SWITCHGEAR DEVICE FUNCTION NUMBERS

with NAMES and SUFFIX LETTERS

To provide a means of quickly grasping the main purpose of any device used as a part of a switchgear equipment, a system of nomenclature known as "device function numbering" has been devised. This system, first developed in connection with automatic switchgear, is now applied to all types of switchgear equipment. It is based on assignment of a standard number to each of the several fundamental functions performed by the component elements of a complete switchgear equipment.

These device functions may refer to the actual function the device performs in an equipment or they may refer to the electrical or other quantity to which the device is responsive. Hence, there may be in some instances a choice of the function number used for a given device. The preferable choice, in all cases, is the one which is recognized to have the narrowest interpretation so that it most specifically identifies the device in the minds of all individuals concerned with the design and operation of the equipment.

The device function numbers with appropriate suffix letter or letters, where necessary, are used on electrical diagrams, in instruction books and in specifications.

The items in this publication were originally a part of Manual and Automatic Station Control, Supervisory, and Associated Telemetering Equipments, ANSI C37.2-1970, which now has been revised into two standards: Definition, Specification, and Analysis of Manual, Automatic, and Supervisory Station Control and Data Acquisition, ANSI/IEEE C37.1-1979, and Electrical Power System Device Function Numbers, ANSI/IEEE C37.2-1979.

Standard Device Function Numbers

Device function numbers, each with its corresponding function name and the general description of each function, are listed in this publication.

NOTE

When alternate names and descriptions are included under the function, only the name and description which applies to each specific case should be used. In general, only one name for each device such as, *relay, contactor, circuit breaker, switch,* or *device,* is included in each function designation. However, when the function is inherently not restricted to any specific type of device and where the type of device itself is thus merely incidental, any one of these alternative names, as applicable, may be substituted. For example, if for device function 6 a contactor is used for the purpose in place of a circuit breaker, the function name should be specified as Starting Contactor.

Numbers from 95 to 99 should be assigned only for those functions in specific cases where none of the assigned standard device function numbers are applicable. Numbers which are "reserved for future application" should not be used.

DEVICE NUMBER	GE RELAY TYPE
2	SAM
8	PK-2
15	GTL
21	CEB, CEY, GCX, GCY, GXS, SLY, SLYG
25	GES, IJS, SLJ
27	CFV, IAV, IFV, NGV
30	HAA
32	CAP, CCP, CFW, GGP, ICW
37	CFW, HGC, ICW, PJC
38	IRT
40	CEH
46	IJC, SGC
47	ICR
49	IRT, THC, TMC
50	CHC, HFC, NGA, PJC, SBC
51	BFC, IAC, IFC, IFCS, IFCV, SFC
59	CFV, IAV, NGV, PJV, STV
60	CFVB, IJC
64	PJG
67	CFC, CJC, CJCG, CLPG, CNP, IBC, IBCG, IBCV, JBC, JBCG, JBCV, JCC
68	CEB
74	HAA, HGA, HMA
76	PJC
78	CEX + GSY
79	HGA18, NLR, NSR, SLR
81	IJF, SFF
85	NAA, SCA, SPA
86	HEA, HSA
87	BDD, CFD, IFD, IJD, PVD, SBD, SPD, STD
94	HEA, HFA, HGA, HMA, HSA, NGA, SBA

