



LEVITON
Applications Cookbook
BAS/BMS Integration
Version 1.1

FOR REFERENCE ONLY

BAS/BMS INTEGRATION COOKBOOK NOTES

BAS/BMS INTEGRATION POSSIBILITIES

Leviton products readily interface to Building Automation Systems (BAS) and Building Management Systems (BMS) in a variety of ways. Building integrated control provides real-time management and access to systems including lighting, HVAC, fire, security, and other advanced features. BAS/BMS are increasingly capable and sophisticated, and can be customized to meet a variety of requirements. Control and monitoring solutions should be matched to operational requirements to allow the room to adjust and expand.

What capabilities and functions can you integrate into a BAS/BMS? Possibilities include:

- Reduced energy use/minimal environmental impact
- Improved user comfort and productivity
- Real-time status of building systems
- Coordinated control of subsystems
- Integrated facilities management
- Trend and runtime reporting
- Enhanced site security

SUCCESSFUL BAS/BMS INTEGRATION

A successful BAS/BMS integration incorporates the following elements:

- Energy Management: metering, runtime reporting, load shedding
- A single interface for all systems users may need to access
- The ability to record, access, and leverage trend data
- Integration of all dissimilar systems in building
- Real-time automated monitoring and control
- Reliability and flexibility

ADVANCED BUILDING SYSTEMS

Building systems can be highly automated and fully integrated. These types of systems will include:

BUILDING MANAGEMENT

- Fire alarm monitoring and fire suppression
- Occupancy sensors and photocells
- Security access level regulation
- Asset performance monitoring
- Lighting and shade control
- Network design integration
- Air flow and air quality
- Remote control

POWER MANAGEMENT

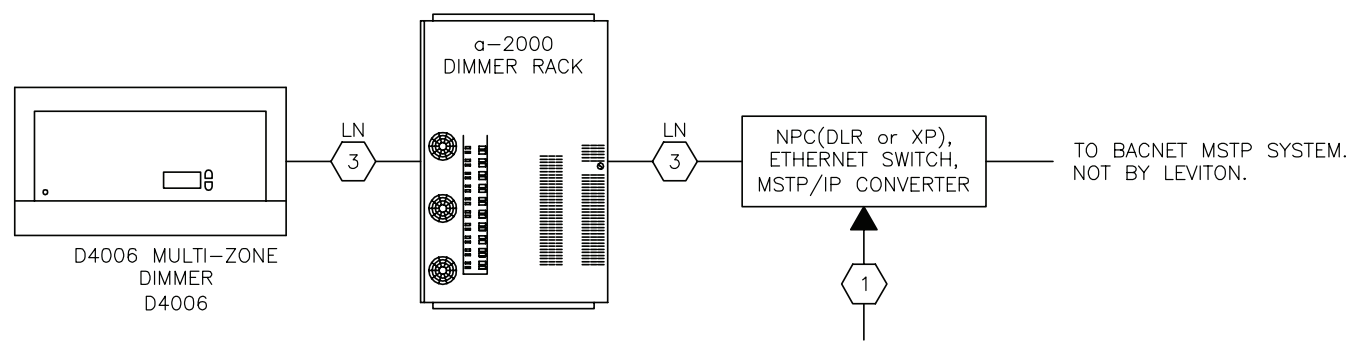
- Transient voltage surge suppression
- Data history and archiving
- Power quality monitoring
- Power usage supervision
- Switch gear management
- Site monitoring
- Site control
- Remote paging
- Load shedding

