Low Cost Power & Power Quality Monitoring

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INTRODUCTION

Logging voltages, currents and other power system parameters are a growing requirement within many different industries these days. This data is often required for various analysis purposes such as PFC/AHF system sizing, device/equipment power consumption and behavior monitoring (especially for small to medium industries without supervisory management systems in service). Therefore, there is a requirement for a low-cost device that can-do essential logging of power system parameters without the premium price tag as normally seen with commercially available portable power and power quality (PQ) meters.

PROBLEM

A secondary school in Melbourne needed to log the current, voltage and power factor across a number of distribution boards in 10 minute intervals. The school management had an existing maintenance contract with a small electrical contractor who they wanted to provide these services. However, the electrical contractor could not afford the cheapest portable PQ device available so needed a cost effective alternative.

SOLUTION(S)

The Camille Bauer Sineax AM1000 with webserver, split core CT and hardwired voltage connections was implemented as the preferred solution for the school. This solution was 65% cheaper in comparison to the lowest price portable PQ analyser, with no compromise on the data logging features.

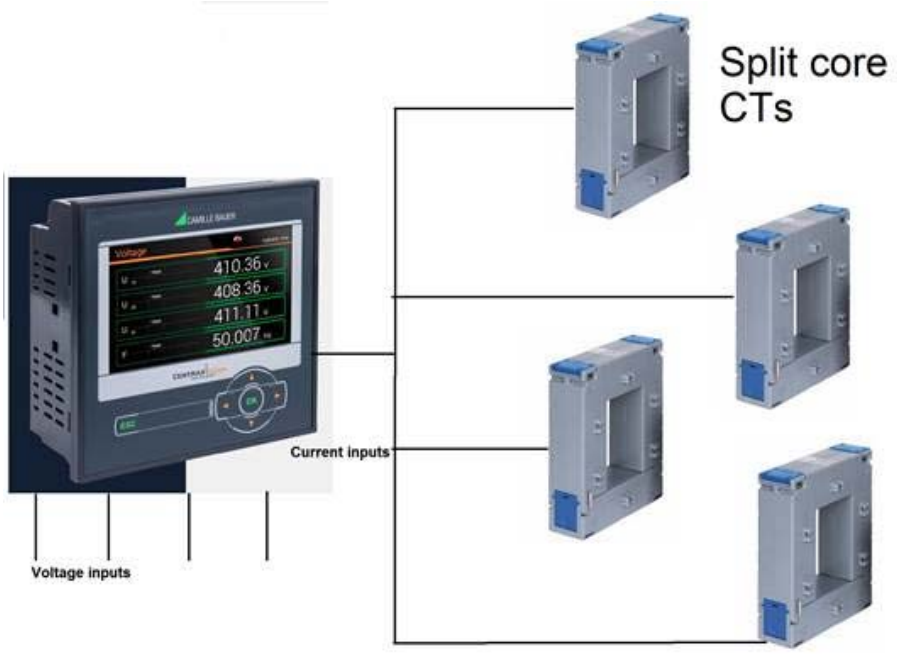


Figure 1 - Sineax AM/CU/PQ series with split core CTs.

Advantages

- Webserver over Ethernet interface delivers superior HMI.
- No requirement to have a network connection as the device can communicate directly to any laptop connected via Ethernet interface.
- Power quality data is an added bonus (i.e. harmonics, imbalance etc.) in addition to logging of all electrical parameters, and event logging is also optionally available.
- 8GB of internal memory is more than enough for logging data for months.
- The device can communicate to Ethernet network / router to enable remote monitoring.

Challenges

Due care needed to be taken whilst implementing this set up for portable applications as it has exposed voltage connections.

Split core CTs had to be installed by a qualified electrician for electrical safety requirements. The CT secondary could not be open circuited at any stage of the connection on energized cables. Shunt resistors could be used for this purpose or follow split core CT connection procedures from Power Parameters.

CONCLUSION

After the initial implementation, the school installed seven sets across their switch boards, which validates the market acceptance of this low-cost solution. This configuration can be extended to other similar web server-based models from Camille Bauer for specific applications like Class A Power Quality analysis, or data acquisition for control/automation applications.

Industries:	Low to Medium sized Service Contractors
PP Products Used:	Camille Bauer Sineax AM1000 + 3 x Generic split core CTs 500A + Hioki voltage leads with alligator clips

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