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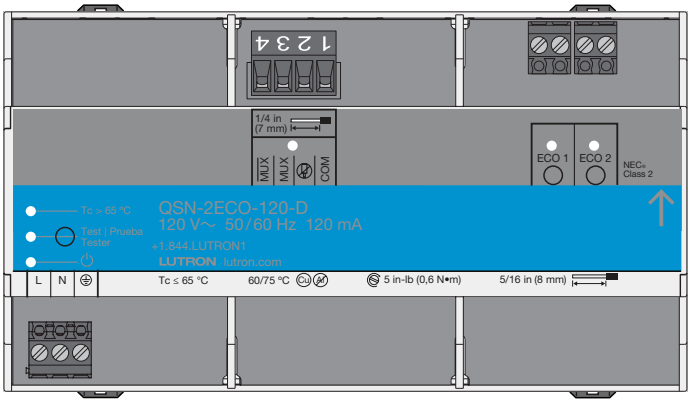
Energi Savr Node EcoSystem Power Module

The Energi Savr Node (ESN) family is a group of modular products for the control of lighting loads and motor loads.

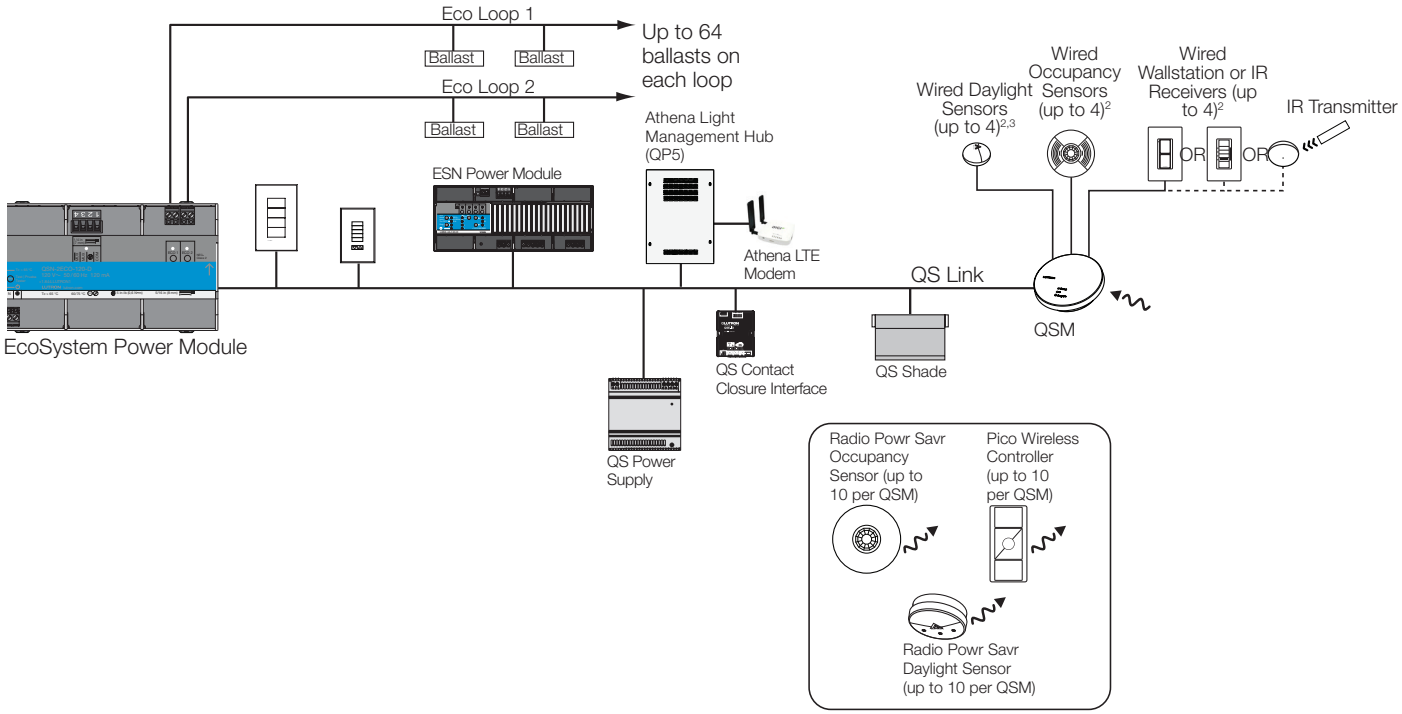
This document describes the following product:
QSN-2ECO-120-D: 2-loop ESN for control of EcoSystem-compatible ballasts, drivers and fixtures



