

CASE STUDY:

Optically Isolated Linear Current Coupler / 1-10V 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-Optically Isolated Linear Current Coupler / 1-10V interface device (discussed herein)

2-DALI Bus Interface Device

Please see; [From Our Lab DALI Bus Interface Device](#)

TECHNICAL REQUIREMENTS:

- High Transfer Linearity
- Low input / output control currents
- High input to output isolation (2500Vrms MIN)
- Accurate transfer gain (CTR)
- Wide input and power supply voltage ranges
- Low isolated power supply current
- Fast response
- Low distortion

TECHNICAL REQUIREMENTS, CONT'D:

To assist our work, since Customer was still in product development, we obtained 2 types of ballasts as shown below;



Image 1: OSRAM Ballast with 1-10V Interface



Image 2: Close-up. OSRAM Ballast with 1-10V Interface



Image 3: OSRAM Ballast with DALI Interface



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

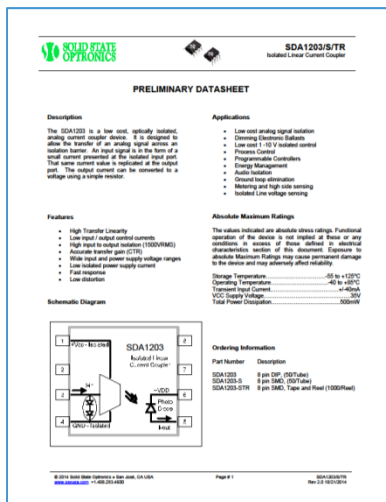
SSO SOLUTION:

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

We agreed that we would offer;

SDA1203:

an Optically Isolated Linear Current Coupler / 1-10V Interface Device



Offered in an 8 pin DIP/SMD package, the SDA1203 was designed to allow the transfer of an analog signal across an isolation barrier by replicating a current presented at the isolated input port of the device at the output across a 2500 Vrms MIN isolation barrier. The output current could be varied by changing the input current, and could be converted to a voltage by using a simple resistor.

SDC1203:

Integration of the SDA1203 and DALI Bus Interface Device (SDB1203) in one device



The SDC1203 combined a DALI Bus interface with an Isolated Linear Current Coupler / 1-10V Interface Device 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?

Have you been considering a single, Optically Isolated Linear Current Coupler in your dimmer application?

Do you like the simplicity of a 1 chip, 1-10V Interface Device?

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.