ZITHA TECH SPECIALTY CABLES (Pty) Ltd

Low-noise wiring units for smart buildings



Overview

Smart Building BMS Cabling Guide (2026): RS-485, KNX, Cat6/Cat6A. A procurement-friendly, engineer-approved blueprint to select RS-485, KNX/EIB, control.

Key Takeaways

Low-noise wiring in smart buildings relies on shielded, low-voltage cables and structured cabling systems to ensure reliable communication and minimal electromagnetic interference (EMI).Key Cable Types and Applications

Low-voltage cables are essential for smart building systems, typically rated for 50 volts or less, and are used for control, data, and power delivery in automation systems, lighting, HVAC, security, and audio/video networks . Common types include:

• RS-485/KNX Bus Cables: Used for field devices and decentralized control systems, these shielded cables reduce EMI and maintain signal integrity in lighting, HVAC, and access control networks .

• Cat6/Cat6A Ethernet Cables: Structured cabling for IP-based systems, supporting high-speed data, Power over Ethernet (PoE), and future bandwidth growth. Shielded variants (S/FTP) are recommended in high-interference areas .

• Fire-Resistant and Plenum-Rated Cables: Required for life safety systems and areas with strict fire codes, ensuring both safety and low-noise performance .

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• Composite Access Control Cables: Multi-conductor shielded cables for door entry and security systems, designed to resist noise and maintain reliable signal transmission .
Design and Installation Best Practices
• Shielding and Separation: Place shielded cables near high-voltage or motor-driven equipment to prevent EMI. Separate power and signal lines where possible .

• Standardization: Use consistent cable families per floor or zone to simplify maintenance, reduce commissioning time, and minimize rework .

• Future-Proofing: Plan for additional capacity, as smart buildings often require 2–3 times more cabling than initially estimated. Consider PoE growth and potential system expansions .

• Testing and Certification: Every cable run should be tested and certified to ensure performance, reliability, and compliance with TIA/EIA standards .

• Documentation: Maintain detailed records of cable routes, terminations, and connections to facilitate troubleshooting and future upgrades .
Advantages of Low-Noise Wiring
• Reliable Communication: Shielded and properly installed cables reduce signal loss and interference, ensuring smooth operation of building automation systems .

• Energy Efficiency: Optimized cabling supports efficient power delivery for PoE devices and lighting controls .

• Scalability and Longevity: Structured, low-noise wiring allows for easy integration of new devices and technologies without major infrastructure changes . By selecting shielded, low-voltage, and fire-rated cables, and following best practices for installation and documentation, smart buildings can achieve robust, low-noise connectivity that supports automation, energy efficiency, and long-term operational reliability.

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