

LEVITON[®]
Applications Cookbook
Metering Solutions

Version 7.0

FOR REFERENCE ONLY

METERING SOLUTIONS COOKBOOK NOTES

Measurement & Verification - Data Collection

GENERAL NOTES

- REFER TO INSTALLATION INSTRUCTIONS FOR DEVICE SPECIFIC TERMINATIONS.
- REFER TO DEVICE DATA SHEETS FOR DEVICE SPECIFIC DATA TRANSFER TYPES.
- INSTALL CURRENT TRANSFORMERS (CT), VOLTAGE SENSORS, AND OTHER REQUIRED HARDWARE ASSOCIATED WITH THE PROPER OPERATION OF THE METERING EQUIPMENT PER NEC AND BEST PRACTICES.
- CURRENT TRANSFORMERS AND VOLTAGE SENSORS NOT SHOWN FOR CLARITY.
- MAXIMUM CURRENT TRANSFORMER LEAD RUN LENGTH DETERMINED BY CT TYPE. REFERENCE CT DOCUMENTATION PRIOR TO LAYING OUT EQUIPMENT.
- LEVITON RECOMMENDS THE FOLLOWING USE OF ISOLATED PULSE OUTPUTS:
 - TENANT BILLING
 - USE kWh (1000) OUTPUT IN MOST APPLICATIONS.
 - IF 15 MINUTE INTERVAL DEMAND DATA IS REQUIRED, USE 10 WATT-HOUR OUTPUT. FOR HIGH ENERGY APPLICATIONS, (METERS RATED 800A OR HIGHER), USE kWh PULSE OUTPUT.
 - ENERGY MONITORING
 - USE 10Wh PULSE OUTPUT FOR MOST APPLICATIONS. THIS WILL PROVIDE BETTER DATA RESOLUTION WHEN USING PULSE ACCUMULATIONS TO TRACK 15 MINUTE INTERVAL DEMAND.
 - FOR HIGH ENERGY APPLICATIONS, (METERS RATED 800A OR HIGHER), USE kWh PULSE OUTPUT.
- AN ENERGY MONITOR HUB AND SERIES 4000/4100 METERS MAY BE ON THE SAME MODBUS RTU LOOP. ONE TYPE PER LOOP SHOWN FOR SIMPLICITY.
- MAXIMUM NUMBER OF CONNECTED DEVICES ON A MODBUS RTU LOOP IS 32.
- BACNET MS/TP AS IT RELATES TO METERS SHOWN. MEDIA CONVERSION AND TRANSPORT ARE PART OF FACILITY BAS/BMS SYSTEM, NOT SHOWN FOR CLARITY.
- FACILITY ETHERNET MAY INCLUDE MEDIA CONVERSION BETWEEN DEVICES. UTP SHOWN FOR SIMPLICITY. INDUSTRY STANDARD DISTANCES APPLY.
- MODBUS IP AND BACNET IP ARE TRANSPORTED VIA ETHERNET.
- REFER TO SPECIFIC METER DATA SHEETS FOR POLARITY REQUIREMENTS OF PULSE OUTPUT WIRES.

WIRE RUNS BY SYMBOL

- LINE: 15AMP, 120VAC, 2 WIRE PLUS GROUND, 60HZ DIRECT FROM SERVICE PANEL, DO NOT SWITCH.
- (1) ETHERNET CABLE EQUAL TO BELDEN 2412, LABELED PER DRAWING. TERMINATIONS PER EIA/TIA 568B. PASS-THROUGH CONNECTORS PROHIBITED.
- (1) MODBUS RTU CABLE EQUAL TO BELDEN 1120A, LABELED PER DRAWING. MAXIMUM LENGTH 1200M (3935 FT).
- (1) BACNET MS/TP CABLE: EIA-485 COMPLIANT CABLE, WIRING IN COMPLIANCE WITH ANSI/ASHRAE 135-2004.
- COMMUNICATION WIRE: EQUAL TO (2) #18-22 AWG THHN PER METER. MAXIMUM 200 FT.
- CT WIRE HARNESS AS NOTED BY MANUFACTURER AND AS SCHEDULED. MAX RUN LENGTH PER CT DOCUMENTATION.
- REFERENCE AND POWER CIRCUIT: (1) 3-PHASE, 4-WIRE, PLUS GROUND CIRCUIT AT THE METERED VOLTAGE. FEED FROM DEDICATED 15A 3-POLE BREAKER.
- POWER WIRE: BY FACTORY.
- COMMUNICATION WIRE: BY FACTORY

NOTES BY SYMBOL

- CONFIGURE HIGH DENSITY PULSE MODULE TO ASSOCIATED DEVICE(S). MAXIMUM 23 METERS.
- CONFIGURE METER TO ASSOCIATED LOADS. REFERENCE GENERAL NOTE 5 FOR RECOMMENDED USE AND PANEL SCHEDULES FOR MONITORED LOADS.
- CONFIGURE ENERGY MONITORING HUB (EMH) OR EMBEDDED ENERGY MONITORING HUB (EMB HUB) AS REQUIRED. THE EMH HAS EIGHT (8) ON BOARD PULSE INPUT CHANNELS. EMB HUB HAS NO PULSE INPUT CHANNELS.
- POWER SUPPLY, CORD AND PLUG PROVIDED AS A COMPLETE ASSEMBLY.
- CONFIGURE HUBLITE AS REQUIRED. HUBLITE HAS FOUR (4) ON-BOARD PULSE INPUT CHANNELS.
- MANAGED ETHERNET SWITCH, 10/100/1000.
 - PROVIDE MINIMUM TWO (2) SPARE PORTS. ASSUME AT LEAST ONE (1) BILLING COMPUTER PER SWITCH IN CALCULATIONS.
 - SWITCH SHALL HAVE A LINK FEATURE.
 - MULTIPLE SWITCHES SHALL BE LINKED TOGETHER.
- CONFIGURE MODHOPPERS AS REQUIRED. MODHOPPER HAS (2) ON BOARD PULSE INPUT CHANNELS.
- CONFIGURE EMH+ AS REQUIRED.
- CONFIGURE DCAP AS REQUIRED.
- CONFIGURE WIRELESS METERING DATA TRANSCIVER TO ASSOCIATED DEVICE(S). MAXIMUM 1 OR 2 DEVICES DEPENDANT ON MODEL.

SYMBOLS










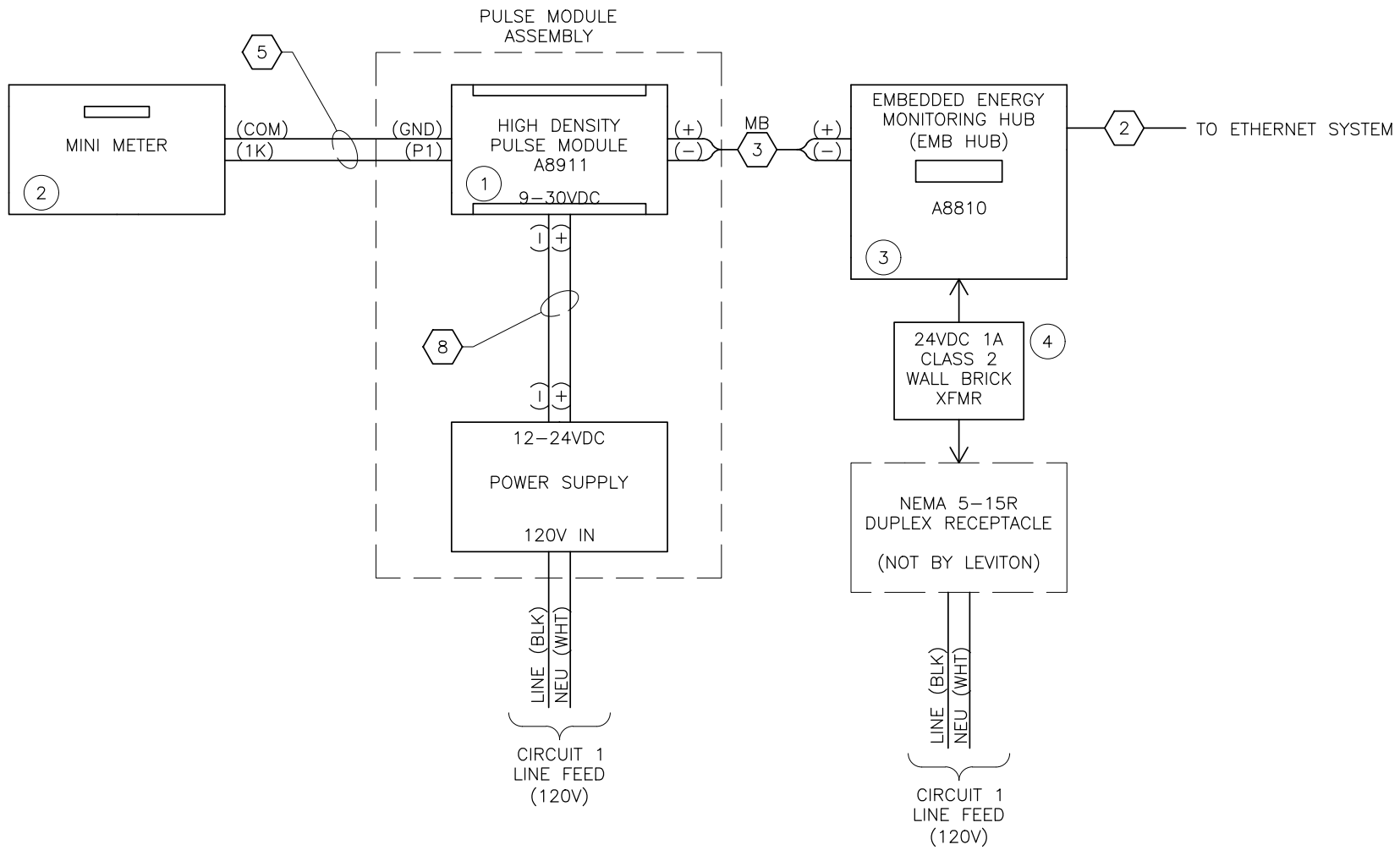
-  CONNECTOR BODY – FEMALE [CABLE MT'G]
-  PLUG – MALE [CABLE MT'G]
-  CROSSING WIRES, NO CONNECTION
-  CONNECTED WIRES
-  SEPARATE WIRES AS PART OF A BUNDLE
-  RECEPTACLE – FEMALE [PANEL MT'G]
-  INLET – MALE [PANEL MT'G]
-  WIRE RUNS NOT BY LEVITON
-  REFERENCE TO NOTES. DOES NOT TRANSCEND DRAWINGS.

