IEEE DEVICE NUMBERS

1 - Master Element
2 - Time Delay Starting or Closing Relay
3 - Checking or Interlocking Relay
4 - Master Contactor
5 - Stopping Device
6 - Starting Circuit Breaker
7 - Rate of Change Relay
8 - Control Power Disconnecting Device
9 - Reversing Device
10 - Unit Sequence Switch
11 - Multi-function Device
12 - Overspeed Device
13 - Synchronous-speed Device
14 - Underspeed Device
15 - Speed - or Frequency, Matching Device
16 - Data Communications Device
17 - Shunting or Discharge Switch
18 - Accelerating or Decelerating Device
19 - Starting to Running Transition Contactor
20 - Electrically Operated Valve
21 - Distance Relay
22 - Equalizer Circuit Breaker
23 - Temperature Control Device
24 - Volts Per Hertz Relay
25 - Synchronizing or Synchronism-Check Device
26 - Apparatus Thermal Device
27 - Undervoltage Relay
28 - Flame Detector
29 - Isolating Contactor or Switch
30 - Annunciator Relay
31 - Separate Excitation Device
32 - Directional Power Relay
33 - Position Switch
34 - Master Sequence Device
35 - Brush-Operating or Slip-Ring Short-Circuiting Device
36 - Polarity or Polarizing Voltage Devices
37 - Undercurrent or Underpower Relay
38 - Bearing Protective Device
39 - Mechanical Condition Monitor
40 - Field (over/under excitation) Relay
41 - Field Circuit Breaker
42 - Running Circuit Breaker
43 - Manual Transfer or Selector Device
44 - Unit Sequence Starting Relay
45 - Abnormal Atmospheric Condition Monitor
46 - Reverse-phase or Phase-Balance Current Relay
47 - Phase-Sequence or Phase-Balance Voltage Relay
48 - Incomplete Sequence Relay
49 - Machine or Transformer, Thermal Relay
50 - Instantaneous Overcurrent Relay
51 - AC Inverse Time Overcurrent Relay
52 - AC Circuit Breaker
53 - Exciter or DC Generator Relay
54 - Turning Gear Engaging Device
55 - Power Factor Relay
56 - Field Application Relay
57 - Short-Circuiting or Grounding (Earthing) Device
58 - Rectification Failure Relay
59 - Overvoltage Relay
60 - Voltage or Current Balance Relay
61 - Density Switch or Sensor
62 - Time-Delay Stopping or Opening Relay
63 - Pressure Switch
64 - Ground (Earth) Detector Relay
65 - Governor
66 - Notching or Jogging Device
67 - AC Directional Overcurrent Relay
68 - Blocking or "Out-of-Step" Relay
69 - Permissive Control Device
70 - Rheostat
71 - Liquid Level Switch
72 - DC Circuit Breaker
73 - Load-Resistor Contactor
74 - Alarm Relay
75 - Position Changing Mechanism
76 - DC Overcurrent Relay
77 - Telemetering Device
78 - Phase-Angle Measuring Relay
79 - AC Reclosing Relay
80 - Flow Switch
81 - Frequency Relay
82 - DC Reclosing Relay
83 - Automatic Selective Control or Transfer Relay
84 - Operating Mechanism
85 - Communications, Carrier or Pilot-Wire Relay
86 - Lockout Relay
87 - Differential Protective Relay
88 - Auxiliary Motor or Motor Generator
89 - Line Switch
90 - Regulating Device
91 - Voltage Directional Relay
92 - Voltage and Power Directional Relay
93 - Field Changing Contactor
94 - Tripping or Trip-Free Relay