Features

- Provides EcoSystem loop power for two loops of EcoSystem ballasts or drivers (up to 250 mA per loop).
- Power failure memory retains control unit programming in the event of a power loss.
- Includes QS Link for connection to an Athena system.
- Energi Savr Node EcoSystem Power Module can be used in an Athena system to control and manage light in an entire building.

System Example



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Specifications

Power

- 120 V~ 50/60 Hz 120 mA
- Lightning strike protection meets ANSI/IEEE standard 62.31-1980. Can withstand voltage surges of up to 6000 V~ and current surges of up to 3000 A.
- Stand by power: 7 W
- BTUs/hour when fully loaded: 24
- EcoSystem loop output: 16 V⎓ 250 mA maximum per loop.

Regulatory Approvals

- Lutron Quality Systems registered to ISO 9001.2015.
- cULus Listed
- NOM Certified
- ICES-5(B)/NMB-5(B)
- FCC Class B

Environment

- See **Mounting** section for thermal specifications.
- Room ambient temperature is between 32 ºF and 104 ºF (0 ºC and 40 ºC).
- Relative humidity: less than 90% non-condensing.
- For indoor use only.

EcoSystem

- Control up to 64 EcoSystem-compatible devices (ballast or LED drivers) per EcoSystem digital loop (up to 128 devices per Energi Savr Node EcoSystem Power Module).
- Digitally define areas and zones.
- Automatic replacement of a single failed ballast or driver.
- Simple method of replacing multiple failed ballasts or drivers.
- EcoSystem digital loop can be wired as Mains voltage or IEC PELV/NEC® Class 2 for maximum wiring flexibility. See App Note #142 (P/N 048142) on www.lutron.com for details.
- EcoSystem loop wires are polarity insensitive and topology-free.

EcoSystem Digital Loop Limits

- Up to 64 EcoSystem-compatible fluorescent ballasts and/or LED drivers per EcoSystem digital loop.
- EcoSystem-compatible fluorescent ballasts and LED drivers on the EcoSystem digital loop do not count as QS devices.

Terminals

- Mains wiring: 5 in-lb (0.6 N•m) 18 AWG to 12 AWG (1.0 mm^2 to 4.0 mm^2)
- EcoSystem loop wiring: 5 in-lb (0.6 N•m) 18 AWG to 12 AWG (1.0 mm^2 to 4.0 mm^2)
- QS Wiring: 5 in-lb (0.6 N•m) 18 AWG (1.0 mm^2)
- Minimum wire temperature rating = 149 °F (65 °C), Cu only

Programming and Compatibility Requirements

- Setup and programming of the Energi Savr Node EcoSystem Power Module is done through the Athena programming software.
- Athena software version 20.4 or higher is required.

QS Link Limits

- Each Energi Savr Node EcoSystem Power Module counts as one device toward the QS Link device limit.
- A ballast or driver counts as 1 zone toward the QS Link zone limit unless specifically grouped into zones from the Athena software.
- A maximum of 8 fully loaded EcoSystem digital loops may be connected to a single QS link.

Troubleshooting and Maintenance Features

- Maintains redundant memory of ballast programming for ease of single or multiple ballast replacement.
- To verify EcoSystem lights connected to EcoSystem loop 1 and loop 2:
  - **Enter Test Mode:** Press and hold ***Test*** button on the Energi Savr Node EcoSystem Power Module until the Test LED starts flashing.
  - **Test:** Each press of either the ***ECO 1*** or ***ECO 2*** button will cycle the lights between high-end, low-end, flash, and off for that loop.
  - **Exit Test Mode:** Press and hold ***Test*** button until Test LED stops flashing.

