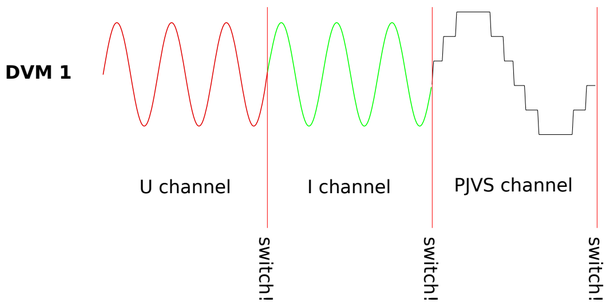
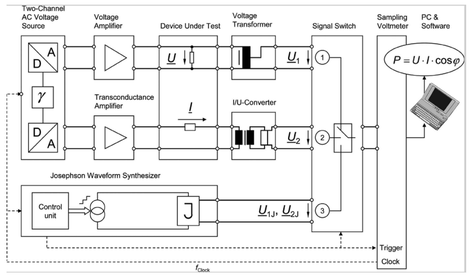
Direct sampling measurements
DVM measure waveform
PJVS is used to calibrate digitizer

1 PJVS, 1 DVM, PTB method. ~33% of U & I waveforms sampled





L. Palafox et al.,
Primary AC Power Standard Based on Programmable Josephson Junction Arrays
IEEE Tr. Instr. Meas., vol. 56, no.2, pp. 410-413, April 2007

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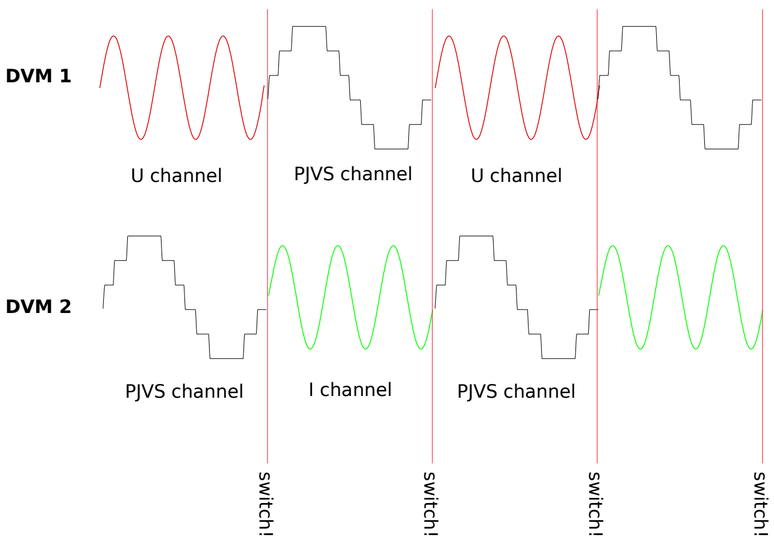
The Josephson-Effect-Based Primary AC Power Standard at the PTB: Progress Report
IEEE Tr. Instr. Meas., vol. 58, no. 4, pp. 1049-1053, April 2009

