

TD-70-120VDC-120VAC-5kW

Description

The TD-70-120VDC-120VAC-5kW is a high efficiency, high power, pure sine wave output DC to AC converter.

Features

- High efficiency (over 94%)
- Pure sinewave output (with max. harmonic distortion less than 3 %)
- Output: short circuit and over current protection
- Input: over voltage protection
- Over temperature protection (hardware)
- Sturdy screw-on terminals.
- 2 models available:
 - 5000W, 42A RMS at 120 Vac
 - 5000W, 21A RMS at 240 Vac
- High power density.
- Weight: 10.5lbs [4.76 Kg]
- Compliant with the following standards:
 - RoHS
 - CE and FCC part15

Applications

- Portable inverter with battery.

Absolute maximum ratings

Parameters	Minimum	Maximum	Units	Notes
Input voltage (continuous)	69.5	117.6	Volts DC	Nom 100Vdc
Terminal voltages				
On-Off	3.1	3.6	Volts DC	ESD protected...
CAN BUS	3.1	3.6	Volts DC	Note 5
Operating temperature range	-4	140	F°	
	-20	60	C°	
Storage temperature range	-40	257	F°	
	-40	125	C°	
Humidity (non-condensing)				
Operating	10	95	%	
Non-operating	20	95	%	
Altitude		9800 (3000)	Feet (meters)	

Electrical characteristics

Parameters	Minimum	Typical	Maximum	Units	Notes
Input characteristics					
Input voltage (continuous)	69.5	100	117.5	Volts DC	
Input current (continuous)		50		Amp. DC RMS	Note 1
Standby current	1mA				
Input under voltage level (120 V AC model)					
Warning		69		Volts DC peak	
Shutdown		65		Volts DC peak	
Input under voltage level (240 V AC model)					
Warning		69		Volts DC peak	
Shutdown		65		Volts DC peak	
Input overvoltage level					
Warning			118	Volts DC	
Shutdown			120	Volts DC	
Input over current level					
Warning		140		Amp. DC	
Shutdown		170		Amp. DC	Note 2
Output characteristics					
Turn-on start-up time		2		sec.	Note 3
Turn-off delay time		1		sec.	
Output Voltage (115 VAC model)	90	120	125	Volts RMS AC	@60 Hz
Output Voltage (230 VAC model)	180	240	265	Volts RMS AC	@60 Hz default @50 HZ with software setting
Output over current level	0				
Warning		55		Amp. AC RMS	
Shutdown		60		Amp. AC RMS	
Output power (115 VAC model)	0	5000	10000	Watts	Note 4
Output power (230 VAC model)	0	5000	10000	Watts	Note 4
Total Harmonic distortion		1	3	%	
Temperature limits					
Internal temperature range	-40 (-40)		248 (120)	F (C°)	

- Note 1: Steady state at 5kW output power 120Vac
- Note 2: Short circuit protection 50uS response time
- Note 3: From activation (start button) to sinewave output
- Note 4: 10kW for 1Sec, 7200W for 30Sec
- Note 5: Isolated, fused protected

Connectors pin assignment

J6, J9: screw terminal

DC input	Signal
Pin 1	Positive DC input
Pin2	Negative DC input

J2, J3: screw terminals

AC output	Signal (120VAC model)	Signal (240VAC model)
Pin 1	AC line	AC Line 1 output
Pin2	AC Neutral	AC Line 2 output

J1: PCB mounted spade connector

Earth	Earth ground
-------	--------------

J18 : USB connector

J14 : CANbus interface

J16,J17: connector type

Fan control	Signal
Pin 1	Fan power 12VDC
Pin 2	Fan PWM control
Pin 3	Fan Tachymeter
Pin 4	Ground

Typical performance characteristics

1. Step load (Figure 2-4)
2. Harmonic distortion (Figure 5)
3. Short circuit protection (Figure 6)
4. Scope captures: (Figure 8-14)
5. Startup sequence (Figure 15)
6. MTBF (Figure 16)

Product mechanical drawings

1. 12.5inch (318mm) x 10inch (254mm) x 2.75inch (70mm)
2. Mounting holes position (See Step File)
3. 3D picture of product (STEP File)

