Fox DataDiode Technical Data Sheet

The Fox DataDiode Hardware is the device that guarantees one-wayness of a network connection. With it, you can assure that secrets remain secret, and critical systems are not manipulated. The Fox DataDiode is the only one-way solution worldwide that has seen overwhelming independent confirmation of its security claims, and has a Common Criteria Evaluation higher than EAL4+: EAL7+. Moreover, the Fox DataDiode is the only one-way solution that guarantees one-wayness on a *physical* level: it does not have software, firmware or FPGAs. Hence, it cannot be exploited or wrongly configured.

Please see the product sheets *Fox DataDiode for protecting secrets* and *Fox DataDiode for Industrial Control Systems* for more non-technical information.

CC EAL 7+
THE HIGHEST EVALUATED PRODUCT IN THE WORLD

DATADIODE
BY FOX IT

Physical

1 unit high 19" rack mountable unit	
Dimensions casing WxDxH	427.00x222.00x41.60 (mm)
Dimensions frontpanel WxDxH	482.60x3.00x43.65 (mm)
Dimensions outer WxDxH	482.60x225.00x43.65 (mm)
Both front panel and rear panel have connectors; the to be connected cables will require some space	
Casing material	Aluminium
Weight	1692 gram
Rear panel functions	power inlet, power switch, fuses
Front panel functions	power status LED activity LED incoming (upstream) network connection outgoing (downstream) network connection

Power

Power inlet:	IEC 60320-C14 (male)
Power input:	90 – 250 VAC, 50 – 60 Hz
Fuses	2 times T4AL250V; 5x20 mm; fuse speed T
BTU	41
The device has only one external power inlet, internally it has two power supplies for high availability	

Network

Incoming (upstream) network connection and outgoing (downstream) network connection:

Multimode optical fiber	
Laser Class 1 according to EN 60825-1	
IEEE-802.3z Gigabit Ethernet (1000Base-SX) at 1.25 Gbps *)	
850nm VCSEL	
Supported cable length (max.)	220 to 550 meters **) dependent on cabling, see IEEE 802.3-2008 Section 3 Table 38-2 p.109
Incoming (upstream) network connection	Duplex "SC" connector, receiver and transmitter (IEC 61754-4)
Outgoing (downstream) network connection	Simplex "SC" connector, transmitter only (IEC 61754-4)

*) 1.25Gbps is the transport layer link speed, the actual throughput is lower and depends on the software used at the proxy servers

**) Typically the Fox DataDiode hardware is installed with and connected to proxy servers in the same rack. These proxy servers can be equipped with the network connection of choice

Environment

Operating environment	0 °C – 55 °C, max 90% humidity, non-condensing
Storage environment	0 °C – 80 °C, max 90% humidity, non-condensing

Tamper-evidence (Government Edition only)
The Government Edition has been sealed in such a manner that manipulation of the device while in transport or otherwise unattended can be detected afterwards. The end customer receives an instruction with the relevant device-specific security features to verify from Fox-IT via separate secure communication.

