An American National Standard

IEEE Standard Nomenclature for Generating Station Electric Power Systems

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Foreword

(This foreword is not a part of IEEE Std 505-1977, IEEE Standard Nomenclature for Generating Station Electric Power Systems.)

The IEEE has developed this standard to provide a standard nomenclature for use in standards and other documents for generating station electric power systems. The selection of standard nomenclature is limited to the following words and terms:

1) Words and terms that have specific definitions apropos to generating station electric power systems
2) Words and terms that provide generic definitions of electric components and their functional identification
3) Words and terms which when used with appropriate prefixes and adjectives can define completely a component and its function

There are words and terms commonly used in the industry that have not been included because they do not properly describe the electric component or because a consensus on a definition is not indicated.

Approved March 11, 1976

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IEEE Standard Nomenclature for Generating Station Electric Power Systems

1. Scope

This standard applies to electric power systems in stationary generating stations that provide electric power to the power system. Nomenclature is included for the following interrelated systems:

1) Generating unit power system
2) Generating unit auxiliaries power system
3) Station auxiliaries power system
4) Generating unit dc auxiliaries power system
5) Station dc auxiliaries power system

This standard is limited to the preceding power systems and does not include nomenclature for instrumentation, controls, or auxiliaries.

2. Purpose

The purpose of this standard is to provide nomenclature for the specific description of generating station electric power systems and the system components. The use of this nomenclature in industry standards and other documents is intended to reduce ambiguity and provide universal interpretation. The abbreviations and abridgment provide a means of conserving space.

3. Definitions

3.1 General

In general, definitions of words and terms are found in IEEE Std 100-1972, IEEE Standard Dictionary of Electrical and Electronic Terms (ANSI C42.100-1972); Abbreviations for Use on Drawings and in Text (ANSI Y1.1-1972), and ANSI C84.1-1970, Voltage Ratings for Electric Power Systems and Equipment. Some of the following definitions have been developed because the reference sources have omitted them or because their current usage in the power engineering science indicates a required clarification.

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3.2 Definitions

alternative (electric power system): A qualifying word identifying a power circuit, equipment, device, or component available to be connected (or switched) into the circuit to perform a function when the preferred component has failed or is inoperative. See also reserve.

auxiliaries (collective): For more than one auxiliary, that is, auxiliaries bus, auxiliaries power transformer, etc.

auxiliary: Any item not directly a part of a specific component or system but required for its functional operation.

control center: An assembly of devices for the purpose of switching and protecting a number of load circuits. The control center may contain transformers, contactors, circuit breakers, protective and other devices intended primarily for energizing and deenergizing load circuits.

electric components: The electric equipment, assemblies, and conductors that together form the electric power systems.

functional nomenclature: Words or terms which define the purpose, equipment, or system for which the component is required.

generating unit: See **unit.**

independent auxiliary: An item capable of performing its function without dependence on a similar item or the component it serves.

nomenclature (electric power system): The words and terms used to identify electric power systems.

normal: See **preferred.**

power system: The electric power sources, conductors, and equipment required to supply electric power.

preferred (electric power system): That equipment and system configuration selected to supply the power system loads under normal conditions.

rectifier: A device for converting ac to dc.

reserve (electric power system): A qualifying term used to identify equipment and capability that is available and is in excess of that required for the load.

NOTE — The reserve may be connected to the system and partially loaded or may be made available by closing switches, contactors, or circuit breakers. Reserve not in operation and requiring switching is sometimes called standby equipment.

standby: See **alternative** and **reserve.**

station auxiliary (generating station): Any auxiliary at a generating station not assigned to a specific unit.

station service transformer: A transformer that supplies power from a station high voltage bus to the station auxiliaries and also to the unit auxiliaries during unit startup and shutdown or when the unit auxiliaries transformer is not available, or both.

substation: An area or group of equipment containing switches, circuit breakers, buses, and transformers for switching power circuits and to transform power from one voltage to another or from one system to another.

unit (generating station): The generator or generators, associated prime mover or movers, auxiliaries and energy supply or supplies that are normally operated together as a single source of electric power.

unit auxiliary: An auxiliary intended for a specific generating unit.

unit auxiliaries transformer: A transformer intended primarily to supply all or a portion of the unit auxiliaries.

unit transformer: A power system supply transformer which transforms all or a portion of the unit power from the unit to the power system voltage.

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4. Nomenclature Selection Criteria

4.1 General

The nomenclature selected to be standard permits the identification of generating station electric power system components. The standard identification is the standard word or words for each component and the modifiers that identify its function.

4.2 Definitions

The nomenclature selected has definitions found in standard dictionaries which are appropriate to electric power supply systems. Only the most frequently used meaning of a word applies. Synonyms, acronyms, slang, and ambiguous words and terms are excluded. When a specific definition is intended it is included in this standard.

4.3 Components and Functions

Standard words and terms are limited to generating station electric power system components and their functions.

4.4 Descriptive Prefixes

Words and terms that describe the type and kind of component are excluded.

4.5 Abbreviations

The abbreviations indicated are unique for the purposes of this standard.

5. Component Function

5.1 General

The following nomenclature identifies the function of components or groups of components which may be all or part of a power system or its equipment.

