

True Sinewave Power Inverter

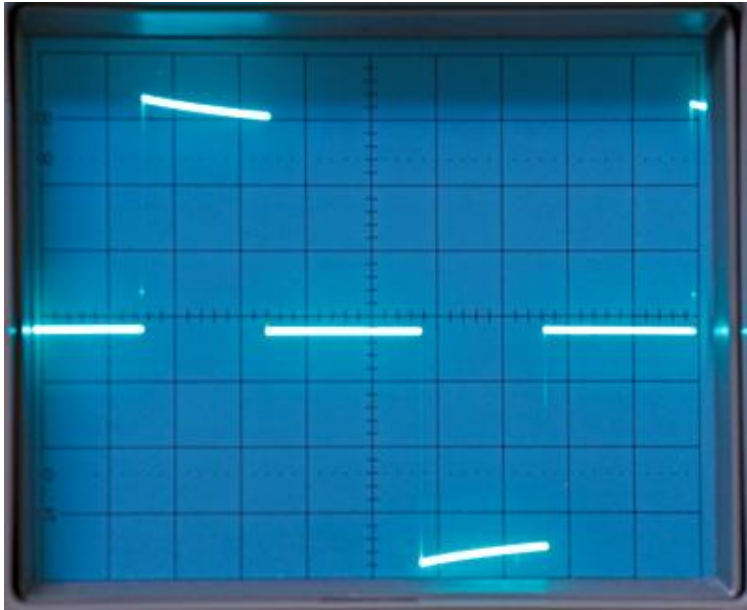
Presentation for the
285-TechConnect Meeting

Dale Keller, ACØST

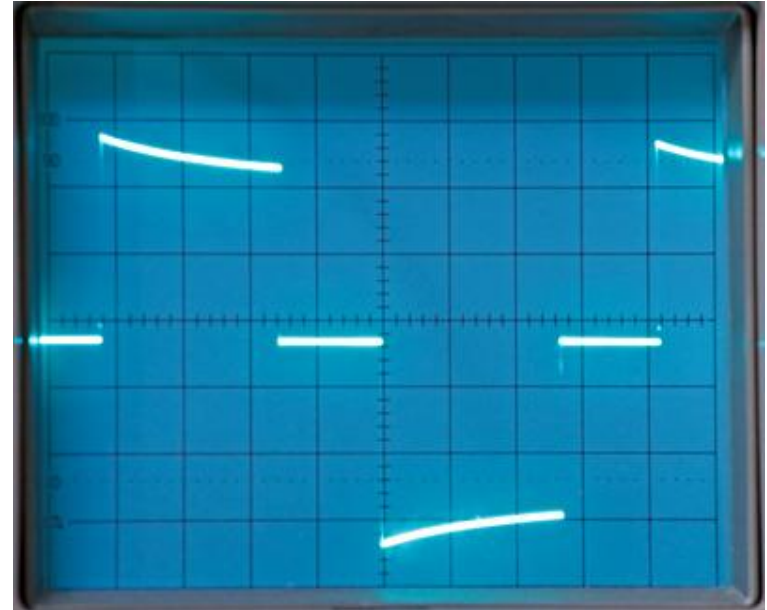
Power Inverters (12VDC to 110VAC)

- Most power inverters on the market output a PWM Squarewave. This is usually advertised as a “modified sinewave” which is marketing-speak for “modified squarewave”.
- Bill, NØCU, gave a talk a few months ago about the problems he had with this squarewave output cooking some of his equipment.

Modified Squarewave (PWM)



PWM Output (low load)



PWM Output (high load)

This waveform is fine for resistive loads like heaters and lightbulbs. But it can wreak havoc with transformers, switching power supplies, and other non-resistive loads.

