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SCHEMATIC & WIRING DIAGRAM SYMBOLS

- WIRING BY VENDOR
- CALLOUT LEADER
- WIRING BY FIELD
- MECHANICAL INTERLOCK, EXISTING, OR FUTURE AS INDICATED
- WIRING BY OTHERS . IDENTITY OF OTHERS SHALL BE SHOWN EACH TIME THIS SYMBOL IS USED
- ENCLOSURE BOUNDARY
- CROSSING OF CONDUCTORS, NOT CONNECTED
- CONNECTION OF CONDUCTORS
- BREAK IN LINE FOR DRAFTING CLARITY
- CONDUCTORS WITH SHIELD. SHOWN WITH CRIMP LUG INSULATED FROM GROUND
- GROUND
- 1 2 3 — GROUPING OF CONDUCTORS. NUMBERS INDICATE WIRE OR TERMINAL DESIGNATION.
- CONTACT. NORMALLY OPEN (N.O.). FORM 'A' CONTACT. CLOSES WHEN COIL IS ENERGIZED. IDENTIFICATION SAME AS ELECTRICAL DEVICE IN PLAN SYMBOLS
- CONTACT. NORMALLY CLOSED (N.C.), FORM 'B' CONTACT OPENS WHEN COIL IS ENERGIZED
  O.L. = OVERLOAD RELAY CONTACTS
  G.R. = GROUND RELAY CONTACTS
- SEPARABLE OR DRAWOUT TYPE CONNECTOR
- EQUIPMENT TERMINAL AND/OR SWITCH CONTACT
- FIELD CONNECTION TO EQUIPMENT TERMINAL
- TERMINATION IN HVAC RELAY BOX
- WIRE CONNECTION, CRIMP TYPE
- TERMINAL OR TERMINAL BOX IN MCC OR SWITCHGEAR
- TERMINAL IN RELAY PANEL
- TERMINAL IN FIELD TERMINAL BOX
- TERMINAL IN MARSHALLING BOX
- TERMINAL IN CONTROL PANEL
- PLC INPUT TERMINAL
- PLC OUTPUT TERMINAL
- TERMINAL IN PACKAGED EQUIPMENT
- M 3 — RELAY COIL :
  - AX = AUXILIARY RELAY.
  - CR = CONTROL RELAY.
  - IR = INTERPOSING RELAY.
  - C = CONTACTOR
  - M = MOTOR STARTER.
  - GR = GROUND RELAY.
  - IC = INSTANTANEOUS CLOSE.
  - IO = INSTANTANEOUS OPEN.
  - SR = REDUCED VOLTAGE STARTING RELAY.
  - TE = TIME DELAY ON ENERGIZATION.
  - TD = TIME DELAY ON DEENERGIZATION.
  - UV = UNDER VOLTAGE.
  - 3 = NUMBER OF CONTACTS.
- A — LIGHTS :
  - A = AMBER LIGHT.
  - B = BLUE LIGHT.
  - C = CLEAR LIGHT.
  - W = WHITE LIGHT.
  - O = ORANGE LIGHT.
  - G = GREEN LIGHT. SWITCH OR CONTACT OPEN, PROCESS ON/VALVE OPEN.
  - R = RED LIGHT. SWITCH OR CONTACT CLOSED, PROCESS OFF/VALVE CLOSED.