UTILITIES METERING

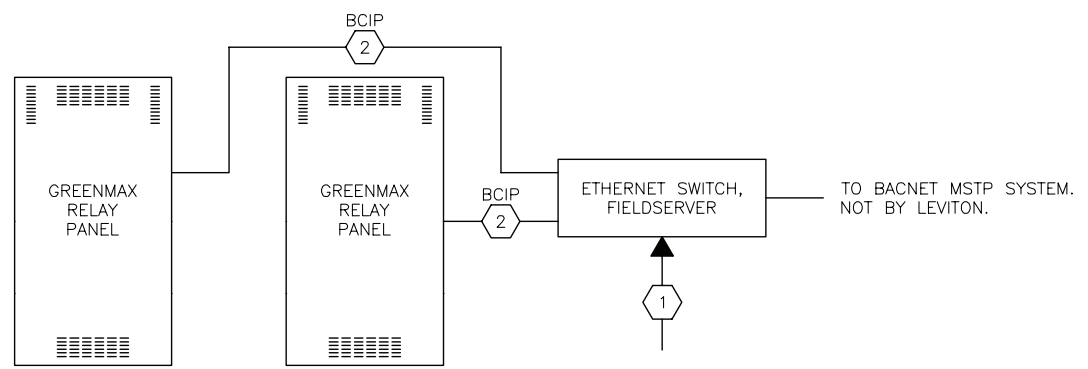
- Electricity, gas, water
- Tenant billing
- Runtime reporting

BAS/BMS INTEGRATION

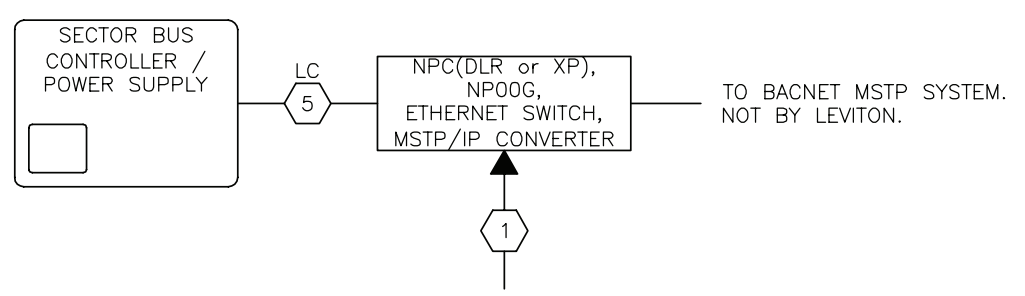
D4006 AND A-2000 CONNECTION TO BACNET MSTP



