GreenMatic har svaret

GreenMatic har her samlet nogle tekniske data – finder du ikke det du søger så ring og vi skaffer det til dig.

The following information is a summary of the standards and certifications that SIXNET products have been tested or evaluated to comply with.

Guide: ✓ – The product has been verified and/or tested to meet the indicated standard.

P – Pending (which means that we are in the process of getting the certification)

CE – This standard is part of the CE compliance for the European Union.

Tel/ITE – This is a TELCOM or ITE (Information Technology Equipment) standard.

DNV – Units that are tested or verified to meet DNV standards have ✓. Units that are fully type approved have ☑.

IPm-based products:

Model	Safety		Hazardous		Emissions (Class B for all)				Immunity	DNV
		CE					CE	CE	CE	
	UL508, CSA 22.2	EN 61010	UL1604, CSA 22.2	EN 50021	FCC Part 15	ICES-003	EN 55022	EN 61326-1	EN 61326-1	DNV
ST-IPM-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VT-IPM-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VT-UIPM-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VT-MIPM-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-GT-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ET-GT-ST-3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

EtherTRAK Ethernet switch products:

Model	Safety		Hazardous		Emissions (Class B for all)				Immunity	DNV
		CE					CE	CE	CE	
	UL508, CSA 22.2	EN 61010	UL1604, CSA 22.2	EN 50021	FCC Part 15	ICES-003	EN 55022	EN 61326-1	EN 61326-1	DNV
ET-GT-3ES-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-GT-5ES-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-GT-9ES-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
EB-GT-8ES-1/1EP	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-5MS-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-9MS-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-5ES-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-9ES-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-5RS-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-9RS-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-9RG-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-9MG-#	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-5xS-IP67-1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ET-5MS-MDM-1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

EtherTRAK device servers:

Model	Safety		Hazardous	Emissions (Class B for all)				Immunity	DNV
		CE				CE	CE	CE	
	UL508, CSA 22.2	EN 60950	UL1604, CSA 22.2	FCC Part 15	ICES-003	EN 55022	EN 61326-1	EN 61326-1	DNV
ET-DS-1	✓	✓	✓	✓	✓	✓	✓	✓	-
ET-SDS-1	✓	✓	✓	✓	✓	✓	✓	✓	-

0907

EtherTRAK I/O products:

Model	Safety UL508, CSA 22.2	Safety CE EN 61010	Hazardous UL1604, CSA 22.2	Hazardous EN 50021	Emissions FCC Part 15	Emissions ICES-003	Emissions CE EN 55022	Emissions CE EN 61326-1	Immunity CE EN 61326-1	DNV
ET-MIX24880	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-16DI2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-16DO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-16AI2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-8INS	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-8CNT	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-8DI2-8DO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-8DI2-8AI2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-4RTD-4DI2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-GT-232	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-GT-485	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-GT-ST-1	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
ET-GT-ST-2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑

VersaTRAK products:

Model	Safety UL508, CSA 22.2	Safety CE EN 61010	Hazardous UL1604, CSA 22.2	Hazardous EN 50021	Emissions FCC Part 15	Emissions ICES-003	Emissions CE EN 55022	Immunity CE EN 50082-1	DNV
VersaTRAK	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mini-VersaTRAK	✓	✓	✓	✓	✓	✓	✓	✓	✓
VT-PB8	✓	✓	✓	✓	✓	✓	✓	✓	✓

RemoteTRAK products:

Model	Safety UL508, CSA 22.2	Safety CE EN 61010	Hazardous UL1604, CSA 22.2	Hazardous EN 50021	Emissions FCC Part 15	Emissions ICES-003	Emissions CE EN 55022	Emissions CE EN 61326-1	Immunity CE EN 61326-1	DNV
RM-RTU-8840	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-8DI2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-16DI2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-8DO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-16DO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-8AI2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-16AI2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-4AO2 / 8AO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-8INS	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-4DI2-4DO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-4DI2-4AI2	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑
RM-232-485-4	✓	✓	✓	✓	✓	✓	✓	✓	✓	☑