DEVICE NUMBER	FUNCTION AND DESCRIPTION
(1)	**MASTER ELEMENT** is the initiating device, such as a control switch, etc, which serves either directly or through such permissive devices as protective and time-delay relays to place an equipment in or out of operation. **Note:** This number is normally used for a hand operated device, although it may be used for an electrical or mechanical device for which no other function number is suitable.
(2)	**TIME-DELAY STARTING OR CLOSING RELAY** is a device that functions to give a desired amount of time delay before or after any point of operation in a switching sequence or protective relay system, except as specifically provided by device functions 48, 62 and 79.
(3)	**CHECKING OR INTERLOCKING RELAY** is a relay that operates in response to the position of a number of other devices (or to a number of predetermined conditions) in an equipment, to allow an operating sequence to proceed, or to stop, or to provide a check of the position of these devices or of these conditions for any purpose.
(4)	**MASTER CONTACTOR** is a device, generally controlled by device function 1 or the equivalent and the required permissive and protective devices, that serves to make and break the necessary control circuits to place an equipment into operation under the desired conditions and to take it out of operation under other abnormal conditions.
(5)	**STOPPING DEVICE** is a control device used primarily to shut down an equipment and hold it out of operation. [This device may be manually or electrically actuated, but excludes the function of electrical lockout (see device function 86) on abnormal conditions.]
(6)	**STARTING CIRCUIT BREAKER** is a device whose principal function is to connect a machine to its source of starting voltage.
(7)	**ANODE CIRCUIT BREAKER** is a device used in the anode circuits of a power rectifier for the primary purpose of interrupting the rectifier circuit if an arc-back should occur.
(8)	**CONTROL POWER DISCONNECTING DEVICE** is a disconnecting device, such as a knife switch, circuit breaker, or pull-out fuse block, used for the purpose of respectively connecting and disconnecting the source of control power to and from the control bus or equipment. **Note:** Control power is considered to include auxiliary power which supplies such apparatus as small motors and heaters.
(9)	**REVERSING DEVICE** is a device that is used for the purpose of reversing a machine field or for performing any other reversing functions.
(10)	**UNIT SEQUENCE SWITCH** is a switch that is used to change the sequence in which units may be placed in and out of service in multiple-unit equipments.
(11)	**RESERVED FOR FUTURE APPLICATION.**
(12)	**OVER-SPEED DEVICE** is usually a direct-connected speed switch which functions on machine overspeed.

DEVICE NUMBER	FUNCTION AND DESCRIPTION
(13)	**SYNCHRONOUS-SPEED DEVICE** is a device such as a centrifugal-speed switch, a slip-frequency relay, a voltage relay, an undercurrent relay, or any type of device that operates at approximately the synchronous speed of a machine.
(14)	**UNDER-SPEED DEVICE** is a device that functions when the speed of a machine falls below a predetermined value.
(15)	**SPEED OR FREQUENCY MATCHING DEVICE** is a device that functions to match and hold the speed or the frequency of a machine or of a system equal to, or approximately equal to, that of another machine, source, or system.
(16)	**RESERVED FOR FUTURE APPLICATION**
(17)	**SHUNTING OR DISCHARGE SWITCH** is a switch that serves to open or to close a shunting circuit around any piece of apparatus (except a resistor), such as a machine field, a machine armature, a capacitor, or a reactor. **Note:** This excludes devices that perform such shunting operations as may be necessary in the process of starting a machine by devices 6 or 42, or their equivalent, and also excludes device function 73 that serves for the switching of resistors.
(18)	**ACCELERATING OR DECELERATING DEVICE** is a device that is used to close or to cause the closing of circuits which are used to increase or decrease the speed of a machine.
(19)	**STARTING-TO-RUNNING TRANSITION CONTACTOR** is a device that operates to initiate or cause the automatic transfer of a machine from the starting to the running power connection.
(20)	**ELECTRICALLY OPERATED VALVE** is an electrically operated, controlled or monitored valve used in a fluid line. **Note:** The function of the valve may be indicated by the use of the suffixes in 3.3.
(21)	**DISTANCE RELAY** is a relay that functions when the circuit admittance, impedence, or reactance increases or decreases beyond a predetermined value.
(22)	**EQUALIZER CIRCUIT BREAKER** is a breaker that serves to control or to make and break the equalizer or the current-balancing connections for a machine field, or for regulating equipment, in a multiple-unit installation.
(23)	**TEMPERATURE CONTROL DEVICE** is a device that functions to raise or lower the temperature of a machine or other apparatus, or of any medium, when its temperature falls below, or rises above, a predetermined value. **Note:** An example is a thermostat that switches on a space heater in a switchgear assembly when the temperature falls to a desired value as distinguished from a device that is used to provide automatic temperature regulation between close limits and would be designated as device function 90T.
(24)	**RESERVED FOR FUTURE APPLICATION**