GREENMAX CONNECTION TO BACNET MSTP

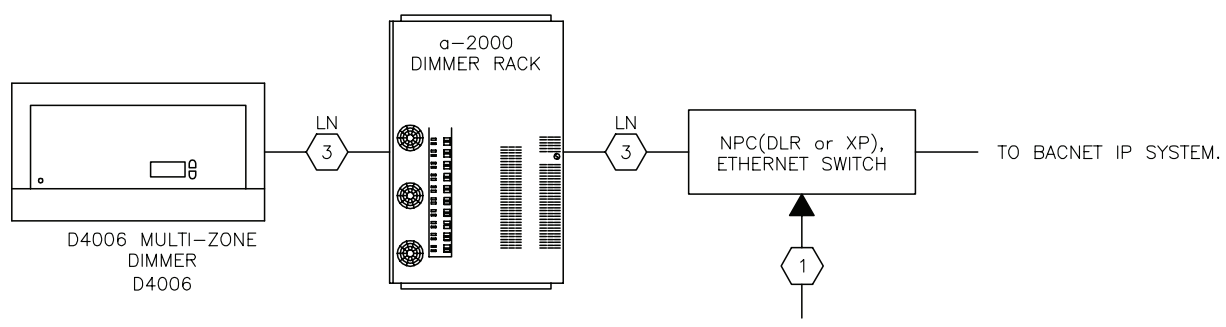


SECTOR CONNECTION TO BACNET MSTP

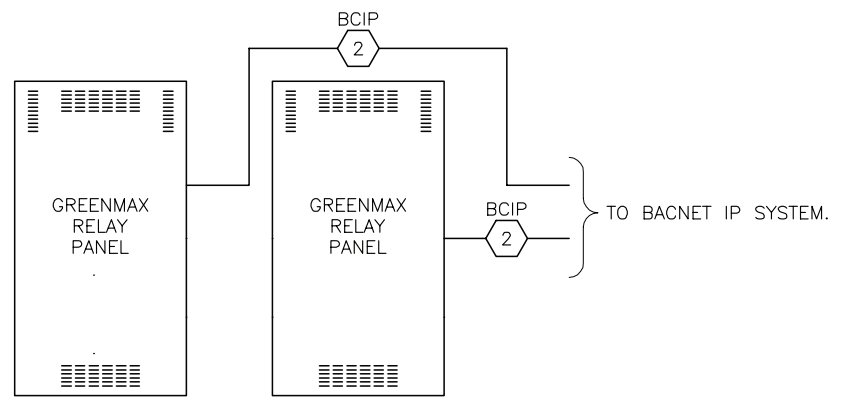


BAS/BMS INTEGRATION

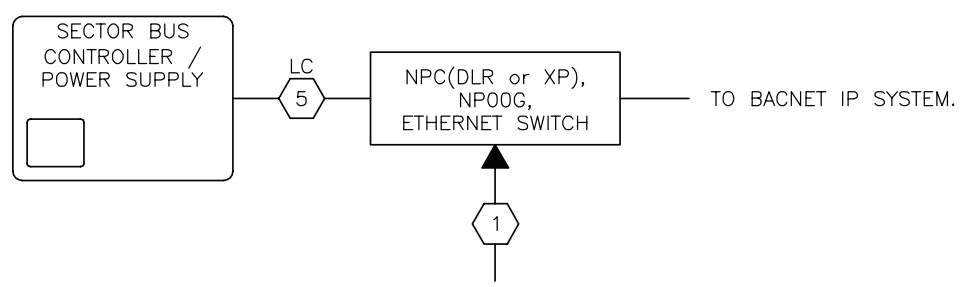
D4006 AND A-2000 CONNECTION TO BACNET IP