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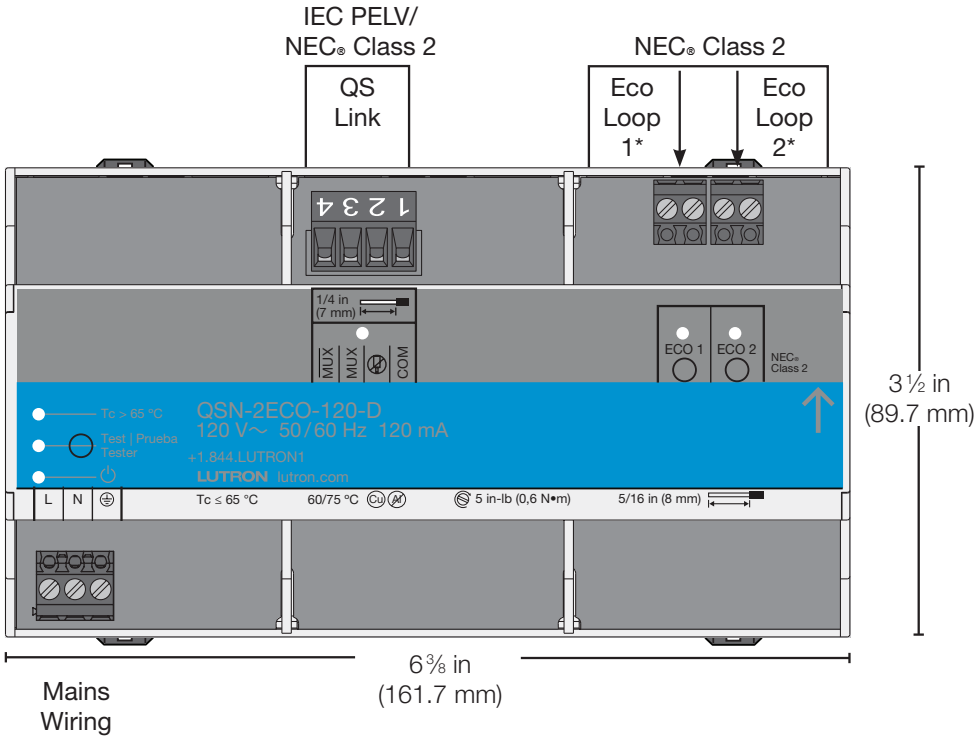
Troubleshooting and Maintenance Features *(continued)*

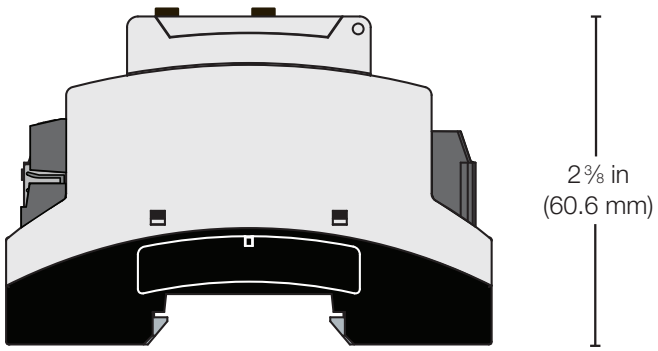
Mounting

- Mount in a Lutron DIN panel (see Lutron specification submittal 3691183 at www.lutron.com).
- Width = 9 DIN modules (6 ⅜ in or 161.7 mm).
- Mount unit in orientation shown.
- Mount to DIN rail by pressing unit onto the rail with the clips locked. To remove from rail, unlock clips using a screwdriver.
- Mount in an accessible and serviceable location.
- Mount unit such that all the conditions below are met:
  – Ambient temperature operating range (inside mounting panel): 32 ºF to 104 ºF (0 ºC to 40 ºC)
  – Calibration point maximum: 149 ºF (65 ºC)

Overview of Wiring Terminals and Mechanical Dimensions



*Wire according to local codes.