DEVICE NUMBER	FUNCTION AND DESCRIPTION
(25)	**SYNCHRONIZING OR SYNCHRONISM-CHECK DEVICE** is a device that operates when two a-c circuits are within the desired limits of frequency, phase angle and voltage, to permit or to cause the paralleling of these two circuits.
(26)	**APPARATUS THERMAL DEVICE** is a device that functions when the temperature of the shunt field or the amortisseur winding of a machine, or that of a load limiting or load shifting resistor or of a liquid or other medium, exceeds a predetermined value; or if the temperature of the protected apparatus, such as a power rectifier, or of any medium decreases below a predetermined value.
(27)	**UNDERVOLTAGE RELAY** is a relay which operates when its input voltage is less than a predetermined value.
(28)	**FLAME DETECTOR** is a device that monitors the presence of the pilot or main flame in such apparatus as a gas turbine or a steam boiler.
(29)	**ISOLATING CONTACTOR** is a device that is used expressly for disconnecting one circuit from another for the purposes of emergency operation, maintenance, or test.
(30)	**ANNUNCIATOR RELAY** is a nonautomatically reset device that gives a number of separate visual indications upon the functioning of protective devices, and which may also be arranged to perform a lockout function.
(31)	**SEPARATE EXCITATION DEVICE** is a device that connects a circuit, such as the shunt field of a synchronous converter, to a source of separate excitation during the starting sequence; or one that energizes the excitation and ignition circuits of a power rectifier.
(32)	**DIRECTIONAL POWER RELAY** is a device that functions on a desired value of power flow in a given direction or upon reverse power such as that resulting from the motoring of a generator upon loss of its prime mover.
(33)	**POSITION SWITCH** is a switch that makes or breaks contact when the main device or piece of apparatus which has no device function number reaches a given position.
(34)	**MASTER SEQUENCE DEVICE** is a device such as a motor-operated multi-contact switch, or the equivalent, or a programming device, such as a computer, that establishes or determines the operating sequence of the major devices in an equipment during starting and stopping or during other sequential switching operations.
(35)	**BRUSH-OPERATING OR SLIP-RING SHORT-CIRCUITING DEVICE** is a device for raising, lowering, or shifting the brushes of a machine, or for short-circuiting its slip rings, or for engaging or disengaging the contacts of a mechanical rectifier.
(36)	**POLARITY OR POLARIZING VOLTAGE DEVICE** is a device that operates, or permits the operation of, another device on a predetermined polarity only, or verifies the presence of a polarizing voltage in an equipment.