GREENMAX CONNECTION TO BACNET IP WITH DISTRIBUTED D4200 CONTROL

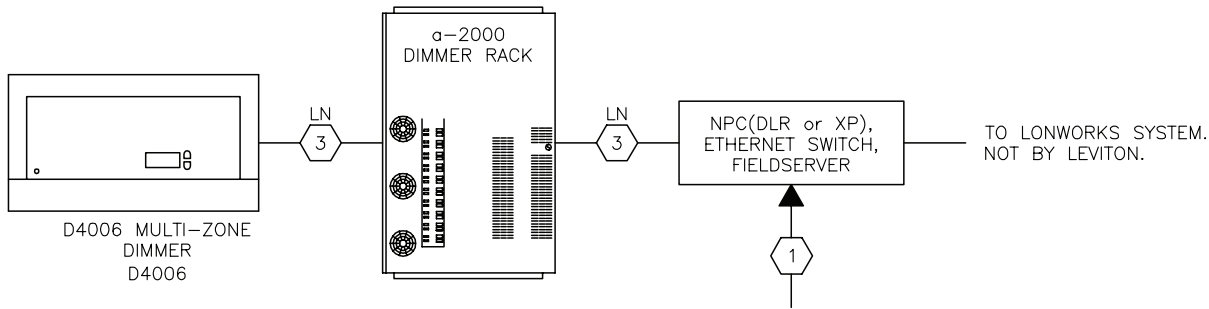


SECTOR CONNECTION TO BACNET IP

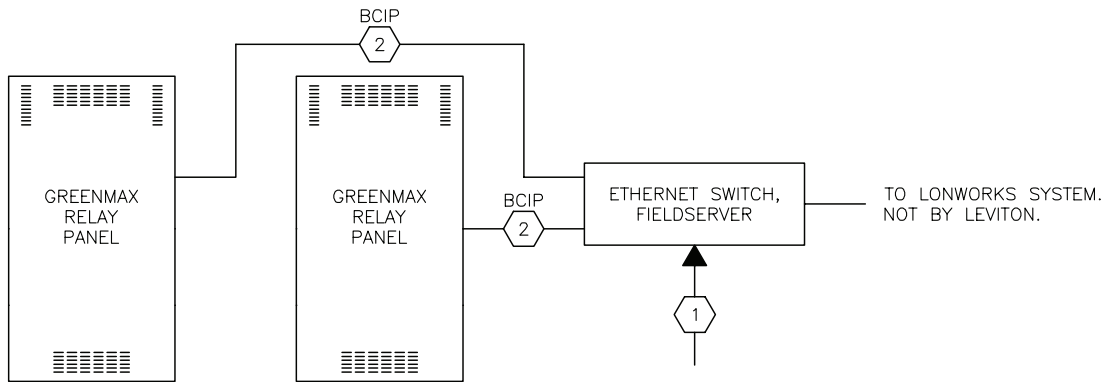


BAS/BMS INTEGRATION

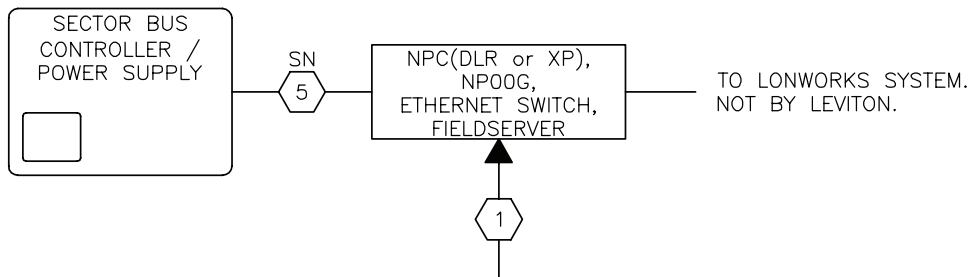
D4006 AND A-2000 CONNECTION TO LONWORKS