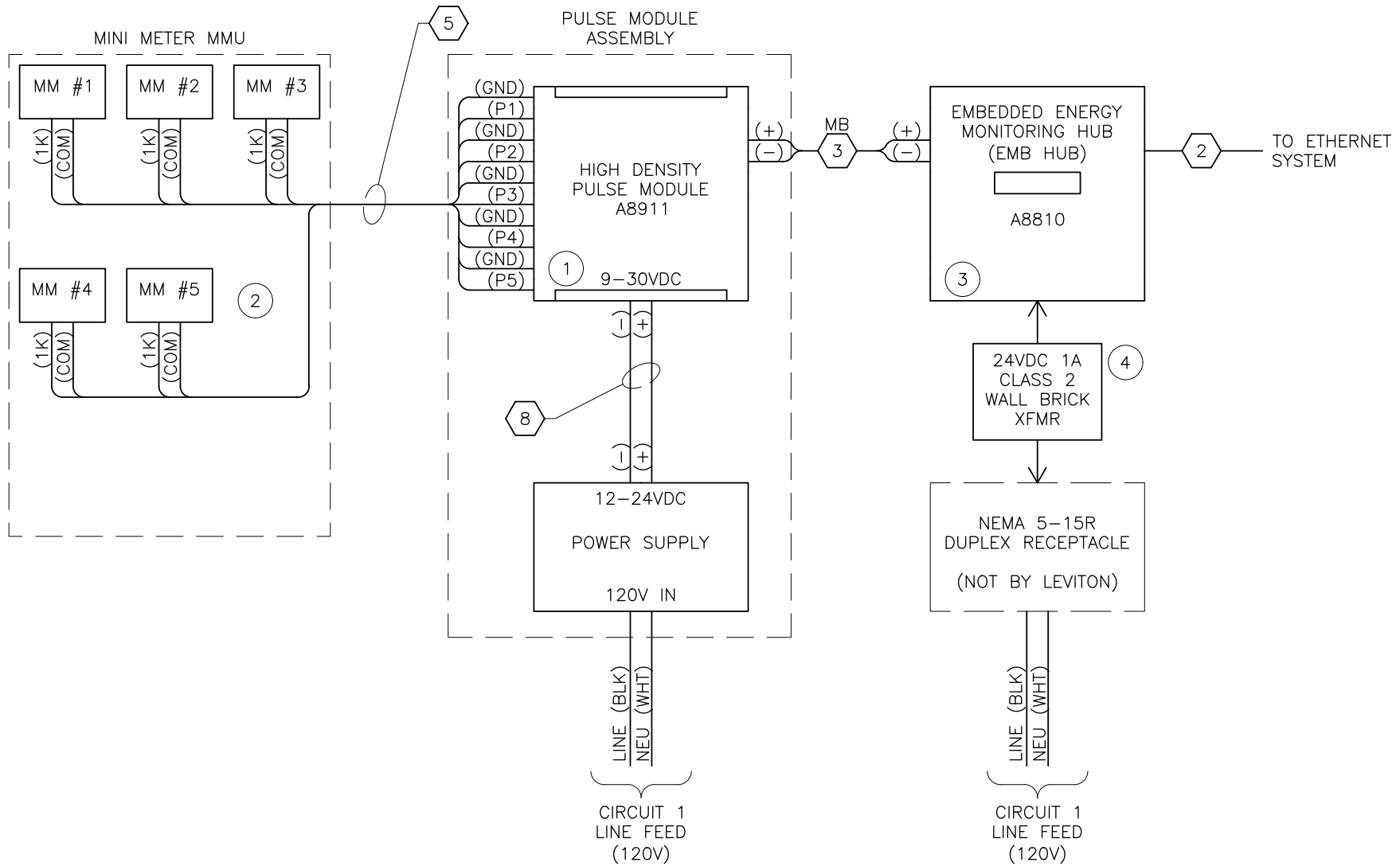
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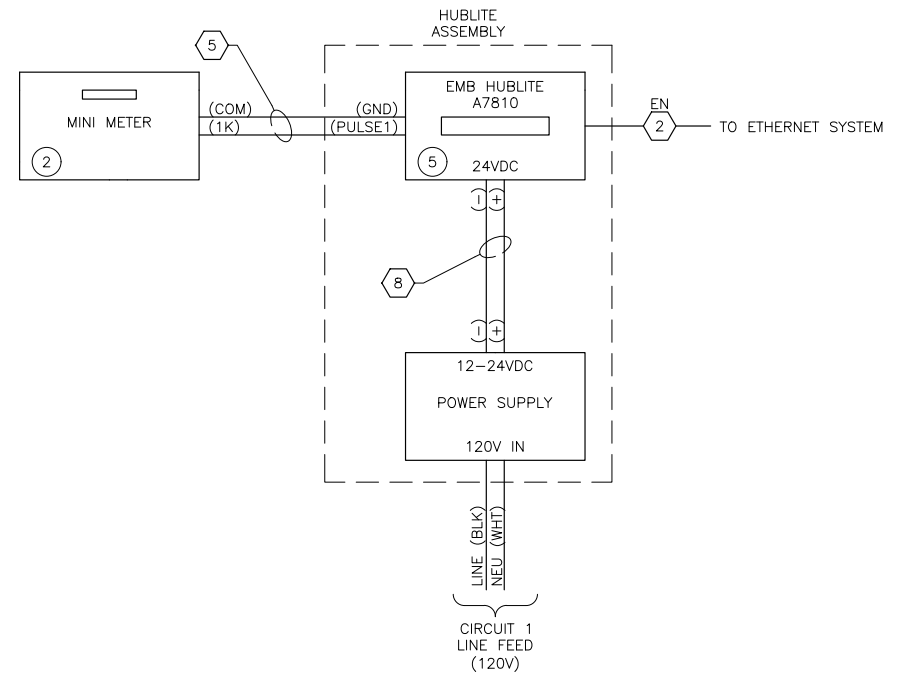
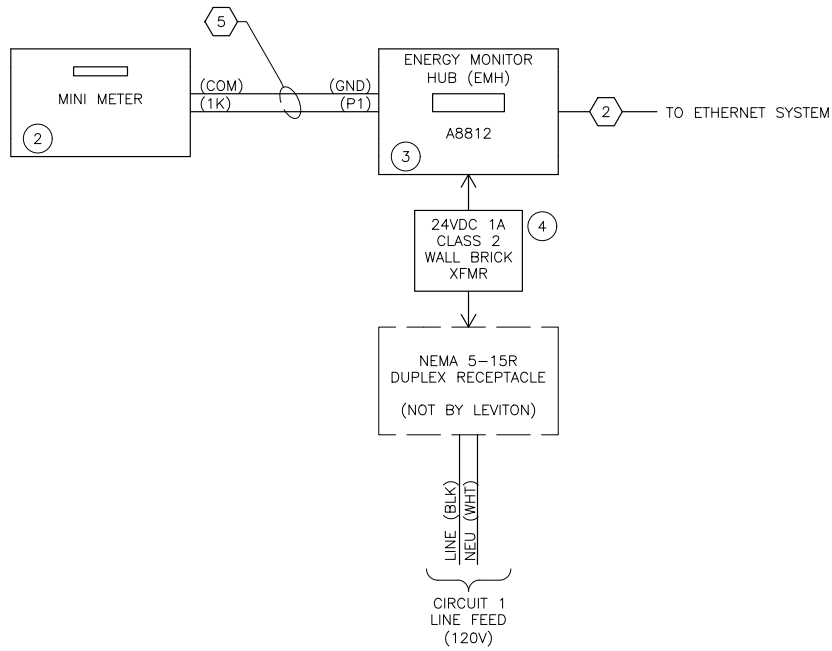
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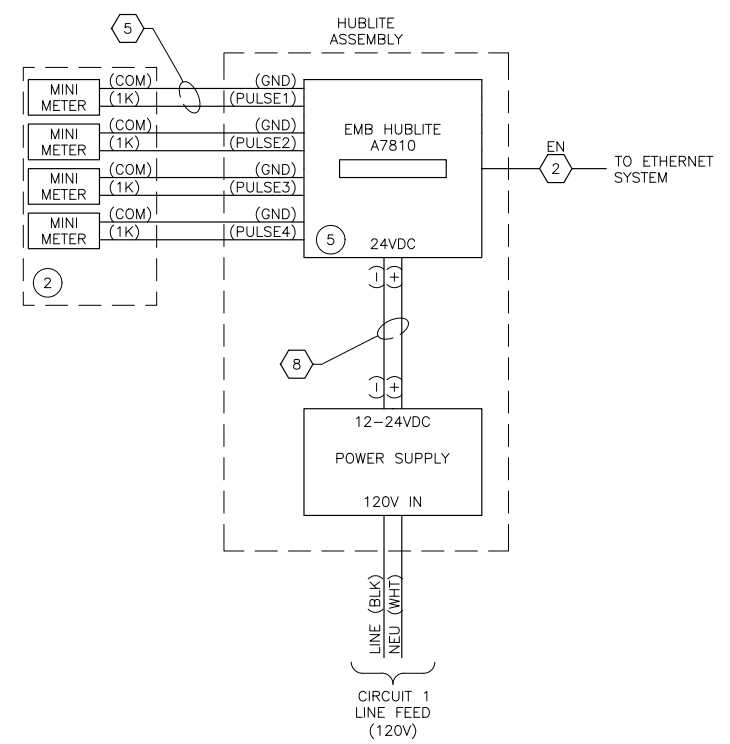
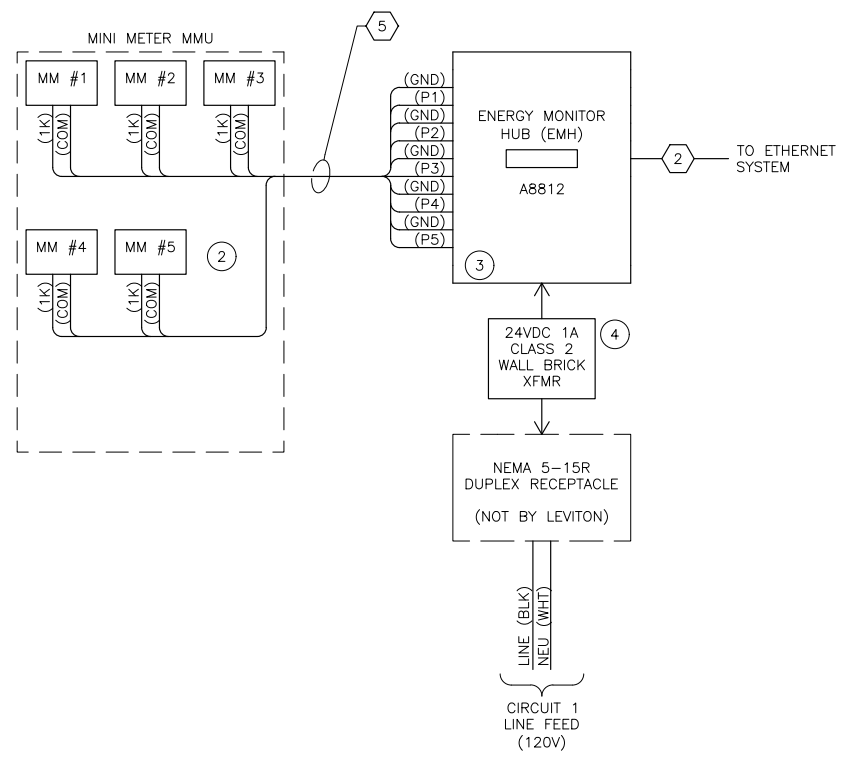
MINI METER MMU TO HIGH DENSITY PULSE MODULE, MONITORING SYSTEM