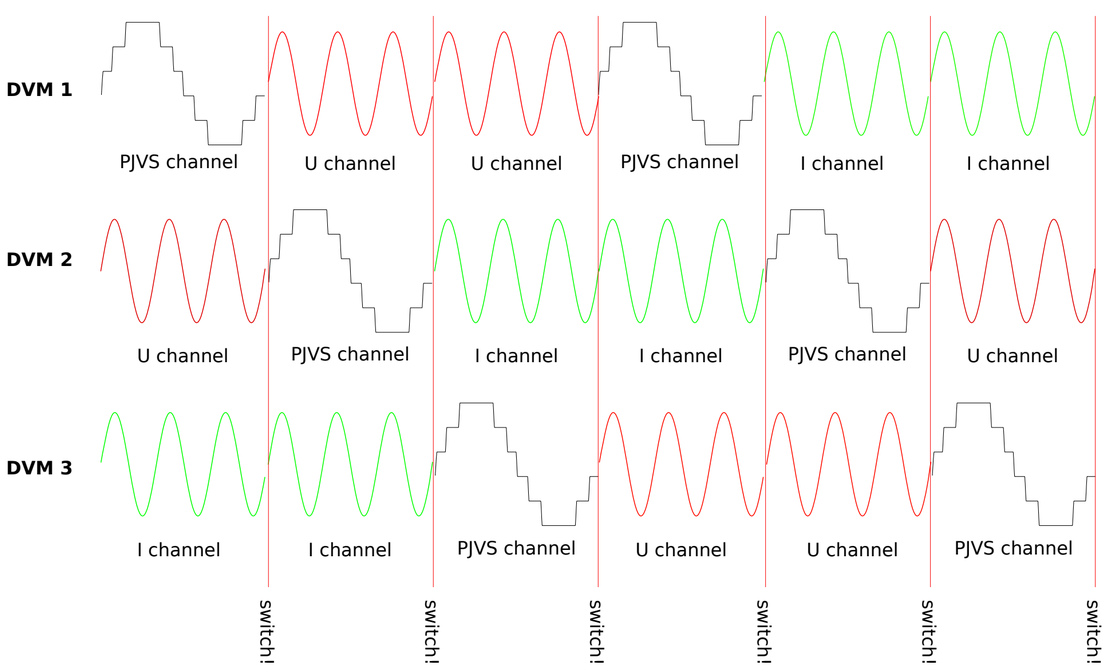
slow switching

1 PJVS, 2 DVM. ~50 % of U & I waveforms sampled



slow switching

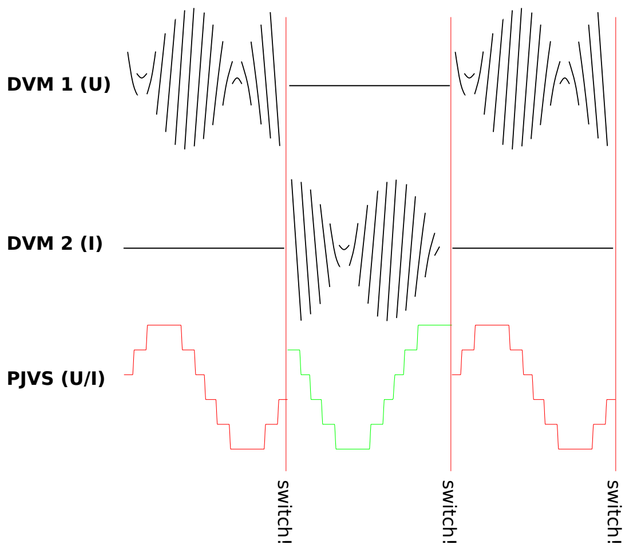
1 PJVS, 3 DVM. ~100 % of U & I waveforms sampled