GREENMAX CONNECTION TO LONWORKS

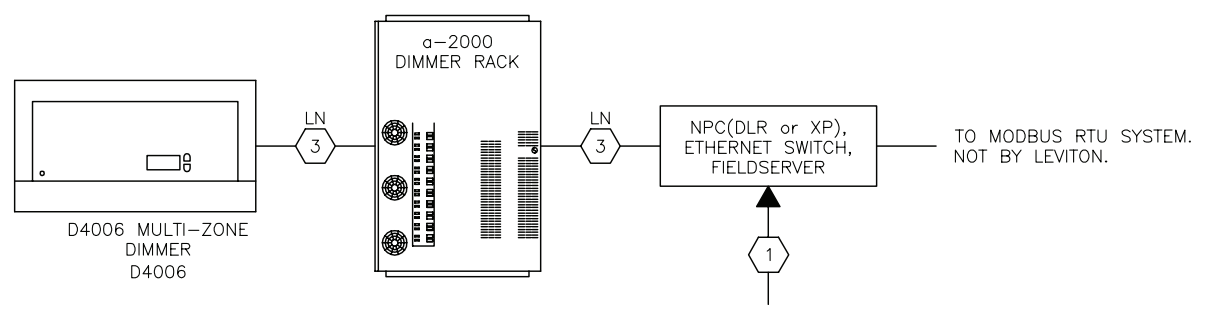


SECTOR CONNECTION TO LONWORKS

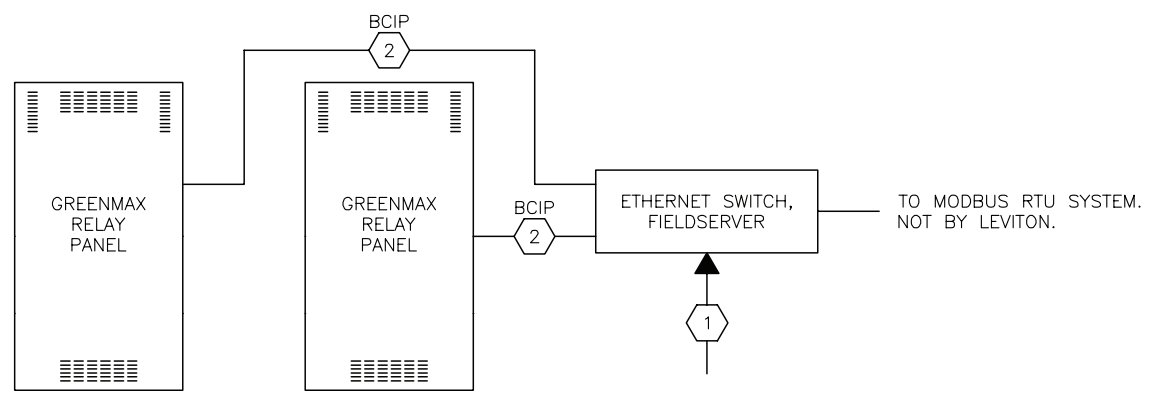


BAS/BMS INTEGRATION

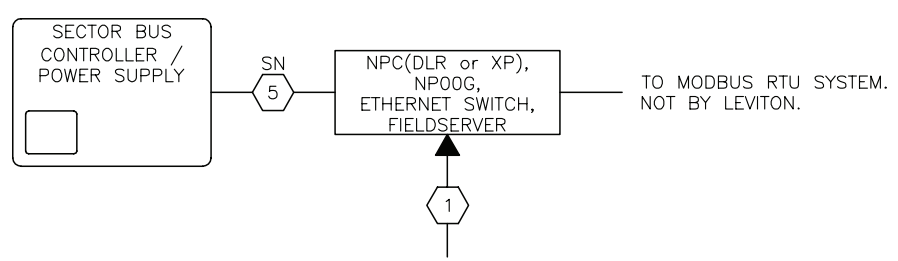
D4006 AND A-2000 CONNECTION TO MODBUS RTU