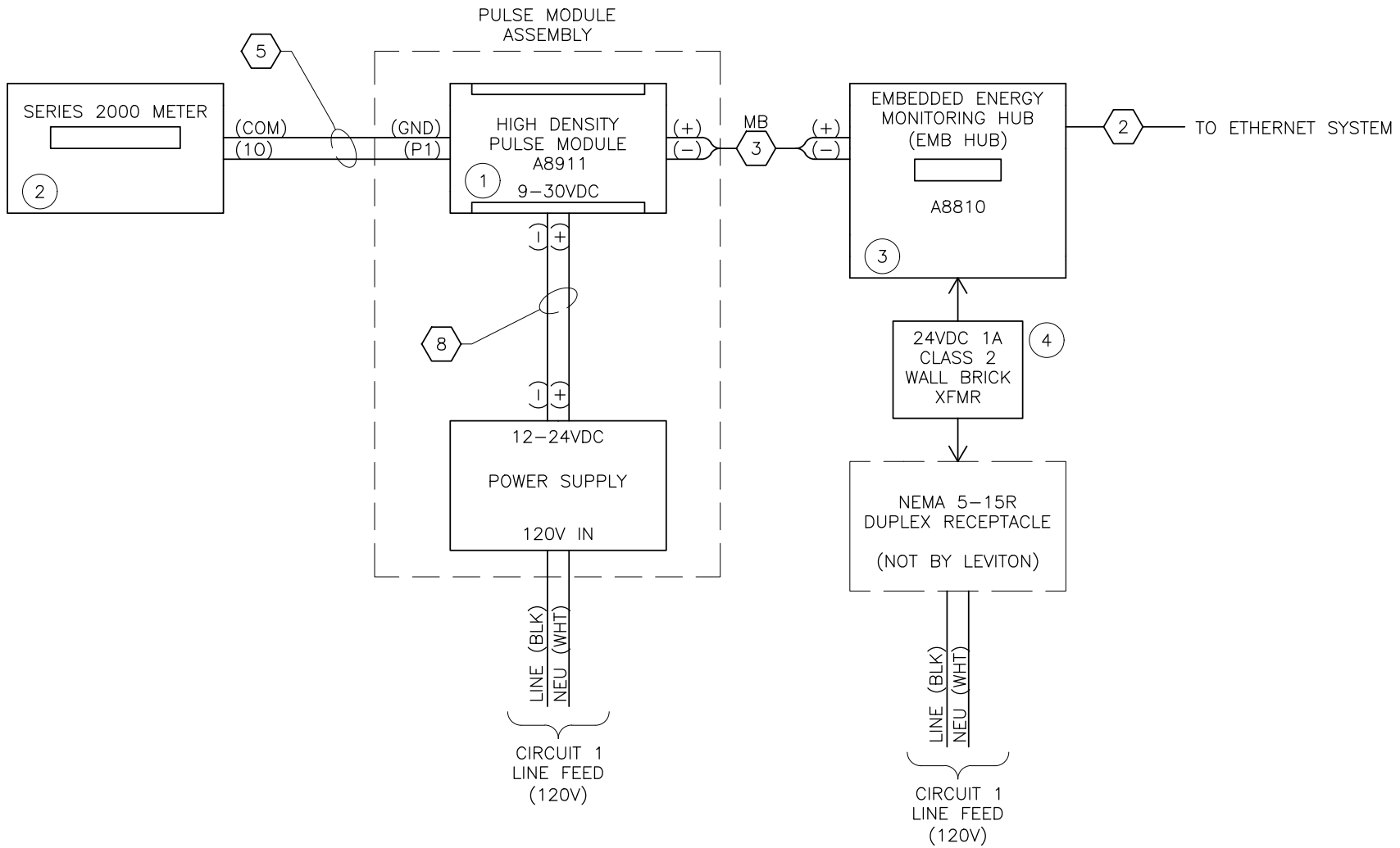
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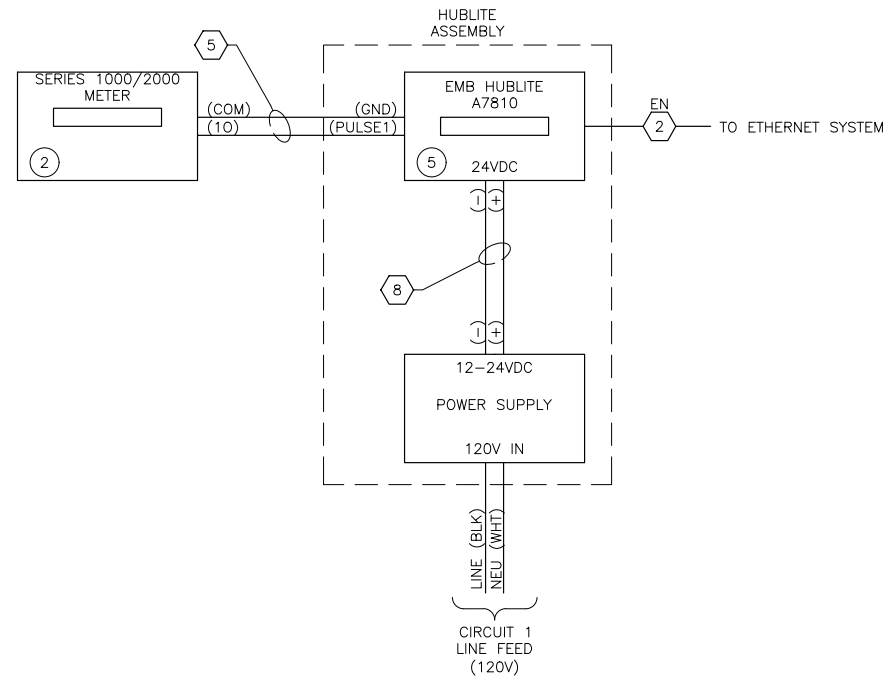
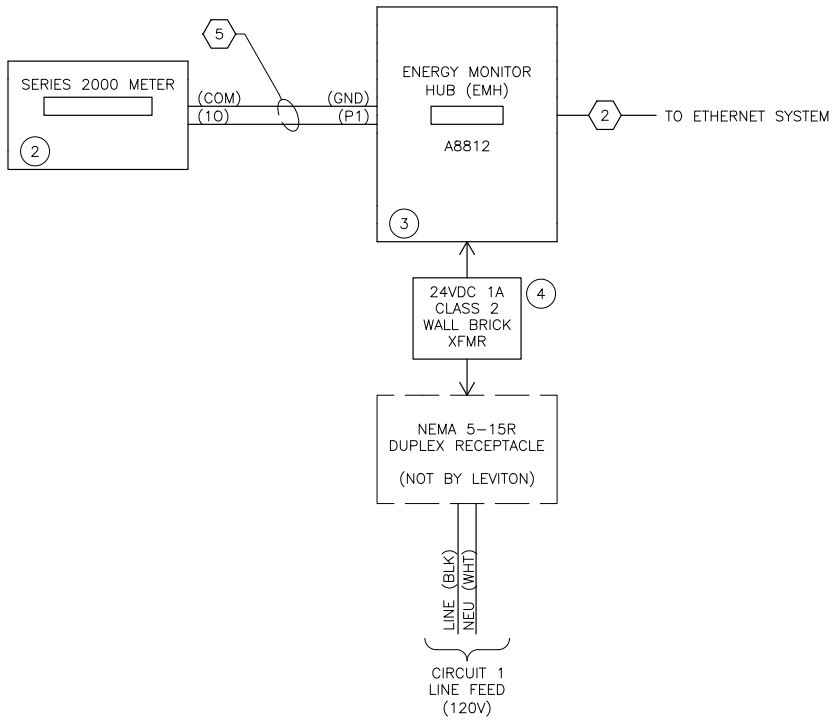
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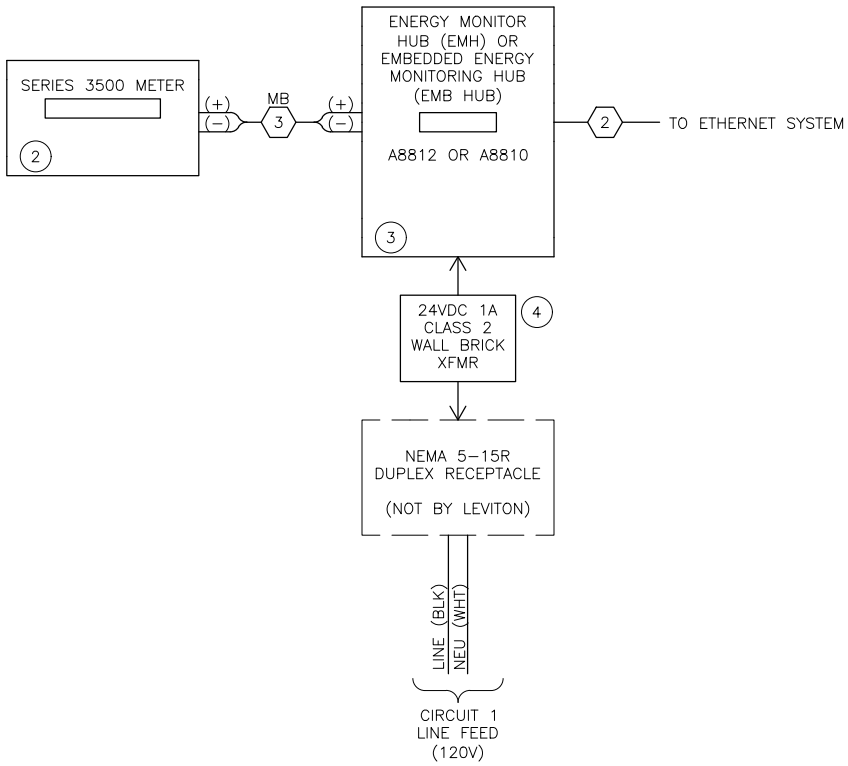
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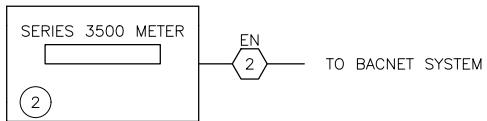
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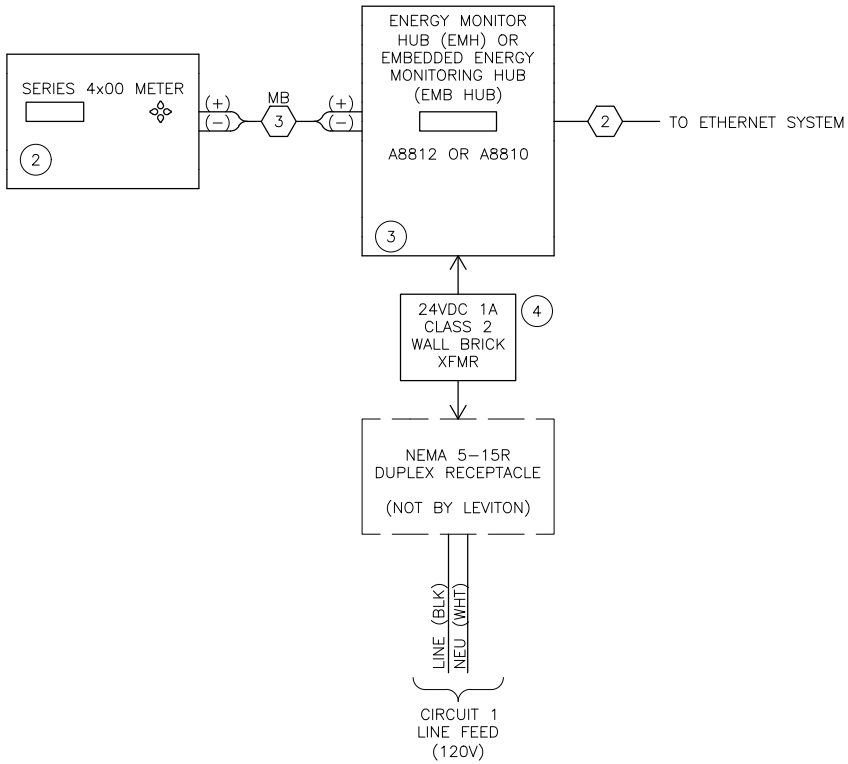
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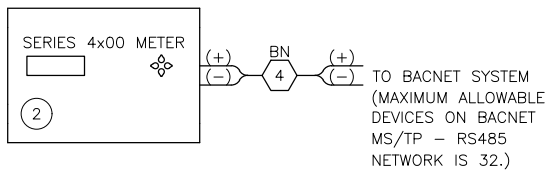
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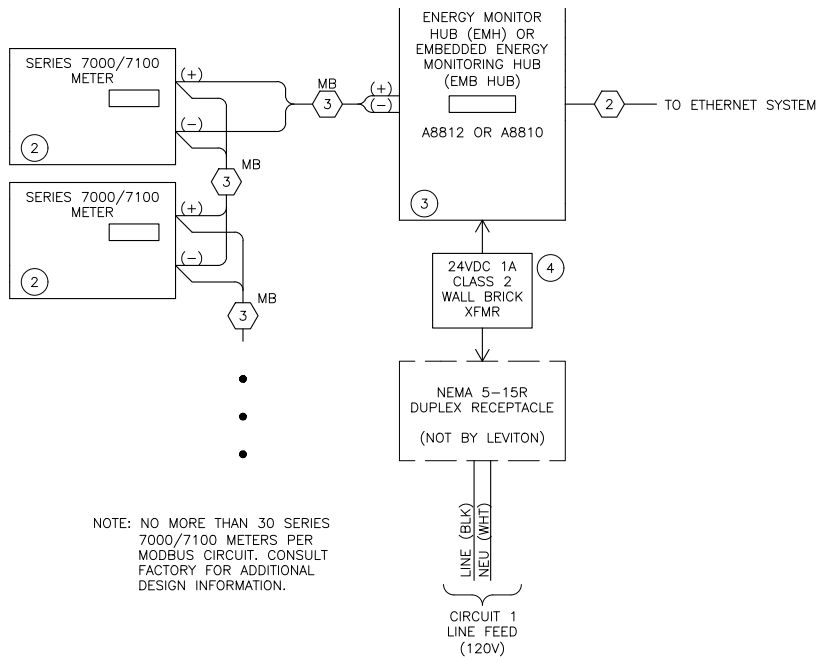
