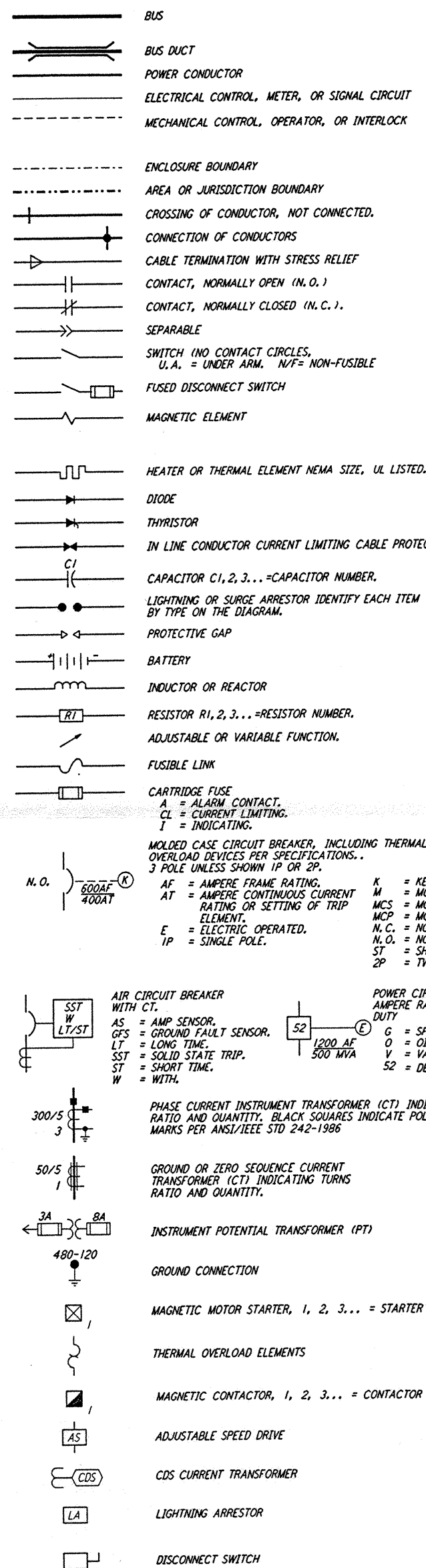
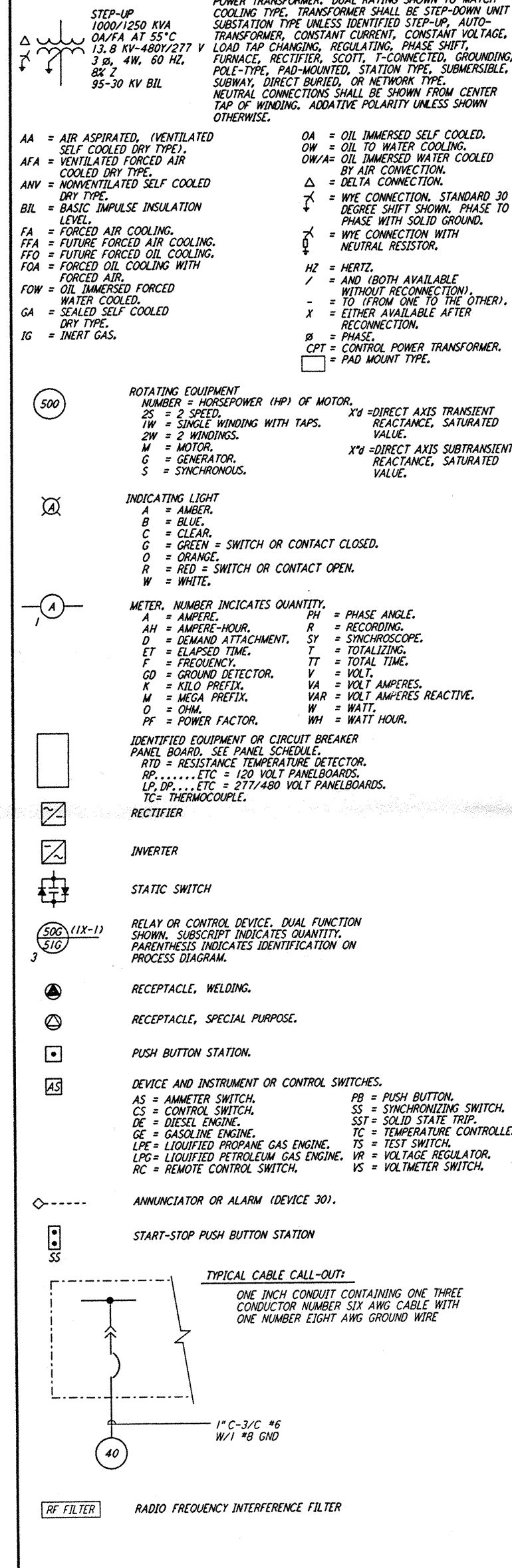