Product Picture

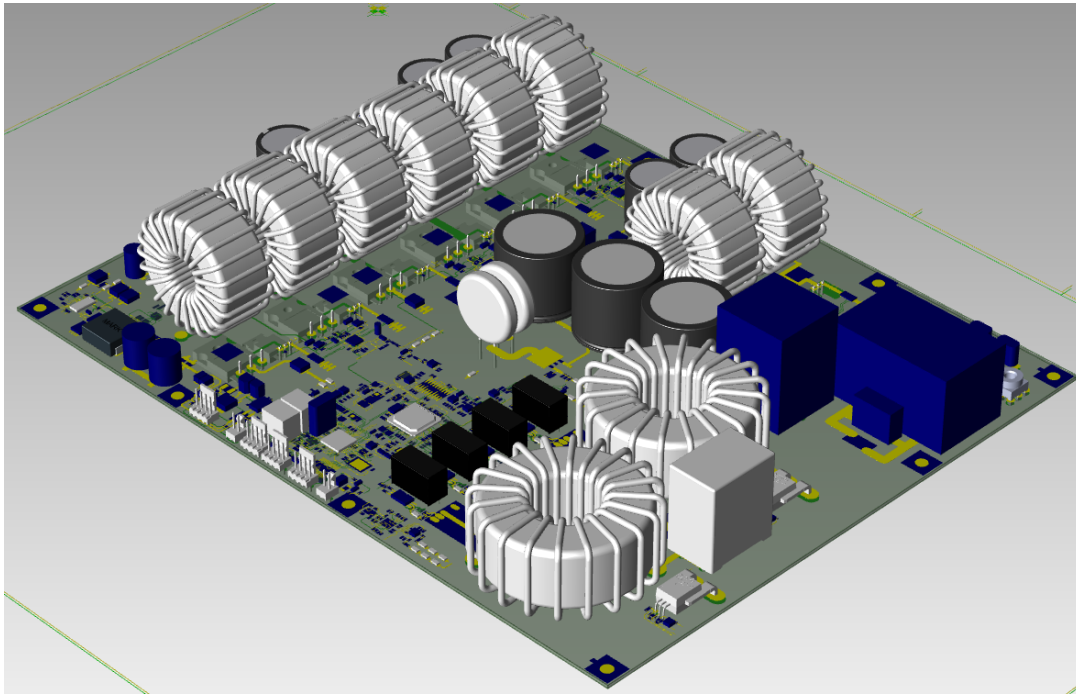
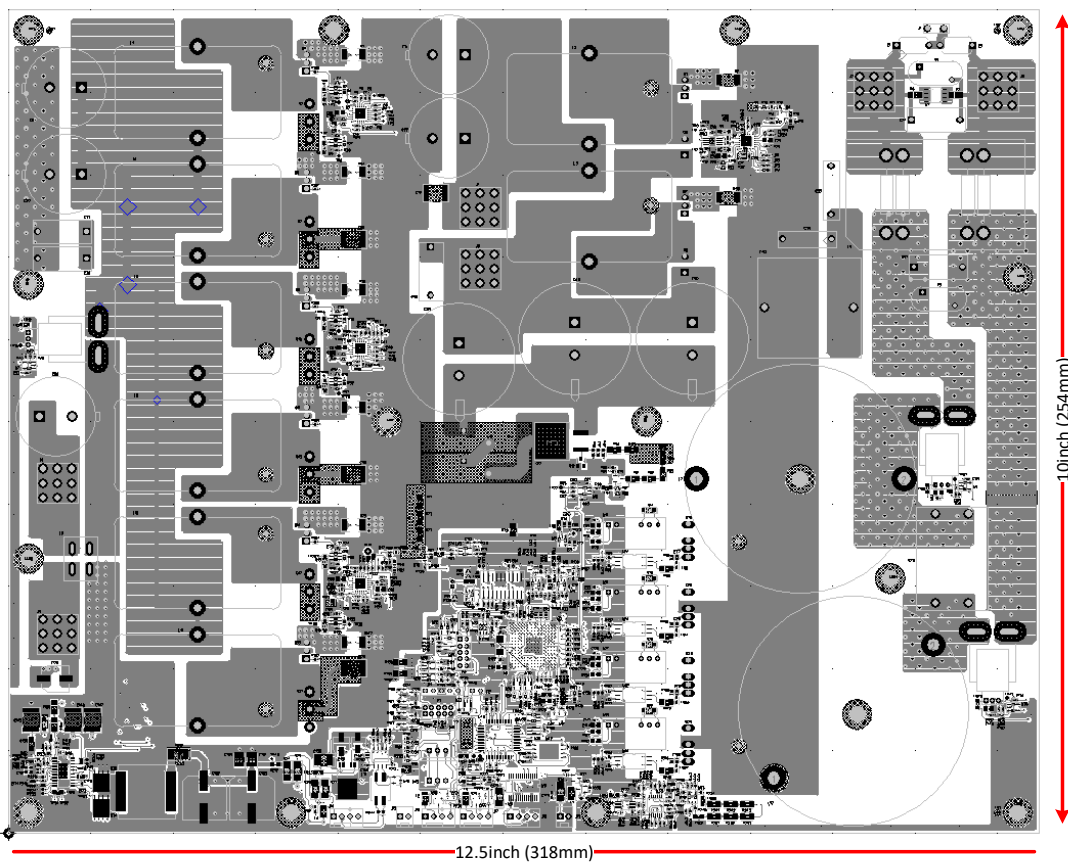
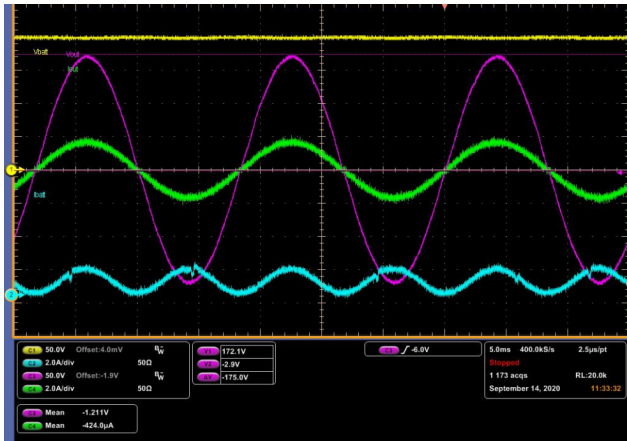