Job Name:	Model Numbers:	
Job Number:		

Wiring: Mains Voltage

Wiring from Distribution Panel to Energi Savr Node EcoSystem Power Module

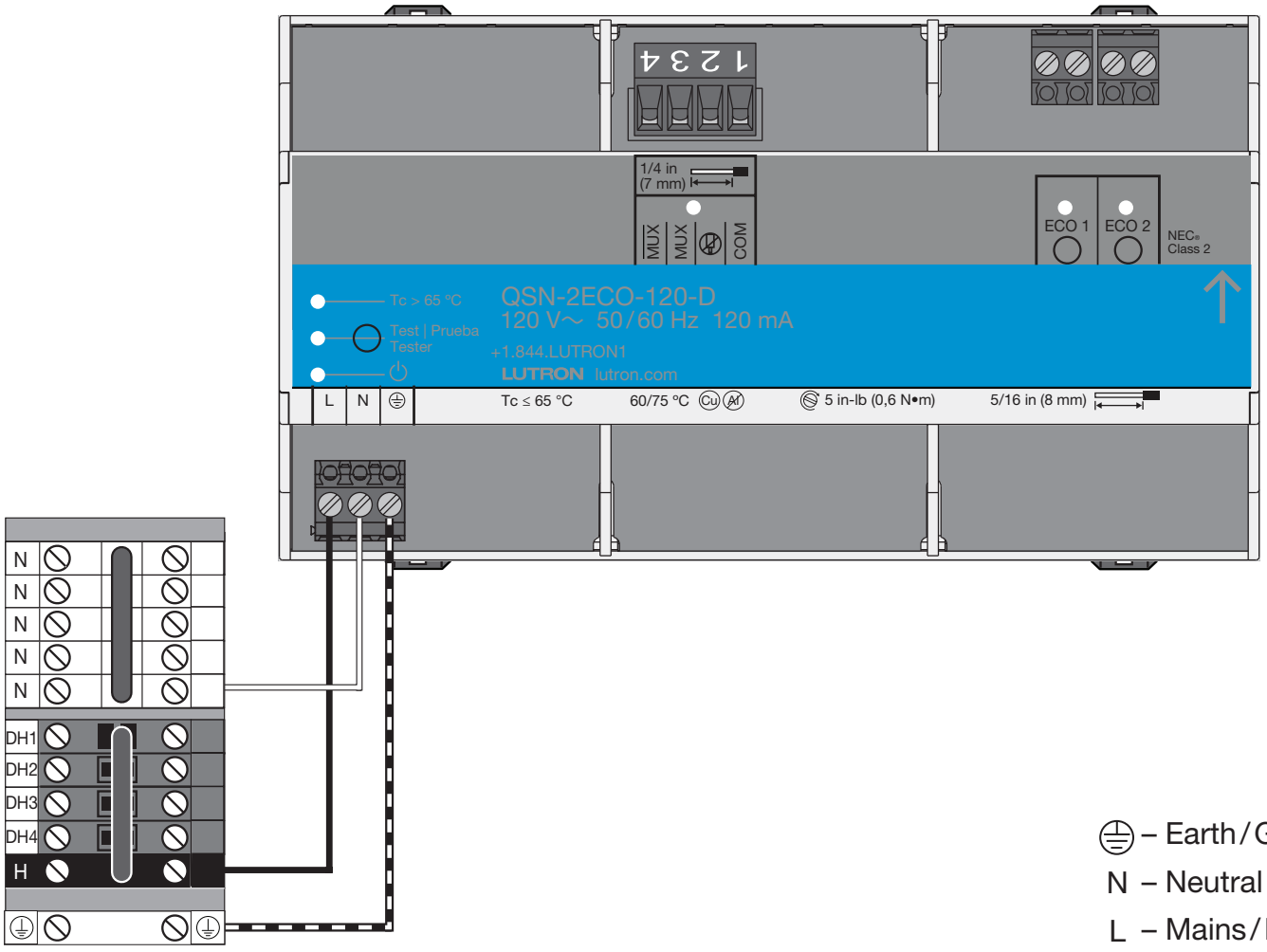
- Turn off all circuit breakers or isolators feeding the unit at the distribution panel.
- Run line, neutral, and earth/ground ⏚ wires from a feed to the Energi Savr Node EcoSystem Power Module.
- Use 18 AWG to 12 AWG (1.0 mm^2 to 4.0 mm^2) conductors (depending on breaker rating) to feed the mains wiring. The device draws less than 120 mA (120 V⁓).

