

# MCM TECHNICAL NOTES

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## ***Things to Consider When Selecting Current Transformers (CT's) and Voltage Transformers (VT's) / Power Transformers (PT's)***

Please Note: For this example PT's and VT's are the same. It all depends on what part of the world you come from as what they are called.

### **Selecting the right CT's**

Sensors should be selected such that the nominal motor values for current and voltage are around 70% of the corresponding sensor rating. Alternatively, for current transformers, the secondary current at nominal motor current should be between 3.5 – 4.5A and for voltage transformers, the secondary voltage should be between 70 - 90V at a nominal motor primary voltage. Failure to do so will result in a loss of sensitivity and the ability of MCM to detect motor degradation or change.

Note: In North America the most common secondary current is rated for 5 Amp's and the secondary control voltage is between 110 and 120 VAC. Side note: Low Voltage is considered 600 VAC and below. Med Voltage – High Voltage is above 500 VAC by European standards. Example a new 575 VAC 3 ph motor would be considered Med Voltage and require CT's & PT's. by European Standards.

## **1 Inverter Driven Systems**

Requires special Hall Effect CT's contact distributor for the proper Hall Effect Closed Loop CT with the right + - mA rating for motors you are monitoring.

## **2 Line Driven Systems**

Current and voltage transformer specifications:

Current transformers:

Upper Voltage (kV)	Class	Secondary output range (A)	Standards	
			IEC	ANSI
0.72	0.5	0-5	60044-1	57.13
7.2 12 17.5 24	0.5	0-5	1851987	CS71978

Voltage transformers:

Upper voltage (kV)	Class	Secondary output (V)	Standards
			IEC
12 24	0.5	0-100	1861987

# Voltage and current connections

Voltage Transformers

Class 0.5

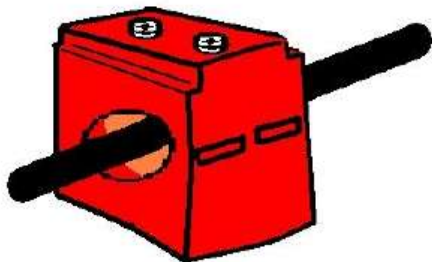
Secondary Voltage 100V,110V,120V



Current Transformers

Class 0.5, Secondary Current 5A

> 1.5A



Current Sensors



## Current sensor rules

- Use Hall effect LEM sensors for variable speed applications, current transformers for fixed speed
- If wound CTs in place, must be better than 0.5% (Class 0.5) accuracy. Protection CTs typically class 1 or 2 (1-2%)
- Not recommended to connect into protection circuits as could risk compromising integrity of protection circuit. MCM should **NEVER** be used for final circuit protection!
- May also use split core current sensors, but accuracy is lower.