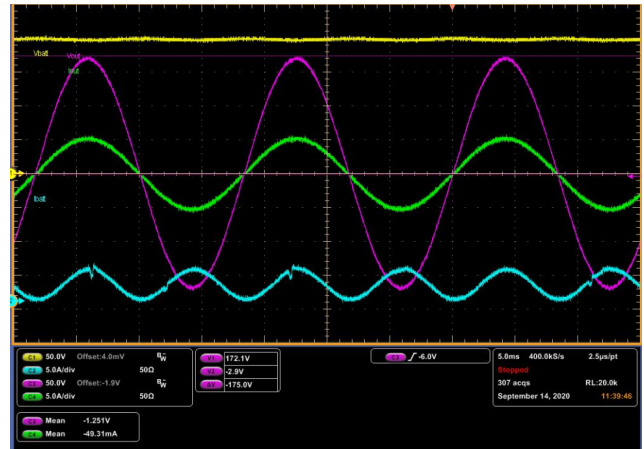
Figure 1 TD 5kW inverter



Vout 120Vac at 144W of load (inverter section only)



Vout 120Vac at 450W of load (inverter section only)



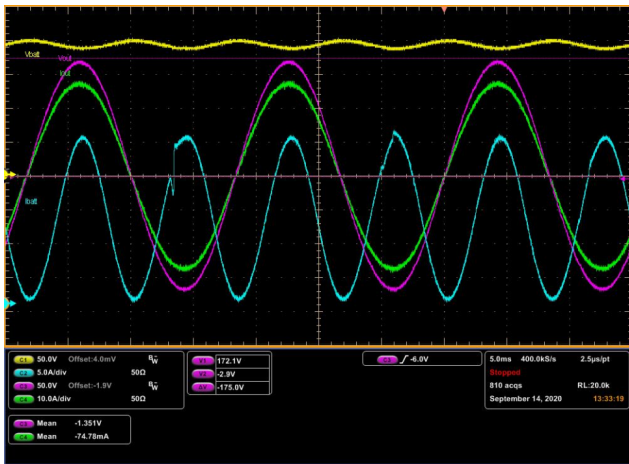
GROUP A Ch1	GROUP B Ch2	GROUP C Ch3	Result
Vrms 120.76 V	Watt 157.19 W		21410
Arms 1.2304 A	Vdc 199.04 V		
Watt 146.00 W	Adc 790.69 mA		
VA 148.59 VA			
Freq 59.991 Hz			
PF 0.9826			
Vdc -46.298 mV			
Vthd 0.1661 %			
EFF 92.881 %			11:35 09/14