Emergency Lighting Applications

- Use normal (non-essential) power only to power the Energi Savr Node EcoSystem Power Module.
- EcoSystem ballasts and drivers are programmed to enter emergency mode when the EcoSystem loop loses power.
- When normal power drops out, the Energi Savr Node EcoSystem Power Module will not power the EcoSystem loops. When this occurs, ballasts powered from emergency feeds go to their emergency mode, full light output by default.
- For UL® 924 compliance, a LUT-SHUNT must be added to each EcoSystem output of the ESN. See Lutron's Emergency Lighting Application Note #106 (P/N 048106) on www.lutron.com for details.

Mains Wiring and NEC® Class 2 Separation

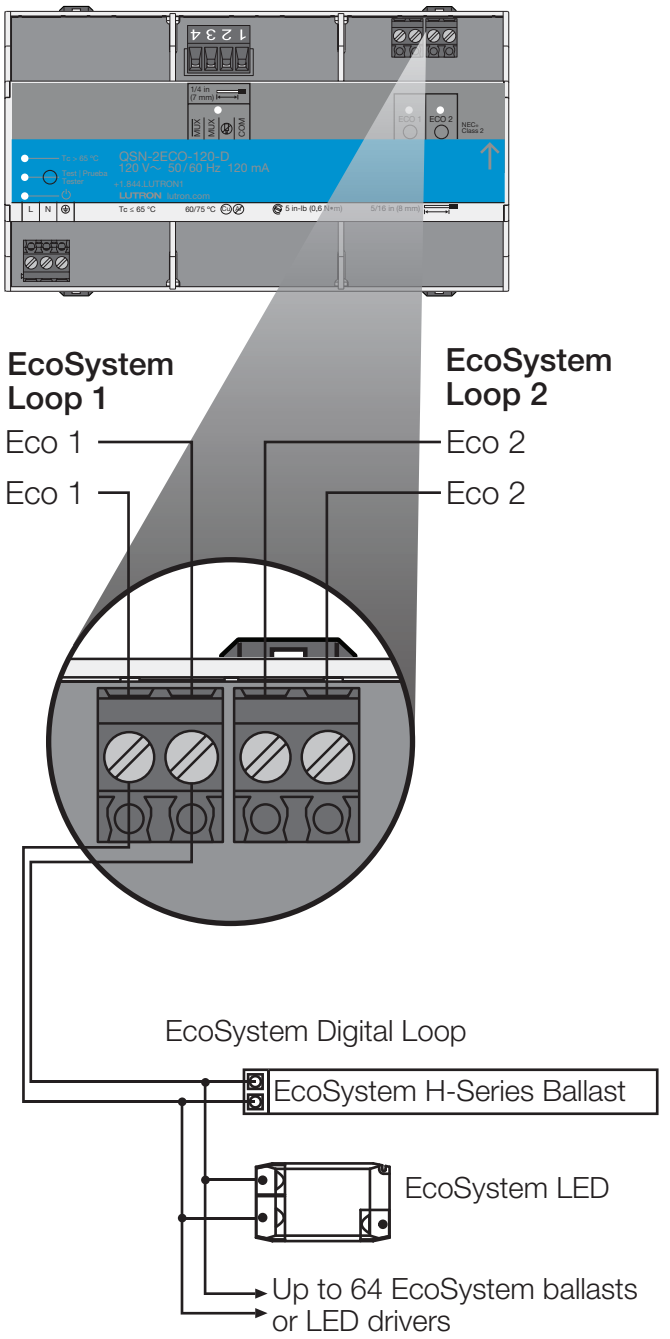
- The Energi Savr Node EcoSystem Power Module is designed to separate mains wiring from NEC® Class 2 circuits.
- Follow appropriate local and national codes to avoid violating required separation guidelines.



⏚ – Earth/Ground
N – Neutral
L – Mains/Line

Job Name:	Model Numbers:	
Job Number:		

Wiring: EcoSystem Loop



The Energi Savr Node EcoSystem Power Module will supply power for two independent EcoSystem loops, which support a maximum of 64 ballasts per loop.

Eco Wiring

- EcoSystem digital loop can be wired as Mains voltage or NEC® Class 2 for maximum wiring flexibility.
- The loop is polarity insensitive and can be wired in any topology.
- Consult all national and local electrical codes for separation requirements.