GREENMAX CONNECTION TO MODBUS RTU

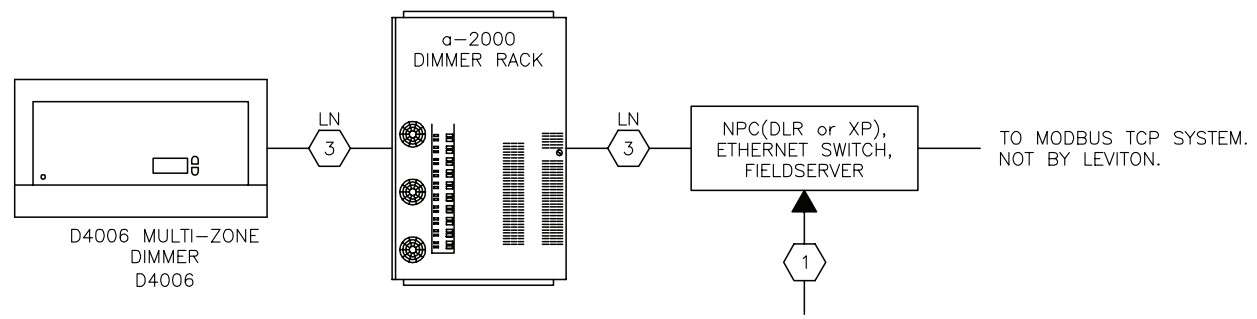


SECTOR CONNECTION TO MODBUS RTU

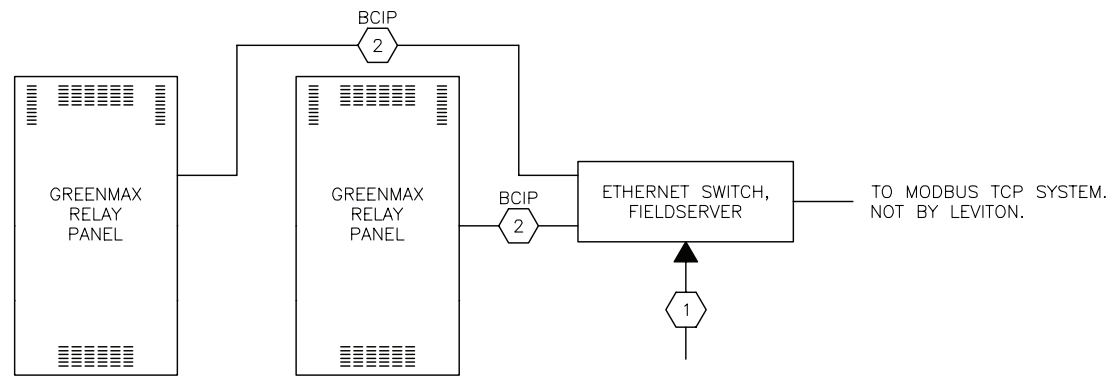


BAS/BMS INTEGRATION

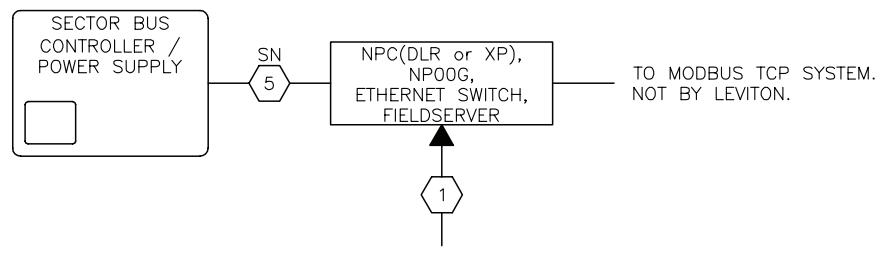
D4006 AND A-2000 CONNECTION TO MODBUS TCP