SixTRAK products:

Model	Safety UL508, CSA 22.2	Safety CE EN 61010	Hazardous UL1604, CSA 22.2	Hazardous EN 50021	Emissions FCC Part 15	Emissions ICES-003	Emissions CE EN 55022	Immunity CE EN 50082-1	DNV
ST-MIX12884	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-MIX16880	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-DI-024-32	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-GT-232-02N	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-GT-ETH-24P	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-GT- all others	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-DI-024-08	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-DI- all others	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-DO-DC1-08	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-DO-AC1-08	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-DO-RLY-06	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-DO-DC3-08	✓	✓	✓	✓	✓	✓	✓	✓	✓
ST-DO- all others	✓	✓	✓	✓	✓	✓	✓	✓	✓

Model											
ST-AO-10V-08	✓	✓	✓	✓	✓	✓	✓		✓	✓
ST-AO-20M-08	✓	✓	✓	✓	✓	✓	✓		✓	✓
ST-AO- all others	✓	✓	✓	✓	✓	✓	✓		✓	✓
ST-AI-INS-08	✓	✓	✓	✓	✓	✓	✓		✓	✓
ST-AI-20M-16	✓	✓	✓	✓	✓	✓	✓		✓	✓
ST-AI- all others	✓	✓	✓	✓	✓	✓	✓		✓	✓
ST-EX-001-20U	✓	✓	✓	✓	✓	✓	✓		✓	✓

Modem products:

Model	Safety					Hazardous			Telcom	
		CE	Tel/ITE	Tel/ITE	Tel/ITE				Tel/ITE	Tel/ITE
	UL508, CSA 22.2	EN60 950	AS/NZS 3260	ACA TS001	IEC 950	UL1604, CSA 22.2	EN 50021		FCC Part 68	CS-03
VT-MODEM-1	✓	✓	✓	✓	✓	✓	✓		✓	✓
VT-MODEM-2	✓	✓	✓	✓	✓	✓	✓		✓	✓
VT-MODEM-3	✓	✓	✓	✓	✓	✓	✓		✓	✓
VT-MODEM-4	✓	✓	✓	✓	✓	✓	✓		✓	✓
VT-MODEM-5	✓	✓	✓	✓	✓	✓	✓		✓	✓

Model	Emissions				Immunity		Marine & Offshore
		CE	Tel/ITE	Tel/ITE	CE		
	FCC Part 15 (ICES-003)	EN 55022	AS/NZS 3548	ACA TS002	EN 50082-1		DNV
VT-MODEM-1	✓ Class B	✓	✓	✓	✓		✓
VT-MODEM-2	✓ Class B	✓	✓	✓	✓		✓
VT-MODEM-3	✓ Class B	✓	✓	✓	✓		✓
VT-MODEM-4	✓ Class B	✓	✓	✓	✓		✓
VT-MODEM-5	✓ Class B	✓	✓	✓	✓		✓

RemoteLog products:

Model	Safety						Hazardous			Telcom	
			CE	Tel/ITE	Tel/ITE	Tel/ITE				Tel/ITE	Tel/ITE
	UL508, CSA 22.2	EN 61010	EN 60950	AS/NZS 3260	ACA TS001	IEC 950	UL1604, CSA 22.2	EN 50021		FCC Part 68	CS-03
SR-4160-1T-1	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
SR-4160-1S-1	✓	✓	NA	NA	NA	NA	✓	✓		NA	NA
SR-4160-1SL-1	✓	✓	NA	NA	NA	NA	✓	✓		NA	NA
SR-4160-1E-1	✓	✓	NA	NA	NA	NA	✓	✓		NA	NA

Model	Emissions (Class B for all)					Immunity	DNV
		CE	CE	Tel/ITE	Tel/ITE	CE	
	FCC Part 15 (ICES-003)	EN 55022	EN 61326-1	AS/NZS 3548	ACA TS002	EN 61326-1	DNV
SR-4160-1T-1	✓	✓	✓	✓	✓	✓	☑
SR-4160-1S-1	✓	✓	✓	NA	NA	✓	☑
SR-4160-1SL-1	✓	✓	✓	NA	NA	✓	☑
SR-4160-1E-1	✓	✓	✓	NA	NA	✓	☑

