Miniaturized Data Diode Technology

The Internet of Things (IoT) is enabled by the connectivity of millions, and eventually billions, of devices and systems to allow information to be shared and used across them, as well as aggregated and analyzed by end-users. These devices could be industrial and manufacturing sensors or actuators, medical and healthcare equipment, smart meters, automobile control systems, robotic systems, smart printers and the list continues. However, as is typical in the IT space, the creation of new connections to these devices is far outpacing their security.

To meet this growing cybersecurity need, Owl has developed and patented a series of miniature data diodes – the world’s smallest ever built – capable of being embedded or collocated within connected devices to enforce one-way-only communication. This new patent (US9305189) again demonstrates Owl’s leading edge advancements in cybersecurity technology.

- World’s smallest complete data diodes, as small as a US quarter
- Capable of being embedded in small connected devices
- Protects IoT devices without disrupting data transmission and collection

The Owl Solution

Owl’s patented miniature solution includes the core data diode technology plus embedded servers to manage connectivity to each network segment, all in something the size of a quarter. It provides OEM system and device designers with hardware-enforced cybersecurity technology to segment and protect small devices from external cyber threats while allowing the communication of important data between the device and an outside data collection point.
One-Way in a Two-Way World

IoT devices are connected via many different protocols such as hardwire Ethernet, wireless Ethernet, USB, Bluetooth, serial and many other connection types. To accommodate the “handshakes” and confirmations required in two-way protocols, data diodes employ proxies on each side of the one-way connection. These proxies are run on CPUs flanking the dual diode hardware, all of which fits on a device in the space of a quarter.

Data diodes are used to separate or segment connected devices and networks from the outside world and yet still allows them to share information. Network segmentation with one-way data diode communications is a proven, recommended (and in some industries, required) method to reduce network attack surfaces, create a defendable environment, and implement secure remote monitoring.

Until now, network segments were typically defined as larger entities like power plants, data centers, substations, or large databases. Now as small as a quarter, this new technology will enable “micro-segments,” for smaller devices such as a single digital controller on a turbine, the control systems in a crane at construction site, a car going down the highway, or even an implanted medical device, such as a pacemaker.