CT Overview and Information

\*\*Basic Information\*\*

The Current Transformer (CT) was chosen to measure the current in order to detect a fault (a rise in current do to a shortage). The reason the CT was chosen was because this project involves the use of Alternating Current (AC) and a simple DC amp meter will not help.A CT produces a reduced current accurately proportional to the current in the circuit, which can be conveniently connected to measuring and recording instruments. A current transformer isolates the measuring instruments from what may be very high voltage in the monitored circuit.

<http://www.murata-ps.com/data/meters/current_transformers.pdf>

CT specs

\*\*Ratio: 100/5 amps\*\*

\*\*Accuracy: +/- 1 percent\*\* of actual amperage

\*\*Burden:3.0 VA (0.12 Ohms) \*\*The secondary load of a current transformer is usually called the "burden" to distinguish it from the load of the circuit whose current is being measured. The burden, in a CT metering circuit is the (largely resistive) impedance presented to its secondary winding. This means that this chosen CT can handle a impedance of .12 ohms due to the 3 VA of apparent power.

\*\*Polarity:\*\* CTs are marked with ‘H1’ (primary) and ‘X1’ (secondary) polarity indicators. When a CT’s only function is to measure amperes, polarity markings can be disregarded. However, correct polarity is mandatory in applications in which the phase relationship between two currents is involved (watt or watt-hour meters are two examples of polarity sensitive applications). Refer to the respective instruments’ documentation for more information.

\*\*Thermal Rating Factor:\*\* The thermal rating factor denotes the amount by which the primary current can be increased on a continuous basis over its rated value without exceeding the CT’s maximum temperature rise.The formula can be used to calculate thermal rating factors at temperatures above 30°C (see data sheet for formula).

<http://openenergymonitor.org/emon/buildingblocks/how-to-build-an-arduino-energy-monitor-measuring-current-only>

\*\*AC to DC\*\*

Since this is going to a PCB board the single phase alternating current will need to converted to DC. So in order to due this a Rectifier will be used to convert the small current from the transformer to DC. The part is relatively is cheap and easy to use.