



nANOVERTER® DC-DC Converters, 100-120 Watt Family

World's Most Advanced Ultra High Density DC-DC Converters

Up to 120 Watts
48 and 300 VDC Input

Evaluation Boards Available

DESCRIPTION

NanoVerter modules are high density DC-DC converters designed for use in telecom and other centralized modular and distributed power applications. Two input voltage ranges are available and all use metal PC boards, planar transformers, and surface mount construction to produce up to 120 watts in a tiny package.

FEATURES

- Miniature Size – Low Profile .42" – .32" with Recessed Mounting
- Constant Frequency Operation
- High Density – Up to 52 W/in.³
- High Efficiency
- Extremely Low Thermal Resistance
- 100°C Baseplate Operation
- Parallelable with Current Sharing
- Fault Tolerant – True n+1 ... n+m Redundancy
- Hot Swap Capability
- Secondary Referenced Controls
- Auxiliary (housekeeping) Supply Output (PV pin)
- Logic On-Off
- Non-Shutdown Over Voltage Protection
- Safety Agency Compliant



MODEL SELECTION

Model Number		Output	
48 VDC (36-72V)	300 VDC (220-400V)	Voltage	Current
nV48-2	nV300-2	2.1V	30A
nV48-3	nV300-3	3.3V	25A
nV48-5	nV300-5	5V	20A
nV48-12	nV300-12	12V	10A
nV48-15	nV300-15	15V	8A
nV48-24	nV300-24	24V	5A

PROFILE



Recessed Mounting



Conventional Mounting

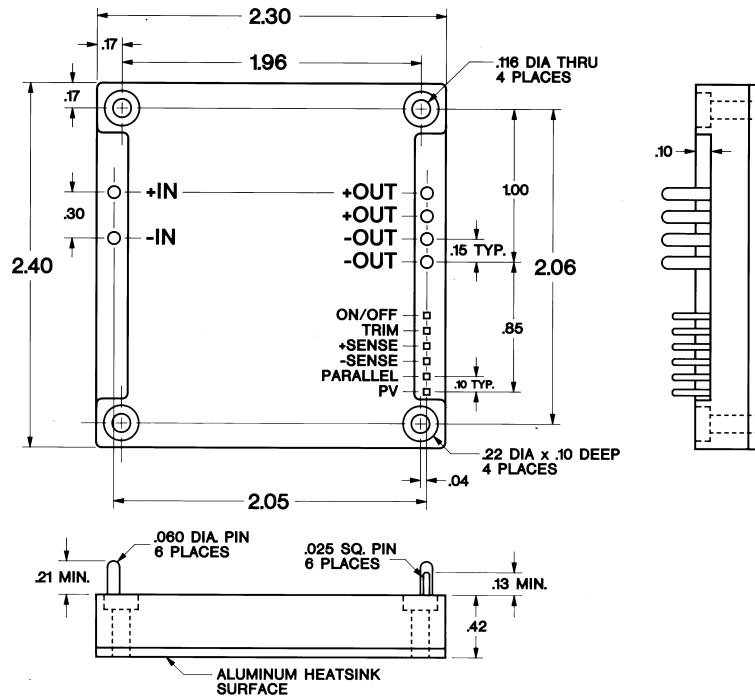
NANOVERTER® nV48 SERIES SPECIFICATIONS

INPUT	MIN	TYPICAL	MAX	CONDITIONS
Input voltage	36VDC	48VDC	72VDC	
Brownout (75% full output power)	32VDC			75% full power
Input reflected ripple		10%		full load, nominal line
Input ripple rejection		60dB		@120Hz
No load power dissipation		0.6W		nominal line
Logic disabled power in		0.6W		
OUTPUT				
Set point accuracy		±0.5%	1%	full load
Load regulation		0.1%	0.2%	0 - full load
Line regulation		0.1%	0.2%	36 - 72VDC
Ripple		1%	3%	0 - 20MHz < 5V outputs
		1%	2%	0 - 20MHz ≥ 5V outputs
Trim range	±10%*			*±5% for 2V,+5%,-10% for 3V
Remote sense compensation	0.5V total			outputs ≥ 5V
OVP (non shutdown auto. rec.)	105%	110%	120%	2V & 3V models
	110%	115%	130%	5V - 24V models
Current Limit (auto.rec.)		115%		
Short circuit current		130%		
Current sharing (automatic)		±1%	±5%	full load
Transient response - Excursion		3%		20 - 80% fl, 1/2 A/μs
Transient response - Recovery Time		50μs	200μs	Vout 1%
Temperature drift			.02%/°C	
EFFICIENCY				
3.3V		76%		full load, nominal line
5V		80%		full load, nominal line
12V		83%		full load, nominal line
CONTROL				
Turn on time (power applied)		30ms		full load, nominal line
Logic turn on time		2ms		full load, nominal line
Logic disable current		20μA		
PV OUTPUT				
2mA PV load		10.3V		main output @ full load
5mA PV load		9.3V		main output @ full load
2mA PV load		10.3V		main output logic disabled or shorted
ISOLATION				
Input to output	3000VDC			consult factory for procedure
Input to case	1500VDC			
Output to case	500VDC			
Input to output capacity		300pF		
THERMAL				
Operating temperature	-40°C case		+100°C case	
Automatic shut down temperature	+100°C case	+105°C case	+110°C case	
Thermal resistance case to ambient		6.6 °C/watt		
Storage temperature	-55°C		+110°C	
WEIGHT				
		3.4oz. (96 grams)		
SIZE				
	0.42" x 2.40" x 2.30" (1.07cm x 6.10cm x 5.84cm)			