“True Sinewave” / “Pure Sinewave”

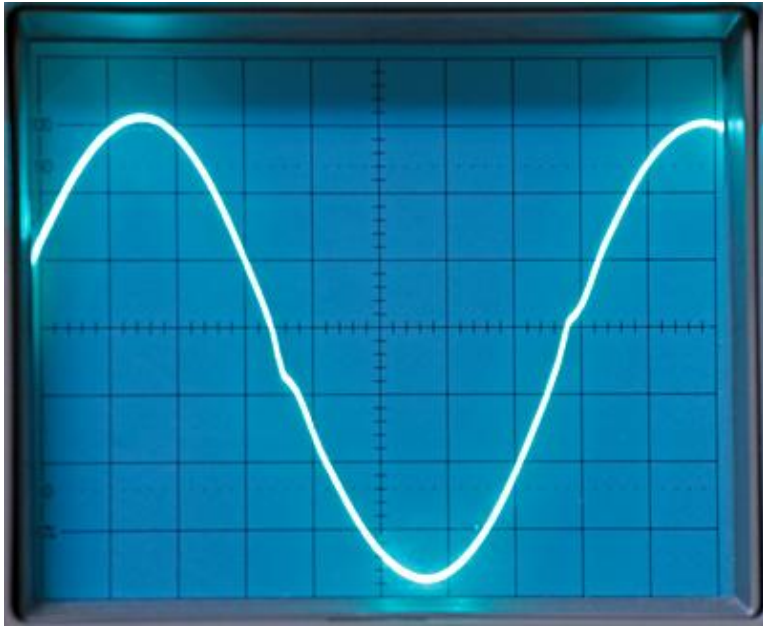
- Reviews of “True Sinewave” inverters show that there is a lot of junk for sale.
- Even the “best in the business” brands get a lot of complaints for poor quality and lousy designs.
- I chose a Samlex because they had slightly fewer bad reviews.

Samlex PST-15S-12A

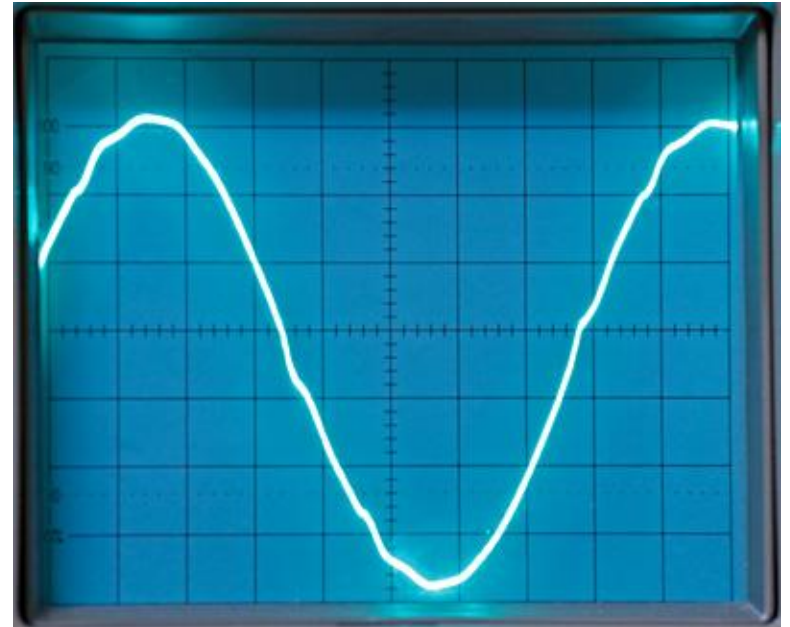


- 12VDC to 120VAC True Sinewave Inverter
- 150 watt output
- About \$100

Test Results



120v, 0 to 150 watt resistive
Load (light bulb)
(13.8v, 0.28 to 14.6amps input)



120v, 17 watt non-resistive
Load (fluorescent) lamp
(13.8v, 1.8 amps input)

Summary

- At 160 watts, it beeps constantly and the lightbulb flickers.
- After 3 minutes with the 140 watt load, the heatsink case is not even getting warm.
- At 140 watts, the cigarette lighter cord is getting a little warm.
- Under low/no load, and up to the rated output, the regulation and sinewave shape is excellent.