Power supplies:

Model	Safety				Hazardous	Emissions (Class B for all)			Immunity	DNV
	CE						CE	CE	CE	
	EN 60950	UL/CSA 1950 or 60950	TUV 60950	UL508, CSA	UL1604, CSA 22.2	FCC Part 15 (ICES-003)	EN 55022	EN 61326-1	EN61326-1 or EN50082-1	DNV
ET-PS-024-02	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
ST-PS-024-05	✓	✓	✓	✓	✓	✓	✓	✓	✓	-
RM-PS-024-01	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
VT-PS-024-02N	✓	✓	-	✓	✓	✓	✓	✓	✓	☑
ST-PS-024-02N	✓	✓	-	✓	✓	✓	✓	✓	✓	☑

Markings:

Below are some of the standard and compliance ratings you may see on a SIXNET product.

All products sold in Europe must have the CE mark. This means the products meet the appropriate directives. At this time only the EMC Directive (emissions and immunity) and Low Voltage Directive (safety) apply.

FCC Part 15: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
FCC Part 68: Complies with Part 68 of FCC rules: Reg. #####; Ringer Equiv. #.#B; Jack (USOC) RJ11

This is the symbol for Det Norske Veritas. Though most of SIXNET products have been tested for DNV compliance, SIXNET doesn't currently put this symbol directly on any products.

This is the UL Listed mark. The "C" and "US" means that the product has been tested to both USA and Canada standards. SIXNET applies this mark to products that have been certified UL1604 and UL508.

This is the UL Recognized mark. The "C" (and optionally a "US") means that the product has been tested to both USA and Canada standards. SIXNET applies this mark to products that have been certified for UL508 only.

This is the A-tick mark. All information technology equipment (telcom devices) must meet the AS/NZS 3548 standard to be sold in Australia or New Zealand. SIXNET applies this mark to modem products.

This is the required Industry Canada mark for telecommunication products. SIXNET applies this only to modem products to indicate that they meet CS-03, the Canadian version of FCC Part 68.

This is the CSA mark. SIXNET doesn't put this on any products. SIXNET gets CSA certification through UL and puts the CUL mark (see above) on the products.

ISO9001 Certified:

www.iso.ch

SIXNET is a "Total Quality" company and has been ISO9001 certified since 1996. The International Organization for Standardization defines the ISO standards. Please review our:

N.I.S.T. Traceable Analog I/O:

www.nist.gov

All SIXNET in-house calibrations on analog I/O are traceable to N.I.S.T. (National Institute of Standards and Technology) standards.

Hazardous Locations:

www.ul.com
www.csa.ca

Most SIXNET products have been tested or verified by Underwriters Laboratories to comply with **UL1604** and **CAN/CSA C22.2/213-M1987**, **Class I, Division 2, Groups A, B, C, D.** Please reference UL File # **E192531**:

(Note: The RM-PS-024-01F power supply meets the requirements for UL1604 but is not currently included in this report.)

EEx nA II T4 X

www.cenelec.org

Most SIXNET products have been tested or verified by SIXNET to **CENELEC EN50021 (EEx nA II T4 X)** for operation in Zone 2 hazardous locations.

www.europa.eu.int

Most SIXNET products have been tested or verified by SIXNET to meet **Council Directive 94/9/EEC (ATEX Directive)** relating to Group II, Category 3 hazardous locations.