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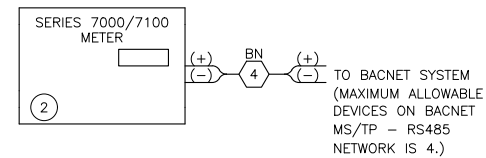
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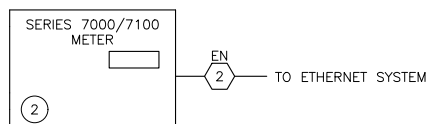
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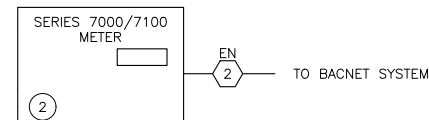
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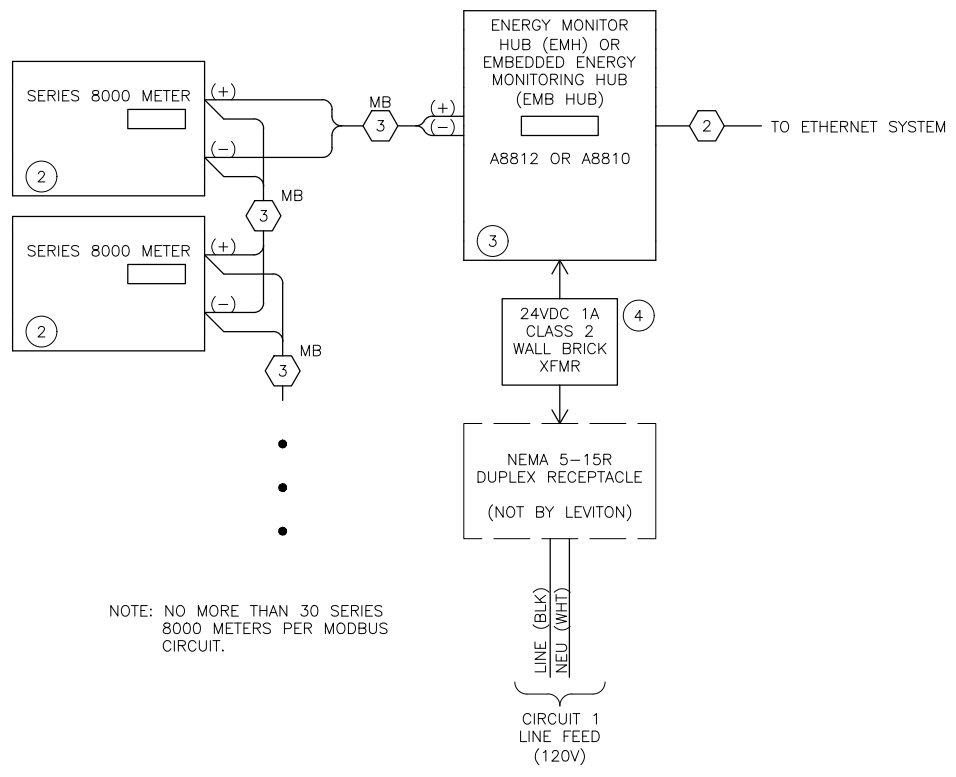
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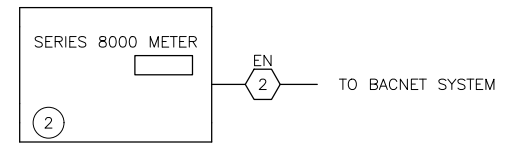
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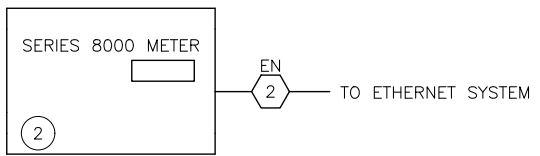
