



HARDWARE SPECIFICATIONS AND SECURITY CERTIFICATIONS

Fox DataDiode Technical Data Sheet

The core of the Fox DataDiode solution lies in the hardware unit. This network device enforces a one-way network connection. With it, you are guaranteed that state and company secrets remain confidential and that Industrial Control Systems (ICS) cannot be manipulated or compromised. The Fox DataDiode is the only one-way solution worldwide that has received extensive independent confirmation of its security claims and has achieved the highest Common Criteria Evaluation possible: EAL7+. On top of which, the Fox DataDiode unit is unique in that it guarantees one-way traffic on a physical level: it does not have software, firmware or FPGAs. Therefore, it cannot be manipulated or misconfigured.



Government Edition and Business Edition

Fox DataDiode – Government Edition

Fox DataDiode – Business Edition

The Fox DataDiode is available in two variants. The Government Edition is the flagship version that has been certified for all kinds of special uses, governments worldwide endorse it to protect their sensitive information. The Business Edition is the cost effective option that has not been subjected to special independent security certifications.

A select number of Fox-IT partners are licensed to sell an OEM-branded version of the Fox DataDiode.

Physical

1 unit high 19" rack mountable unit	
Casing dimensions WxDxH	427.00x222.00x41.60 (mm)
Frontpanel dimensions WxDxH	482.60x3.00x43.65 (mm)
Outer dimensions WxDxH	482.60x225.00x43.65 (mm)
Both front panel and rear panel are equipped with connectors; the cables that need to be connected will require some space.	
Casing material	Aluminium
Weight	1692 gram
Rear panel functions	Power inlet, power switch, fuses
Front panel functions	Power status LED indicator Activity LED indicator Incoming (upstream) network connection Outgoing (downstream) network connection

Power

Power inlet:	IEC 60320-C14 (male)
Power input:	90 – 250 VAC, 50 – 60 Hz
Power consumption (max, avg)	12W
Fuses	2 times T4AL250V; 5x20 mm; fuse speed T
BTU	41
The unit has only 1 external power inlet, internally it has 2 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 ¹⁾	
850nm VCSEL	
Supported cable length (max.)	220 to 550 meters ²⁾ 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⁾ 1.25Gbps is the transport layer link speed, the actual throughput is lower and depends on the software used at the proxy servers

²⁾ 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 (Applicable to government Edition only)

The Fox DataDiode Government Edition has been sealed in such a way that manipulation of the unit while in transport or otherwise unattended can be detected afterwards. The end customer will receive an instruction with the relevant unit-specific security features to verify with Fox-IT via a separate secure communication.

TEMPEST protection (Applicable to government Edition only)

The Fox DataDiode unit has been designed to have virtually no compromising emanations. By using fiber optics, galvanic separation is achieved, and no radio magnetic signals are transmitted while 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.

Fox DataDiode properties relevant to NATO

- Certified in the "Green Scheme" up to and including NATO SECRET
- Listed in the NATO Information Assurance Product Catalogue (NIAPC). See www.ia.nato.int/niapc/Product/Fort-Fox-data-diode-FFHDD2_250
- A Basic Ordering Agreement (BOA) is in place between NATO and Fox-IT, with reference NC3A/BOA/12766. See <https://boa.ncia.nato.int/boa/12766/12766.htm>
- NATO Stock Number (NSN):
 - Appliance consisting of a Fox DataDiode hardware unit and two proxy servers with software: 7025-17-120-2687
 - Fox DataDiode hardware unit only: 7025-17-122-5997
- Tested by the NATO Communications and Information Agency (NCIA)
- Included in the Approved Fielded Product List (AFPL)
- Included in the NATO Master Catalogue of References for Logistics (NMCRL)
- Assigned the NATO Commercial and Government Entity Code (NCAGE Code) H1V72



Security Certifications (Applicable to Government Edition only)

The Fox DataDiode is the single most trusted high assurance IT security solution available worldwide, as substantiated by both the diversity and thoroughness of the security certifications listed below. Please note that not all awarded certifications are mentioned, as not all security certifications are eligible for public disclosure.

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 ¹⁾ , by ЦНИИ ЭИСУ (CNIИ EISU)
The Netherlands	up to and including Staatsgeheim GEHEIM, by NL-NCSA/NBV (Nationaal Bureau voor Verbindingsbeveiliging)
Germany	up to and including GEHEIM, by BSI (Bundesamt für Sicherheit in der Informationstechnik)

¹⁾ "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 (Applicable to Government Edition only)

Under the Common Criteria Recognition Arrangement (CCRA), the Common Criteria (CC) certifications are valid and recognized internationally. For more details, please visit: www.commoncriteriaportal.org. The Security Targets (STs), Certification reports and certificates are downloadable via 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	TÜV Rheinland Nederland B.V. Apeldoorn 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 outline a security framework for the protection of Critical Infrastructures.