TEMPEST protection (Government Edition only)
The Fox DataDiode has been designed to have virtually no compromising emanations. By using fiber optics, galvanic separation is achieved, and no radio magnetic signals are transmitted with the information flowing through the Fox DataDiode.
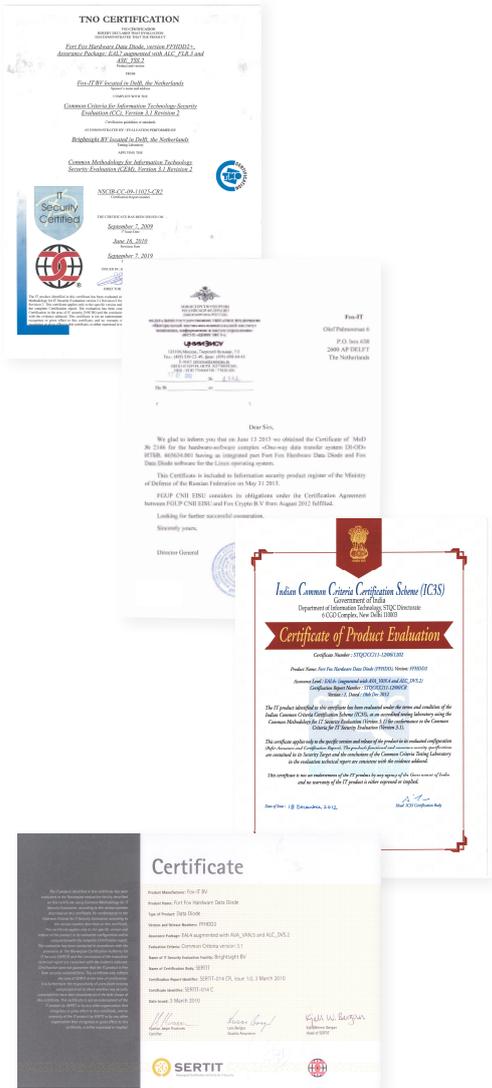The Government Edition Fox DataDiode (and any proxy servers ordered with it) can be provided with certificates of the following types:
- **NATO SDIP-27 Level A** (equivalent to USA NSTISSAM Level I, formerly AMSG 720B)
  This is the strictest standard for devices that will be operated in NATO Zone 0 environments, where it is assumed that an attacker has almost immediate access (e.g. neighboring room, 1m distance).
- **NATO SDIP-27 Level B** (equivalent to USA NSTISSAM Level II, formerly AMSG 788A)
  This is a slightly relaxed standard for devices that are operated in NATO Zone 1 environments, where it is assumed that an attacker cannot get closer than about 20m (or where building materials ensure an attenuation equivalent to the free-space attenuation of this distance).
The Fox DataDiode is listed in the BSI German Zoned Products List (BSI TL 03305) for zones 1–3.

Security Certifications (Government Edition only)

The Fox DataDiode is the single most trusted high assurance IT security solution worldwide, as shown by both the diversity and thoroughness of the security certifications listed below. Please be aware that the list is not exhaustive, as not all security certifications are eligible for confirmation in public.

Common Criteria	EAL7+
NATO	up to and including NATO SECRET, Green Scheme
Russian Federation	сертификат Минобороны России на соответствие 2 уровню контроля НДВ и РДВ *), by ЦНИИ ЭИСУ (CNII EISU)
	ФСТЭК (FSTEC) certification in process
The Netherlands	up to and including Staatsgeheim GEHEIM, by NL-NCSA/NBV (Nationaal Bureau voor Verbindingsbeveiliging)
Germany	up to and including GEHEIM, by BSI (Bundesamtes für Sicherheit in der Informationstechnik)

*) "Certificate on code review and software testing against Russian Ministry of Defense requirements to undeclared features (level 2) and functional requirements correspondingly"

Common Criteria Certifications (Government Edition only)

Under the Common Criteria Recognition Arrangement (CCRA), the Common Criteria (CC) certifications are valid internationally. Consult the CC portal for details: **www.commoncriteriaportal.org**. The Security Targets (STs), Certification reports and certificates are available for download at the Fox-IT website.

CC version	3.1, revision 2	3.1, revision 2	3.1, revision 2
EAL	**EAL4+**	**EAL7+**	**EAL4+**
Augmentations	AVA_VAN.5 and ALC_DVS.2	ASE_TSS.2 and ALC_FLR.3	AVA_VAN.4 and ALC_DVS.2
Scheme	Norwegian	Dutch	Indian
Evaluation Facility	Brightsight BV Delft The Netherlands	Brightsight BV Delft The Netherlands	ERTL East Kolkata India
Certification Body	SERTIT Oslo Norway	NL-NCSA/NBV Zoetermeer The Netherlands	STQC New Delhi India

NERC-CIP Compliance

The North American Electric Reliability Corporation (NERC) develops and enforces reliability standards. The NERC Critical Infrastructure Protection (CIP) standards provide a security framework for the protection of Critical Infrastructures. The Fox DataDiode addresses CIP compliance and provides an Electronic Security Perimeter (ESP) according to the overall NERC-CIP framework. Fox-IT is a NERC-CIP compliant vendor.