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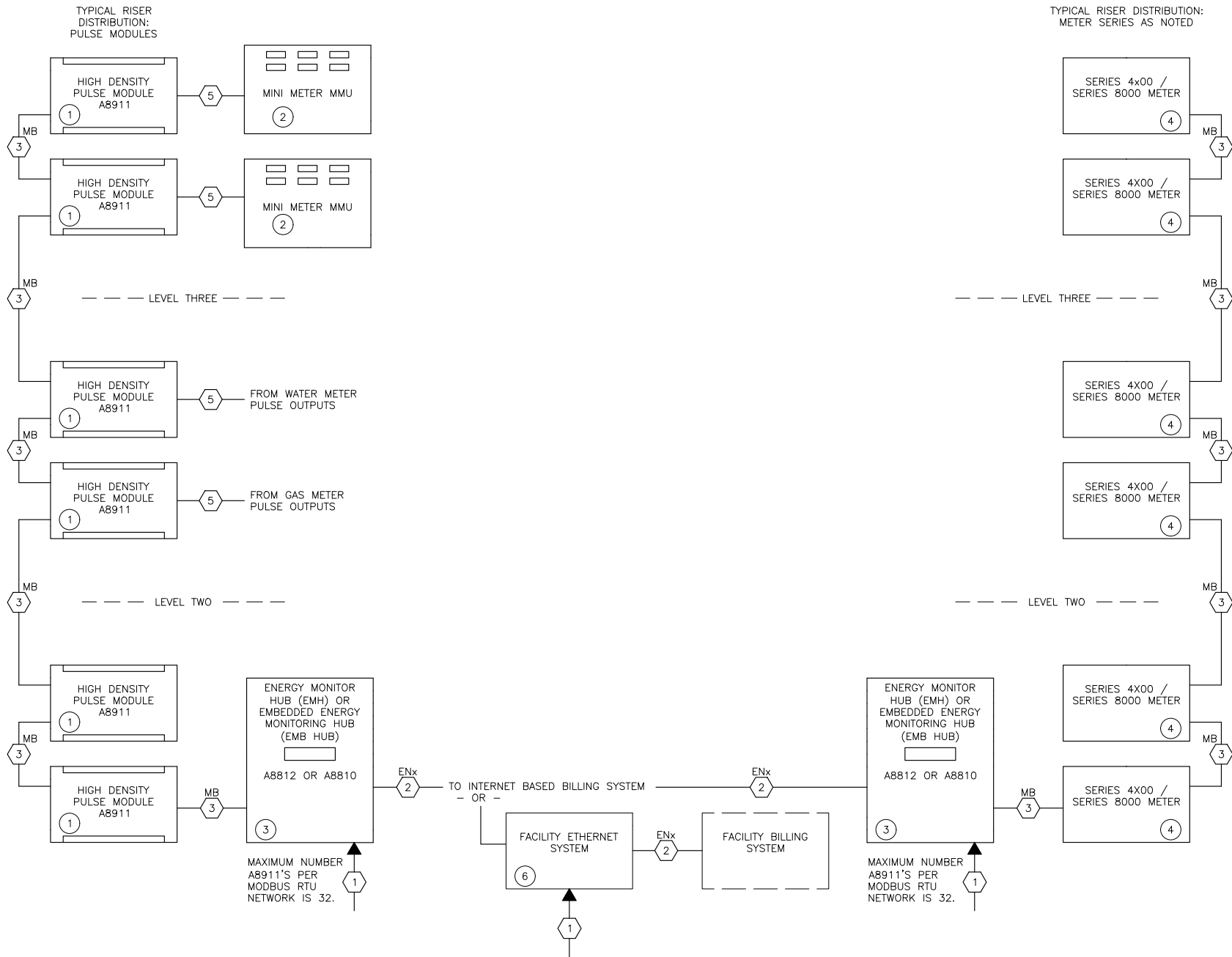
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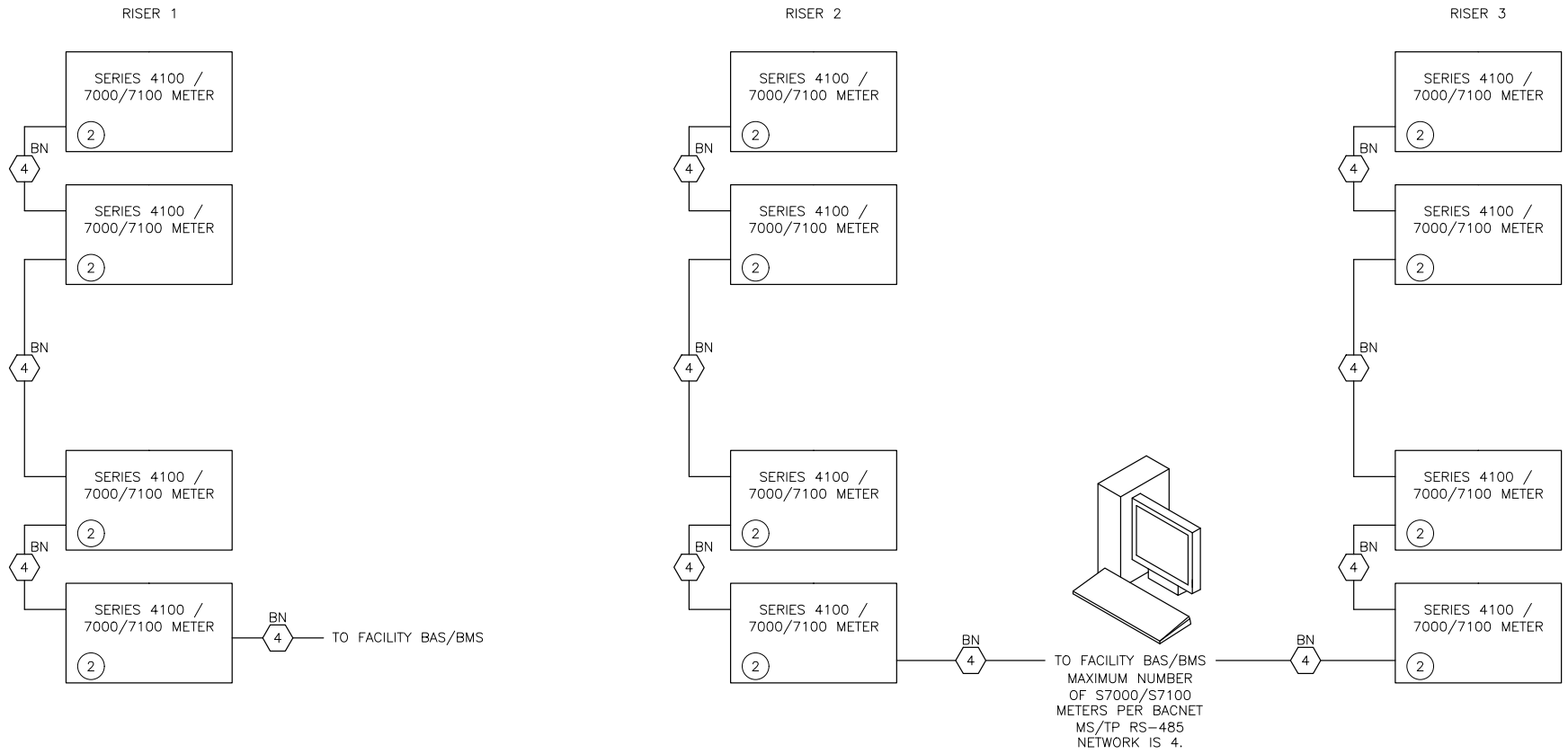
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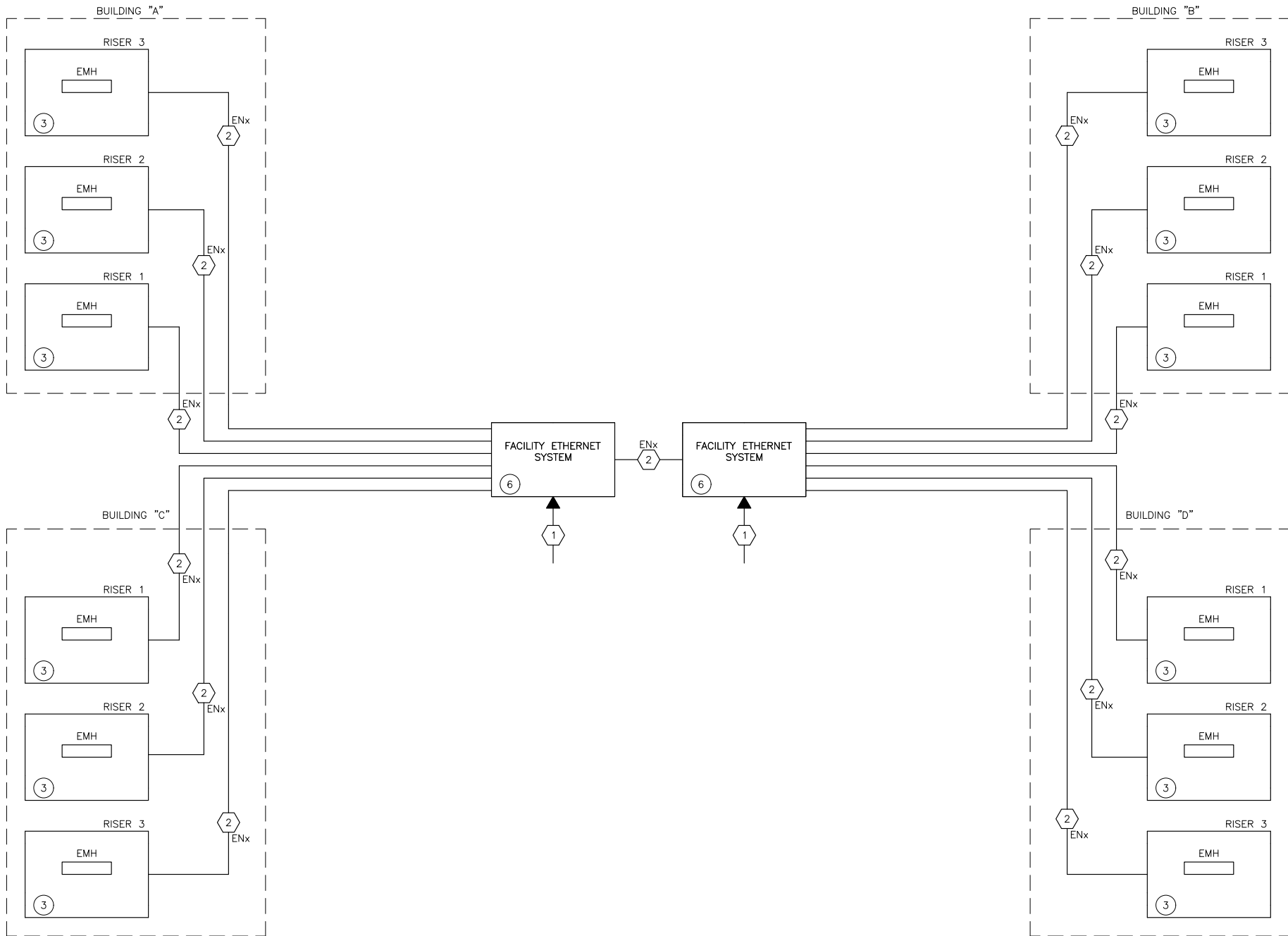
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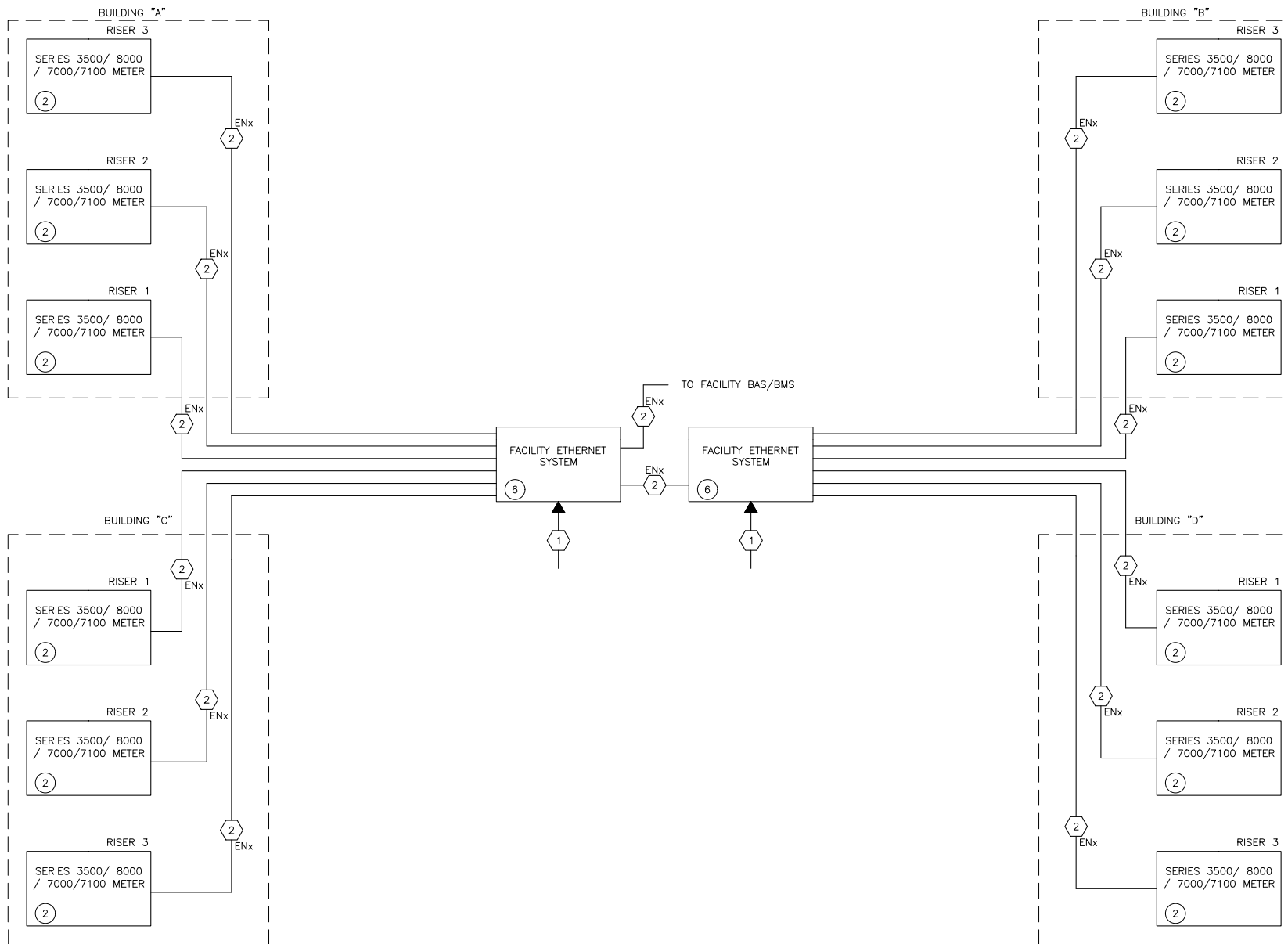
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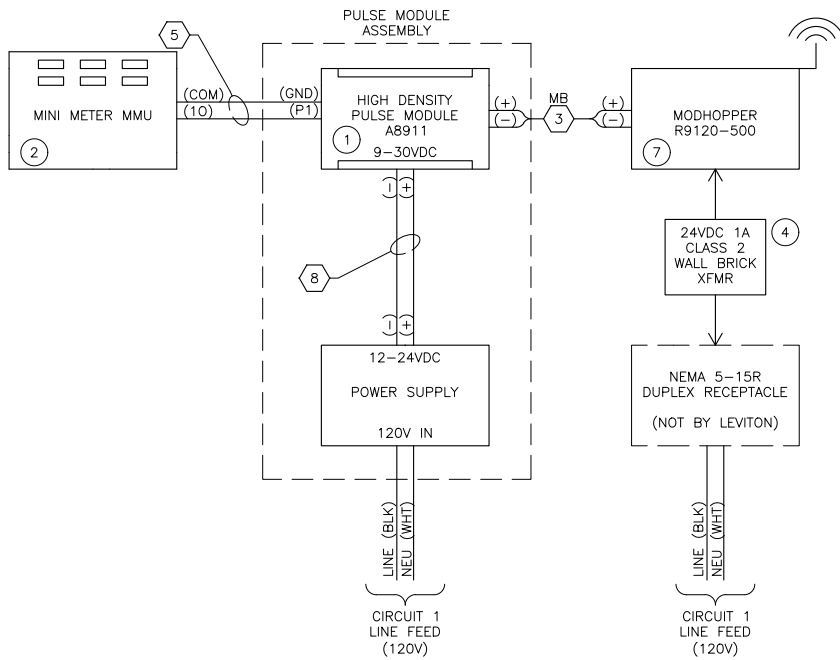
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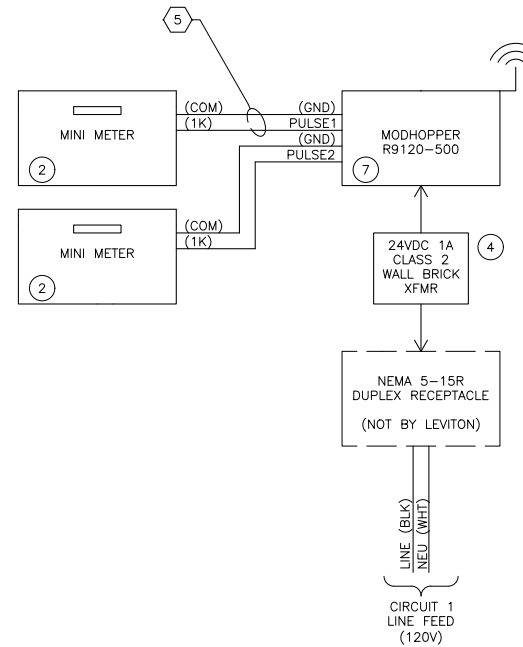
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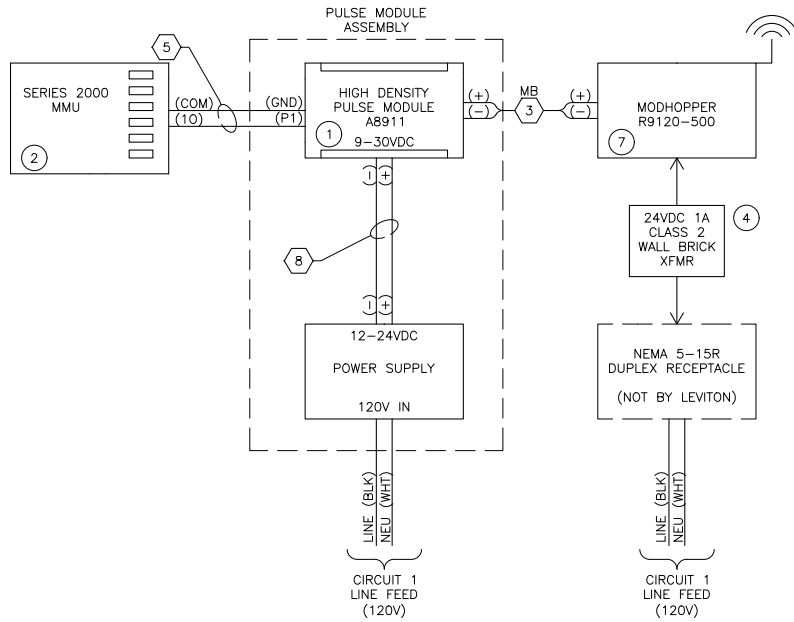