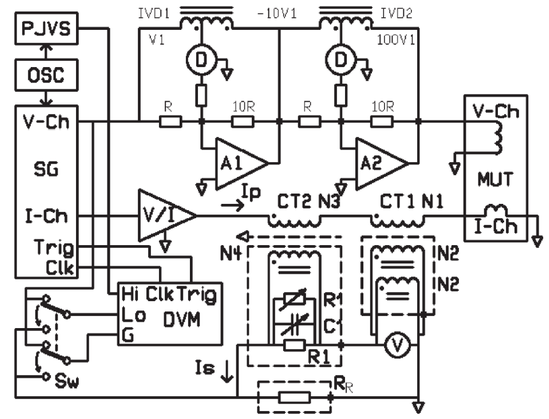


slow switching

Differential measurements
DVM measure difference between
PJVS and U or I signal

1 PJVS, 1 DVM, ~50% of U & I waveforms sampled





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Low-Frequency Quantum-Based AC Power Standard at NRC Canada
IEEE Tr. Instr. Meas.,
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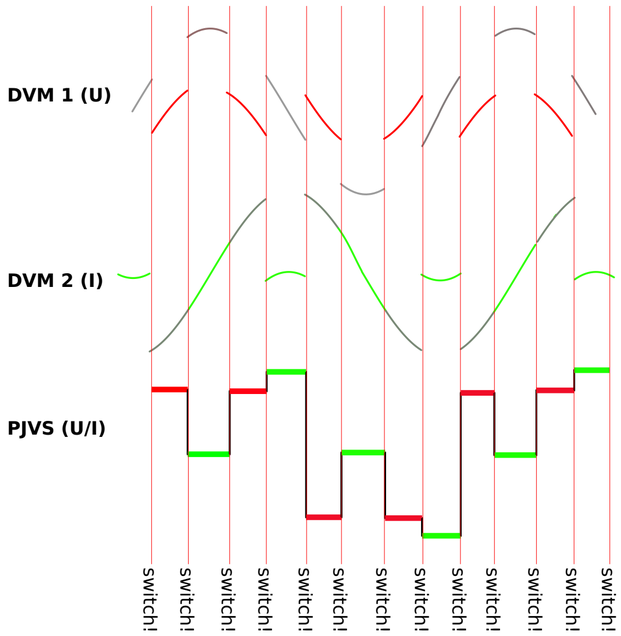
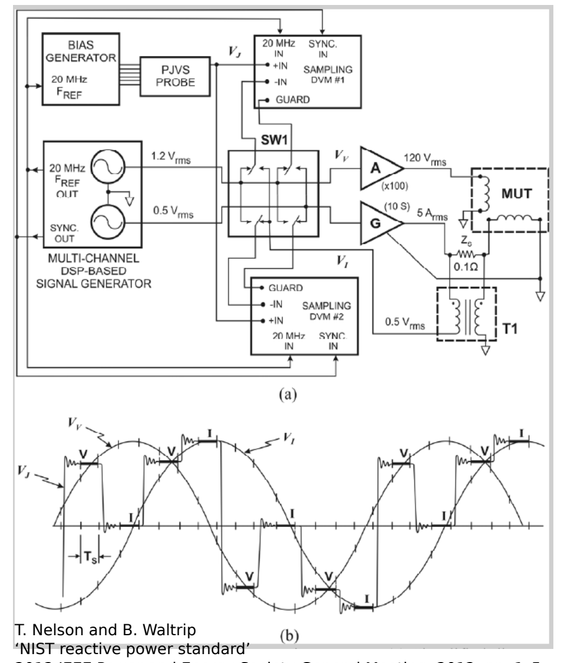
slow switching

1 PJVS, 2 DVM, NIST method

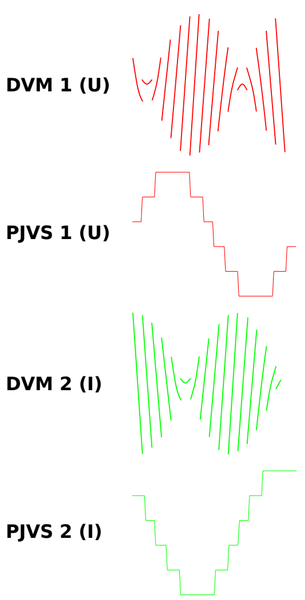


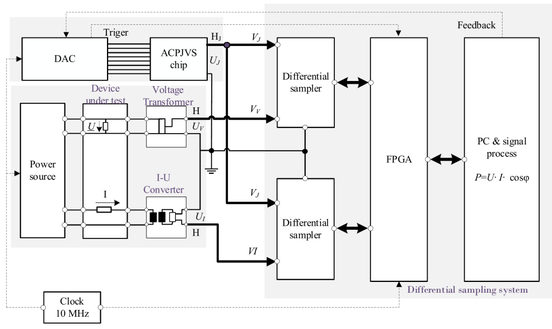


T. Nelson and B. Waltrip
'NIST reactive power standard'
2012 IEEE Power and Energy Society General Meeting, 2012, pp. 1–5.

fast switching

2 PJVS, 2 DVM, 100% of U & I waveforms sampled





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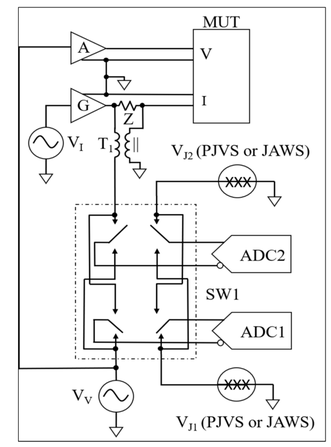
"Phase Measurement Performance Evaluation of Differential Sampling System," 2018 Conference on Precision Electromagnetic Measurements (CPEM 2018), Paris, 2018, pp. 1-3, doi: 10.1109/CPEM.2018.8501128.



Bryan C. Waltrip et al.,
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CPEM 2020 Conf. Digest and online presentation