westermo

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Lynx 3000 Series

Industrial Ethernet switch

weOS

Table of Contents

1. General Information 3
    1.1. Legal Information 3
    1.2. About This Guide 3
    1.3. Software Tools 3
    1.4. License and Copyright for Included FLOSS 3
    1.5. WeOS 3
2. Safety and Regulations 4
    2.1. Warning Levels 4
    2.2. Safety Information 5
    2.3. Care Recommendations 7
    2.4. Product Disposal 7
    2.5. Compliance Information 7
        2.5.1. Agency Approvals and Standards Compliance 7
        2.5.2. FCC Part 15.105 Class A Notice 8
        2.5.3. Corrosive Environment 8
        2.5.4. Simplified Declaration of Conformity 8
3. Product Description 9
    3.1. Product Description 9
    3.2. Available Models 10
    3.3. Hardware Overview 11
    3.4. Connector Information 12
        3.4.1. Power Input 12
        3.4.2. I/O Connection 12
        3.4.3. Console Port 13
        3.4.4. Micro SD 13
        3.4.5. SFP Transceivers 13
    3.5. LED Indicators 15
    3.6. Dimensions 16
4. Installation 17
    4.1. Mounting 17
    4.2. Removal of Product 17
    4.3. Panel Mounting 18
    4.4. Wall Mounting 19
    4.5. Cable Strap 19
    4.6. Functional Earth Connection 20
    4.7. Cooling 21
5. Specifications 22
    5.1. Interface Specifications 22
    5.2. Type Tests and Environmental Conditions 27
6. Revision Notes 31

1. General Information

1.1. Legal Information

The contents of this document are provided “as is”. Except as required by applicable law, no warranties of any kind are made in relation to the accuracy and reliability or contents of this document, either expressed or implied, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Westermo reserves the right to revise this document or withdraw it at any time without prior notice.

Under no circumstances shall Westermo be responsible for any loss of data or income or any special, incidental, and consequential or indirect damages howsoever caused.

More information about Westermo can be found at www.westermo.com.

1.2. About This Guide

This guide is intended for installation engineers and users of the Westermo products.

It includes information on safety and regulations, a product description, installation instructions and technical specifications.

1.3. Software Tools

Related software tools are available at https://www.westermo.com/support/product-support.

1.4. License and Copyright for Included FLOSS

This product includes software developed by third parties, including Free/Libre Open Source Software (FLOSS). The specific license terms and copyright associated with the software are included in each software package respectively. Please visit the product web page for more information.

Upon request, the applicable source code will be provided. A nominal fee may be charged to cover shipping and media. Please direct any source code request to your normal sales or support channel.

1.5. WeOS

This product runs WeOS 5 (Westermo Operating System). Instructions for quick start, configuration and factory reset are found in the WeOS user documentation at www.westermo.com.

2.1. Warning Levels

Warning signs are provided to prevent personal injuries and/or damages to the product. The following levels are used:

Level of warning	Description	Consequence personal injury	Consequence material damage
WARNING	Indicates a potentially hazardous situation	Possible death or major injury	Major damage to the product
CAUTION	Indicates a potentially hazardous situation	Minor or moderate injury	Moderate damage to the product
NOTICE	Provides information in order to avoid misuse of the product, confusion or misunderstanding	No personal injury	Minor damage to the product
NOTE	Used for highlighting general, but important information	No personal injury	Minor damage to the product

Table 1. Warning levels

2.2. Safety Information

Before installation:

Read this manual completely and gather all information available on the product. Make sure it is fully understood. Check that your application does not exceed the safe operating specifications for the product.

SAFETY DURING INSTALLATION

The product must be installed and operated by qualified service personnel and installed into an apparatus cabinet or similar, where access is restricted to service personnel only.

Before energising and connecting communication cables to the product, ensure a protective earthing conductor is first connected to the protective earthing terminal (only valid for metallic housings). Westermo recommends a cross-sectional area of at least 4 mm^2.