DEVICE NUMBER	FUNCTION AND DESCRIPTION
(37)	**UNDERCURRENT OR UNDERPOWER RELAY** is a relay that functions when the current or power relay is a relay that functions when the current or power flow decreases below a predetermined value.
(38)	**BEARING PROTECTIVE DEVICE** is a device that functions on excessive bearing temperature, or on other abnormal mechanical conditions associated with the bearing, such as undue wear, which may eventually result in excessive bearing temperature or failure.
(39)	**MECHANICAL CONDITION MONITOR** is a device that functions upon the occurrence of an abnormal mechanical condition (except that associated with bearings as covered under device function 38), such as excessive vibration, eccentricity, expansion, shock, tilting, or seal failure.
(40)	**FIELD RELAY** is a relay that functions on a given or abnormally low value or failure of machine field current, or on an excessive value of the reactive component of armature current in an a-c machine indicating abnormally low field excitation.
(41)	**FIELD CIRCUIT BREAKER** is a device that functions to apply or remove the field excitation of a machine.
(42)	**RUNNING CIRCUIT BREAKER** is a device whose principal function is to connect a machine to its source of running or operating voltage. This function may also be used for a device, such as a contactor, that is used in series with a circuit breaker or other fault protecting means, primarily for frequent opening and closing of the circuit.
(43)	**MANUAL TRANSFER OR SELECTOR DEVICE** is a manually operated device that transfers the control circuits in order to modify the plan of operation of the switching equipment or of some of the devices.
(44)	**UNIT SEQUENCE STARTING RELAY** is a relay that functions to start the next available unit in a multiple-unit equipment upon the failure or nonavailability of the normally preceding unit.
(45)	**ATMOSPHERIC CONDITION MONITOR** is a device that functions upon the occurrence of an abnormal atmospheric condition, such as damaging fumes, explosive mixtures, smoke, or fire.
(46)	**REVERSE-PHASE OR PHASE-BALANCE CURRENT RELAY** is a relay that functions when the polyphase currents are of reverse-phase sequence, or when the polyphase currents are unbalanced or contain negative phase-sequence components above a given amount.
(47)	**PHASE-SEQUENCE VOLTAGE RELAY** is a relay that functions upon a predetermined value of polyphase voltage in the desired phase sequence.
(48)	**INCOMPLETE SEQUENCE RELAY** is a relay that generally returns the equipment to the normal, or off, position and locks it out if the normal starting, operating, or stopping sequence is not properly completed within a predetermined time. If the device is used for alarm purposes only, it should preferably be designated as 48A (alarm).

DEVICE NUMBER	FUNCTION AND DESCRIPTION
49	**MACHINE OR TRANSFORMER THERMAL RELAY** is a relay that functions when the temperature of a machine armature or other load-carrying winding or element of a machine or the temperature of a power rectifier or power transformer (including a power rectifier transformer) exceeds a predetermined value.
50	**INSTANTANEOUS OVERCURRENT OR RATE-OF-RISE RELAY** is a relay that functions instantaneously on an excessive value of current or on an excessive rate of current rise.
51	**A-C TIME OVERCURRENT RELAY** is a relay that operates when its a-c input current exceeds a predetermined value and in which the input current and operating time are inversely related through a substantial portion of the performance range.
52	**A-C CIRCUIT BREAKER** is a device that is used to close and interrupt an a-c power circuit under normal conditions or to interrupt this circuit under fault or emergency conditions.
53	**EXCITER OR D-C GENERATOR RELAY** is a relay that forces the d-c machine field excitation to build up during starting or which functions when the machine voltage has been built up to a given value.
54	**RESERVED FOR FUTURE APPLICATION.**
55	**POWER FACTOR RELAY** is a relay that operates when the power factor in an a-c circuit rises above or falls below a predetermined value.
56	**FIELD APPLICATION RELAY** is a relay that automatically controls the application of the field excitation to an a-c motor at some predetermined point in the slip cycle.
57	**SHORT-CIRCUITING OR GROUNDING DEVICE** is a primary circuit switching device that functions to short-circuit or to ground a circuit in response to automatic or manual means.
58	**RECTIFICATION FAILURE RELAY** is a device that functions if one or more anodes of a power rectifier fail to fire, or to detect an arc-back or on failure of a diode to conduct or block properly.
59	**OVERVOLTAGE RELAY** is a relay which operates when its input voltage is more than a predetermined value.
60	**VOLTAGE OR CURRENT BALANCE RELAY** is a relay that operates on a given difference in voltage, or current input or output, of two circuits.
61	**RESERVED FOR FUTURE APPLICATION.**
62	**TIME-DELAY STOPPING OR OPENING RELAY** is a time-delay relay that serves in conjunction with the device that initiates the shutdown, stopping, or opening operation in an automatic sequence or protective relay system.

