FEND®

Physically Block Cyberattacks

-2018-
DOE SBIR
WINNER

Why Fend?

Fend protects you from cyberattack by providing physical network segmentation for critical infrastructure. Fend's products are:

- Made in the USA
- Sold with all protocols and software included, no extra licenses required
- Compatible with our optional Fend Cloud service

Tested by
US Army TSMO • Intertek
National Cyber Range
US Navy CSTB • GSA
USACE ERDC-CERL
SERDP-ESTCP

Fend Product Advantages

Fend Hardware

- Transmit data in a physically-enforced, one-way fashion.
- Send files between segmented networks using FTP and TCP/IP
- Stream industrial Modbus or BACnet data
- Convert legacy industrial data to modern JSON formats
- Connect to equipment without external servers or software
- Send data via Ethernet, serial RS485, or cellular.

Fend Cloud

- Obtain data feeds previously out of reach due to cybersecurity concerns
- Rapidly bring equipment into the industrial IoT
- Send data securely to Fend's cloud-based platform
- Monitor the status of your diodes remotely via Fend's web-based app
- Connect with third-party analytics providers using Fend's API

Codes

DUNS: 080992384 • CAGE: 80LY7 • NAICS: 541715, 334210 • RISE OTA Member

Ready to protect your infrastructure with Fend?

Learn more at www.fend.tech or write info@fend.tech

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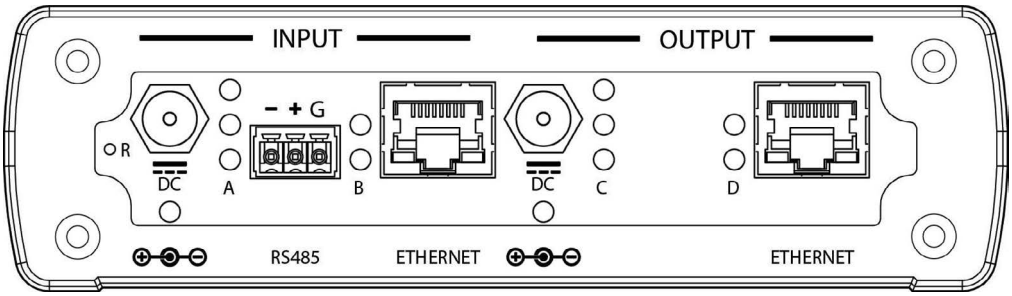
TECHNICAL INFORMATION

Fend Diode XE15

Fend's patented hardware was designed from the ground up for industrial and rugged applications needing an affordable, stable, easy-to-use solution that physically keeps attackers away from protected networks and equipment. The following table describes Fend's diode design specifications:

Specifications (Model FD-15M-SE1-XE2-B4 / Ethernet)



Maximum data throughput[1]	15.0 Mbps
Dimensions (L x W x H), inches	5.1 x 5.8 x 1.6
Operating voltage	12-48VDC, 1.5A max
Provided power supply(s)	100-240VAC 1.0A in, 12VDC 1.5A out[2]
Diode power consumption (max)	4.0 W
Design operating temperature range	-30C to +85C
Designed and manufactured	USA
Connections:	
Inputs	DC Barrel Connector (optional screw-in secure connector)
	Ethernet RJ-45
	Serial RS-422/485 Combicon MC connector
Outputs	DC Barrel Connector (optional screw-in secure connector)
	Ethernet RJ-45
Protocols supported:[3]	FTP/FTPS[4]
	TCP/IP
	Modbus Serial, Modbus TCP
	BACnet-MSTP, BACnet-IP
	LON-IP
	MQTT (Fend Cloud on AWS)[5]

Additional Features:

- Denial of service (DOS) protection
- Anti-Tamper protection
- Power loss / fluctuation protection
- Factory or field configurable
- Optional secure hosting of data in AWS cloud
- ETL Listed (US, EU, Canada)
- CE, RoHS
- Full optical isolation with independent grounding of each side of the diode

1 Data throughput may vary based on protocol and application

2 Customer can provide their own power supply as long as the output meets the input ratings of the diode. The Fend Data Diode is designed to be installed in industrial settings such as equipment rooms, control rooms, and IT closets where only adults are normally present.