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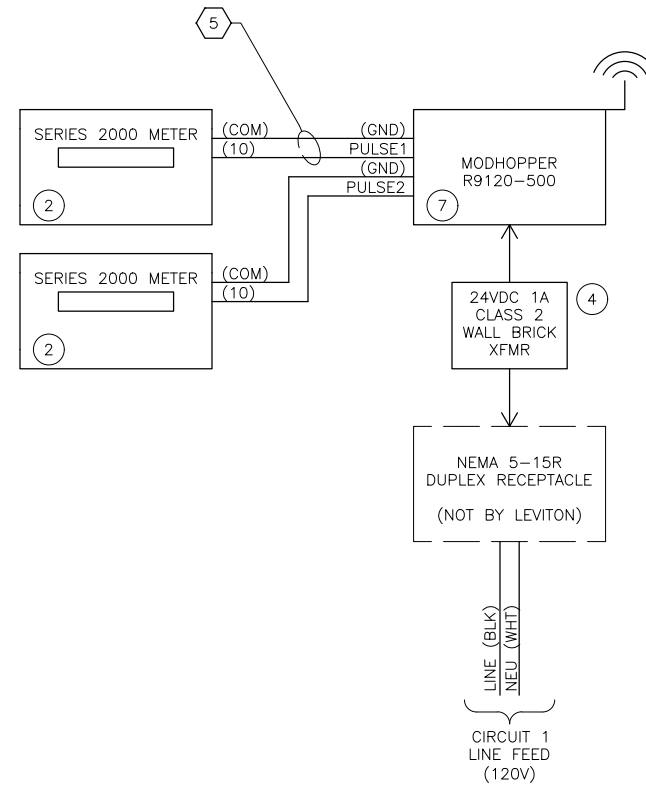
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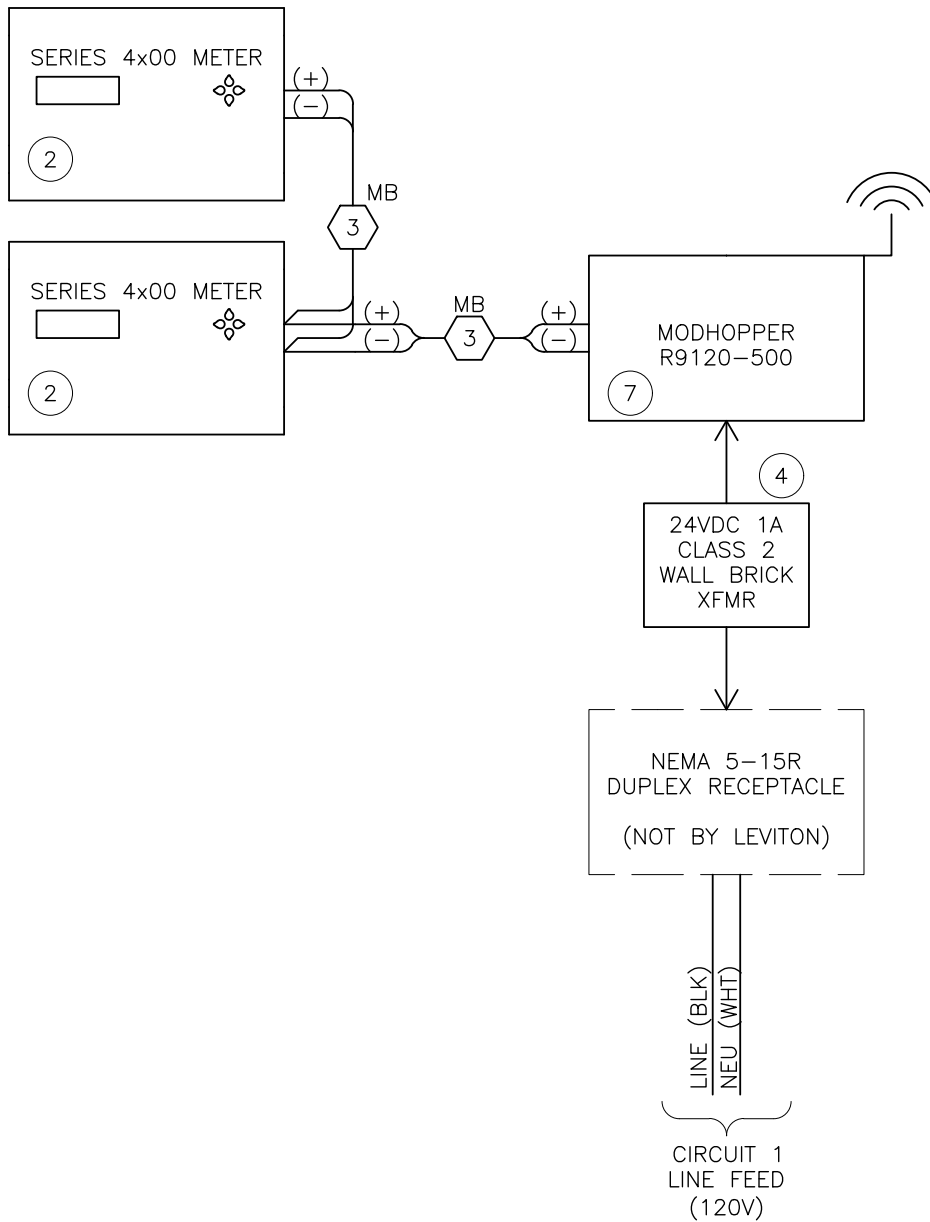
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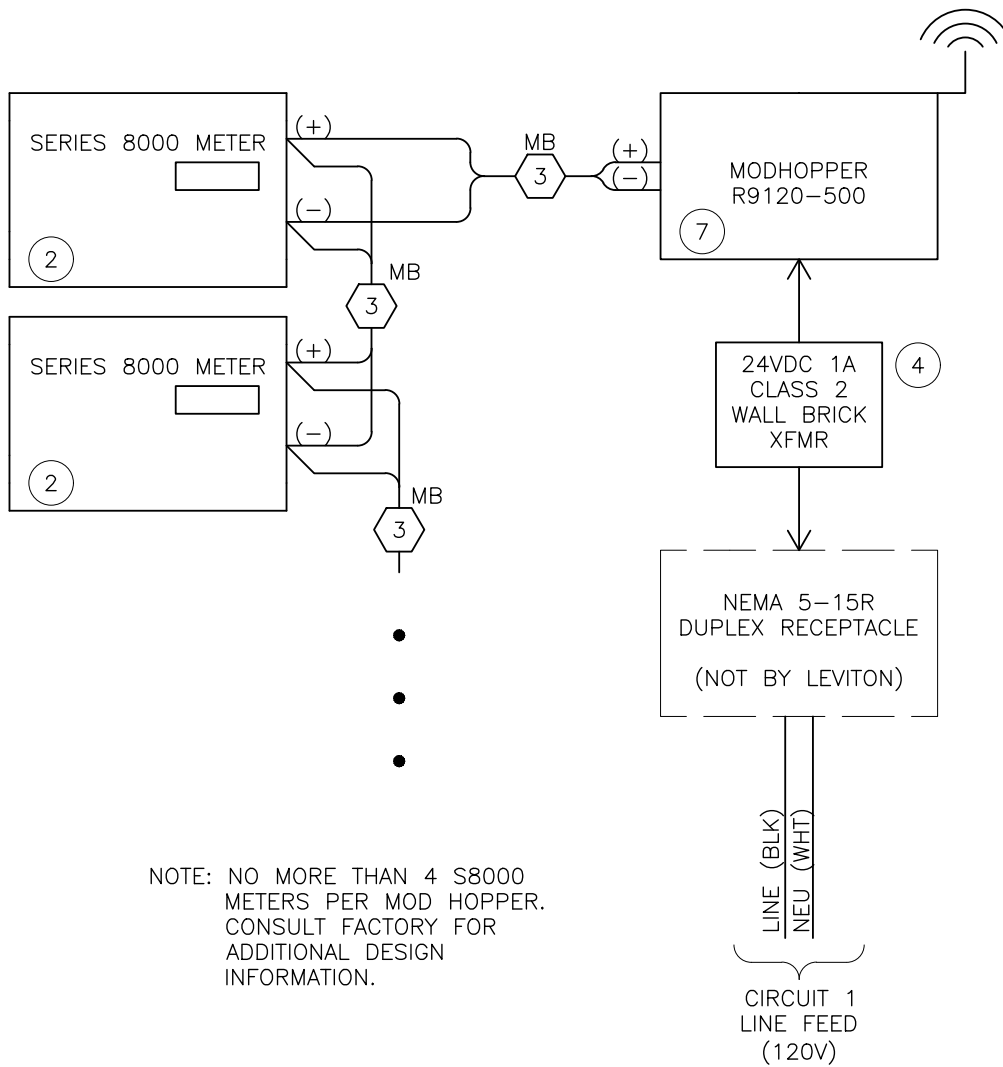
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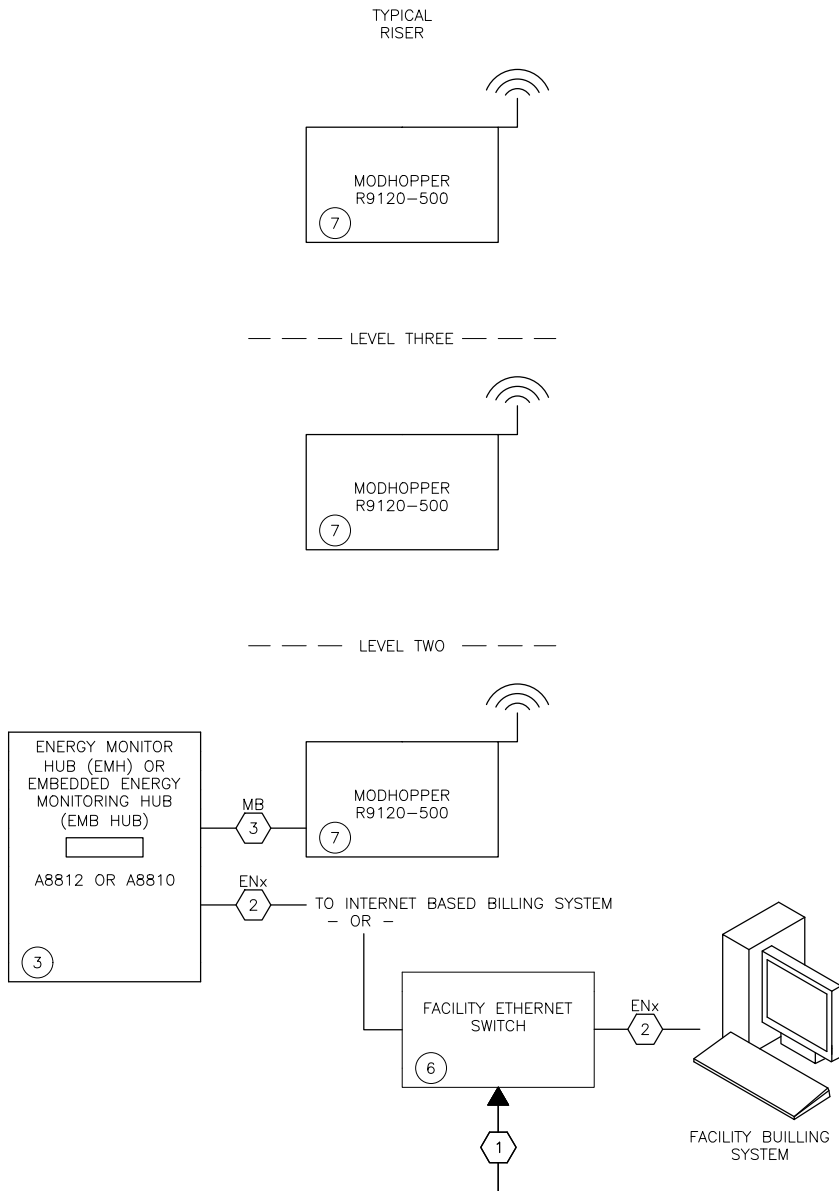
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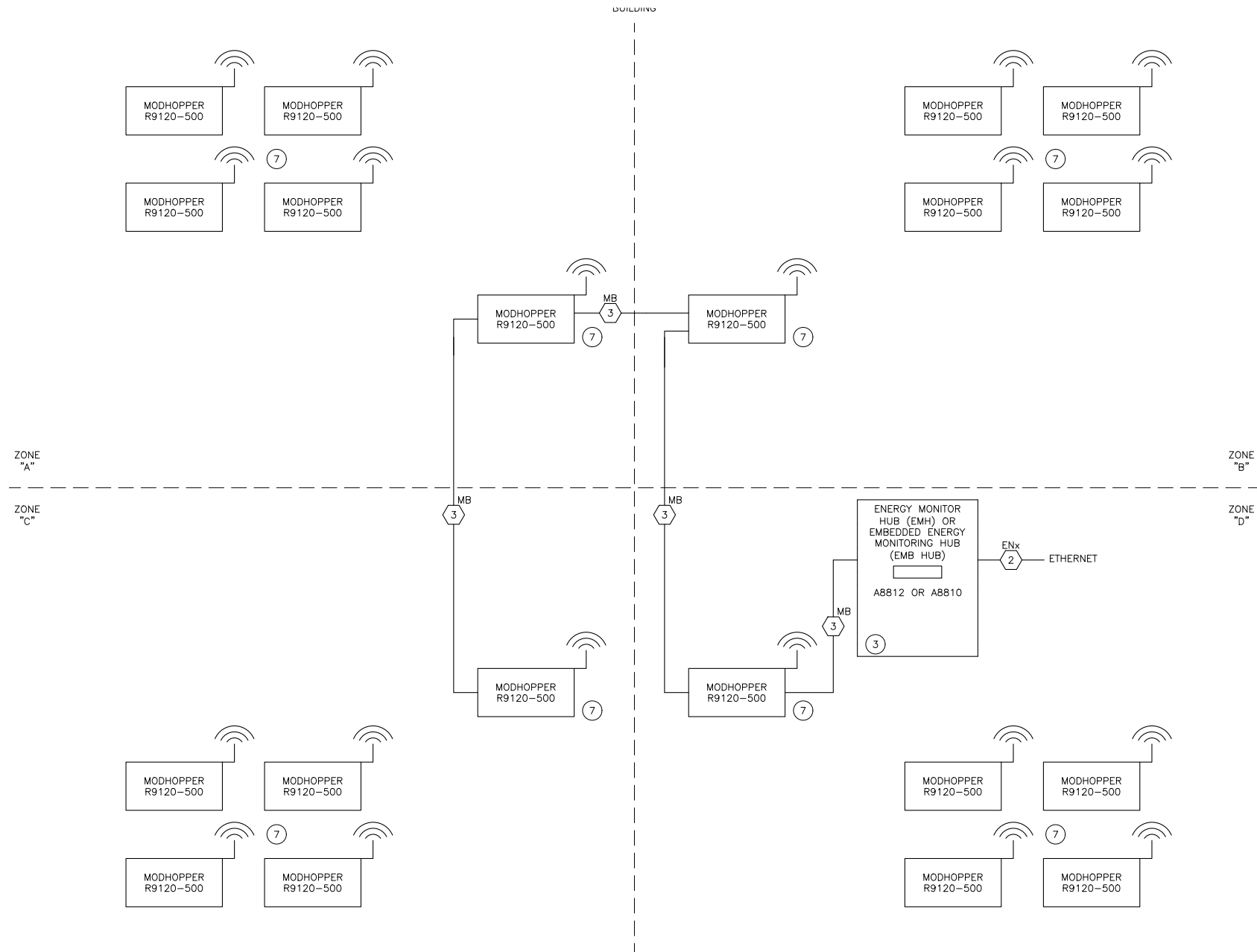
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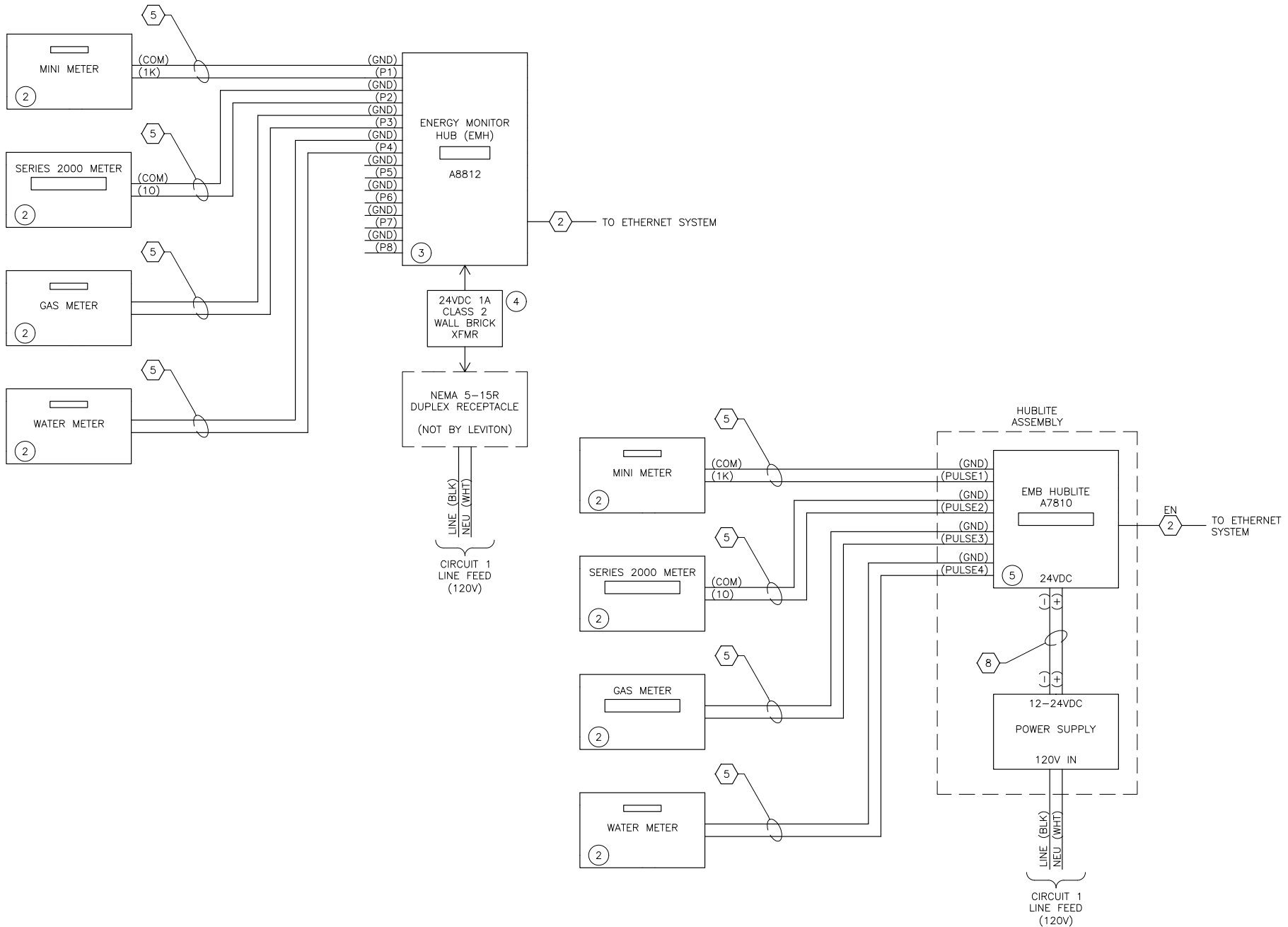
METERS — SYSTEM BACKBONE — MODHOPPER



