MEDIA DIODES

AUDIO AND VIDEO

Manage and secure media flows to prevent eavesdropping and data leakage

THE THREAT OF USING
MEDIA PERIPHERALS

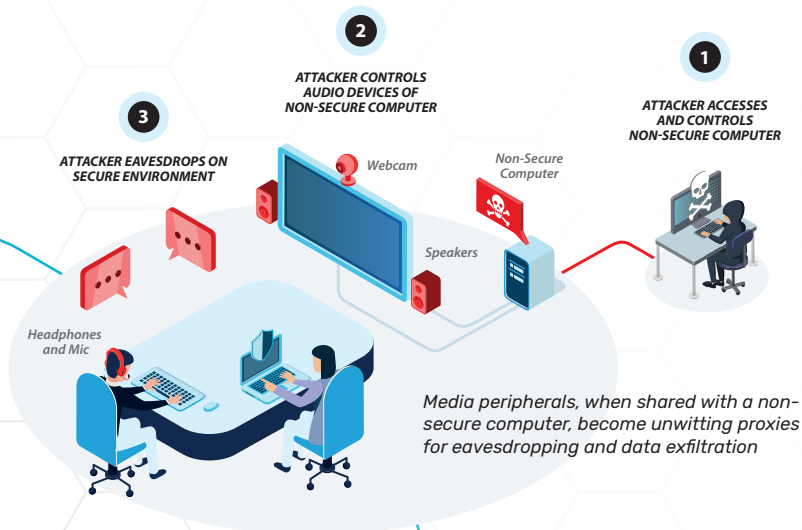### Eavesdropping on a Sensitive Conversation

Unsecured audio devices can be exploited to leak sensitive information:

- Speakers can be repurposed as microphones by attackers through malicious software to listen in on nearby conversations.

- Modified audio drivers can amplify and filter even weak signals to eavesdrop on surrounding conversations.

Compromising Secure Data

Exploiting media peripherals to inject or capture data

- **Video Vulnerabilities -** Unsecured devices such as displays and web-cams have internal memories, making them susceptible to surreptitious data transfer between connected devices. Attackers can inject malicious code or extract data using those internal memories, when shared between computers on different networks.

- **Audio Vulnerabilities -** Attackers can transfer data from secured to unsecured networks by broadcasting high-frequency audio signals to an external hacking device. These ultrasonic transmissions are undetectable to the human ear.

2

ATTACKER CONTROLS AUDIO DEVICES OF NON-SECURE COMPUTER

1

ATTACKER ACCESSES AND CONTROLS NON-SECURE COMPUTER

3

ATTACKER EAVESDROPS ON SECURE ENVIRONMENT

Webcam

Non-Secure Computer

Speakers

Headphones and Mic

Media peripherals, when shared with a non-secure computer, become unwitting proxies for eavesdropping and data exfiltration

THE SOLUTION:
HSL MEDIA DIODES

High Sec Lab's Media Diodes mitigate the risks of eavesdropping and data breaches when using peripheral audio and video devices.

The new HSL Media Diode family of products connects between a source (a PC usually) and a media device (speaker/headphone or microphone).

The Media Diode prevents attackers from exploiting media-peripheral vulnerabilities.

FA10AC-4

THE MEDIA DIODES FAMILY
SPECIFICATIONS

MODEL	FA10A-4	FA10B-4	FA10AO-4	FA10BO-4	FA10AM-4	FA10BM-4	FA10BB-4	FA10AC-4	FA10BC-4	FCA10BB-4	FS11USB2
FEATURES											
Function	🔊	🔊	🔊	🔊	🔊🎤	🔊🎤	🔊🎤	🔊🎤📷	🔊🎤📷	📷	🔊🎤📷
Computer Interface	Analog	USB	Analog	USB	Analog	USB	USB	Analog	USB	USB	USB
Audio Output Interface	Analog	Analog	Analog	Analog	Analog	Analog	USB	Analog	Analog	✗	USB
Mic Input Interface	✗	✗	✗	✗	Analog	Analog	USB	Analog	Analog	✗	USB
Camera Input Interface	✗	✗	✗	✗	✗	✗	✗	USB	USB	USB	USB
Always Open	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗	✗
PHYSICAL											
Dim.	85 (W) x 65 (D) x 34 (H) mm / 3.1 (W) x 3.1 (D) x 2.4 (H) inch										*
Weight	185 gr (0.41 lbs.)										**
CERTIFICATION											
Security Cert.	Compliant with NIAP Common Criteria PP4.0 PSD Protection Profile			N/A							

* 145 (W) x 105 (D) x 28 (H) mm / 5.8 (W) x 4.2 (D) x 1.1 (H) inches
** 300 gr (0.64 lbs.)

THE MEDIA DIODES
SECURITY
MECHANISM

Unidirectional Flow

Audio Diodes enforce a unidirectional audio flow from the PC to the speakers/ headphones, preventing hackers from converting speakers into microphones to capture conversations.

Videobar Diodes separate digital media streams sending audio to an audio diode and the camera feed to a video diode implemented as unidirectional parallel bus, preventing cross-talk.