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### ONE AND THREE LINE DIAGRAM SYMBOLS



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### DEVICE FUNCTION NUMBERS

- ADAPTED FROM ANSI C37. 2-1987, USAGE PER IEEE STD. 242-1986
1. MASTER ELEMENT OR INITIATING DEVICE SUCH AS FLOAT SWITCH.
  2. TIME DELAY STARTING OR CLOSING RELAY.
  3. CHECKING OR INTERLOCKING RELAY. (AND GATE).
  4. MASTER CONTACTOR.
  5. STOPPING DEVICE.
  6. STARTING CIRCUIT BREAKER.
  7. ARREST CIRCUIT BREAKER.
  8. CONTROL POWER DISCONNECTING DEVICE.
  9. REVERSING SWITCH.
  10. UNIT SEQUENCE SWITCH.
  11. THREE OR MORE FUNCTIONS PER LEGEND.
  12. OVER SPEED DEVICE.
  13. SYNCHRONOUS SPEED DEVICE.
  14. UNDER SPEED DEVICE.
  15. SPEED OR FREQUENCY MATCHING DEVICE.
  16. RESERVED FOR FUTURE APPLICATION.
  17. SHUNTING OR DISCHARGE SWITCH.
  18. ACCELERATING OR DECELERATING DEVICE.
  19. STARTING TO RUNNING TRANSITION DEVICE.
  20. ELECTRICALLY OPERATED VALVE.
  21. DISTANCE RELAY. (IMPEDANCE CHANGE DETECTOR).
  22. EQUALIZER CIRCUIT BREAKER.
  23. TEMPERATURE CONTROL DEVICE. (SPACE HEATER THERMOSTAT).
  24. VOLTS PER HERTZ RATIO RELAY.
  25. SYNCHRONIZING OR SYNCHRONISM CHECK DEVICE.
  26. MECHANICAL CONDITION (VIBRATION ETC.) MONITOR.
  27. UNDERVOLTAGE RELAY.
  28. FLAME DETECTOR.
  29. ISOLATING CONTACTOR.
  30. ANNUNCIATOR RELAY.
  31. SEPARATE EXCITATION DEVICE.
  32. DIRECTIONAL POWER RELAY. (ANTI MOTORING).
  33. POSITION INDICATOR SWITCH. (CELL SWITCH).
  34. MASTER SEQUENCE DEVICE.
  35. BRUSH OPERATING SLIP RING SHORT CIRCUITING DEVICE.
  36. POLARITY OR POLARIZING VOLTAGE DEVICE.
  37. UNDERCURRENT OR UNDERPOWER DEVICE (GROUND CONTINUITY MONITOR).
  38. BEARING PROTECTIVE DEVICE.
  39. MECHANICAL CONDITION (VIBRATION ETC.) MONITOR.
  40. FIELD RELAY. (EXCITATION LOSS).
  41. FIELD CIRCUIT BREAKER.
  42. RUNNING CIRCUIT BREAKER.
  43. CONTROL CIRCUIT MANUAL TRANSFER OR SELECTOR DEVICE.
  44. UNIT SEQUENCE STARTING RELAY.
  45. ATMOSPHERIC CONDITION MONITOR.
  46. REVERSE PHASE OR PHASE BALANCE CURRENT RELAY.
  47. PHASE SEQUENCE VOLTAGE RELAY.
  48. INCOMPLETE SEQUENCE RELAY.
  49. MACHINE OR TRANSFORMER (ARMATURE OR LOAD WINDING) THERMAL RELAY.
  50. INSTANTANEOUS OVERCURRENT RELAY.
  51. AC TIME OVERCURRENT RELAY.
  52. AC CIRCUIT BREAKER.
  53. RECTIFIER OR DC GENERATOR RELAY.
  54. TURNING GEAR ENGAGING DEVICE.
  55. POWER FACTOR RELAY.
  56. FIELD APPLICATION RELAY.
  57. SHORT CIRCUITING OR GROUNDING DEVICE.
  58. RECTIFIER FAILURE RELAY.
  59. OVERVOLTAGE RELAY.
  60. VOLTAGE BALANCE RELAY.
  61. GAS DENSITY SWITCH.
  62. TIME DELAY STOPPING OR OPENING RELAY.
  63. LIQUID OR GAS SUDDEN PRESSURE RELAY, MANUAL RESET.
  64. GROUND PROTECTION RELAY (UNDERVOLTAGE = INSULATION FAILURE).
  65. GOVERNOR.
  66. NOTCHING OR JOGGING DEVICE.
  67. AC DIRECTIONAL OVERCURRENT RELAY.
  68. BLOCKING RELAY.
  69. PERMISSIVE CONTROL DEVICE.
  70. ELECTRICALLY OPERATED RHEOSTAT.
  71. LEVEL SWITCH.
  72. DC CIRCUIT BREAKER.
  73. LOAD RESISTOR CONTACTOR.
  74. ALARM RELAY. (ALARMS OTHER THAN ANNUNCIATOR, DEVICE 30).
  75. POSITION CHANGING MECHANISM.
  76. DC OVERCURRENT RELAY.
  77. TELEMETRY DEVICE.
  78. PHASE ANGLE MEASURING OR OUT-OF-STEP RELAY.
  79. AC CLOSING RELAY.
  80. FLOW SWITCH.
  81. FREQUENCY RELAY.
  82. DC RE-CLOSING RELAY.
  83. AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY.
  84. OPERATING MECHANISM.
  85. CARRIER OR PILOT WIRE RECEIVER RELAY.
  86. LOCKOUT AUXILIARY RELAY, MANUAL RESET.
  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.
  95. OPEN FOR SPECIFIC APPLICATIONS.
  96. OPEN FOR SPECIFIC APPLICATIONS.
  97. OPEN FOR SPECIFIC APPLICATIONS.
  98. OPEN FOR SPECIFIC APPLICATIONS.
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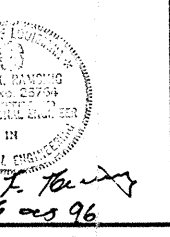
### DEVICE SUFFIX DESIGNATIONS:

- SPECIFIC USAGE SHALL BE IDENTIFIED IN A LEGEND ON THE DIAGRAM.
- A = AIR
  - B = BUS
  - C = CURRENT
  - CS = CONTROL SWITCH
  - E = ELECTRIC
  - F = FREQUENCY
  - G = GROUND CONNECTION ON NEUTRAL OF WYE POWER TRANSFORMER.
  - GS = GROUND SENSOR, ZERO SEQUENCE WINDOW TYPE CT ENCLOSING ALL PHASE CONDUCTORS AND NO GROUND PATH.
  - HR = HAND RESET.
  - J = DIFFERENTIAL
  - L = LIQUID, LEVEL, OR LINE.
  - M = MANUAL
  - N = RESIDUAL CURRENT CONNECTION ON WYE OF THREE 1Ø CTS.
  - P = POWER
  - PR = PRESSURE RELIEF.
  - O = OIL
  - S = SYNCHRONIZING
  - T = TEMPERATURE OR TRANSFORMER
  - 2 = SEQUENTIAL NUMBER OF IDENTICAL UNITS.
  - V = VOLTAGE
  - X = AUXILIARY (ENERGIZING) RELAY.
  - Y = AUXILIARY (ANTI-PUMPING) RELAY.
  - Z = AUXILIARY RELAY.

REFERENCES	DESCRIPTION
LA-E-001	ABBREVIATIONS & ACRONYMS
LA-E-002	STANDARD PLAN SYMBOLS
LA-E-003	SCHEMATIC & WIRING SYMBOLS

REVISIONS	NO.	DATE	BY	CHKD	ENGR	PROJ	DESCRIPTION

ISSUED FOR CONSTRUCTION	NO.	DATE	BY	CHKD	ENGR	PROJ



**PARSONS**

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GRAVITATIONAL-WAVE OBSERVATORY  
SITE NO. 2 - LIVINGSTON, LOUISIANA

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