The Fox DataDiode solution provides a hardware-enforced one-way method to transfer data and works as a data diode as described in the NERC document CAN-0024. It uses a specialized non-routable protocol that enables one-way data transfer with an assured high level of data integrity while protecting cyber assets inside the Electronic Security Perimeter (ESP). Proxy servers on either side of the Fox DataDiode are connected to the networks; either the upstream or the downstream network, using standard network connections.

Additional Certifications

CE safety & environmental certification	Directive 2002/95/EC	Restriction of Hazardous Substances (RoHS)
		EMC
	Safety	Directive 2004/108/EC: Electromagnetic Compatibility (EMC)
		ETS EN 300 386 V1.4.1 (2008-04)
Russian Federation	GOST R ¹⁾	EN 55022:2006 + A1:2007 Class A
		EN 55024:1998 + A1:2001 + A2:2003
		Directive 2006/95/EC: Low Voltage
		BS EN 60950-1:2006 + A1:2010
		EN60825-1 (Laser Class 1)
		ГОСТ P

¹⁾ Due to changes in Russian legislation, the GOST R / GOCT P certification is no longer required

Export Control and Customs

The Fox DataDiode is developed and manufactured by Fox-IT in a secured environment 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 854370. Fox-IT holds the necessary export licenses to be able to internationally provide the Fox DataDiode to a very wide range of customers. Please contact Fox-IT should you have export control questions specific to your circumstances.

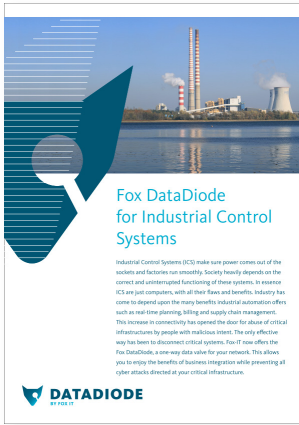
Fox DataDiode security certifications for the Russian Federation

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

The scope of the Russian security certifications however also include the software that is provided with the device and runs on the proxy servers (see page 4 of this document). As a result, these certifications do not only warrant the enforced one-way network connection of the Fox DataDiode hardware, but do also warrant the 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 policy on IT security certifications.

The certified Fox DataDiode software can be collected from trusted Russian sources. GOST fingerprints are available upon request.



The Fox DataDiode solution

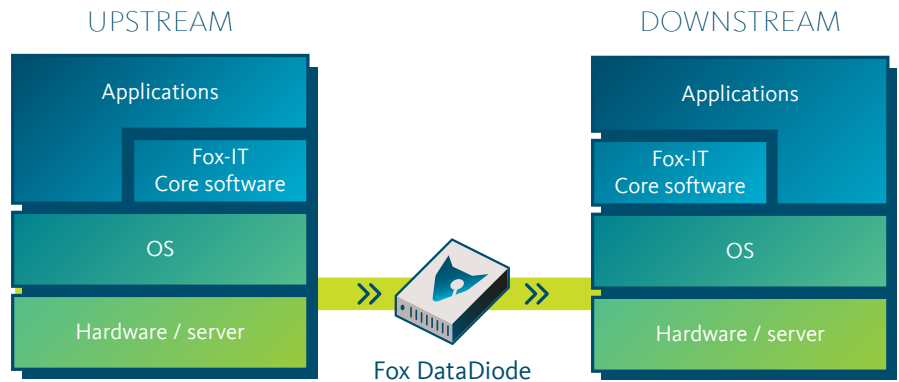
Fox-IT has prepared special non-technical product documentation that addresses the needs and requirements of various verticals, spanning both industry and government. Consult *Fox DataDiode for Industrial Control Systems* if your goal is to protect your business assets against manipulation. Consult *Fox DataDiode for protecting secrets* if your goal is to protect your classified and sensitive data and prevent data leakage.

The complete Fox DataDiode installation

A complete Fox DataDiode setup consists of more than the Fox DataDiode hardware. A fully operational setup has a proxy server on both 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 select their own server hardware and server OS and in addition want to run other services or daemons on that same hardware, should choose the *Fox DataDiode Windows Core* or the *Fox DataDiode Linux Core* providing basic and powerful stackable features such as support for TCP, UDP and file & directory mirroring.
- Customers that want a turn-key solution, should choose the *Fox DataDiode Appliance*, a complete solution consisting of the Fox DataDiode, two (2) rack mountable servers with pre-installed software which supports seamless integration into office environments and comes with built-in support for many common file transfer protocols such as SMB, FTP, SCP and can be configured using a user friendly web interface.



There are numerous software solutions provided by Fox-IT to leverage the value and investment in a Fox DataDiode installation.

These solutions operate at the application level. They include, but are not limited to the *Fox DataDiode PI Replicator* and the *Fox DataDiode Modbus Replicator*.

Ready to fortify and secure your network connections;

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

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.

022-013-EN

for a more secure society



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