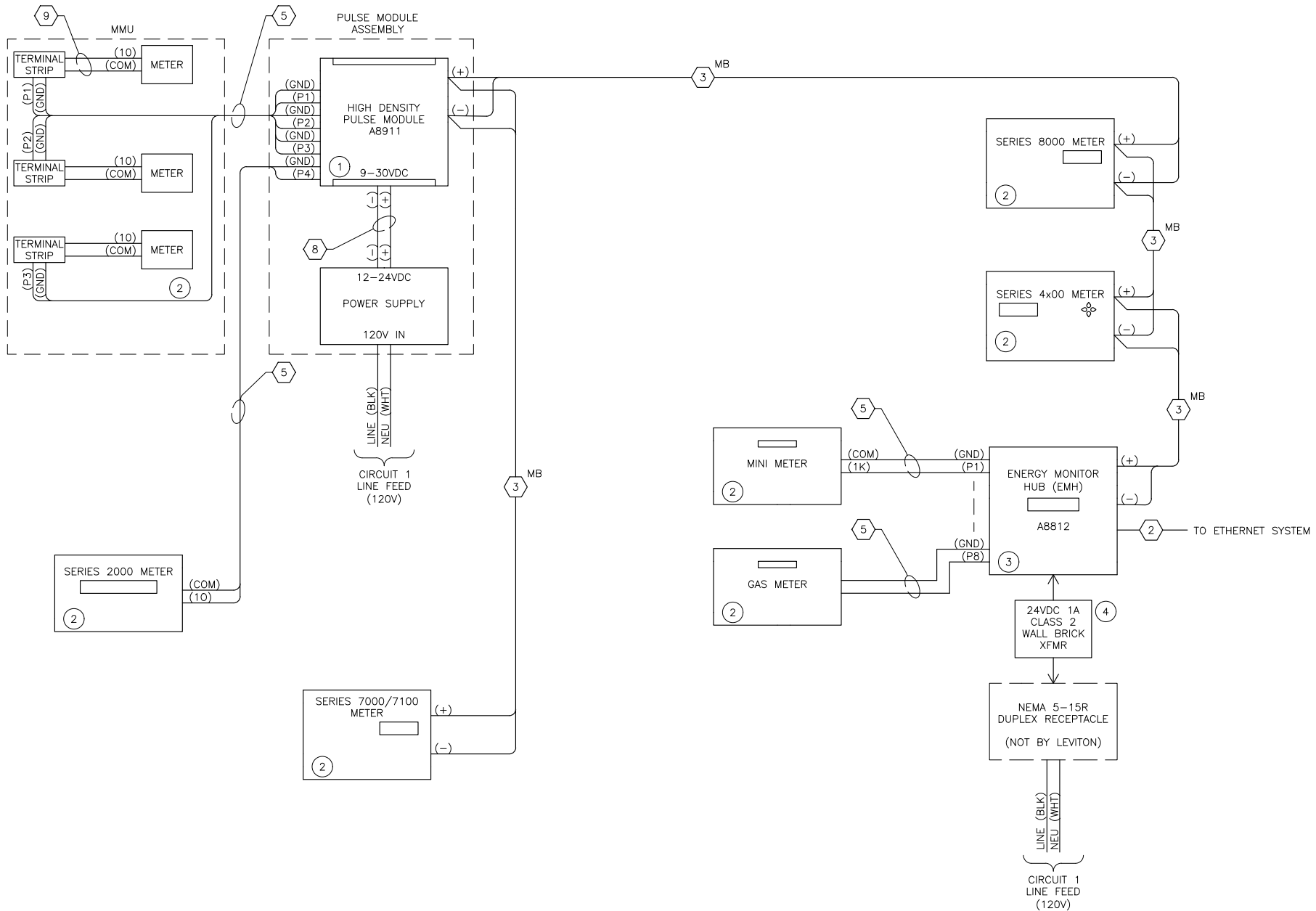
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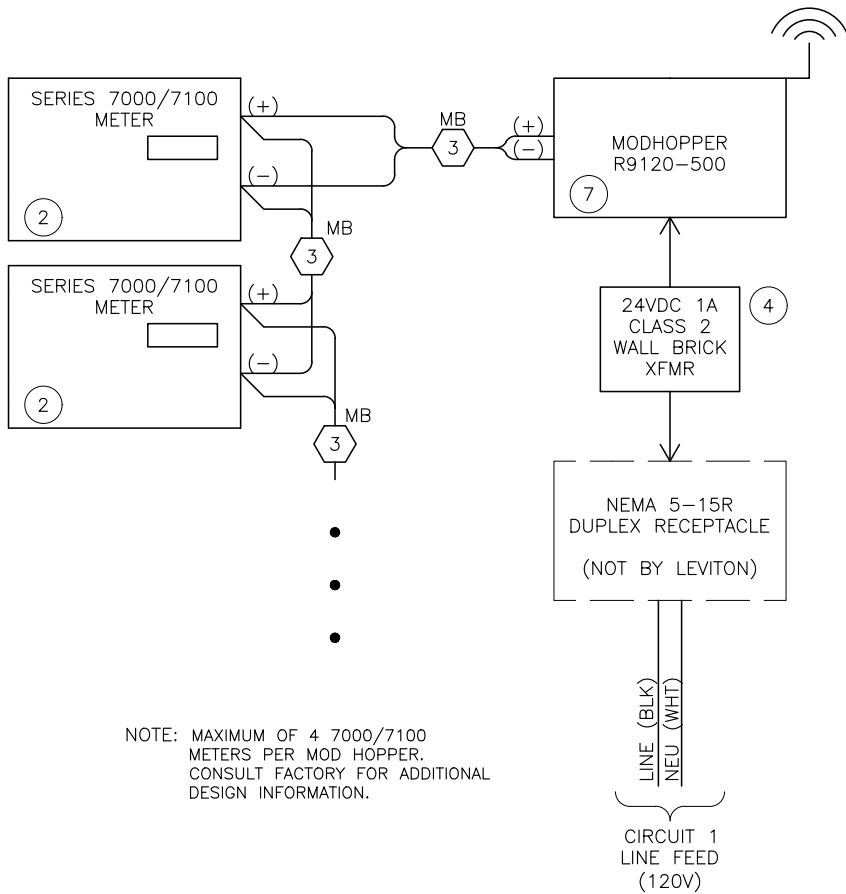
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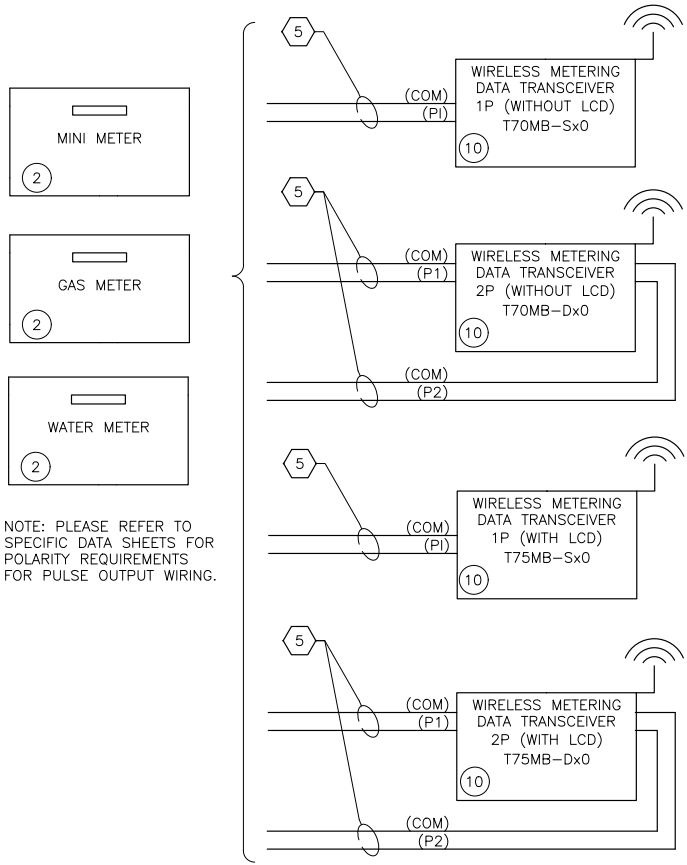