Wire Gauge	Maximum EcoSystem-compliant Loop Wire Length
12 AWG (4.0 mm²)	2200 ft (671 m)
14 AWG (2.5 mm²)	1400 ft (427 m)
16 AWG (1.5 mm²)	900 ft (275 m)
18 AWG (1.0 mm²)	570 ft (175 m)

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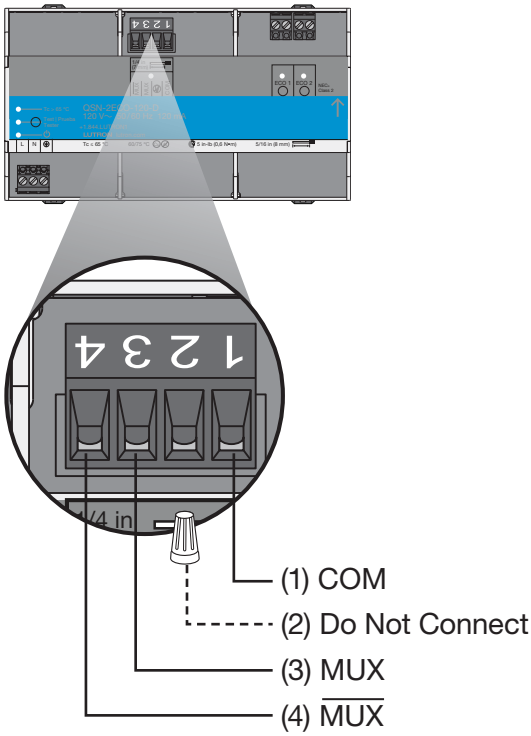
Wiring: QS Link



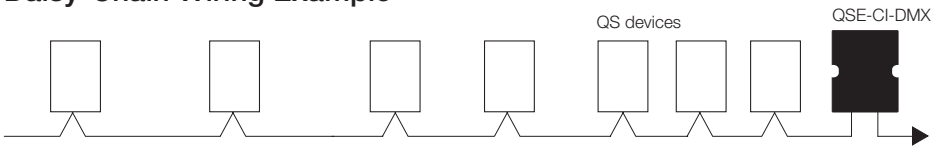
QS Link NEC® Class 2 Wiring

- Follow all applicable national and local codes for proper circuit separation and protection.
- Link communicates using NEC® Class 2 wiring.
- Device does not supply or consume PDUs.
- Wiring may be daisy-chained or T-tapped.
- Do NOT connect terminal 2.
- Optional QS link wiring harnesses sold separately, refer to Lutron specification submittal 3691183 on www.lutron.com for part numbers.

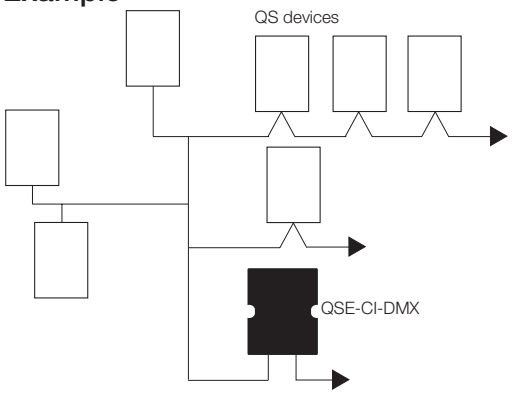
QS Link Wiring Options

Control Link Length	Wire Gauge (for terminals)	Available from Lutron in one cable:
Less than 500 ft (153 m)	Power (terminals 1 and 2): 1 pair 18 AWG (1.0 mm²)	GRX-CBL-346S (non-plenum) GRX-PCBL-346S (plenum)
	Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm²), twisted and screened	
500 ft (153 m) to 2000 ft (610 m)	Power (terminals 1 and 2): 1 pair 12 AWG (4.0 mm²)	GRX-CBL-46L (non-plenum) GRX-PCBL-46L (plenum)
	Data (terminals 3 and 4): 1 pair 22 AWG (0.5 mm²), twisted and screened	

Daisy-Chain Wiring Example



T-Tap Wiring Example



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