CASE STUDY: DALI Bus Interface Device

We were approached by a US-based start-up focused on lighting networking and controls to provide responsive, energy-efficient lighting in large scale commercial environments.

With lighting contributing to over 25% of commercial property utility costs, our Customer was looking to introduce networked lighting systems that utilized occupancy and ambient light sensors to communicate with their dimmable, networkable ballasts to control both fluorescent and LED lighting. The goal was to provide just the right amount of light when and where needed, thereby promising significant energy cost reductions.

One of their design goals was the simplification of ballast control design, including a reduction of the number of SKUs they would have to bring to market.

To this end, they wanted SSO to provide a device that would support the DALI communication protocol and a 1-10V dimmer in one package. Our components would be assembled into the control circuitry of their ballasts.

These are 2 distinctly different types of devices, each with their own technical requirements. Although ultimately integrated into 1 package, the discussion of these requirements and our responses are discussed in 2 separate case studies.

1-DALI Bus Interface Device (discussed herein)
2-Optically Isolated Linear Current Coupler (1-10V interface device)
Please see: From Our Lab Optically Isolated Linear Current Coupler / 1-10V Interface Device

TECHNICAL REQUIREMENTS:

- Bi-directional wiring of DALI Bus
- High input to output isolation (2500Vrms MIN)
- Meets all DALI specifications
- No external components required
- Sink Current 250mA
- Low control current -1.2mA Typical
- Built-in DALI input thresholds
- 1200 Bits per second transmission rate

TECHNICAL REQUIREMENTS, CONT'D:

To assist our work, since Customer was still in product development, we obtained 3 types of ballasts as shown below;

Image 1: Sylvania Ballast with DALI Interface

Image 2: Close-up. Sylvania Ballast with DALI Interface

Image 3: OSRAM Ballast with DALI Interface

Image 4: Close-up. OSRAM Ballast with DALI Interface

Image 5: OSRAM Ballast with 1-10V Interface

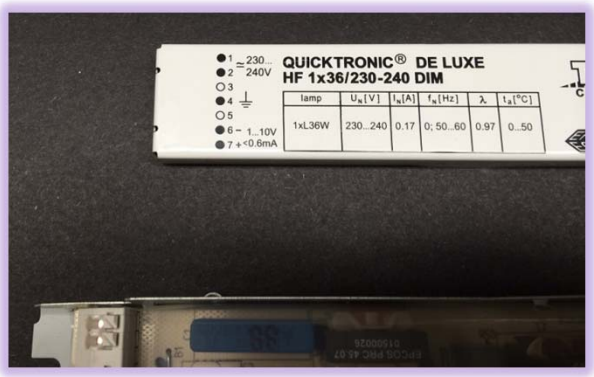


Image 6: Close-up. OSRAM Ballast with 1-10V Interface

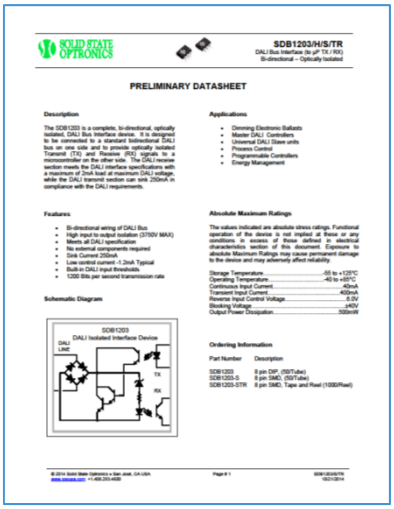
SSO SOLUTION:

Our engineers worked closely with our Customer to define their requirements and articulate our path to meet these.

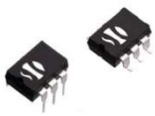
We agreed that we would offer;

SDB1203:

a DALI Bus Interface Device


SDB1203/H/S/TR

PRELIMINARY DATASHEET



SDC1203:

Integration of the SDB1203 and the Optically Isolated Linear Current Coupler (SDA1203) in one device


SDC1203/TR

PRELIMINARY DATASHEET

Offered in a 6 pin DIP/SMD the SDB1203 was a complete, bi-directional, optically isolated, DALI Bus Interface device. It was designed to be connected to a standard bidirectional DALI bus on one side and to provide optically isolated Transmit (TX) and Receive (RX) signals to a microcontroller on the other side. The DALI receive section meet the DALI interface specifications with a maximum of 2mA load at maximum DALI voltage, while the DALI transmit section could sink 250mA in compliance with the DALI requirements.

The SDC1203 combined a DALI Bus interface with an Isolated Linear Current Coupler in a miniature 16 pin SOIC package—providing high function integration and significant board space savings. It was designed specifically for dimmable ballasts that use the DALI protocol.

Outcome:

Devices were built and functioning prototypes were delivered to the Customer. While we were able to meet their technical and market requirements, facing much larger, well-entrenched competition, the Customer was unable to gain sufficient market acceptance and eventually exited this market space.

Want to learn more?

Are you looking to implement a DALI solution and would like the simplicity of a single chip solution that meets DALI specifications?

If you'd like to talk to an Engineer and learn more details about this case study, or have other questions and want to know if SSO can help, just let us know.

With over 30 years of technical expertise, we likely have a solution for you.