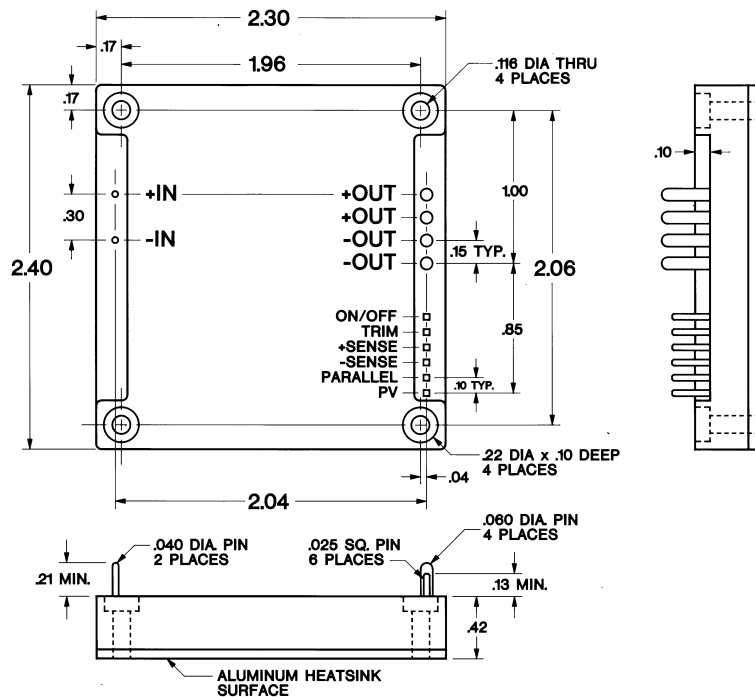
nANOVERTER® nV300 SERIES SPECIFICATIONS

INPUT	MIN	TYPICAL	MAX	CONDITIONS
Input voltage	220VDC	300VDC	400VDC	
Input reflected ripple		10%		full load, nominal line
No load power dissipation		1.5W		nominal line
Logic disabled power in		0.8W		nominal line
OUTPUT				
Set point accuracy		±0.5%		full load
Load regulation		0.1%	0.2%	0 - full load
Line regulation		0.1%	0.2%	220 - 400VDC
Ripple		1%	3%	0 - 20MHz
Trim range	±10%*			* OVP Limited on 2V & 3V Modules
Remote sense compensation	0.5V total*			* OVP Limited on 2V & 3V Modules
OVP (non shutdown auto. recovery)	105%	110%	120%	2V & 3V models
	110%	115%	130%	5V - 24V models
Current limit (auto.recovery)		115%		
Short circuit current		130%		
Transient response				
Excursion		3%		20 - 80% fl, 0.5A/μs
Recovery Time		50μs	200μs	Vout 1%
Temperature drift			.02%/°C	
EFFICIENCY				
5V model		80%		full load, nominal line
CONTROL				
Turn on time (power applied)		150ms		full load, nominal line
Logic turn on time		2ms		full load, nominal line
Logic disable current		20μA		
PV OUTPUT				
2mA PV load		10.3V		main output @ full load
5mA PV load		9.3V		main output @ full load
2mA PV load		10.3V		main output logic disabled or shorted
ISOLATION				
Input to output	4500VDC			consult factory for procedure
Input to case	2500VDC			
Output to case	500VDC			
Input to output capacity		5200pF		
THERMAL				
Operating temperature	-40°C case		+100°C case	
Automatic shut down temperature	+100°C case	+105°C case	+110°C case	
Thermal resistance case to ambient		6.6 °C/w		
Storage temperature	-55°C		+110°C	
WEIGHT				
		3.4oz. (96 grams)		
SIZE				
	0.42" x 2.40" x 2.30" (1.07cm x 6.10cm x 5.84cm)			