DEVICE NUMBER	FUNCTION AND DESCRIPTION
63	**PRESSURE SWITCH** is a switch which operates on given values or on a given rate of change of pressure.
64	**GROUND PROTECTIVE RELAY** is a relay that operates on failure of machine, or of other apparatus insulation to ground. Note: This function is not applied to a device connected in the secondary circuit of current transformers on a normally grounded power system where other device numbers with a suffix G or N should be used, that is 51N is connected in the neutral and 51G is connected in the residual circuit of Y connected CT's.
65	**GOVERNOR** is the assembly of fluid, electrical, or mechanical control equipment used for regulating the flow of water, steam, or other medium to the prime mover for such purposes as starting, holding speed or load, or stopping.
66	**NOTCHING OR JOGGING DEVICE** is a device that functions to allow only a specified number of operations of a given device, or equipment, or a specified number of successive operations within a given time of each other. It is also a device that functions to energize a circuit periodically or for fractions of specified time intervals, or that is used to permit intermittent acceleration or jogging of a machine at low speeds for mechanical positioning.
67	**A-C DIRECTIONAL OVERCURRENT RELAY** is a relay that functions on a desired value of a-c overcurrent flowing in a predetermined direction.
68	**BLOCKING RELAY** is a relay that initiates a pilot signal for blocking of tripping on external faults in a transmission line or in other apparatus under predetermined conditions, or cooperates with other devices to block tripping or to block reclosing on an out-of-step condition or on power swings.
69	**PERMISSIVE CONTROL DEVICE** is generally a two position, device that, in one position, permits the closing of a circuit breaker, or the placing of an equipment into operation, and in the other position prevents the circuit breaker or the equipment from being operated.
70	**RHEOSTAT** is a variable resistance device used in an electric circuit, which is electrically operated or has other electrical accessories, such as auxiliary, position, or limit switches.
71	**LEVEL SWITCH** is a switch which operates on given values or on a given rate of change of level.
72	**D-C CIRCUIT BREAKER** is a circuit breaker that is used to close and interrupt a d-c power circuit under normal conditions or to interrupt this circuit under fault or emergency conditions.

DEVICE NUMBER	FUNCTION AND DESCRIPTION
(73)	**LOAD-RESISTOR CONTACTOR** is a contactor that is used to shunt or insert a step of load limiting, shifting, or indicating resistance in a power circuit, or to switch a space heater in circuit, or to switch a light or regenerative load resistor of a power rectifier or other machine in and out of circuit.
(74)	**ALARM RELAY** is a relay other than an annunciator, as covered under device function 30, that is used to operate, or to operate in connection with, a visual or audible alarm.
(75)	**POSITION CHANGING MECHANISM** is a mechanism that is used for moving a main device from one position to another in an equipment; as for example, shifting a removable circuit breaker unit to and from the connected, disconnected, and test positions.
(76)	**D-C OVERCURRENT RELAY** is a relay that functions when the current in a d-c circuit exceeds a given value.
(77)	**PULSE TRANSMITTER** is used to generate and transmit pulses over a telemetering or pilot-wire circuit to the remote indicating or receiving device.
(78)	**PHASE-ANGLE MEASURING OR OUT-OF-STEP PROTECTIVE RELAY** is a relay that functions at a predetermined phase angle between two voltages or between two currents or between voltage and current.
(79)	**A-C RECLOSING RELAY** is a relay that controls the automatic reclosing and locking out of an a-c circuit interrupter.
(80)	**FLOW SWITCH** is a switch which operates on given values or on a given rate of change of flow.
(81)	**FREQUENCY RELAY** is a relay that responds to the frequency of an electrical quantity operating when the frequency or rate of change of frequency exceeds or is less than a predetermined value.
(82)	**D-C RECLOSING RELAY** is a relay that controls the automatic closing and reclosing of a d-c circuit interrupter, generally in response to load circuit conditions.
(83)	**AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY** is a relay that operates to select automatically between certain sources or conditions in an equipment, or performs a transfer operation automatically.
(84)	**OPERATING MECHANISM** is the complete electrical mechanism or servomechanism, including the operating motor, solenoids, position switches, etc, for a tap changer, induction regulator, or any similar piece of apparatus which otherwise has no device function number.
(85)	**CARRIER OR PILOT-WIRE RECEIVER RELAY** is a relay that is operated or restrained by a signal used in connection with carrier-current or d-c pilot-wire fault relaying.
(86)	**LOCK-OUT RELAY** is a auxiliary hand, or electrically, reset relay that is operated under the occurrance of abnormal conditions to maintain associated equipment or devices inoperative until it is reset.