Upon removal of the product, disconnect the product from the power supply and all other communication ports before disconnecting the protective earthing conductor.

HAZARDOUS VOLTAGE

Do not open an energised product. Hazardous voltage may occur when connected to a power supply.

PROTECTIVE FUSE

It must be possible to disconnect manually from the power supply. Ensure compliance to national installation regulations.

POWER SUPPLY CONNECTION

There are safety regulations governing the power source that can be used in conjunction with the product. Refer to chapter Interface Specifications.

REDUCE THE RISK OF FIRE

To reduce the risk of fire, use only telecommunication line cords with a cable diameter of AWG 26 or larger. Regarding power cable dimensions, see chapter Interface Specifications.

HOT SURFACE
Be aware that the surface of this product may become hot. When it is operated at high temperatures, the external surface may exceed Touch Temperature Limit according to the product's relevant electrical safety standard.

CLASS 1 LASER PRODUCT
Do not look directly into a fibre optical port or any connected fibre, although the product is designed to meet the Class 1 Laser regulations and complies with 21 CFR 1040.10 and 1040.11.

HANDLING OF SFP TRANSCEIVERS
SFP transceivers are supplied with plugs to avoid contamination inside the optical port. They are very sensitive to dust and dirt. If the fibre optic cable is disconnected from the product, a protective plug must be used on the transmitter/receiver. The protective plug must be kept on during transportation. The fibre optic cable must be handled the same way.

CORROSIVE GASES
If the product is placed in a corrosive environment, it is important that all unused connector sockets are protected with a suitable plug, in order to avoid corrosion attacks on the gold plated connector pins.

ELECTROSTATIC DISCHARGE (ESD)
Prevent electrostatic discharge damage to internal electronic parts by discharging your body to a grounding point (e.g. use a wrist strap).

CABLE TEMPERATURE RATING FOR FIELD TERMINAL WIRES
There may be a requirement on the minimum temperature rating of the cable to be connected to the field wiring terminals, see chapter Interface Specifications.

2.3. Care Recommendations

Follow the care recommendations below to maintain full operation of the product and to fulfill the warranty obligations:

- Do not drop, knock or shake the product. Rough handling above the specification may cause damage to internal circuit boards.
- Use a dry or slightly water-damp cloth to clean the product. Do not use harsh chemicals, cleaning solvents or strong detergents.
- Do not paint the product. Paint can clog the product and prevent proper operation.

If the product is used in a manner not according to specification, the protection provided by the equipment may be impaired.

If the product is not working properly, contact the place of purchase, the nearest Westermo distributor office or Westermo technical support.

2.4. Product Disposal

This symbol means that the product shall not be treated as unsorted municipal waste when disposing of it. It needs to be handed over to an applicable collection point for recycling electrical and electronic equipment.

By ensuring the product is disposed of correctly, you will help to reduce hazardous substances and prevent potential negative consequences to both the environment and human health, which could be caused by inappropriate disposal.

Figure 1. WEEE symbol for treatment of product disposal

2.5. Compliance Information

2.5.1. Agency Approvals and Standards Compliance

Type	Approval/Compliance
EMC	• EN/IEC 61000-6-2, Immunity industrial environments • EN/IEC 61000-6-4, Emission industrial environments
Environmental[a.]	• NEMA TS 2, Traffic Controller Assemblies with NTCIP Requirements
Trackside	• EN 50121-4/IEC 62236-4, Railway signalling and telecommunications apparatus
Marine	• DNV GL rules for classification - Ships and offshore units

[a.] Applicable for non-PoE models only

Table 2. Agency approvals and standards compliance

2.5.2. FCC Part 15.105 Class A Notice

This product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the product is operated in a commercial environment.

This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user manual, may cause harmful interference to radio communications. Operation of this product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the users own expense.

2.5.3. Corrosive Environment

This product has been successfully tested in a corrosion test according to IEC 60068-2-60, method 3. This means that the product meets the requirements to be placed in an environment classified as ISA-S71.04 class G3.

