CHIPKIN

Case Study

Lutron Grafik 7000 Lighting Integration with BACnet IP BMS
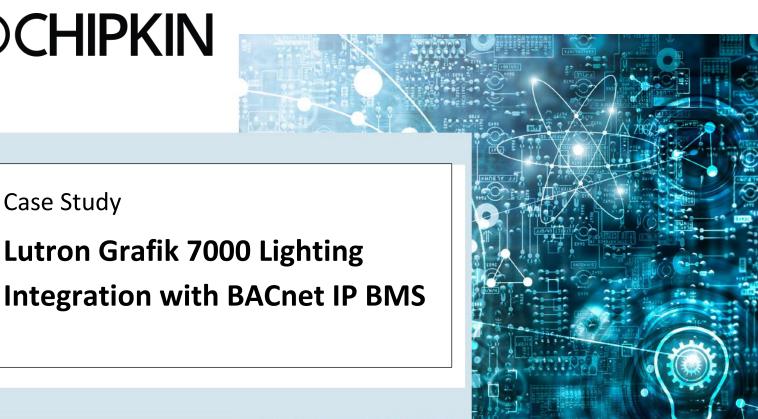
Overview

This case study involves a client who was looking for a solution on how to integrate their lighting control system with their Building Management System (BMS).

The primary goal was to enable seamless communication between the BMS and the Grafik 7000 lighting system, more specifically, the client aimed to push on/off and dimming commands from their BMS to control the lights across their building. This allowed them to centralize control and automation of lighting across different rooms and areas of the building thus leading to energy savings.

Integration between the BMS and the Grafik 7000 System required and interface between BACnet IP (BMS Protocol) and Lutron (Grafik 7000 System Protocol).

Challenges and Solutions

In Servicing this project, Chipkin worked with the client to overcome the following unique challenges with custom tailored solutions for successful system integration.

1. **Baud Rate Mismatch:** The FieldServer Quickserver device is factory-set to a baud rate of 9600 which did not align with the fixed baud rate of the client's panel 38400. Chipkin had to adapt our device to operate at the client's baud rate which required innovative adjustments.

2. **Wiring Noise Interference:** The client's wiring to the gateway introduced noise, disrupting data transmission. To overcome this issue, Chipkin recommended implementing a terminating resistor which mitigated this interference and ensured reliable communication.

3. **Data Formatting Limitations:** Writing points from the BMS to our FS device posed challenges due to limited point range support. We had to reformat the data from Multistates to Analog Output (AO) to accommodate the required range (0-16).

4. **Legacy Protocol Complexity:** Dealing with an outdated protocol, compounded by retired driver developers, presented unique hurdles. Generating connection parameter reports and understanding the panel's workings required extensive research and collaboration.

5. **Verification and Diagnosis:** Verifying connection parameters proved challenging, necessitating the use of RealTerm software. Direct connection of the panel to the client's PC via a USB to RS232/485 cable revealed transmission issues, ultimately aiding in diagnosing wiring noise problems.

Closing Remarks

The successful integration between the Building Management System (BMS) and the Grafik 7000 lighting system demonstrates the power of innovative solutions and collaboration. Despite facing numerous challenges, Chipkin provided tailored solutions to ensure seamless communication and data integrity. By overcoming these obstacles, the client achieved their goal of centralizing control and automation of lighting, leading to significant energy savings and enhancing overall building efficiency. This case study underscores the importance of adaptability, problem-solving skills, and effective communication in delivering successful integration projects.

With the above solutions to the challanges, the integration was successfully completed, earning Chipkin a happy client.

> **As a comment, the client provided Chipkin with the following kind words:**
>
> "Thanks a lot, and really appreciate your extreme effort to solve this issue.
>
> We tested the different point on BACnet explorer and it's working fine. Let us configure all point on Niagara based workstation and will update you later.
>
> Once again thank you for your time and commitment in this matter."