC Input Models			3	Amps; Slow blow type
48 VDC Input Models			1.5	Amps; Slow blow type
<b>Efficiency by Model</b>				
1003S12HN		78		%; FL Nominal Line
1005S12HN		82		%; FL Nominal Line
1012S12HN		86		%; FL Nominal Line
1015S12HN		87		%; FL Nominal Line
1003S24HN		74		%; FL Nominal Line
1005S24HN		75		%; FL Nominal Line
1012S24HN		78		%; FL Nominal Line
1015S24HN		80		%; FL Nominal Line
1003S48HN		78		%; FL Nominal Line
1005S48HN		82		%; FL Nominal Line
1012S48HN		83		%; FL Nominal Line
1015S48HN		84		%; 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



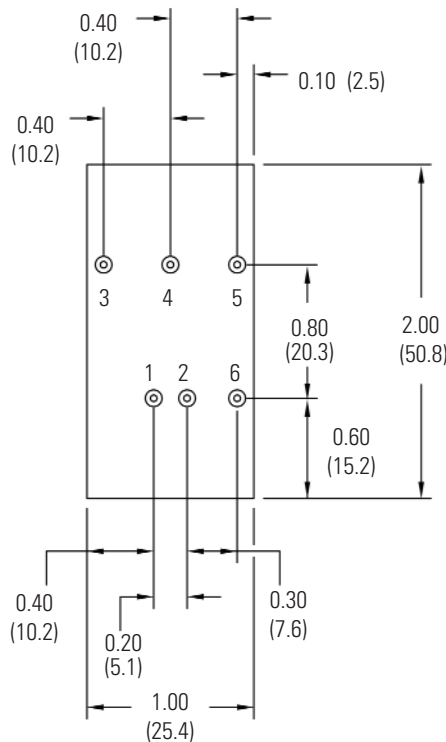
### MODEL SELECTION CHART

	Input Voltage (VDC)	Output Voltage (VDC)	Full Load Output Current (A)
1003S12HN	12	3.3	2.40
1005S12HN	12	5.0	2.00
1012S12HN	12	12.0	0.83
1015S12HN	12	15.0	0.67
1003S24HN	24	3.3	2.00
1005S24HN	24	5.0	1.50
1012S24HN	24	12.0	0.63
1015S24HN	24	15.0	0.50
1003S48HN	48	3.3	2.40
1005S48HN	48	5.0	2.00
1012S48HN	48	12.0	0.83
1015S48HN	48	15.0	0.67

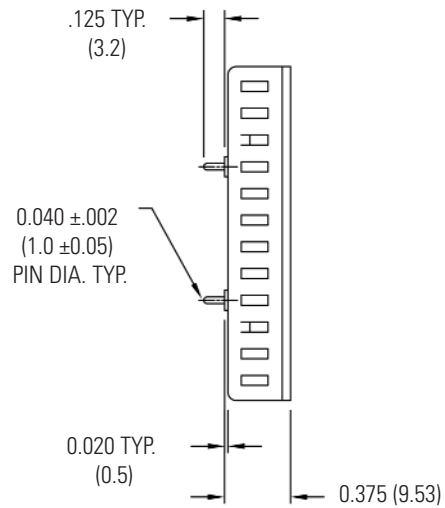
### GENERAL CHARACTERISTICS

	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



**BOTTOM VIEW**



**SIDE VIEW**

### 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	Inches	mm
	X.XX = ±0.02	X.X = ±0.5
	X.XXX = ±0.010	X.XX = ±0.25
  - 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 output is recommended for operation.