CORROSIVE GASES

If the product is placed in a corrosive environment, it is important that all unused connector sockets are protected with a suitable plug, in order to avoid corrosion attacks on the gold plated connector pins.

2.5.4. Simplified Declaration of Conformity

Hereby, Westermo declares that this product is in compliance with applicable EU directives and UK legislations. The full declaration of conformity and other detailed information is available at www.westermo.com/support/product-support.

Figure 2. The European Conformity and the UK Conformity Assessment markings

3. Product Description

3.1. Product Description

The Lynx 3000 is a series of compact high performance industrial managed switches and routers developed with the needs of current and future industrial data networks in mind.

The switches are designed for the harshest industrial environments and can withstand extreme temperatures, vibrations, humidity and electrical environments. The use of only industrial grade components ensures market leading mean time between failure (MTBF), maximized service life, and reduced operational and life cycle costs.

The series provides layer 2 and layer 3 functionality, enabling complex ring networks and routing solutions. It features a rich assortment of variants for various use cases, including applications requiring true high performance. With models supporting up to 2.5 gigabit speeds, as well as entry-level models optimized for Fast Ethernet applications, the series is ideal for handling big data, high bandwidth, and mission-critical applications.

Power over Ethernet (PoE) versions provide up to 30 W output per port and a total budget of 240 W. The possibility of lean, simple installations is ideal, as both connectivity and power can be provided by a single cable. These switches have advanced PoE management features for connecting HD IP CCTV cameras in industrial settings, as well as other power-hungry applications.

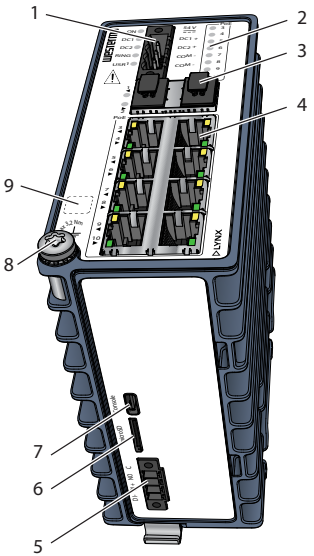
The series is powered by the next generation WeOS operating system, which ensures robust operation and support for an expanding range of protocols and features. In addition, recognizing the growing sophistication of cyberattacks, an extensive suite of cybersecurity tools is available. These tools can be used to build networks in compliance with the IEC 62443 standard, which defines technical security requirements for data communication network components.

The Lynx 3000 switches are ideal for mission critical applications within transportation, manufacturing, energy, smart cities and other applications.

3.2. Available Models

Art. no.	Model	SW	Total no. of ports	Copper ports No. of ports/ Speed/PoE			SFP ports No. of ports/ Speed		I/O and SD slot
3627-0600	Lynx 3306-F2G-T4-LV	L2	6	4	100 Mbit/s	-	2	1 Gbit/s	-
3627-0610	Lynx 3306-E-F2G-T4-LV	L3							
3627-0560	Lynx 3310-F2G-T8-LV	L2	10	8					
3627-0570	Lynx 3310-E-F2G-T8-LV	L3							
3627-0520	Lynx 3510-F2G-T8G-LV	L2			1 Gbit/s				Yes
3627-0530	Lynx 3510-E-F2G-T8G-LV	L3							
3627-0500	Lynx 3510-F2G-P8G-LV	L2				Yes			
3627-0510	Lynx 3510-E-F2G-P8G-LV	L3							
3627-0540	Lynx 3510-F2G2.5-T8G-LV	L2				-		2,5 Gbit/s	
3627-0550	Lynx 3510-E-F2G2.5-T8G-LV	L3							
3627-0580	Lynx 3510-F2G2.5-P8G-LV	L2				Yes			
3627-0590	Lynx 3510-E-F2G2.5-P8G-LV	L3							

3.3. Hardware Overview



Illustrated by a Lynx 3510-F2G-P8G-LV

Figure 3. Location of interface ports and LED indicators

No.	Description	No.	Description
1	Power port	2	LED indicators
3	Gbit SFP ports or 2.5 Gbit SFP ports[a.]	4	Ethernet TX ports or Ethernet TX ports (PoE+)[a.]
5	I/O port[b.]	6	Micro SD[b.]
7	Console port	8	Protective earth terminal
9	Label with data matrix[c.]		