GREENMAX CONNECTION TO MODBUS TCP

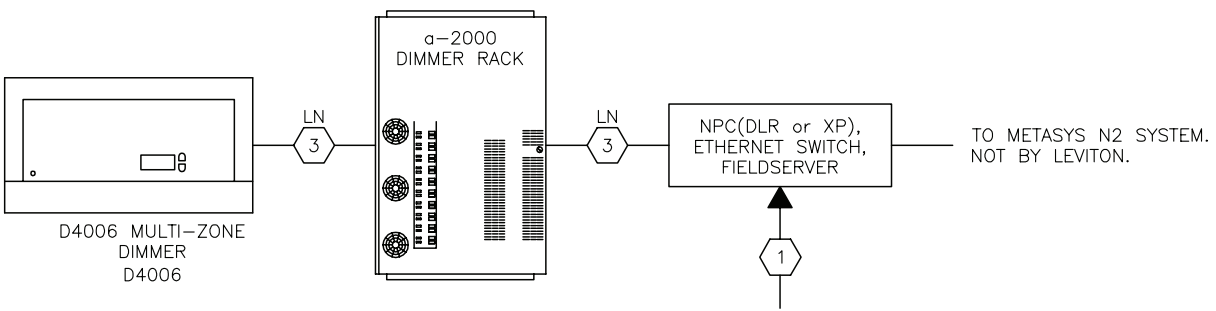


SECTOR CONNECTION TO MODBUS TCP

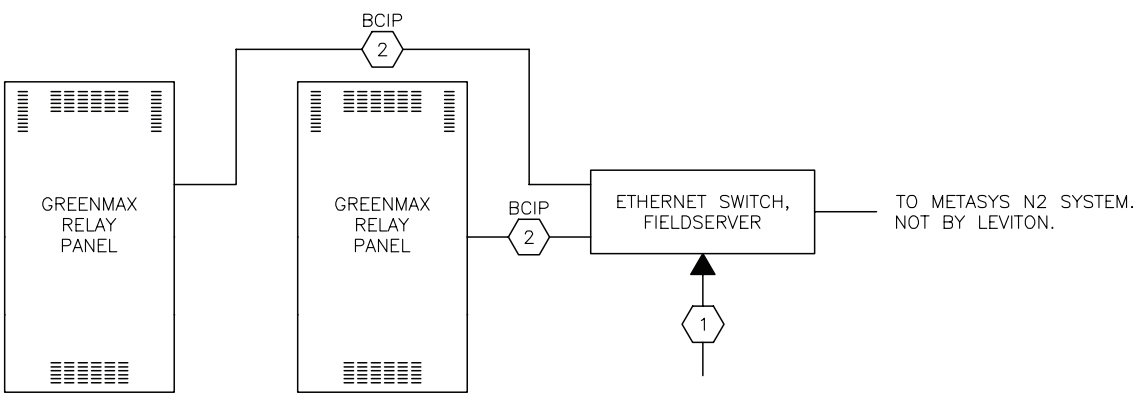


BAS/BMS INTEGRATION

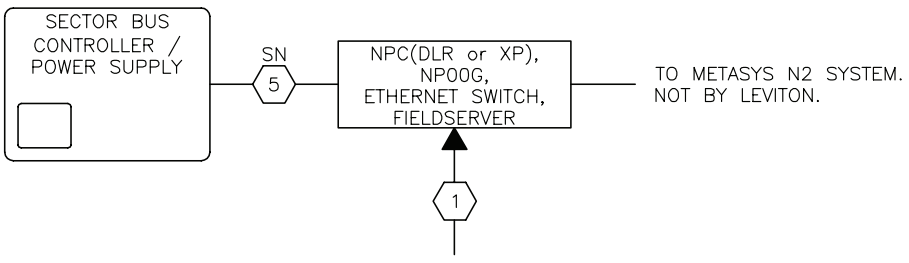
D4006 AND A-2000 CONNECTION TO METASYS N2