SERIES 7000-7100 METERS TO MODHOPPER, MONITORING SYSTEM

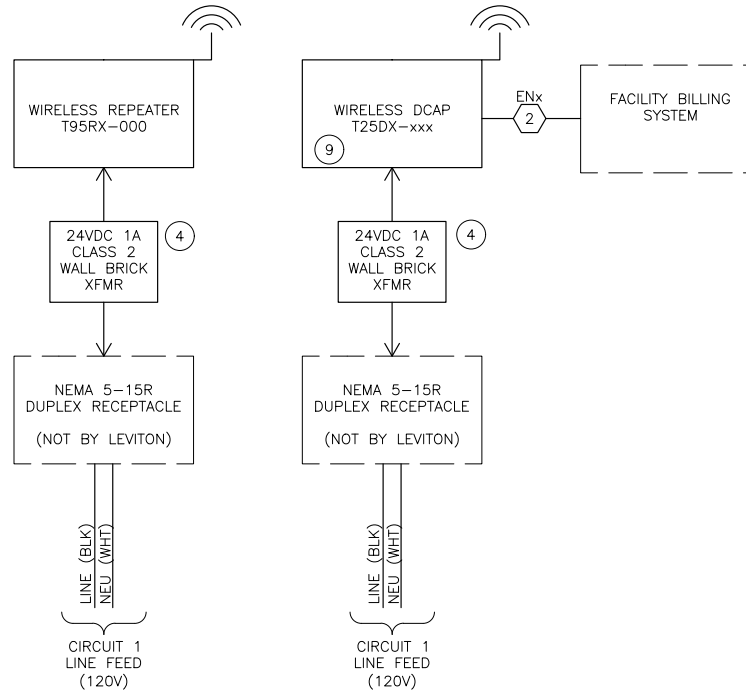


NOTE: MAXIMUM OF 4 7000/7100 METERS PER MOD HOPPER. CONSULT FACTORY FOR ADDITIONAL DESIGN INFORMATION.

WIRELESS METERING DATA TRANSCEVERS, DCAP, AND REPEATER



NOTE: PLEASE REFER TO SPECIFIC DATA SHEETS FOR POLARITY REQUIREMENTS FOR PULSE OUTPUT WIRING.





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