

Radio Bridge

Designing Flexible, Long-Range Wireless IoT Sensors with Maxim Analog ICs



Radio Bridge's long-range, low-cost wireless sensor solutions are ideal for the home security, smart city, medical device, and industrial automation industries.

Challenge

- IoT sensors require low-current power management ICs
- Need to achieve fast time-to-market to meet customer demands

Solution

- **MAX31856**
- **MAX22191**
- Various other Maxim analog and power management ICs

Benefits

- 90% lower power
- 20% extended battery life
- 50% smaller solution size
- Nearly one month saved in development cycle

Headquartered in Minneapolis, Minnesota, **Radio Bridge, Inc.** designs and manufactures long-range **wireless sensors** for internet of things (IoT) applications using emerging low-power wide-area network (LPWAN) wireless standards including LoRaWAN, Sigfox, and NB-IoT. The company is making its mark with products that are low in cost and have extended battery life. What also distinguishes Radio Bridge from other sensor companies is its open architecture. Using its optional web-based device management console, designers can remotely provision, monitor, and configure the sensors in the field. Designers can also turn to the company for customization of the sensors for their end applications.

Remote sensor configuration unleashes the efficiency benefits of the IoT, eliminating the need for field crews to fan out at various locations to gather data or make adjustments. The company's open architecture approach allows it to partner with gateway providers, integrators, and cloud solution providers. "Our goal is to be the leader in LPWAN sensors, and to focus on being the best sensor company in the industry," said Steve Kilts, co-founder and CEO of Radio Bridge.

CUSTOMER SUCCESS STORY: RADIO BRIDGE



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- Steve Kilts, CEO, Radio Bridge

Challenges

Radio Bridge’s sensors include products for sensing proximity, temperature, movement, and the presence of liquids, as well as wireless air sensors, wireless pushbuttons, and wireless industrial sensors. To develop these solutions, the company needs components that are low power and also meet stringent performance specifications. Fast time-to-market is also an important consideration. Most of its sensor customers, especially those with higher volume applications, want more custom features, which adds to the complexity of the verification and manufacturing processes. The company strives to quickly deliver high-quality custom components, so it’s important to work with IC vendors who can support these goals.

Solution and Benefits

With its technical specifications and time-to-market considerations in mind, Radio Bridge established a relationship with Maxim as it began seeking components for new outdoor/industrial versions of its sensors. The company selected a variety of Maxim analog ICs.

The switching power supply selected uses 90% less current in sleep mode than competitive technologies, which, in turn, increases battery life by more than a year. The 4-20mA circuitry is about one-third the size of competitive products, and an RS-485 solution is about half the size. This size reduction allows the entire product to fit into a smaller package. The **MAX31856** thermocouple interface is much more advanced than other solutions and has taken significant time out of the design cycle, allowing that product to get to market more quickly. The company is also using the MAX22191 IEC 61131-2 compliant industrial digital input device, which translates a 24V digital industrial input to a 2.4mA (typical) current for driving optical isolators.

“What’s cool about Maxim is you tend to have very specialized components, so when we’re looking for certain types of features at a certain price point, Maxim is usually one of the best options,” Kilts said. “Maxim has also done a lot to make components available, which makes it way easier to design. And since we do a lot of customization, it’s good to partner with a company like Maxim.”

Radio Bridge initially evaluated the company’s power components. “Maxim has very low power devices, which is really important when you’re doing sensor design,” Kilts noted. The relationship grew from there, enhanced by support from the Maxim applications engineer. “In the IoT space, things are moving very quickly and you need to react quickly. Working with the Maxim team allowed us to accelerate things and, in aggregate, get ahead of schedule by nearly a month.”

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