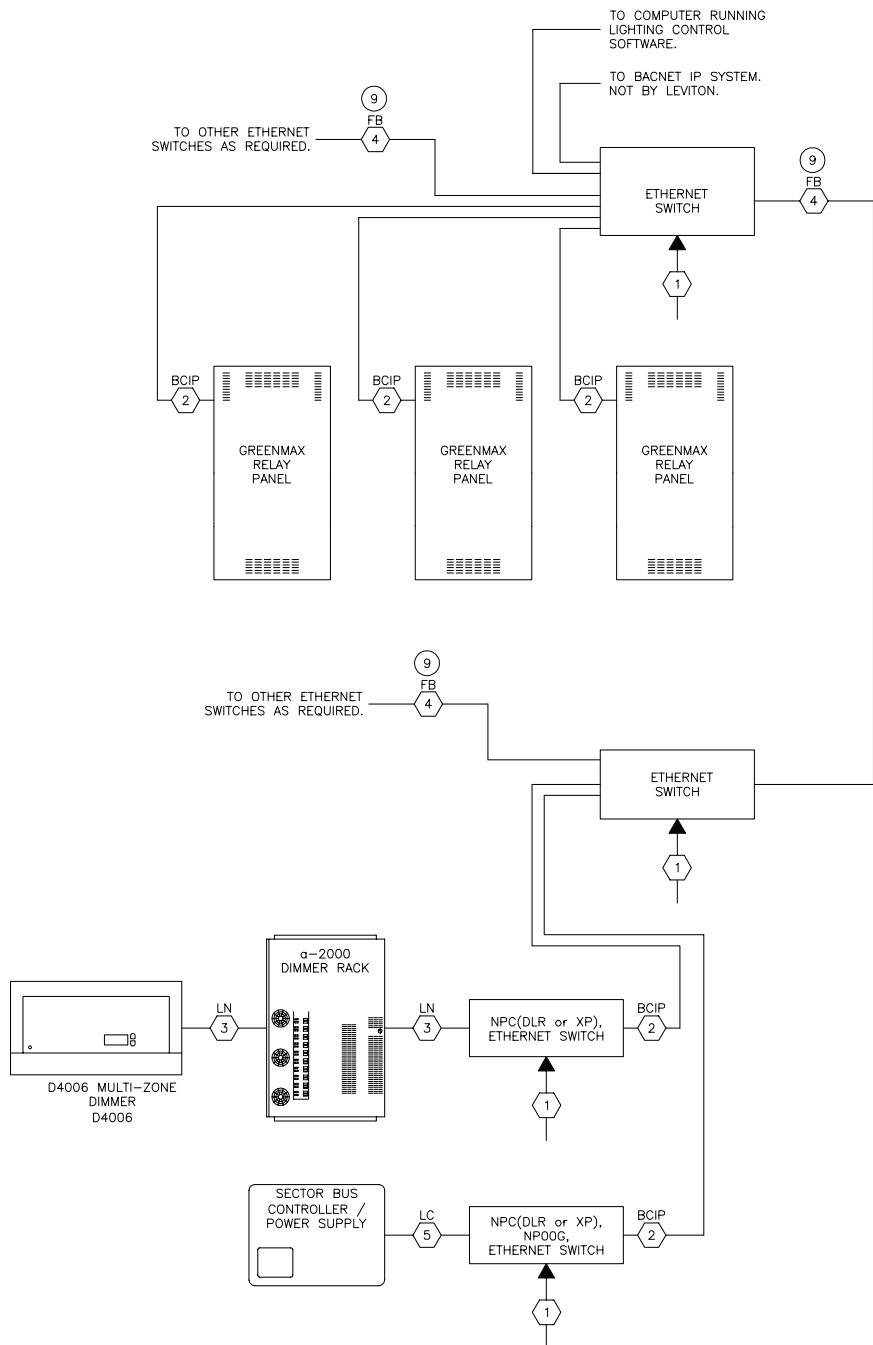
GREENMAX CONNECTION TO METASYS N2



SECTOR CONNECTION TO METASYS N2



GREENMAX® BACNET WITH MULTIPLE PROTOCOLS AND FIBER OPTIC CABLE



APPENDIX NOTES

WIRE RUNS NOT BY LEVITON

- 1 Line: 15AMP, 120-230VAC, 2 wire plus ground, direct from service panel, do not switch
- 2 (1) BACnet IP (BCIP) cable
- 3 (1) Luma-Net cable, in the presence of multiple power sources—do not interconnect +V between sources
- 4 (1) Fiber optic (FB) cable (type may be LX, FX, or SX)
- 5 (1) LumaCAN cable

NOTES (UNLESS OTHERWISE SPECIFIED)

1. All Class 2 low voltage and network wiring shall be run separate from line voltage wiring and in its own metallic conduit per NEC and best practices
2. Drawings do not indicate the number or size of conduits required, but the separation of groups of wires. Interconnecting wire and conduit are not by Leviton
3. Interface of Leviton equipment with equipment by others is the sole responsibility of the electrical or theatrical contractor
 - Leviton assumes no responsibility for the functionality of equipment by others as it relates to this system, or Leviton systems under separate contract
4. Cable runs are continuous between connected devices; no splicing allowed
5. Luma-Net “LN” Cable:
 - Total network cable runs not to exceed 2000 feet
 - Connection topology is multi-drop bus with a 0” maximum drop length (no drops permitted)
 - Sequential connection only; no branching allowed unless a Luma-Net Hub is used
6. Ethernet and/or Colornet network cable installation by certified network systems contractor only. Enhanced CAT 6 network cable run including plug-in cable(s) not to exceed 328 feet (100m).
7. Ethernet control signals routed via local IDF (Intermediate Distribution Frame) unless otherwise shown

8. Lighting networks over Ethernet:

- Require a dedicated network
- Bandwidth typically is under 10Mbps with bursts at 100Mbps and QOS cannot be guaranteed for any traffic on a shared network
- Traffic and storm controls require different configurations as traffic may be misinterpreted as a DOS attack
- Partitioned resources are acceptable as long as the lighting network special conditions can be maintained

9. Fiber optic “FN” cables:

- Actual run length to be determined by others, based on fiber cable and switch (not by Leviton)
- FX fiber optic media using 62.5um multimode is approximately 2km
- LX fiber optic media using 62.5um multimode is approximately 550m
- SX fiber optic media using 62.5um multimode is approximately 220m
- Fiber optic “FN” cable installation shall be per cable manufacturer’s recommended specifications
- Fiber optic “FN” numbering for strand identification, not for denoting strand counts in bundles

10. GreenMAX: BACnet/IP protocol is native to GreenMAX relay panels. Connect BACnet/IP via the Ethernet network port for BMS integration

11. SectorNET LumaCAN wiring notes:

- Each device that wires directly to LumaCAN is a node
- Devices are daisy-chain networked together
- 254 Bus controllers per network
- LumaCAN “LC” enhanced CAT 6 cable run including plug-in cable(s) not to exceed 1600 feet (485m).

12. All drawings and notes are for illustration purposes only, and are not intended to portray finished system designs. Contact Leviton for more details.



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