Video diodes emulate device clients on both ends, disabling any direct data exchange, and enforcing unidirectional media flow.

Low-Pass Filter

All analog audio passes through a low-pass filter that restricts audio frequencies to match those compatible with the human ear, preventing ultrasonic data exfiltration.

Press-and-release action

The device only responds when the activation button is pressed and released to prevent accidental re-activation.

Button-Activated

Media flows are activated with the push of a button, and are automatically disabled after a set duration. To reactivate the device during a long call, push the button again.
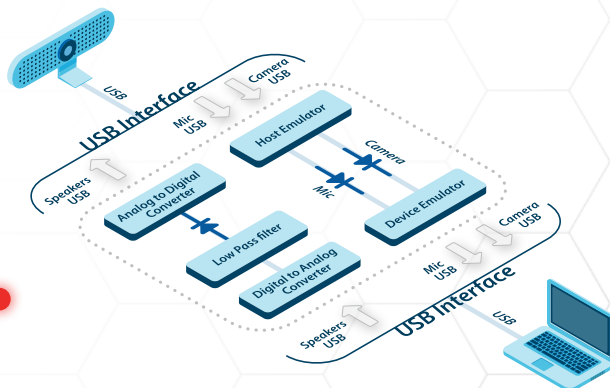
Bi-Color LED Status Indicator

The media diode buttons are illuminated to indicate whether transmissions are disabled (Green) or active (Red).

MEDIA DIODES
HIGHLIGHTS

- **Prevents attackers from exploiting audio and video peripheral device vulnerabilities.**

  HSL's media diodes isolate connected media devices from the host computer and enforce a unidirectional flow of data. Audio diodes filter high-frequency signals to eliminate data transmissions beyond the range of human hearing.

Media Diodes mitigate the risks of using peripheral audio and video devices in organisations with multiple isolated networks having different classification levels.
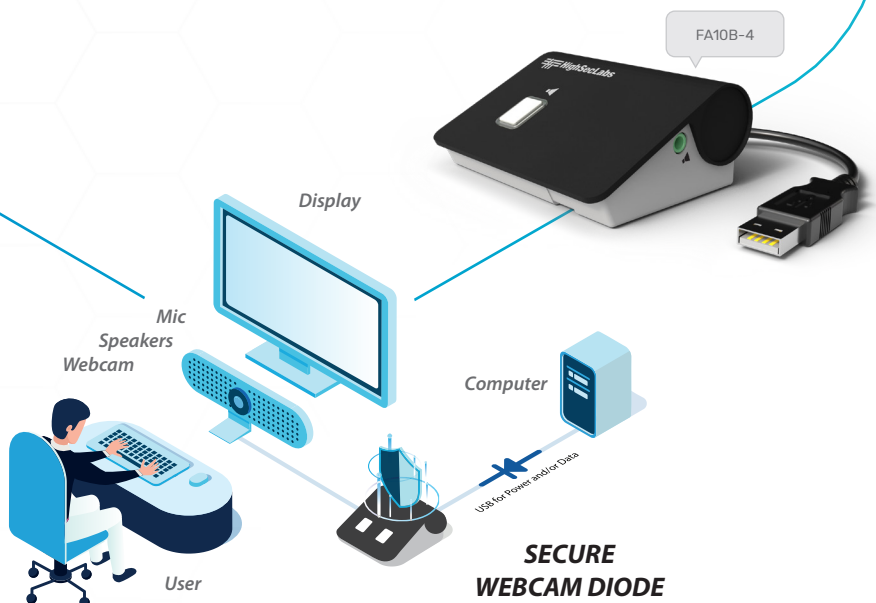
- **Disabled by default**

  Communications are enabled, only for a limited duration, when the activation button is pushed.

- **Compact design**

  Most HSL media diodes take up little space on a user's workstation. W 85mm x L 65mm x H 34mm

- **Easy to install**

  Connects directly to the host computer through USB, and is automatically recognized as a media device without having to install additional drivers. Media peripherals are plugged in to the media diode, and do not require configuration updates to operate.

FA10B-4

Display

Mic
Speakers
Webcam

Computer

USB for Power and/or Data

User

SECURE WEBCAM DIODE

NEW
RELEASE

Videobar Diode
FS11USB2

The Videobar Diode is part of HSL's SoundSentry™ Secure Meeting Room Solution.

By enforcing unidirectional data flow, the Videobar Diode prevents data leaks arising from exploiting videobar vulnerabilities. Special filters block attempts of data exfiltration through high-frequency transmissions.

FS11USB2

- **Invisible Defense**
  The Videobar Diode is transparent to both the computer and the media device by using advanced emulation techniques.

- **Remote Control**
  Compatible with secure RS-232 remote controls to enable/disable media flows.

- **Timer-Enabled Functionality**
  Prevents inadvertent audio/video transmissions

HIGH SEC LABS (HSL)

DEVELOPS HIGH-QUALITY CYBER-DEFENSE SOLUTIONS FOR PROTECTING NATIONAL ASSETS AND INFRASTRUCTURE IN THE FIELD OF NETWORK AND PERIPHERAL ISOLATION.

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