

# DATA DIODES PROTECT

## Critical Infrastructure



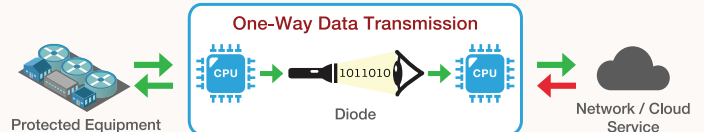
### What are data diodes?

This class of cybersecurity hardware is used to protect industrial control systems and other infrastructure by only allowing data to flow in one direction. Hackers cannot penetrate the network connection remotely. Once reserved for extremely critical applications, like protection of nuclear power plants, this technology's cost and complexity have decreased significantly in recent years. Diodes now present a practical choice for industrial and utility cybersecurity.



### How do data diodes work?

Data diodes send data in only one direction using a beam of light. All inbound traffic is stopped by the diode because the hardware does not provide a light to shine in the reverse. Data diodes provide connectivity to the Industrial Internet of Things and the security of an "air gap." Operators can transmit equipment status without any possible way for hackers to control industrial equipment, inject ransomware, or use legacy systems as a backdoor to business information systems.



### Who uses data diodes?

Data diodes are becoming increasingly rugged and affordable, expanding their uses. Current applications include protection of:



Energy  
Production  
Facilities



Intelligence  
Community  
Operations



Military  
Systems



Water  
Utilities

#### Business Operations

Secure database  
backup/historian

#### Industrial Facility

Connect OT and IT (SCADA  
and business systems)

#### Diode Uses

#### Customers

Protect sensors  
and smart meters

#### Remote Equipment

Performance monitoring

### Diodes vs. Firewalls



Hackers have access to rentable botnets, unlimited cloud computing, and artificial intelligence. Some malicious code is going to get through traditional defenses, like software and firewalls, before patches and updates are issued.



### Diode use by utilities

Multiple utilities use data diodes to protect their infrastructure today. An East Coast water utility installed several diodes in 2016 to send data from locally-controlled, self-contained SCADA systems to business networks. These diodes keep the historical data flowing for regulatory and engineering purposes. "They're an important tool in building a secure system," says the security manager.

Capability/Feature	Firewalls	Data Diodes
Protects without needing patch management	X	✓
Keeps all inbound traffic out	X	✓
Connects to network or cloud	✓	✓
Suitable for two-way control of equipment	✓	X
Ideal for remote monitoring	X	✓
Best for securely bridging IT and OT networks	X	✓



### Benefits of remote monitoring

Today's internet was designed around two-way communication. This setup inherently introduces cybersecurity vulnerabilities even when a truly one-way function, like equipment monitoring, is desired. Data diodes enable secure access to online monitoring and predictive analytics, allowing:



Increased  
Efficiency



Decreased  
Unexpected Downtime



Increased  
Staff Productivity



### Why Fend?

Fend makes robust, affordable data diodes to protect industry, utilities, critical infrastructure, and our modern way of life.

Fend's products are:

- Made in the USA
- Designed for harsh environments
- Built for years of continuous operation



Learn more at [www.fend.tech](http://www.fend.tech) or write [info@fend.tech](mailto:info@fend.tech).