[a.] Depending on model

[b.] Not applicable for Lynx 3306 and Lynx 3310 models

[c.] The base MAC address and production date of the product is included in the front label data matrix.

3.4. Connector Information

3.4.1. Power Input

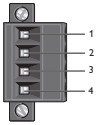
Illustration	Position	Product marking	Direction	Description
	1	DC1	Input	Supply voltage
	2	DC2	Input	Supply voltage
	3	-COM	Input	Common
	4	-COM	Input	Common

Table 3. Power input

POWER SUPPLY CONNECTION
There are safety regulations governing the power source that can be used in conjunction with the product. Refer to chapter Interface Specifications.

3.4.2. I/O Connection

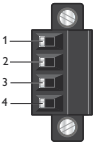
Illustration	Pin no.	Product marking	Direction	Description
	1	C	Output	Relay output common
	2	NO	Output	Relay output normally open
	3	DI +	Input	Digital in +
	4	DI -	Input	Digital in -

Table 4. I/O connection

The relay output is a potential free, opto-isolated, normally open, solid-state relay. This can be configured to monitor various alarm events within the unit, see *WeOS User guide*. An external load in series with an external voltage source is required for proper functionality. For voltage/current, see Interface Specifications.

The Digital in is an opto-isolated digital input, which can be used to monitor external events. For voltage/current, see Interface Specifications.

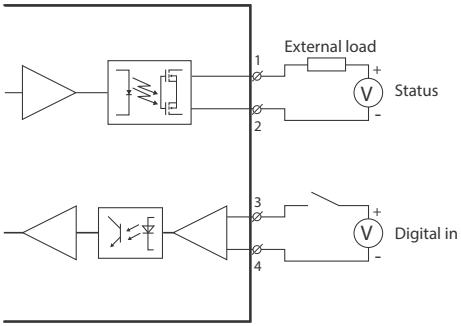


Figure 4. Digital in

3.4.3. Console Port

The console port can be used to connect to the CLI (Command Line Interface). The console connector is a USB-C cable that connects to a FTDI FT232R USB to serial converter internally. For drivers, refer to www.ftdichip.com and download the appropriate VCP driver.

3.4.4. Micro SD

To insert the micro SD card correctly, turn the gold plated pins upwards towards the text "microSD".

Figure 5. Insertion of micro SD card

3.4.5. SFP Transceivers

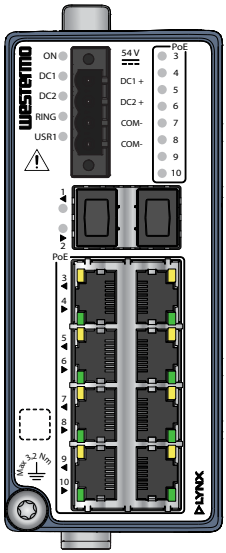
Each SFP slot can hold one SFP transceiver. See *"Transceiver User Guide 6100-0000"* for transceiver handling instructions, which also can be downloaded from the product support pages at www.westermo.com/support/product-support.

In the event of contamination, the optical connectors in the SFP transceivers should only be cleaned by the use of forced nitrogen and some kind of cleaning stick. Recommended cleaning fluids are methyl-, ethyl-, isopropyl- or isobutyl alcohol, hexane or naphtha.

HANDLING OF SFP TRANSCEIVERS

SFP transceivers are supplied with plugs to avoid contamination inside the optical port. They are very sensitive to dust and dirt. If the fibre optic cable is disconnected from the product, a protective plug must be used on the transmitter/receiver. The protective plug must be kept on during transportation. The fibre optic cable must be handled the same way.

