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IEEE Standard for Synchrophasor Measurements for Power Systems

Amendment 1: Modification of Selected Performance Requirements

IEEE Power and Energy Society

Sponsored by the
Power System Relaying Committee

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IEEE Std C37.118.1a™-2014
(Amendment to
IEEE Std C37.118.1™-2011)

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Approved 27 March 2014

IEEE-SA Standards Board

Abstract: Modifications in this amendment include some performance requirements with related text updates to correct inconsistencies and remove limitations introduced by IEEE Std C37.118.1™-2011. It was discovered that a few requirements were not achievable with the published models as was intended and others were extremely difficult to meet with available hardware. This amendment modifies requirements in Table 4 through Table 10. Text was modified to support the requirement modification. Testing described in 5.5.9 was clarified, and Table 11 (formerly Table 12) was modified to match. Annex C was modified to keep it consistent with the rest of the document.

Keywords: data concentrator, FE, frequency error, IEEE C37.118.1, IEEE C37.118.1a, IRIG-B, PDC, phasor, phasor measurement, phasor measurement unit, PMU, RFE, ROCOF, ROCOF error, synchronized phasor, synchrophasor, total vector error, TVE

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Introduction

This introduction is not part of IEEE Std C37.118.1a™-2014, IEEE Standard for Synchrophasor Measurements for Power Systems

Amendment 1: Modification of Selected Performance Requirements.

This amendment for IEEE Std C37.118.1™-2011 was initiated to address issues brought up by users attempting to develop PMUs that meet the new performance requirements. The first issue was that the description for the latency measurement was not consistent with the latency test. The second issue was that the ramp test did not have a long enough exclusion interval for the M-class filters and could give different results depending on implementation.

The third and major issue was that users found that frequency and rate of change of frequency (ROCOF) requirements were very difficult to meet with available hardware and with the reference models provided in Annex C. At the time of publication, these requirements were new and largely untested with practical PMUs. New implementations that focused on ROCOF requirements had degraded phasor and/or frequency measurement results. The Working Group decided the best approach was to relax or suspend ROCOF and/or frequency requirements to be sure PMU implementations would satisfy all requirements. Analysis of each test showed how errors in phasors, frequency, and ROCOF affected each other. Performance requirements were modified to assure they are consistent for each test and between tests.

This amendment also corrects a few typographic errors in the standard. Annex C was updated to match the modified requirements.

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