

Master/Bachelor Thesis:

Characterizing a PMU for a power grid based on IEEE standard

Context:

A phasor measurement unit (PMU) is a device, which measures the electrical waves on an electricity grid using a common time source for synchronization. Time synchronization allows synchronized real-time measurements of multiple remote measurement points on the grid. The resulting measurement is known as a synchrophasor. PMUs are considered one of the most important measuring devices in the future of power systems.^[1] A PMU can be a dedicated device, or the PMU function can be incorporated into a protective relay or other device.

We have developed an PMU device on a microcontroller based on TI-F2379D. We are able to generate the frequency, rate of change of frequency and phasor. We would like to characterize the PMU with Real time digital simulator (RTDS) on our lab for the errors and try to optimize the PMU for minimizing the error

Your tasks:

The major tasks involved in the thesis are as tabulated below.

- Characterization of PMU
 - Implementing the existing RTDS module for static conditions
 - Implement according to the standard RTDS modules for dynamic conditions
- Implement windowing functions and recognize the sources of error

What will you learn:

You would have the following knowledge till the end of the thesis

- A good knowledge of IEEE Std. C37.118 PMU standard
- Type A characterization of instruments and window functions
- A good signal processing knowledge
- A better understanding of embedded C programming

Profile:

Basic understanding of Embedded C

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