3.5. LED Indicators

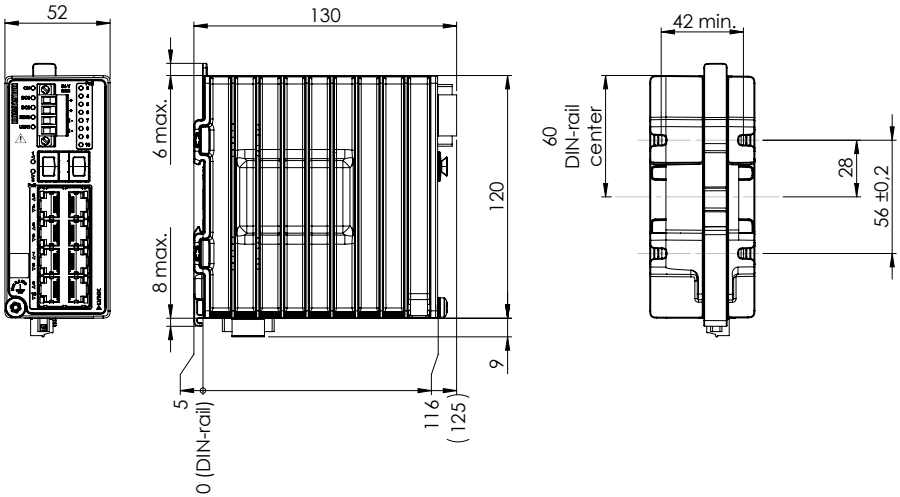
LED	Status	Description	Illustration
ON	OFF	Product has no power	
	GREEN	All OK, no alarm condition	
	RED	Alarm condition, or until product has started up. (Alarm conditions are configurable, see *WeOS5 User Guide*)	
USR1	Configurable, see *WeOS5 User Guide*		
RING	OFF	All ring protocols are disabled	
	GREEN	All ring protocols are OK	
	RED	A ring protocol has an error	
	FLASH	Green flash: All ring protocols are OK. A ring protocol acts as master/focal-point/root. Red flash: A ring protocol has an error. A ring protocol acts as master/focal-point/root.	
DC1	OFF	Product has no power	
	GREEN	Power OK on DC1	
	RED	DC1 input voltage is below operating voltage limit	
DC2	OFF	Product has no power	
	GREEN	Power OK on DC2	
	RED	DC2 input voltage is below operating voltage limit	
TX/FX ports	OFF	No link	
	GREEN	Link established	
	GREEN FLASH	Data traffic indication	
	YELLOW	Port alarm, or port is set in blocking state by link redundancy protocol	
	YELLOW FLASH	Location indicator ("Here I am"). Activated when connected to WeConfig tool, or open request from web or/and CLI.	
PoE[a.]	OFF	No PoE output	
	GREEN	PoE output active	
	GREEN FLASH	Error or negotiating power output	

[a.] Only available for PoE models

Table 5. LED indicators

3.6. Dimensions

Dimensions are stated in mm and are regardless of model.



Illustrated by a Lynx 3510-F2G-P8G-LV

Figure 6. Dimensional drawing

4. Installation

4.1. Mounting

This product should be mounted on a 35 mm DIN-rail, which is horizontally mounted inside an apparatus cabinet or similar dry location.

1. To mount the product, first push the support pin down, then towards the front of the product to lock the support pin.
2. Then, place the product on to the DIN-rail. First the upper part, then the lower part of the product.
3. Lastly, push the support pin forward to lock the product to the DIN-rail. Make sure the products is secured to the DIN-rail.

