



IEEE P1564 Voltage Sag Indices Task Force Meeting



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IEEE P1564 Task Force Meeting

Agenda

- Task Force Overview
- Draft Status
- Review Document

IEEE P1564 Task Force Overview

Status

- Title
 - IEEE Guide for Voltage Sag Indices
- Scope
 - This guide identifies appropriate voltage sag indices and characteristics as well as the methods for calculating them. Methods are provided for quantifying the severity of individual events (single-event characteristics), for quantifying the performance at a specific location (single-site indices), and for quantifying the performance of the whole system (system indices). Multiple methods are presented for each. The methods are appropriate for use in transmission, distribution, and utilization electric power systems.
- Purpose
 - This document identifies and defines different characteristics and indices. It does not recommend the use of a specific set of indices, but instead recommends the method for calculating specific indices when such an index is used. The large variation in customers sensitive to voltage sags and power providers supplying them makes it impossible to prescribe a specific set of indices. Instead this document aims at assisting in the choice of index and ensuring reproducibility of the results after a certain index has been chosen. The user of this document may decide to calculate the value for just one index or for a number of different indices, depending on the application.
- PAR Status
 - In February 2007 the IEEE-SA Standards Board approved the project until December 31, 2011.

Project Status

- Task force chair completed IEEE P1564 D14 in July 2011
 - IEEE P1564 D13 reviewed by three task force members from January to March 2011
 - Ballot pool opened in January 2011.
 - Charts converted to grayscale for D14
 - Bibliography brought into conformance for D14 and relinked to clauses in main document.
 - Inconsistencies in reference to IEEE 1366 and to 1159 found during review of D13 and addressed in D14

Major Change in IEEE P1564 D14

- IEEE Definitions of a Sustained Interruption
 - IEEE Std 1159-2005 (Maintained by the IEEE PQ Subcommittee)
 - A type of long-duration root-mean-square (rms) voltage variation where the complete loss of voltage (<0.1 pu) on one of more phase conductors is for a time greater than 1 min
 - IEEE Std 1366 (Maintained by the IEEE Distribution Subcommittee)
 - Any interruption not classified as a part of a momentary event. That is, any interruption that lasts more than 5 minutes
- IEEE P1564 D13
 - Used five minutes as the upper limit of voltage sag indices and referenced IEEE Std 1366 for its justification
- IEEE P1564 D14
 - Uses one minute as the upper limit of the duration of a voltage sag and references IEEE Std 1159 as its justification

Suggested Discussion Topic for Next Revision of IEEE 1159

- IEEE Std 1159

Category	Duration	Voltage Magnitude
Short Duration Variations		
Instantaneous		
<i>Sag</i>	0.5 to 30 cycles	0.1 to 0.9 pu
<i>Swell</i>	0.5 to 30 cycles	1.1 to 1.8 pu
Momentary		
<i>Interruption</i>	0.5 cycles to 3 s	< 0.1 pu
<i>Sag</i>	30 cycles to 3 s	0.1 to 0.9 pu
<i>Swell</i>	30 cycles to 3 s	1.1 to 1.8 pu
Temporary		
<i>Interruption</i>	3 s to 1 min	< 0.1 pu
<i>Sag</i>	3 s to 1 min	0.1 to 0.9 pu
<i>Swell</i>	3 s to 1 min	1.1 to 1.8 pu
Long Duration Variations		
<i>Sustained Interruption</i>	> 1 min	0.0 pu
<i>Undervoltage</i>	> 1 min	0.8 to 0.9 pu
<i>Overvoltage</i>	> 1 min	1.1 to 1.2 pu

- IEEE Std 1366

- Momentary Interruption (MAIFI): <5 min
- Sustained Interruption (SAIFI, SAIDI): >5 min

- Should IEEE 1159 be aligned better with IEEE 1366?

Final Editing Task

P1564_D15.doc [Compatibility Mode] - Microsoft Word

Home Insert Page Layout References Mailings Review View Add-Ins Acrobat

Print Layout Full Screen Reading Outline Show/Hide Zoom New Window Arrange All Split Switch Windows Macros

Document Views Window Macros

IEEE P1564/D15, July 2011

1 Annex D Examples of Measurement Aggregation

2 D.1 High-Voltage Survey D6

3 This survey covered 22 sites at 70 kV with monitoring period up to 6 years and a total of 110 monitor-years. The results are shown in Table 18, Table 19, and Table 20 for the average, 50th percentile and 95th percentile tables with and without time aggregation. Time aggregation windows of 10 seconds and 10 minutes length have been applied.

7 The effect of a 10-second time aggregation is significant for the 95th percentile table, especially for short and shallow events. The additional effect of a 10-minute time-aggregation window is small. The 50th percentile and average tables are not much affected by time aggregation. The clustered events are concentrated at a small number of sites. All values in the tables are number of events per year.

11 Table 18
12 High-Voltage Survey D-6, 95th Percentile Table, No Time Aggregation

	0-20ms	20-100ms	0.1-0.5s	0.5-1s	1-3s	3-10s	10-60s	1-3min
85-90%	3.2	12.1	7.8	2.3	1.0			
70-85%	0.7	10.0	11.0	2.5	0.7			
40-70%	1.3	8.7	8.7	2.0				
10-40%	0.2	1.8	4.0	0.2				
0-10%		0.3	0.7	1.0	1.2	1.0	0.3	2.0

14 Table 19
15 High-Voltage Survey D-6, 95th Percentile Table, 10-Second Time Aggregation

	0-20ms	20-100ms	0.1-0.5s	0.5-1s	1-3s	3-10s	10-60s	1-3min
85-90%	1.0	8.8	5.8	2.8	1.0			
70-85%	0.3	11.3	10.3	2.3	0.7			
40-70%	1.3	8.0	8.3	2.0	0.2			
10-40%	0.2	1.3	4.0	0.2				
0-10%		0.3	0.7	1.0	1.3	1.0	0.3	2.0

17 Table 20
18 High-Voltage Survey D-6, 95th Percentile Table, 10-Minute Time Aggregation

	0-20ms	20-100ms	0.1-0.5s	0.5-1s	1-3s	3-10s	10-60s	1-3min
85-90%	1.0	8.1	5.3	2.4	0.7			
70-85%	0.3	10.3	8.7	2.7	0.3			
40-70%	1.3	7.5	7.5	1.8	0.2			
10-40%	0.2	1.3	3.3	0.2	0.2			
0-10%		0.3	0.7	1.0	1.2	1.0	0.3	1.7

Page: 50 of 52 Words: 14,157 English (U.S.) 69%

- The final review showed that the data in Annex D5 has no reference.
- An inquiry to Math Bollen has been submitted.

IEEE P1564 Action Items

Schedule

- IEEE P1564 D14 will be submitted for Mandatory Editorial Coordination with IEEE Standards during the week of August 2
- After IEEE Standards completed edit, the task force chair will submit the resulting IEEE P1564 D15 for ballot.
- Extend the ballot invitation to current task force members as a minimum.
- Begin the ballot and ask for 1-yr extension for PAR.
- The task force chair will ask IEEE Standards if we need to complete any administrative actions with the PAR since it is set to expire on December 31, 2011.