Safety of Programmable Controller and Related Components:

www.ul.com
www.csa.ca

Most SIXNET products have been tested or verified by Underwriters Laboratories to comply with **UL508** and **CAN/CSA C22.2/14-91M**. Please reference UL File # **E179490**:

Directive Compliance for the European Community:

All current SIXNET products are designed, manufactured, and verified to comply with the following European Union (EU) directives, as applicable:

- **EMC Directive** - Council Directive 89/336/EC relating to **E**lectro**M**agnetic **C**ompatibility
- **Low Voltage Directive** - Council Directive 73/23/EC relating to electrical safety of "low voltage" devices
- **RTTE Directive** - Council Directive 99/5/EC relating to **R**adio and **T**elecommunications **T**erminal **E**quipment
- **ATEX Directive** - Council Directive 94/9/EC relating to equipment and protective systems intended for use in potentially explosive atmospheres (SIXNET complies for Group II, Category 3 locations)
- **RoHS Directive** - Council Directive 2002/95/EC relating to the **R**estriction **of H**azardous **S**ubstances (SIXNET is in the process of complying to RoHS - see RoHS Compliance Statement)

www.europa.eu.int

Safety for the European Community: (see CE links above)

Most SIXNET products are designed, manufactured, and verified to comply with **EN61010 (Switches, I/O, Controller, & RTU products)** or **EN60950 (modem products)**.

www.europa.eu.int

Immunity for the European Community: (see CE links above)

Representative samples of most SIXNET products were tested and verified by a third party test lab and/or SIXNET. The samples were found to be immune to radiated RFI, ESD, and line-conducted burst interference in accordance with **EN50082-1** or **EN61326-1**.

CE

www.europa.eu.int

This includes compliance with the standards listed below (as applicable):

- EN61000-4-2 (IEC801-2) – ESD immunity
- EN61000-4-3 / ENV50204 (IEC801-3 / ENV50140) – Radiated immunity
- EN61000-4-4 (IEC801-4) – Fast transient immunity
- EN61000-4-5 (ENV50142) – Surge immunity
- EN61000-4-6 (ENV50141) – Conducted immunity
- EN61000-4-8 – Magnetic fields immunity
- EN61000-4-11 – Voltage interrupts immunity

Emissions for the European Community: (see CE links above)

CE

www.europa.eu.int

Representative samples of most SIXNET products were tested by a third part test lab. The samples were found to be within acceptable limits for radiated and line conducted emissions per **EN55022** or **EN61326-1**.

Emissions for the USA and Canada:

FCC

www.fcc.gov

Representative samples of most SIXNET products were tested by a third party test lab. The samples were found to comply with **FCC Part 15 - Subpart B, DOC Regulation CRC - c.1374**, and **Industry Canada** Notice ICES-003, Issue 2.

TELCOM for Telephone Modem Products:

FCC

www.fcc.gov

Representative samples of the VT-MODEM were tested by a third party test lab. The samples were found to comply with limits for a **Class B computing device pursuant to Subpart J of Part 15, and Part 68 of FCC rules**. The FCC registration number is **5KN-USA-34579-MD-E**.

www.ic.gc.ca

The VT-MODEM has been certified by **Industry Canada to Specification CS03, Issue 8**. The Industry Canada certification number is **2991 8926 A**.

The VT-MODEM has been certified by an approved third party test lab in Australia to meet the following standards: **ACA TS001-1997, ACA TS002-1997, AS/NZS3260-1993 (incl. amendments 1,2,3,4), AS/NZS3548-1993 (incl. amendments 1,2), IEC950-1991 (incl. amendments 1,2,3,4)**.

www.aca.gov.au

Marine & Offshore Locations:

Representative samples of most SIXNET products were tested by **Det Norske Veritas** to DNV Certification No. 2.4 for Class A and B locations. This testing includes compliance with all the standards listed below.