nV 48 SERIES



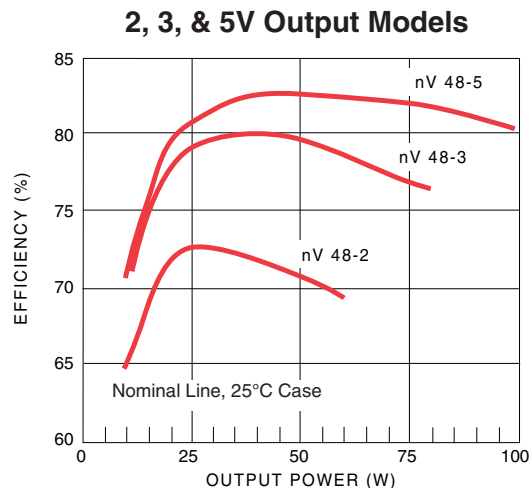
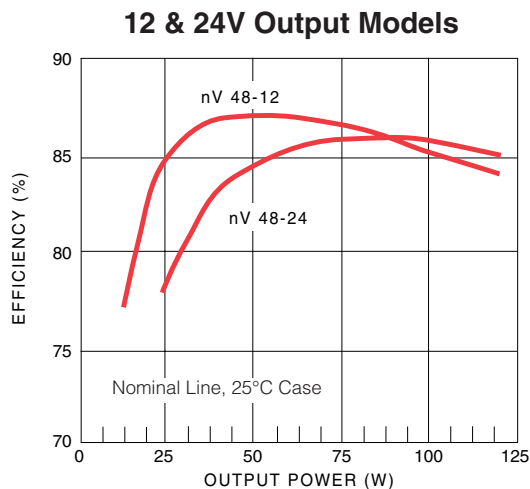
nV 300 SERIES





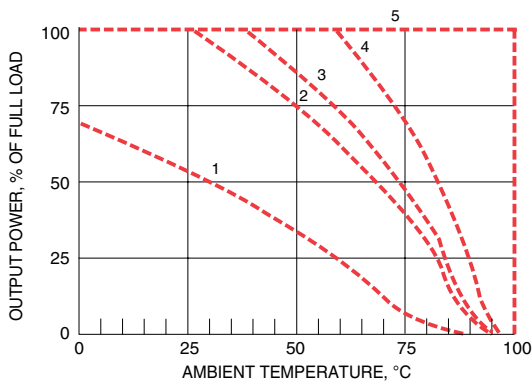
nANOVERTER® Performance Data

EFFICIENCY CURVES



THERMAL PERFORMANCE

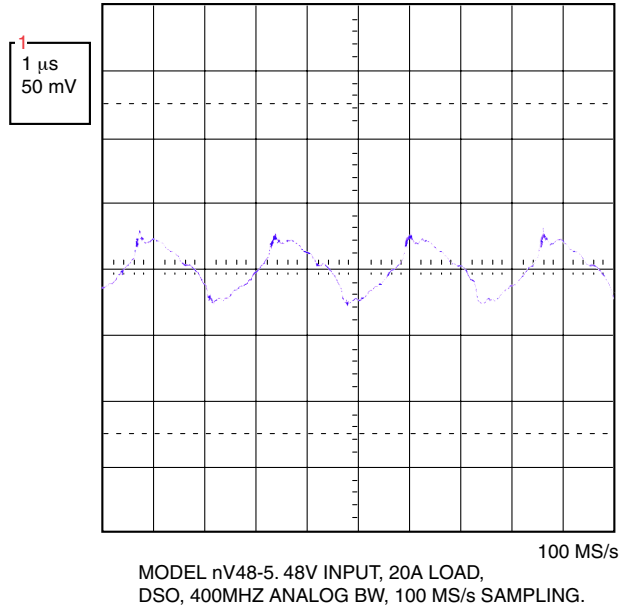
NanoVerter Thermal



- 1 - With No Heatsink and No Airflow
- 2 - With 2003 Heatsink and No Airflow or, with a 2.9°C/W Heatsink
- 3 - With 2003 Heatsink and 200 LFM Airflow or, with a 2.4°C/W Heatsink
- 4 - With 2003 Heatsink and 400 LFM Airflow or with a 1.6°C/W Heatsink
- 5 - Output Power vs. Case Temperature. No Derating Required for Tc<100°C

OUTPUT RIPPLE

NanoVerter Output Ripple



TRANSIENT RESPONSE

NanoVerter Transient