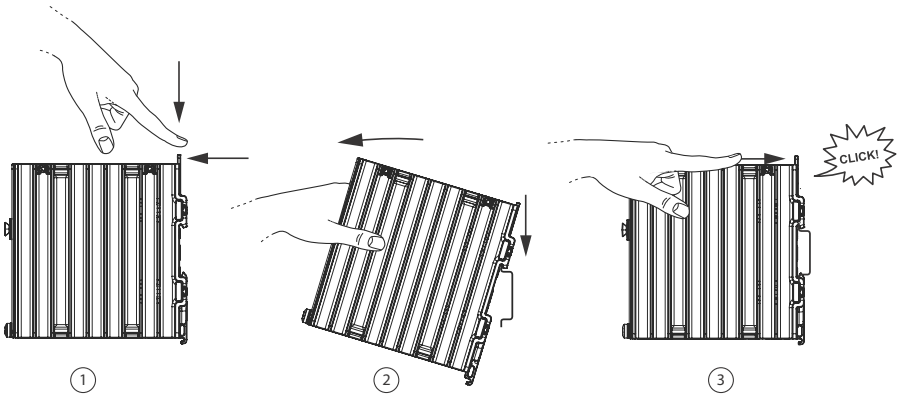


Figure 7. Mounting of product

4.2. Removal of Product

To remove the product, either push the support pin down and towards the front of the product, or press down the support at the back with a screwdriver and lift off the product from the DIN-rail.

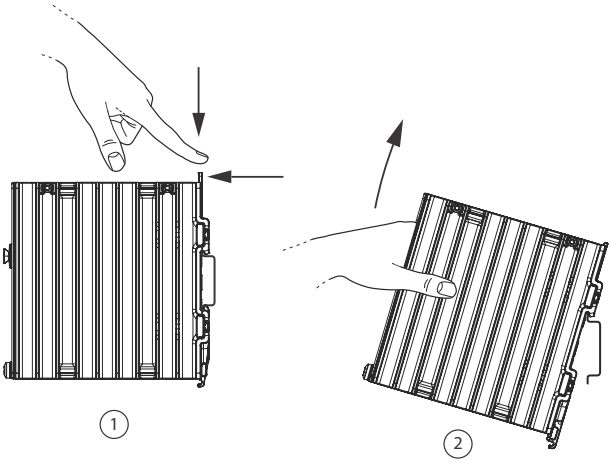


Figure 8. Removal of product by pushing the support pin

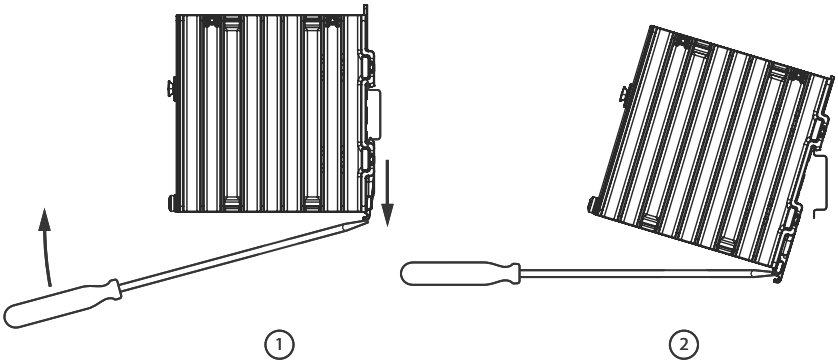


Figure 9. Removal of product with screwdriver

4.3. Panel Mounting

The product can be mounted to a panel with cage nuts made for 5.3 mm square holes with a 1-1.6 mm panel thickness.