3 See detailed protocol chart for full list of supported input and output protocols

4 Supports Linux and Windows. Tested with Windows and Linux native FTP, WinSCP, XLReporter, and CoreFTP

5 Requires subscription to Fend Cloud service

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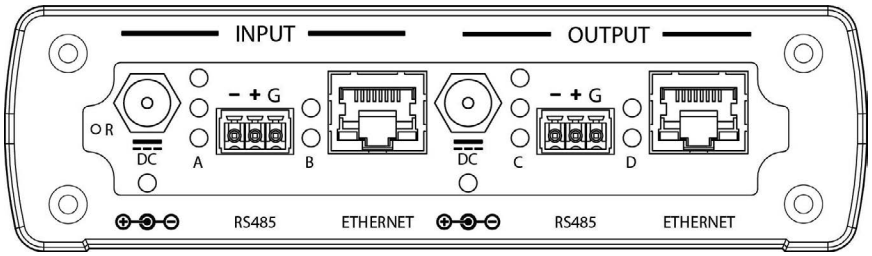
TECHNICAL INFORMATION

Fend Diode SE15

Fend's patented hardware was designed from the ground up for industrial and rugged applications needing an affordable, stable, easy-to-use solution that physically keeps attackers away from protected networks and equipment. The following table describes Fend's diode design specifications:

Specifications (Model FD-15M-SE1-SE2-B4 / Ethernet + Serial)



Maximum data throughput[1]	15.0 Mbps
Dimensions (L x W x H), inches	5.1 x 5.8 x 1.6
Operating voltage	12-48VDC, 1.5A max
Provided power supply(s)	100-240VAC 1.0A in, 12VDC 1.5A out[2]
Diode power consumption (max)	4.0 W
Design operating temperature range	-30C to +85C
Designed and manufactured	USA
Connections:	
Inputs	DC Barrel Connector (optional screw-in secure connector)
	Ethernet RJ-45
	Serial RS-422/485 Combicon MC connector
Outputs	DC Barrel Connector (optional screw-in secure connector)
	Ethernet RJ-45
	Serial RS-422/485 Combicon MC connector
Protocols supported:[3]	FTP/FTPS[4]
	TCP/IP
	Modbus Serial, Modbus TCP
	BACnet-MSTP, BACnet-IP
	LON-IP
	MQTT (Fend Cloud on AWS)[5]

Additional Features:

- Denial of service (DOS) protection
- Anti-Tamper protection
- Power loss / fluctuation protection
- Factory or field configurable
- Optional secure hosting of data in AWS cloud
- ETL Listed (US, EU, Canada)
- CE, RoHS
- Full optical isolation with independent grounding of each side of the diode

1 Data throughput may vary based on protocol and application

2 Customer can provide their own power supply as long as the output meets the input ratings of the diode. The Fend Data Diode is designed to be installed in industrial settings such as equipment rooms, control rooms, and IT closets where only adults are normally present.

3 See detailed protocol chart for full list of supported input and output protocols

4 Supports Linux and Windows. Tested with Windows and Linux native FTP, WinSCP, XLReporter, and CoreFTP

5 Requires subscription to Fend Cloud service

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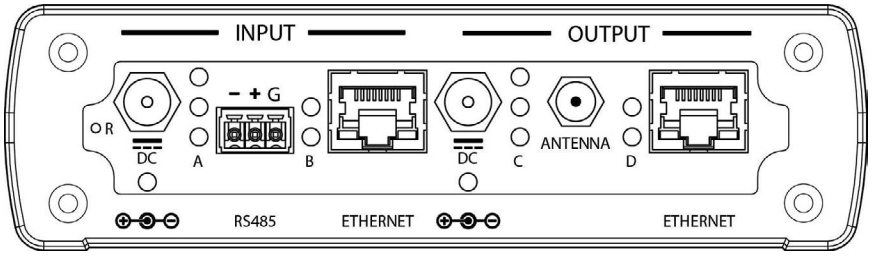
TECHNICAL INFORMATION

Fend Diode CE15

Fend's patented hardware was designed from the ground up for industrial and rugged applications needing an affordable, stable, easy-to-use solution that physically keeps attackers away from protected networks and equipment. The following table describes Fend's diode design specifications:

Specifications (Model FD-15M-SE1-CE2-B4 / Ethernet + Cellular)



Maximum data throughput[1]	15.0 Mbps
Dimensions (L x W x H), inches	5.1 x 5.8 x 1.6
Operating voltage	12-48VDC, 1.5A max
Provided power supply(s)	100-240VAC 1.0A in, 12VDC 1.5A out[2]
Diode power consumption (max)	8.0 W
Design operating temperature range	-30C to +85C
Designed and manufactured	USA
Connections:	
Inputs	DC Barrel Connector (optional screw-in secure connector)
	Ethernet RJ-45
	Serial RS-422/485 Combicon MC connector
Outputs	DC Barrel Connector (optional screw-in secure connector)
	Ethernet RJ-45
	4G cellular LTE modem (Verizon / AT&T)
Protocols supported:[3]	FTP/FTPS[4]
	TCP/IP
	Modbus Serial, Modbus TCP
	BACnet-MSTP, BACnet-IP
	LON-IP
	MQTT (Fend Cloud on AWS)[5]