5.2 Functional Nomenclature

The following listing shows standard functional nomenclature.

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Term	Abbreviation
alternative	altn
auxiliaries	auxs
auxiliary	aux
current limiting	cur limiting
distribution	dist
generating unit	unit
generator	gen
ground	gnd
independent	indep
neutral	neut
power	pwr
preferred	pfd
reserve	rsv
service	svce
standby	stby
station	sta
system	sys
tie	
transfer	xfr
unit	

6. Components

6.1 General

The following nomenclature identifies the electric components or groups of components which may be all or part of a system or its equipment.

6.2 Component Nomenclature

The following listing shows standard component nomenclature.

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Term	Abbreviation
battery	bat
battery charger	bat chg
bus	
cable	ca
capacitor	cap
circuit	ckt
circuit breaker	cb
control center	cc
contactor	cntor
disconnector	disc
exciter	exctr
feeder	fdr
generator	gen
grounding equipment	gndg eqpt
inverter	inv
motor-generator set	mg set
panelboard	pnlbd
reactor	reac
rectifier	rect
resistor	res
substation	substa
surge protective equipment	surge prot eqpt
switchgear	swgr
transformer	xfmr

7. Nominal Voltage

7.1 General

The component or component group description may include the nominal voltage of the power system of which it is a part.

7.2 Nominal Voltage Nomenclature

The following listing shows standard nominal voltage nomenclature.

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NOTES:

1 — Where 1 ph or dc is not indicated, 3 phase is implied.

2 — Where dc is not indicated, 60 Hz is implied.

Term	Abbreviation
120 volt 1 phase 60 Hz	120 V 1 ph
125 volt dc	125 V dc
208 volt 3 phase 60 Hz	208 V
208 volt 1 phase 60 Hz	208 V 1 ph
240 volt 1 phase 60 Hz	240 V 1 ph
240 volt 3 phase 60 Hz	240 V
250 volt dc	250 V dc
277 volt 1 phase 60 Hz	277 V 1 ph
480 volt 3 phase 60 Hz	480 V
600 volt 3 phase 60 Hz	600 V
2400 volt 3 phase 60 Hz	2.4 kV
4160 volt 3 phase 60 Hz	4.16 kV
6900 volt 3 phase 60 Hz	6.9 kV
13 800 volt 3 phase 60 Hz	13.8 kV

8. Examples

8.1 General

In the following examples the component or component group is identified in quotes. The examples include commonly used nomenclature but are not intended to be a complete listing of all possible combinations of the standard nomenclature listed in Sections 5.2 and 6.2. The use of nominal voltages is not included; however, any one of the voltages listed in Section 7.2 may be appropriately included with the examples; for example, 4.16 kV auxiliaries bus.

8.2 Nomenclature Examples

The following listing shows examples of standard nomenclature.

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Function	"Component" or "Component Group"
auxiliaries	"battery"
alternative	"feeder"
auxiliary	"generator"
auxiliary generator	"auxiliaries"
auxiliary	"bus"
auxiliary	"transformer"
auxiliaries	"power transformer"
auxiliaries bus	"unit feeder"
auxiliaries bus	"station feeder"
auxiliaries bus	"preferred feeder"
auxiliaries bus	"alternative feeder"
current limiting	"reactor"
current limiting	"resistor"
distribution	"bus"
distribution	"load control center"
distribution	"panelboard"
distribution	"switchgear"
distribution	"transformer"
generator	"auxiliaries"
generator	"bus"
generator	"circuit breaker"
generator	"disconnector"
generator	"exciter"
generator	"grounding equipment"
generator	"neutral"
generator	"neutral grounding equipment"
generator	"surge protective equipment"
independent	"auxiliaries"
independent	"auxiliary"
independent	"system"
independent	"power"
independent	"bus"

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Function	"Component" or "Component Group"
independent bus	"generator"
independent	"dc bus"
independent dc bus	"generator"
independent dc bus	"battery"
independent bus	"feeder"
independent bus	"preferred feeder"
independent bus	"alternative feeder"
independent bus	"feeder circuit breaker"
independent bus	"feeder disconnector"
independent	"load control center"
neutral	"ground"
neutral	"grounding transformer"
neutral	"grounding reactor"
neutral	"grounding resistor"
neutral	"grounding disconnector"
neutral	"current limiting reactor"
neutral	"current limiting resistor"
power	"transformer"
power	"feeder"
power	"system"
reserve	"generator"
reserve	"feeder"
reserve	"transformer"
reserve	"bus"
standby	"auxiliary"
standby	"auxiliaries"
standby	"transformer"
standby	"generator"
standby	"bus"
standby	"power system"
standby	"feeder"
station service	"transformer"
station service	"feeder"

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Function	"Component" or "Component Group"
station service	"substation"
station	"auxiliary"
station	"auxiliaries"
station	"service"
station auxiliaries	"service"
station	"load"
station auxiliaries	"load"
station service	"load"
unit	"auxiliaries"
unit auxiliaries	"switchgear"
unit	"transformer"
unit auxiliaries	"transformer"
unit	"circuit breaker"
unit	"exciter"
unit	"battery"
unit auxiliaries	"bus"
unit	"auxiliary generator"
unit auxiliaries	"generator"

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