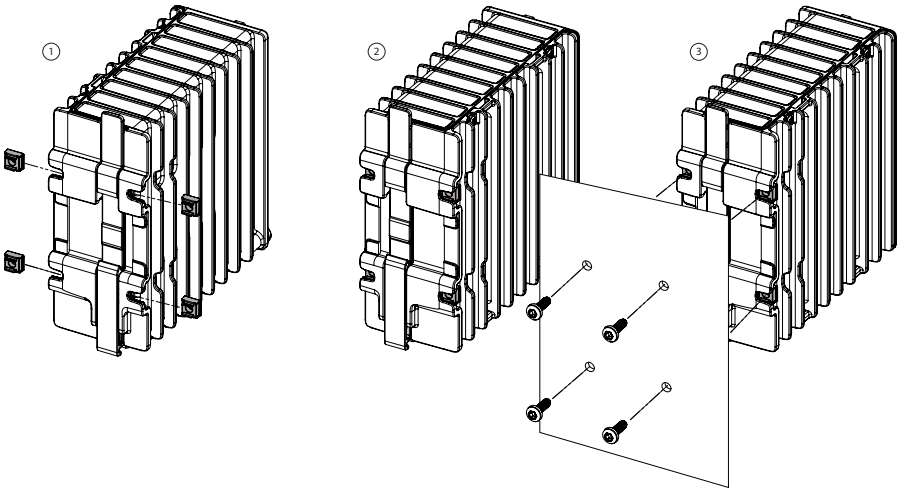
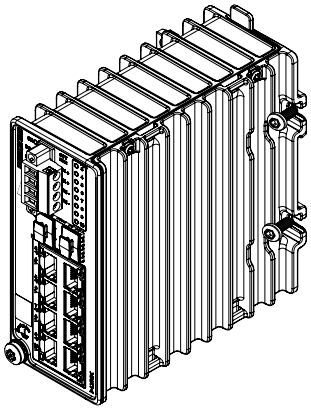


Figure 10. Panel mounting with cage nuts

4.4. Wall Mounting

The product can be mounted to a wall with screws.

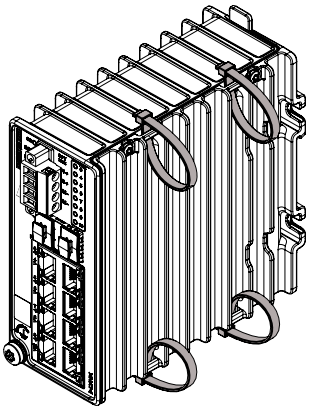


Illustrated by a Lynx 3510-F2G-P8G-LV

Figure 11. Wall mounting with screws

4.5. Cable Strap

The product has loops on the right side that cable straps can be attached to, to help collecting the connector cables and lead them aside.

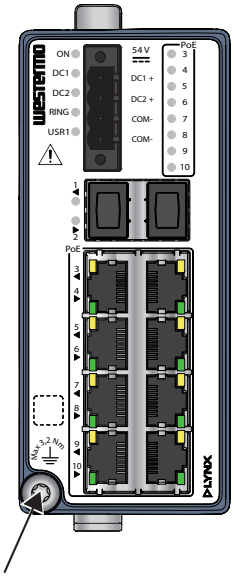


Illustrated by a Lynx 3510-F2G-P8G-LV

Figure 12. Cable straps

4.6. Functional Earth Connection

For correct function, the earth connection needs to be properly connected to a designated PE rail. Torx: T25 and torque: 3.2 Nm.

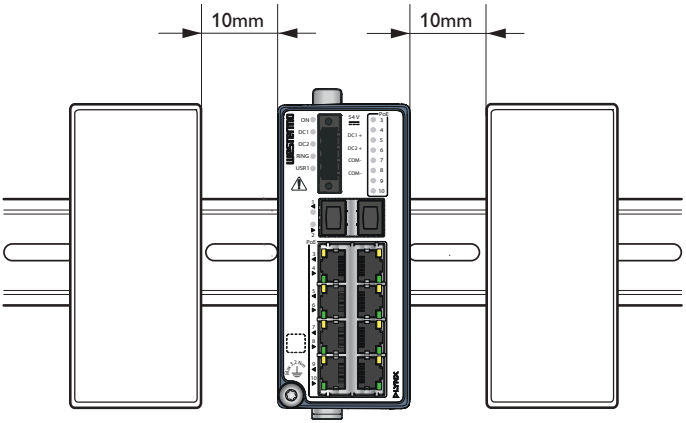


Illustrated by a Lynx 3510-F2G-P8G-LV

Figure 13. Earth connection

4.7. Cooling

This unit uses convection cooling. To avoid obstructing the airflow around the unit, use the following spacing rules. Minimum spacing 25 mm (1.0 inch) above / below and 10 mm (0.4 inches) left / right the unit. Spacing is recommended for the use of unit in full operating temperature range and service life.