Other Certifications

CE safety & environmental certification	Directive 2002/95/EC	Restriction of Hazardous Substances (RoHS)
	EMC	Directive 2004/108/EC: Electromagnetic Compatibility (EMC)
		ETSI EN 300 386 V1.4.1 (2008-04)
		EN 55022:2006 + A1:2007 Class A
		EN 55024:1998 + A1:2001 + A2:2003
	Safety	Directive 2006/95/EC: Low Voltage
		BS EN 60950-1:2006 + A1:2010
		EN60825-1 (Laser Class 1)
Russian Federation and Customs Union safety & environmental certification	GOST R *)	ГОСТ Р
	EMC – CU TR 020/2011	ТР ТС 020/2011 Электромагнитная Совместимость Технических Средств
	Safety – CU TR 004/2011	ТР ТС 004/2011 О Безопасности Низковольтного Оборудования

*) Due to changes in Russian legislation, the GOST R / ГОСТ Р certification is no longer required

Export Control and Customs

The Fox DataDiode is designed and produced by Fox-IT in the Netherlands. A certificate of origin (COO) is available upon request. The Fox Data Diode is categorized under Export Control Classification Number (ECCN) 5A002a7 of the list of dual-use goods and technologies of the Wassenaar Arrangement (WA-LIST). The Harmonized System code (HS code) of the Fox DataDiode is 8517620009. Fox-IT holds the necessary export licenses to be able to internationally provide the Fox DataDiode to a very wide range of customers. Contact Fox-IT in case you have export control questions specific to your circumstances.

Fox DataDiode security certifications for the Russian Federation

The security certifications of the Fox DataDiode all have the Fox DataDiode hardware as its scope, as the security guarantee of one-wayness is enforced by the hardware of the tangible device.

However, the scopes of the Russian security certifications include the software that comes with the device, which is to be run on the proxy servers (see page 4 of this document). As a result, these certifications do not only warrant the enforced one-wayness of the Fox DataDiode hardware, but do also warrant absence of undeclared features (e.g. backdoors and spyware) in the Fox DataDiode software. This extended certification scope is a result of the Russian government vision on IT security certifications.

The certified software can be collected from trusted Russian sources and GOST fingerprints are available upon request.
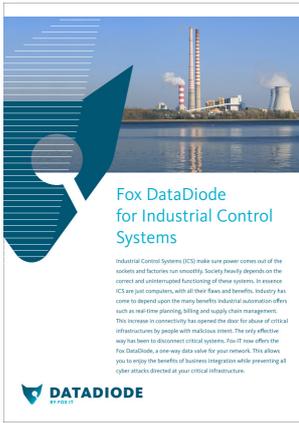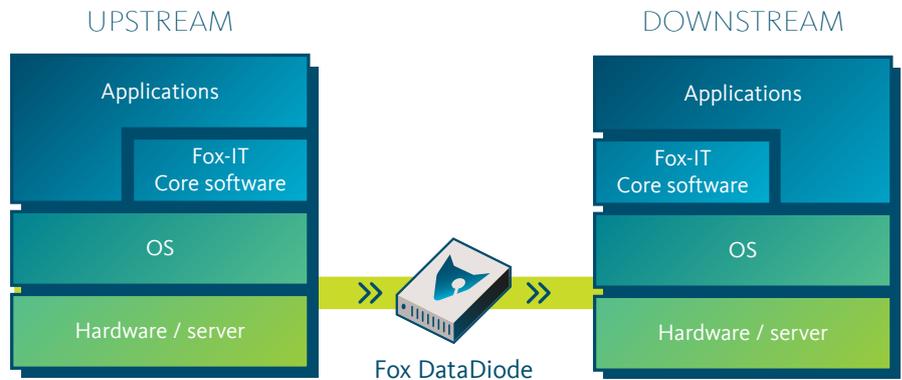
Fox-IT appreciates your application scenario

Fox-IT has prepared special product collateral to address the considerations of various customer groups and product setups. Consult *Fox DataDiode for Industrial Control Systems* if your goal is to protect your assets against manipulation. Consult *Fox DataDiode for protecting secrets* if your goal is to protect your secrets and prevent data leakage.