## How To ORDER

**HOW TO ORDER**

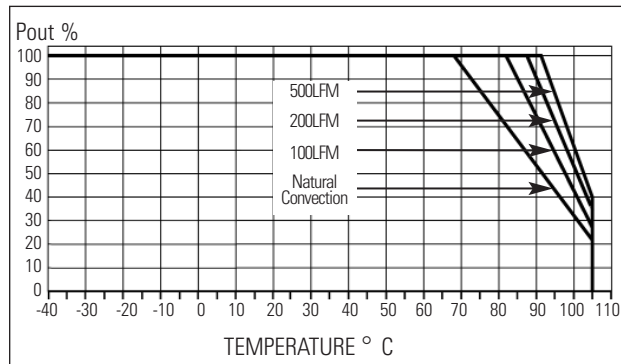
**10 XX S XX HN - Y**

Wattage ——— **10**  
 Output Voltage ——— **XX**  
 Single Output ——— **S**  
 Input Voltage ——— **XX**  
 Hi-Density, Non-Encap ——— **HN**  
 ROHS Compliant ——— **- Y**

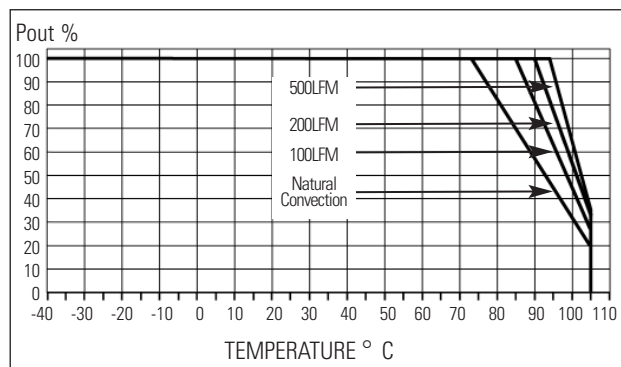
**R Options:** To add the remote on/off feature to the converter please add a "-R" at the end of the part number. An additional pin (pin#6) will be added to the converter. Consult mechanical drawing for location.

## DERATING CURVES

**MODEL 1000HN Single 3.3V & 5V**

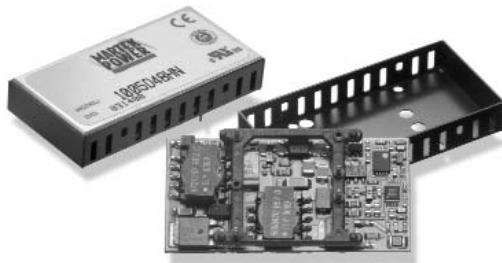


**MODEL 1000HN Single 12 & 15V**



# 1000 HN series

## Dual Output DC/DC Converter



### DESCRIPTIONS

The 1000HN, dual output power modules are 10 watt DC/DC converters featuring a 4 - 1 input range and 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 83%. 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
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 (Balanced Loads)
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		260		%; Clamp type



### FEATURES

- Up to 83% Efficiency
- Dual Output, Up To 10 watt converter
- Available in 12, 24 and 48 VDC Inputs 4-1 Input Range
- 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	9	24	36	VDC
48 VDC Input Models	18	48	75	VDC
<b>Under Voltage Shut Down</b>				
12 VDC Input Models		8.5		VDC
24 VDC Input Models		8.5		VDC
48 VDC Input Models		16		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			1.06	A
24 VDC Input Models			0.40	A
48 VDC Input Models			0.27	A
<b>Input Fuse Requirements</b>				
12 VDC Input Models			3.0	Amps; Slow blow type
24 VDC Input Models			3.0	Amps; Slow blow type
48 VDC Input Models			1.5	Amps; Slow blow type
<b>Efficiency by Model</b>				
1005D12HN		81		%; FL Nominal Line
1012D12HN		83		%; FL Nominal Line
1015D12HN		83		%; FL Nominal Line
1005D24HN		81		%; FL Nominal Line
1012D24HN		83		%; FL Nominal Line
1015D24HN		83		%; FL Nominal Line
1005D48HN		81		%; FL Nominal Line
1012D48HN		83		%; FL Nominal Line
1015D48HN		83		%; 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

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