Figure 9 Vout 144W of load

GROUP A Ch1	GROUP B Ch2	GROUP C Ch3	Result
Vrms 120.55 V	Watt 463.71 W		22031
Arms 3.7551 A	Vdc 198.11 V		
Watt 451.84 W	Adc 2.3475 A		
VA 452.69 VA			
Freq 59.991 Hz			
PF 0.9981			
Vdc 26.197 mV			
Vthd 0.1756 %			
EFF 97.440 %			11:51 09/14

Figure 10 Vout 450W of load

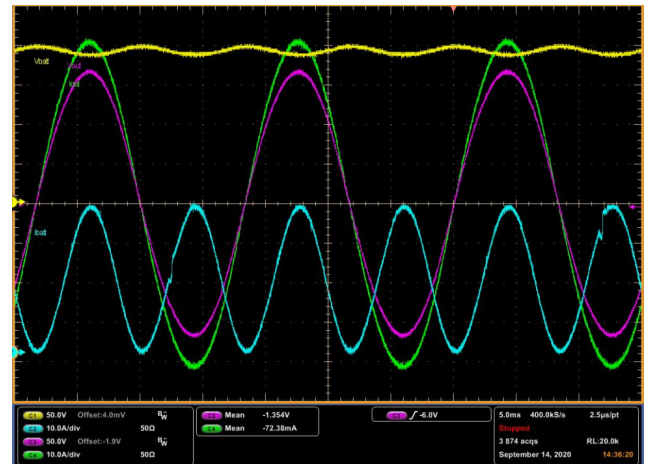
Vout 120Vac at 2400W of load (inverter section only)



GROUP A Ch1	GROUP B Ch2	GROUP C Ch3	Result
Vrms 119.65	VWatt 2.3886	kW	22317
Arms 19.579	Vdc 191.60	V	
Watt 2.3425	kWadc 12.656	A	
VA 2.3428	kVA		
Freq 59.992	Hz		
PF 0.9999			
Vdc 10.591	mV		
Vthd 0.7917	%		
EFF 98.070 %			
			13:38 09/14

Figure 11 Vout 2400W of load

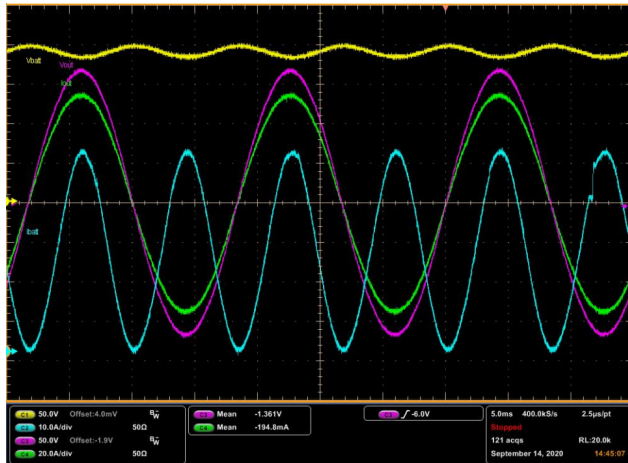
Vout 120Vac at 3600W of load (inverter section only)



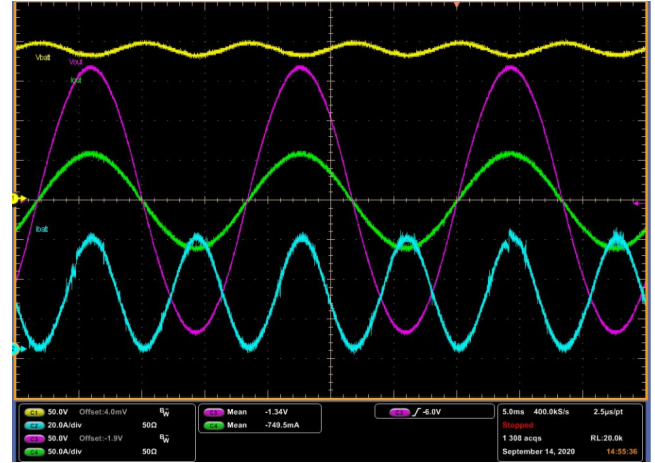
GROUP A Ch1	GROUP B Ch2	GROUP C Ch3	Result
Vrms 119.61	VWatt 3.6117	kW	23135
Arms 29.412	Vdc 191.83	V	
Watt 3.5173	kWadc 19.099	A	
VA 3.5179	kVA		
Freq 59.991	Hz		
PF 0.9999			
Vdc -37.505	mV		
Vthd 1.2329	%		
EFF 97.387 %			
			14:40 09/14