DEVICE NUMBER	FUNCTION AND DESCRIPTION
(87)	**DIFFERENTIAL PROTECTIVE RELAY** is a protective relay that functions on a percentage or phase angle or other quantitive difference of two currents or of some other electrical quantities.
(88)	**AUXILIARY MOTOR OR MOTOR GENERATOR** is one used for operating auxiliary equipment, such as pumps, blowers, exciters, rotating magnetic amplifiers, etc.
(89)	**LINE SWITCH** is a switch used as a disconnecting, load-interrupter, or isolating switch in an a-c or d-c power circuit, when this device is electrically operated or has electrical accessories, such as an auxiliary switch, magnetic lock, etc.
(90)	**REGULATING DEVICE** is a device that functions to regulate a quantity, or quantities, such as voltage, current, power, speed, frequency, temperature, and load, at a certain value or between certain (generally close) limits for machines, tie lines or other apparatus.
(91)	**VOLTAGE DIRECTIONAL RELAY** is a relay that operates when the voltage across an open circuit breaker or contactor exceeds a given value in a given direction.
(92)	**VOLTAGE AND POWER DIRECTIONAL RELAY** is a relay that permits or causes the connection of two circuits when the voltage difference between them exceeds a given value in a predetermined direction and causes these two circuits to be disconnected from each other when the power flowing between them exceeds a given value in the opposite direction.
(93)	**FIELD-CHANGING CONTACTOR** is a contactor that functions to increase or decrease, in one step, the value of field excitation on a machine.
(94)	**TRIPPING OR TRIP-FREE RELAY** is a relay that functions to trip a circuit breaker, contactor, or equipment, or to permit immediate tripping by other devices; or to prevent immediate reclosure of a circuit interrupter if it should open automatically even though its closing circuit is maintained closed.
(95)	*
(96)	*
(97)	*
(98)	*
(99)	*

*Used only for specific applications in individual installations where none of the assigned numbered functions from 1 to 94 are suitable.

ITEM 3.2

SUPERVISORY CONTROL AND INDICATION. A similar series of numbers, prefixed by the letters RE (for "remote") shall be used for the interposing relays (performing functions that are controlled directly from the supervisory system. Typical examples of such device functions are: RE1, RE5, and RE94.

Note: The use of the "RE" prefix for this purpose in place of the former 200 series of numbers now makes it possible to obtain increased flexibility of the device function numbering system. For example, in pipeline pump stations, the numbers 1 through 99 are applied to device functions that are associated with the over-all station operation. A similar series of numbers, starting with 101 instead of 1, are used for those device functions that are associated with unit 1; a similar series starting with 201 for device functions that are associated with unit 2; and so on, for each unit in these installations.

ITEM 3.3

SUFFIX LETTERS as listed and classified in the several general groupings from 3.3.1 through 3.3.5 may be used with device function numbers for various purposes. They permit a manifold multiplication of available function designations for the large number and variety of devices used in the many types of equipment covered by this standard. They may also serve to denote individual or specific parts or auxiliary contacts of these devices or certain distinguishing features, characteristics, or conditions which describe the use of the device or its contacts in the equipment.

Letter suffixes should, however, be used only when they accomplish a useful purpose. For example, when all of the devices in an equipment are associated with only one kind of apparatus, such as a feeder or motor or generator, it is common practice, in order to retain maximum simplicity in device function identification, not to add the respective suffix letter F or M or G to any of the device function numbers.