Additional Features:

- Denial of service (DOS) protection
- Anti-Tamper protection
- Power loss / fluctuation protection
- Factory or field configurable
- Optional secure hosting of data in AWS cloud
- ETL Listed (US, EU, Canada)
- CE, RoHS
- Full optical isolation with independent grounding of each side of the diode

1 Data throughput may vary based on protocol and application

2 Customer can provide their own power supply as long as the output meets the input ratings of the diode. The Fend Data Diode is designed to be installed in industrial settings such as equipment rooms, control rooms, and IT closets where only adults are normally present.

3 See detailed protocol chart for full list of supported input and output protocols

4 Supports Linux and Windows. Tested with Windows and Linux native FTP, WinSCP, XLReporter, and CoreFTP

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DATA DIODES PROTECT
Critical Infrastructure

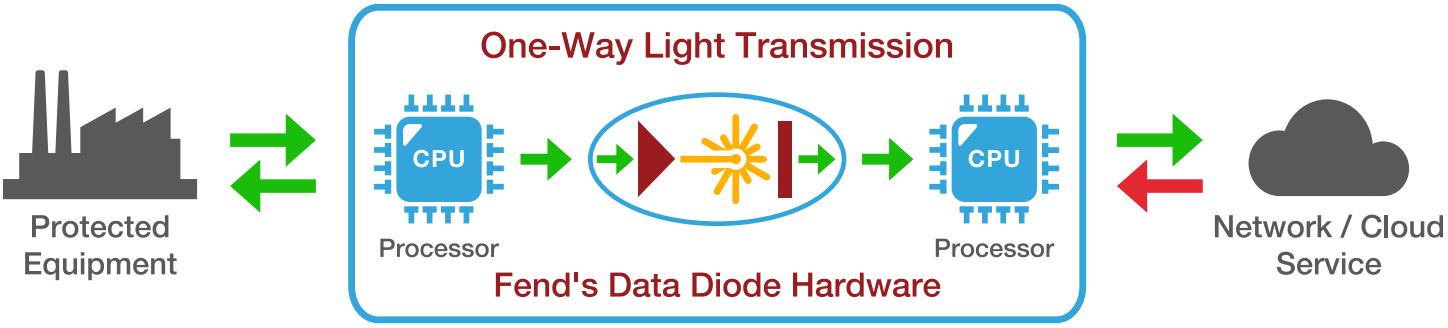
The Problem

Attackers continue to show an ability to stay one step ahead of traditional cybersecurity defenses, disabling critical equipment, injecting ransomware, and stealing sensitive information. Legacy solutions fall short. **You deserve better protection than:**

- *Firewalls* - whose patches prepare you for yesterday's war
- *Air gaps* - that keep you in the dark and invite mistakes
- *Intrusion detection systems* - that alert you after it's too late

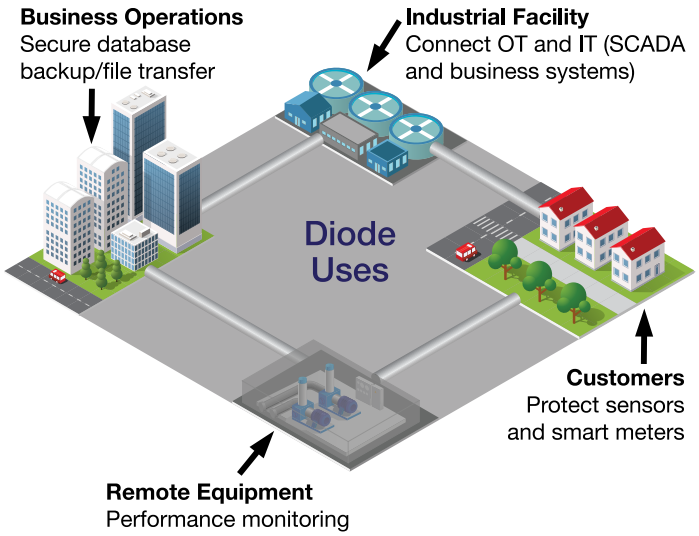
The Solution

Fend safely transmits data in a physically-enforced one-way fashion.



How do data diodes work?

One-way communication diodes send data in only one direction using light. All inbound traffic is stopped by the diode. Hackers cannot physically reach your network or protected equipment.



Who depends on Fend today?

- Manufacturers
- Oil and Gas
- Water Treatment
- Electric Infrastructure

For More Information
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