Current Transformer Board 1.0

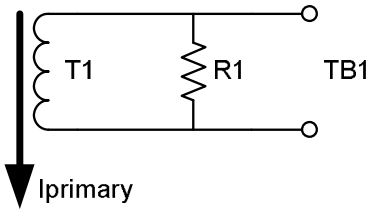
Current Transformer Board 1.0

Introduction

The Current Transformer Board 1.0 features a single 500A wideband current transformer which is perfect for use in small DRSSTCs and SSTCs. It is most commonly used as a feedback current transformer in DRSSTCs or a current monitor in both DRSSTC and high voltage / pulsed power applications. There is an onboard 2 watt resistor, R1, which can be utilized as a burden resistor for current monitoring. A screw terminal block is provided for the output of the current transformer.

Typical Applications:

- DRSSTC Feedback Transformers
- Current Sense Circuits
- Pulse Current Monitor
- Low-to-Mid Power DRSSTCs



Schematic Diagram

Electrical Properties	
Bandwidth	20kHz – 200kHz
Max. Current (peak)	> 500A
Max. Current (RMS)	> 110A
Number Turns	100
Inductance	14mH
R1, Max. Power	2W

Selecting R1, Burden Resistor

Selection of the R1, burden resistor should be done using the following formula:

Volts/Amp = R1 / Number of Turns

For example, if we used a burden resistor of 1 ohm, then our calculated Volts / Amp would be:

Volts/Amp = 1 / 100 = 0.01V/A

So with a DRSSTC that operates with a peak current of 500A, the output of this current transformer would be:

Voutput = (Ipulse x R1) / Number of Turns

= (500A * 1) / 100 = 5V

R1, Burden Resistor Power Dissipation

Power dissipation of the burden resistor, R1, can be approximated with the following equation:

$Pdiss = (Voutput^2 / R1) \times DC$

(where DC = duty cycle of DRSSTC system)

Generally, DRSSTCs operate at very low duty cycles, typically 5-10% maximum duty cycle. So, if we have a DRSSTC that operates with a peak output current of 500A and the maximum operational duty cycle is 5%, the maximum power dissipation of the burden resistor, R1 would be:

$Pdiss = (5V^2 / 1) \times 0.05$

Pdiss = 1.25 watts

The maximum power dissipation of the onboard burden resistor, R1 is 2 watts so this value of burden resistance is acceptable.