In order to prevent any possible conflict or confusion, each suffix should preferably have only one meaning in an individual equipment. To accomplish this, short distinctive abbreviations, such as contained in ANSI Y1-1 (1972) or any appropriate combination of letters, may also be used as letter suffixes, where necessary. However, each suffix should not consist of more than three (and preferably not more than two) letters, in order to keep the complete function designation as short and simple as possible.

The meaning of each suffix used with a device function number should be designated in the following manner on the necessary drawings or publications applying to the equipment: TC, Trip Coil; V, Voltage; X, Auxiliary Relay.

In the cases where the same suffix (consisting of one letter or a combination of letters) has different meanings in the same equipment, depending upon the device function number with which it is used, then the complete device function number with its suffix letter should be listed in the legend in each case, as follows: 63V, Vacuum Relay; 70R, Raising Relay for Device 70; 90V, Voltage Regulator.

ITEM 3.3.1

AUXILIARY DEVICES. These letters denote separate auxiliary devices, such as:

C	Closing Relay or Contactor
CL	Auxiliary Relay, Closed (energized when main device is in closed position)
CS	Control Switch
D	"Down" Position Switch Relay
L	Lowering Relay
O	Opening Relay or Contactor
OP	Auxiliary Relay, Open (energized when main device in in open position)
PB	Push Button
R	Raising Relay
U	"Up" Position Switch Relay
X, Y, Z	Auxiliary Relay

Note: In the control of a circuit breaker with a so-called X-Y relay control scheme, the X relay is the device whose main contacts are used to energize the closing coil or the device which in some other manner, such as by the release of stored energy, causes the breaker to close. The contacts of the Y relay provide the anti-pump feature for the circuit breaker.

ITEM 3.3.2

ACTIVATING QUANTITIES. These letters indicate the condition or electrical quantity to which the device responds, or the medium in which it is located, such as:

A	Air or Amperes
C	Current
D	Direct or Discharge
E	Electrolyte
F	Frequency or Flow or Fault
H	Explosive
J	Differential
L	Level or Liquid
P	Power or Pressure
PF	Power Factor
Q	Oil
S	Speed or Suction or Smoke
T	Temperature
V	Voltage or Volts or Vacuum
VAR	Reactive Power
VB	Vibration
W	Water or Watts

ITEM 3.3.3

MAIN DEVICES. These letters denote the main device to which the numbered device is applied or is related.

A	Alarm or Auxiliary Power
AN	Anode
B	Battery or Blower or Bus
BK	Brake
BL	Block (valve)
BP	Bypass
BT	Bus Tie
C	Capacitor or Condenser or Compensator or Carrier Current or Case or Compressor
CA	Cathode
CH	Check (valve)
DP	Discharge (valve)
DC	Direct Current
E	Exciter
F	Feeder or Field or Filament or Filter or Fan
G	Generator or Ground*
H	Heater or Housing
L	Line or Logic
M	Motor or Metering
MOC	Mechanism Operated Contact**
N	Network or Neutral*
P	Pump or Phase Comparison
R	Reactor or Rectifier or Room
S	Synchronizing or Secondary or Strain or Sump or Suction (valve)
T	Transformer or Thyratron
TH	Transformer (High-voltage Side)
TL	Transformer (Low-voltage Side)
TM	Telemeter
U	Unit

***Note:** Suffix "N" is generally used in preference to "G" for devices connected in the secondary neutral of current

**Denotes a circuit-breaker generated cell switch.

transformers, or in the secondary of a current transformer whose primary winding is located in the neutral of a machine or power transformer, except in the case of transmission line relaying, where the suffix "G" is more comonly used for those relays that operate on ground faults.

ITEM 3.3.3.4

MAIN DEVICE PARTS. These letters denote parts of the main device, divided into the two following categories:

(1) All parts, such as the following, except auxiliary contacts, position switches, limit switches, and torque limit switches which are covered in (2) through 2—3.3.4.6.