SCHEMATIC & WIRING DIAGRAM SYMBOLS

- A — METERS :
  - A = AMMETER.
  - F = FREQUENCY METER.
  - D = DEMAND ATTACHMENT.
  - ET = ELAPSED TIME.
  - GD = GROUND DETECTOR.
  - O = OHM METER.
  - K = KILO PREFIX.
  - M = MEGA PREFIX.
  - PF = POWER FACTOR METER.
  - PH = PHASE ANGLE METER.
  - PI = POSITION INDICATOR.
  - R = RECORDING METER.
  - SY = SYNCHROSCOPE.
  - T = TOTALIZING.
  - TT = TOTAL TIME.
  - V = VOLT METER.
  - VAR = VOLT AMPS REACTIVE.
  - W = WATT.
  - WH = WATT HOUR.
- HHL 27 — DEVICE AS IDENTIFIED ON PROCESS DIAGRAM HIGH-HIGH LEVEL SWITCH NO. 27 SHOWN.
- PUSHBUTTON, NORMALLY OPEN, SINGLE POLE, SINGLE THROW (SPST), MOMENTARY CLOSED
- PUSHBUTTON, NORMALLY CLOSED, SINGLE POLE, SINGLE THROW (SPST), MOMENTARY OPEN.
- H O A — SWITCH, MULTIPLE POLE, MULTIPLE THROW.
  - H = HAND
  - O = OFF
  - A = AUTO
  - X = SWITCH DEVELOPMENT CONTACT MAKE.
  - R = REMOTE
  - L = LOCAL
- TWO-SINGLE CIRCUIT, PUSHBUTTON STATION, SINGLE POLE, SINGLE THROW (SPST), MAINTAINED CONTACT.
- SWITCH, SINGLE POLE, SINGLE THROW (SPST). THE SWITCH BLADE SHALL BE SHOWN ON THE MAINTAINED CONTACT LOAD SIDE (TYPICAL).
- SWITCH, SINGLE POLE, DOUBLE THROW (SPDT) MAINTAINED CONTACT.
- TRANSFER CONTACTS (ALTERNATE TO SPDT).
- ROPE SWITCH, (EMERGENCY STOP).
- LIMIT SWITCH, NORMALLY OPEN (N.O.).
- LIMIT SWITCH, NORMALLY CLOSED (N.C.).
- LEVEL SWITCH - OPENS ON LOW LEVEL, CLOSES ON RISING LEVEL. NORMALLY OPEN (N.O.).
- LEVEL SWITCH - OPENS ON RISING LEVEL, CLOSES ON LOW LEVEL. NORMALLY CLOSED (N.C.).
- PRESSURE SWITCH, FORM "C" CONTACTS. TOP NORMALLY OPEN (N.O.), BOTTOM NORMALLY CLOSED (N.C.).
- PRESSURE SWITCH, OPENS ON HIGH PRESSURE, CLOSES ON LOW PRESSURE. NORMALLY CLOSED (N.C.).
- TEMPERATURE SWITCH, OPENS ON LOW TEMPERATURE, CLOSES ON RISING TEMPERATURE. NORMALLY OPEN (N.O.).
- TEMPERATURE SWITCH, OPENS ON RISING TEMPERATURE, CLOSES ON LOW TEMPERATURE. NORMALLY CLOSED (N.C.).
- VIBRATION SWITCH, OPENS ON VIBRATION. NORMALLY CLOSED (N.C.).
- FLOW SWITCH, OPENS ON DECREASING FLOW, CLOSES ON INCREASING FLOW. NORMALLY OPEN (N.O.).
- FLOW SWITCH, OPENS ON INCREASING FLOW, CLOSES ON DECREASING FLOW. NORMALLY CLOSED (N.C.).
- TE / TDC — ON DELAY RELAY CONTACT. NORMALLY OPEN, CLOSES AFTER TIME DELAY (TDC).
- TE / TDO — ON DELAY RELAY CONTACT. NORMALLY CLOSED, OPENS AFTER TIME DELAY (TDO).
- IC / TDO — OFF DELAY RELAY CONTACT NORMALLY OPEN (N.O.) INSTANTANEOUS CLOSED, OPENS AFTER TIME DELAY (TDO).
- IO / TDC — OFF DELAY RELAY CONTACT NORMALLY CLOSED (N.C.) INSTANTANEOUS OPEN, CLOSES AFTER TIME DELAY (TDC).

SCHEMATIC & WIRING DIAGRAM SYMBOLS

- H — ANNUNCIATOR: H=HORN, S=SPEAKER.
- BELL.
- BUZZER.
- S — SOLENOID OPERATED VALVE. (DC COIL REVERSE POLARITY DIODE)
- THERMOCOUPLE
- DIODE
- THYRISTOR
- IN LINE CONDUCTOR CURRENT LIMITING CABLE PROTECTOR
- LIGHTNING OR SURGE ARRESTOR
- PROTECTIVE GAP
- BATTERY
- R1 — RESISTOR R1, 2, 3... = RESISTOR NUMBER.
- ADJUSTABLE OR VARIABLE FUNCTION.
- CARTRIDGE FUSE
  - A = ALARM CONTACT.
  - CL = CURRENT LIMITING.
  - I = INDICATING.
- C1 — CAPACITOR. C1, 2, 3 ... = CAPACITOR NUMBER.
- FUSIBLE LINK.
- CIRCUIT BREAKER, MOLDED CASE
- INDUCTOR
- 480V / 120V — 50 VA — CONTROL POWER TRANSFORMER. PRIMARY AND SECONDARY VOLTAGE PLUS VOLT AMPERES SHALL BE SHOWN.
- IDENTIFIED EQUIPMENT.
- TB-A: 1 2 3 4 5 6 7 — TERMINAL BLOCK (TB).
  - A, B, C ...ETC = SEQUENTIAL IDENTIFIER.
  - 1, 2, 3 ...ETC = TERMINAL NUMBER.
- △ DENOTES CONTROL DEVICE TO BE LOCATED IN FIELD OR ADJACENT TO MOTOR.
- ▲ LOCATED ON CONTROL BOARD.
- ○ PURCHASED BY INSTRUMENT SPECIFICATION OR REQUISITION.
- ⊕ FURNISHED WITH MECHANICAL EQUIPMENT.

MOTOR CONTROL CABLE CONDUCTOR COLOR CODE

CODE	COLOR	CONDUCTOR NO.
R	RED	1
O	ORANGE	2
X2	WHITE	X2
BU	BLUE	3
Y	YELLOW	4
BK	BLACK	5
BR	BROWN	6
R/BK	RED/BLACK	7
BU/BK	BLUE/BLACK	8
GR	GREEN	GROUND OR (-)

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REFERENCES

DRAWING NO.	DESCRIPTION
LA-E-001	ABBREVIATIONS & ACRONYMS
LA-E-002	STANDARD PLAN SYMBOLS
LA-E-004	ONE/THREE LINE DIAGRAM SYMBOLS

REVISIONS

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STATE OF LOUISIANA — KAI C. K. RAMSING — REG. No. 26704 — PROFESSIONAL ENGINEER — ELECTRICAL ENGINEERING

Kai C. K. Ramsing 15 Oct 96

PARSONS
100 WEST WALNUT STREET
PASADENA, CALIFORNIA

LIGO
CALIFORNIA INSTITUTE OF TECHNOLOGY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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

TITLE: ELECTRICAL STANDARD SCHEMATIC & WIRING DIAGRAMS SYMBOLS

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