A complete Fox DataDiode setup

A complete Fox DataDiode setup typically consists of more than just the Fox DataDiode hardware only. A typical setup has a proxy server on two sides of the Fox DataDiode, which convert bi-directional protocols in a one-way protocol (on the upstream side) and vice versa (on the downstream side).

Fox-IT offers flexibility in the way that these proxy servers and the converting software are set up.

- Customers that want to choose their own server hardware and server OS, and may want to run other services or daemons on the same hardware, can choose the *Fox DataDiode Windows Core* or the *Fox DataDiode Linux Core* which provide basic but powerful stackable features like support for TCP, UDP and file and directory mirroring.
- Customers that want a hassle-free turn key solution, Fox-IT provides the *Fox DataDiode Appliance*, a complete package consisting of the Fox DataDiode, two rack mountable servers with pre-installed software which supports seamless integration into office environments and built-in support for many common file transfer protocols like SMB, FTP, SCP, and can be configured using a user friendly web interface.

UPSTREAM   DOWNSTREAM

| Applications |
| Fox-IT Core software |
| OS |
| Hardware / server |

Fox DataDiode

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There are many software solutions provided by Fox-IT to leverage the value of the Fox DataDiode. These solutions operate at the application level. Solutions include, but are not limited to the *Fox DataDiode PI Replicator* and the *Fox DataDiode Modbus Replicator*.

Next steps

A wealth of information is available on the different applications and scenarios for the Fox DataDiode. The DataDiode is delivered through a global network of partners who are knowledgeable in handling confidential information. For more information, including partner details, please visit **www.foxdatadiode.com**.

Fox DataDiode for Industrial Control Systems

Industrial Control Systems (ICS) make sure power comes out of the sockets and factories run smoothly. Society heavily depends on the correct and uninterrupted functioning of these systems. In essence ICS are just computers, with all their flaws and benefits. Industry has come to depend upon the many benefits industrial automation offers such as real-time planning, billing and supply chain management. This increase in connectivity has opened the door for abuse of critical infrastructures by people with malicious intent. The only effective way has been to disconnect critical systems. Fox-IT now offers the Fox DataDiode, a one-way data valve for your network. This allows you to enjoy the benefits of business integration while preventing all cyber attacks directed at your critical infrastructure.

DATADIODE
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EFFECTIVE, STRAIGHTFORWARD AND CERTIFIED SOLUTION FOR SECURING CLASSIFIED INFORMATION

Fox DataDiode for protecting secrets

Handling confidential information poses a challenge on organizations. Draconian measures are often taken to ensure that secrets remain secret. Some organizations use air gaps and high levels of physical security which offer great protection but hamper productivity. Other organizations trade in too much of their security requirements for a more fluent workflow. Rules and regulations for handling confidential information require a level of security that is often considered impractical. Fox-IT introduces the Fox DataDiode, a cross-domain solution reconciling the seemingly contradictory requirements of high assurance and free information flow. Organizations around the globe trust the Fox DataDiode for their unidirectional requirements, as illustrated by the numerous certifications such as NATO SECRET and Common Criteria EAL7+.

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Fox-IT prevents, solves and mitigates the most serious threats as a result of cyber-attacks, fraud and data breaches with innovative solutions for government, defense, law enforcement, critical infrastructure, banking, and commercial enterprise clients worldwide. Our approach combines human intelligence and technology into innovative solutions that ensure a more secure society. We develop custom and packaged solutions that maintain the security of sensitive government systems, protect industrial control networks, defend online banking systems, and secure highly confidential data and networks.

022-010-EN

for a more secure society