www.dnv.com

DNV #	IEC/EN Standard	Test	Description
3.6.2	60068-2-6 (Fc)	Sinusoidal Vibration	3-13.2Hz: ±1mm / 13.2-100Hz: 0.7g
3.7	600 68-2-2 (Bb,Bd)	Dry Heat	70°C / 16 hours
3.8	600 68-2-30 (Db)	Damp Heat	Two cycles, each 24 hours, 20/55°C, 95% RH
3.9	60068-2-1	Cold	0°C / 16 hours
3.4	60092-504	Power Supply Failure	3 interruptions, 30s duration
3.5	60092-504	Power Supply Variation	Four combo. of ±10% volt deviation & ±5% frequency deviation
3.12	60092-504	Insulation Resistance	Power lines - gnd: >100Mohm / >10Mohm
3.13	60092-504	High Voltage	1500V line to gnd: / 1min
3.14.9	61000-4-2	Electrostatic Discharge	±8kV air discharge / ±6 kV contact discharge
3.14.5	61000-4-4	Electrical Fast Transient / Burst	Power lines: ±2kV / Signal lines: ±1kV
3.14.6	61000-4-5	Electrical Slow Transient / Surge	Power input: ±0.5 kV, line-line / ±1kV, line-earth
3.14.8	61000-4-3	Radiated Susceptibility	80 MHz - 3GHz / 10 V/m 80% AM 1kHz
3.14.7	61000-4-6	Conducted High Frequency	Power input/Signal: 10 KHz-80MHz / 3V / 80% AM
3.14.4	60945	Conducted Low Frequency	Power input (110VAC): 0.05-10KHz
3.15.3	60533 / 50081-2	Radiated Emissions	30-1000MHz
3.15.3	60533 / 50081-2	Conducted Emissions	10KHz-20MHz
3.2	-	Visual Inspection	Electrical/mechanical construction & workmanship
3.11	IEC 92-504	Inclination	Static and dynamic

MTBF Data for SIXNET Hardware

SIXNET calculates the actual installed experience of our customers in calculating the Mean Time Between Failure (MTBF) data we publish. We use a conservative estimate of only 70% of units shipped being in service and a usage per day of 12 hours.

There are several methods to calculate MTBF. Most often manufacturers quote theoretical calculations that are based upon statistics computed about the components used in the product. We have chosen instead to report actual results, which are gathered from our ISO9001 traceable shipments and return/repair records.

MTBF Calculation:

First, we determine the average number of units being installed per month (A). Second, we determine the number of months that the unit has been shipping (B). We then can calculate the total number of "unit months" that the unit has been in the field (C).

((A x 1) + (A x 2) + … + (A x B)) = C (total number of unit months in the field)
(Note: For a twelve-month period, you would multiply 78 times the average number of units installed per month.)

Next, we assume an installation rate of 70% of what we shipped and 12 hours operation per day on the average. From this we can calculate the total number of "unit operating hours" (D) as follows:

C (from above) x 70% x 12 hours/day x 30 days/month = D (total number of unit operating hours)

Finally, to get the MTBF we divide the total number of unit operating hours by the number of applicable failures. An applicable failure is one that cannot be attributed to misuse (i.e. over-voltage, forklift impalement, etc.) or Mother Nature (i.e. lightning, flooding, etc.).

(Total number of unit operating hours) / (number of chargeable failures) = MTBF

MTBF Data: (last updated 05/2002)

Product	Units Shipped (1st year)	Average Units / month (A)	Total Unit Months (A x 78)	Total Unit Hours (A x 78 x .7 x 12 x 30)	Applicable Failures	MTBF (see notes)
SixTRAK I/O	4,000	333	25,974	6,545,448	9	**727,272**
SixTRAK Gateways & VersaTRAK RTUs	660	55	4,290	1,081,080	4	**270,270**
Industrial Modems	2,840	236	18,408	4,638,816	9	**515,424**
RemoteTRAK I/O, EtherTRAK I/O, & Modbus Gateways	1,800	150	11,700	2,948,400	5	**589,680**
Ethernet Switches	1,715	143	11,154	2,810,808	4	**702,702**
SiteTRAK and all IPm products	Too New. Not enough data yet. Estimated MTBF to be similar to legacy SixTRAK Gateways & VersaTRAK RTUs.					

Notes:
- These MTBF numbers are based on data for the first year of production for each product group.
- For SIXTRAK I/O, the MTBF can be broken down such that for a system with 20 modules, there is only a 1 in 4 likelihood that you will have a single failure in 4 years.