ANSI DEVICE NUMBERS

AFD - Arc Flash Detector
CLK - Clock or Timing Source
DDR - Dynamic Disturbance Recorder
DFR - Digital Fault Recorder
ENV - Environmental Data
HIZ - High Impedance Fault Detector
HMI - Human Machine Interface
HST - Historian
LGC - Scheme Logic
MET - Substation Metering
PDC - Phasor Data Concentrator
PMU - Phasor Measurement Unit
PQM - Power Quality Monitor
RIO - Remote Input/Output Device
RTU - Remote Terminal Unit/ Data Concentrator
SER - Sequence of Events Recorder
TCM - Trip Circuit Monitor
SOTF - Switch On To Fault

TYPICAL SUFFIXES

A - Alarm/Auxiliary Power
AC - Alternating Current
B - Battery/Blower/Bus
BT - Bus Tie
C - Capacitor/Condenser/ Compensator/Carrier Current/Case/Compressor
DC - Direct Current
E - Exciter
F - Feeder/Field/Filament/ Filter/Fan
G - Generator/Ground*
M - Motor/Metering
N - Network/Neutral*
P - Pump/Phase Comparison
R - Reactor/Rectifier/Room
S - Synchronizing/Secondary/ Stainer/Sump/Suction (Valve)
T - Transformer/Thyratron
TH - Transformer (High-voltage Side)
TL - Transformer (Low-voltage Side)
TT - Transformer (Tertiary-voltage Side)
U - Unit

Note: Descriptions per IEEE Std C37.2-1996
*Suffix N is preferred when the device is connected in the residual of a polyphase circuit, is connected across broken delta, or is internally derived from the polyphase current or voltage quantities. The suffix G is preferred where the measured quantity is in the path of ground or, in the case of ground fault detectors, is the current flowing to ground.

NEUTRAL GROUNDING RESISTOR
SIZING CHART

System Voltage (Line-to-line)	NGR Let-through Current and Resistance	Time Rating
208 V	5 A / 24 Ohms	Continuous
480 V	5 A / 55 Ohms	Continuous
600 V	5 A / 69 Ohms	Continuous
2,400 V	5 A / 277 Ohms or 10 A / 139 Ohms	Continuous or 10 s
4,160 V	5 A / 480 Ohms or 10 A / 240 Ohms	Continuous or 10 s
13,800 V	10 A / 798 Ohms or 200 A / 40 Ohms	10 seconds
25,000 V	200 A / 72 Ohms or 400 A / 36 Ohms	10 seconds
34,500 V	200 A / 100 Ohms or 400 A / 50 Ohms	10 seconds

Note: The values shown are for any size transformer and are typical.
NOTE: The above table is for illustrative purposes only. Actual values may differ based on a variety of individual system considerations, such as capacitive charging current and co-ordination study results.

CURRENT TRANSFORMER
SIZING CHART

Conductor Size (AWG/kcmil)	Minimum CT Window Size (Inner Diameter in mm)					
	Number of Conductors					
	1	3	4	6	8	12
12	4	8	9	11	13	15
10	6	10	11	14	16	19
8	7	12	14	17	20	24
6	9	15	18	22	25	31
4	11	19	22	28	32	39
3	13	22	25	31	36	44
2	14	25	28	35	40	49
1	16	28	32	39	45	55
1/0	18	31	36	44	51	62
2/0	20	35	40	49	57	69
3/0	23	39	45	55	64	78
4/0	25	44	51	62	72	88
250	28	48	55	67	78	95
350	33	56	65	80	92	113
500	39	67	78	95	110	135
750	48	82	95	117	135	165
1000	55	95	110	135	156	191

Installation Instructions:
When installing the PGC Family CTs, ensure the following:

1. Only the load carrying conductors pass through the center of the CT. This means L1 + N for 1-phase and L1+ L2 + L3 for 3-phase.
2. The power conductors pass through the center of the CT and are preferably bound together to keep the conductors uniformly spaced.
3. The power conductors pass perpendicular to the CT and, where practical, continue perpendicular to the CT on both sides of the CT for 3".
4. The power conductors should not be installed in a way that allows them to run along the side edges of the CT.
5. Where practical, locate the CT away from noise-generating devices such as transformers, frequency converters, etc.