BK	Brake
C	Coil or Condenser or Capacitor
CC	Closing Coil
HC	Holding Coil
M	Operating Motor
MF	Fly-ball Motor
ML	Load-limit Motor
MS	Speed Adjusting or Synchronizing Motor
S	Solenoid
SI	Seal-in
TC	Trip Coil
V	Valve

(2) All auxiliary contacts and position and limit switches for such devices and equipment as circuit breakers, contactors, valves and rehostats and contacts of relays.

a Contact that is open when the main device is in the standard reference position, commonly referred to as the nonoperated or de-energized position, and that closes when the device assumes the opposite position.

b Contact that is closed when the main device is in the standard reference position, commonly referred to as the nonoperated or de-energized position, and that opens when the device assumes the opposite position.

Note: The simple designation "a" or "b" is used in all cases where there is no need to adjust the contacts to change position at any particular point in the travel of the main device or where the part of the travel where the contacts change position is of no significance in the control or operating scheme. Hence the "a" and "b" designations usually are sufficient for circuit breaker auxiliary switches.

ITEM 3.3.4.1

AUXILIARY SWITCHES WITH DEFINED OPERATING POSITIONS.

aa Contact that is open when the operating mechanism of the main device is in the nonoperated position and that closes when the operating mechanism assumes the opposite position.

bb Contact that is closed when the operating mechanism of the main device is in the nonoperated position and that opens when the operating mechanism assumes the opposite position.

The part of the stroke at which the auxiliary switch changes position should, if necessary, be specified in the description. "LC" is used to designate the latch-checking switch of such a mechanism, which is closed when the mechanism linkage is relatched after an opening operation of the circuit breaker.

ITEM 3.3.4.4

LIMIT SWITCHES. "LS" designates a limit switch. This is a position switch that is actuated by a main device, such as a rheostat or valve, at or near its extreme end of travel. Its usual function is to open the circuit of the operating motor at the end of travel of the main device, but it may also serve to give an indication that the main device has reached an extreme position of travel.

ITEM 3.3.4.5

TORQUE LIMIT SWITCHES. This is a switch that is used to open an operating motor circuit at a desired torque limit at the extreme end of travel of a main device, such as a valve. It should be designated as follows:

tqc Torque limit switch, opened by torque-responsive mechanism, to stop valve closing.

tqo Torque limit switch, opened by torque-responsive mechanism, to stop valve opening.

ITEM 3.3.4.6

OTHER SWITCHES. If several similar auxiliary, position, and limit switches are present on the same main device, they should be designed with supplementary numerical suffixes as 1, 2, 3, etc., when necessary.

ITEM 3.3.5

OTHER SUFFIX LETTERS. The following letters cover all other distinguishing features or characteristics or conditions, not specifically described previously, which serve to describe the use of the device or its contacts in the equipment, such as:

A	Accelerating or Automatic
B	Blocking or Backup
C	Close or Cold
D	Decelerating or Detonate or Down or Disengaged
E	Emergency or Engaged
F	Failure or Forward
H	Hot or High
HR	Hand Reset
HS	High Speed
L	Left or Local or Low or Lower or Leading
M	Manual
O	Open
OFF	OFF
ON	ON
P	Polarixing
R	Right or Raise or Reclosing or Receiving or Remote or Reverse
S	Sending or Swing
T	Test or Trip or Trailing
TDC	Time-delay Closing
TDO	Time-delay Opening
U	Up

ITEM 3.4

SUFFIX NUMBERS: If two or more devices with the same function numbers and suffix letter (if used) are present, in the same equipment, they may be distinguished by numbered suffixes, as for example, 4X-1, 4X-2, and 4X-3 when necessary.

ITEM 3.5

DEVICES PERFORMING MORE THAN ONE FUNCTION. If one device performs two relatively important functions in an equipment so that it is desirable to identify both of these functions, a double function number and name, such as 50/51 Instantaneous and Time Overcurrent Relay, may be used.