Figure 12 Vout 3600W of load

Vout 120Vac at 4800W of load (inverter section only)



Vout 120Vac at 5200W of load (inverter section only)



GROUP A Ch1	GROUP B Ch2	GROUP C Ch3	Result
Vrms 119.43 V	Watt 4.8310 kW		23413
Arms 39.233 A	Vdc 189.71 V		
Watt 4.6852 kW	Adc 25.967 A		
VA 4.6856 kVA			
Freq 59.992 Hz			
PF 0.9999			
Vdc -58.811 mV			
Vthd 1.1286 %			
EFF 96.982 %			14:48 09/14

Figure 13 Vout 4800W of load

GROUP A Ch1	GROUP B Ch2	GROUP C Ch3	Result
Vrms 119.41 V	Watt 5.2857 kW		23997
Arms 42.946 A	Vdc 188.98 V		
Watt 5.1278 kW	Adc 28.583 A		
VA 5.1281 kVA			
Freq 59.992 Hz			
PF 1.0000			
Vdc -29.277 mV			
Vthd 1.0171 %			
EFF 97.013 %			14:57 09/14

Figure 14 Vout 5200W of load

MTBF

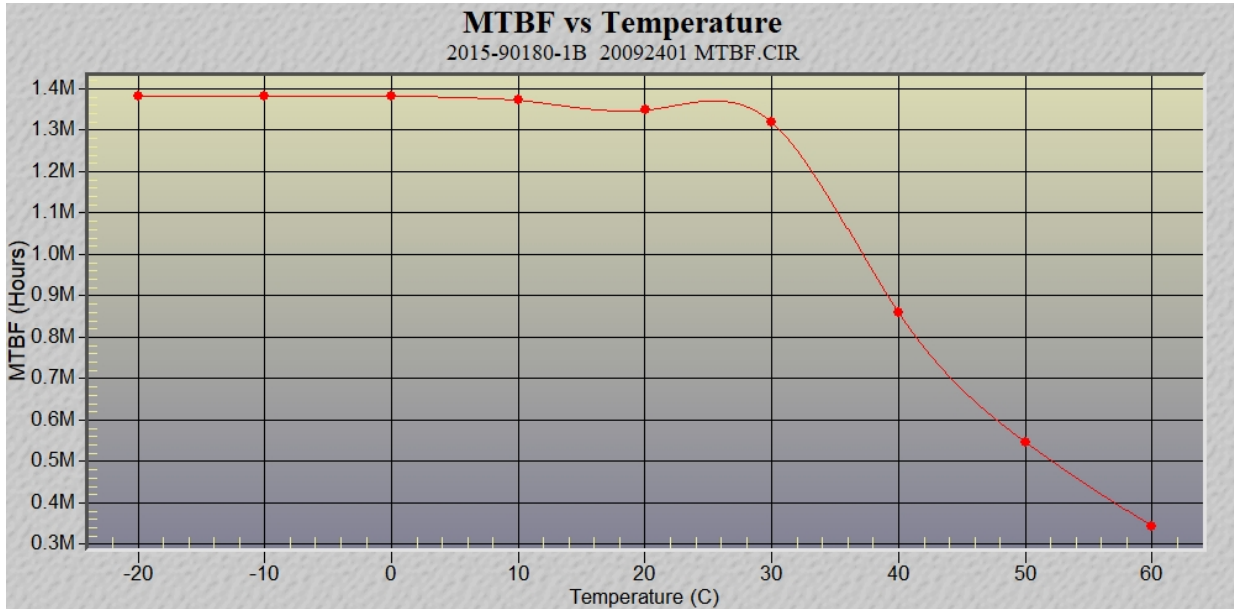


Figure 16 MTBF