Illustrated by a Lynx 3510-F2G-P8G-LV

Figure 14. Minimum spacing of product

5. Specifications

5.1. Interface Specifications

DC, Power port (non-PoE models)		
Rated voltage[a.]	12 to 48 VDC, Class III (SELV/PELV)[b.]	
Operating voltage	9.6 to 60 VDC	
Rated current	0.16 to 0.6 A	
Fuse rating	Denote time-delay fuse	4.0 A(T)
Rated frequency	DC	
Inrush current, I^2t[c.]	175 mA^2s at 12 VDC 287 mA^2s at 48 VDC	
Startup current	2 x nominal current	
Polarity	Reverse polarity protected	
Redundant power input	Yes	
Isolation	All other ports	
Connector	Detachable screw terminal connector	
Conductor cross section (flexible)	0.2-1.5 mm² (AWG 24-16). Use copper conductors only.	
Stripping length cable	10 mm	
Cable temperature rating	For minimum temperature rating of the cable to be connected to the field wiring terminals minimum + 90 °C	
Circuit type	SELV	
Shielded cable	Not required	

[a.] Only CE-compliant Class I or Class II power supplies with SELV/PELV output shall be used with the product

[b.] This equipment is considered equivalent to Class III equipment, even though the internal voltage of switching transformer exceeds the specified level of 6.3.1 in EN/IEC/UL 61010-1. The voltage at the accessible part does not exceed the limit of 6.3.2 in EN/IEC/UL 61010-1 during a single fault condition.

[c.] Measured for 1 second at startup

DC, Power port (PoE models)		
Rated voltage[a.]	54 VDC, Class III (SELV/PELV)[b.]	
Operating voltage	802.3at (PoE+): 53 to 57 VDC 802.3af: 48 to 57 VDC No PoE usage: 12 to 57 VDC	
Rated current	Max. 4.8 A	
Fuse rating	Denote time-delay fuse	6.3 A(T)
Rated frequency	DC	
Inrush current, I^2t[c.]	320 mA^2s at 54 VDC	
Startup current	2 x nominal current	
Polarity	Reverse polarity protected	
Redundant power input	Yes	
Isolation	All other ports except Ethernet TX port	
Connector	Detachable screw terminal connector	
Conductor cross section (flexible)	0.2-1.5 mm² (AWG 24-16). Use copper conductors only.	
Stripping length cable	10 mm	
Cable temperature rating	For minimum temperature rating of the cable to be connected to the field wiring terminals minimum + 90 °C	
Circuit type	SELV	
Shielded cable	Not required	

[a.] Only CE-compliant Class I or Class II power supplies with SELV/PELV output shall be used with the product

[b.] This equipment is considered equivalent to Class III equipment, even though the internal voltage of switching transformer exceeds the specified level of 6.3.1 in EN/IEC/UL 61010-1. The voltage at the accessible part does not exceed the limit of 6.3.2 in EN/IEC/UL 61010-1 during a single fault condition.

[c.] Measured for 1 second at startup

I/O connection, Digital input[a.,b.]	
Isolation to	All other ports
Connector	Detachable screw terminal connector
Conductor cross section	0.2-1.5 mm² (AWG 24-16). Use copper conductors only.
Stripping length cable	10 mm
Circuit type	SELV
Maximum voltage/ current	60 VDC, $I_{IN} \leq 2.9$ mA at 60 VDC
Voltage levels	Logic one: >8 VDC Logic zero: <5 VDC

[a.] Not applicable for Lynx 3306 and Lynx 3310 models

[b.] External circuits connected to I/O connectors shall be SELV-rated circuits, galvanic isolated from mains

I/O connection, Relay output[a.,b.]	
Connect resistance	Maximum 30 Ω
Isolation to	All other ports
Connector	Detachable push-in terminal
Conductor cross section	0.2-1.5 mm² (AWG 24-16). Use copper conductors only.
Stripping length cable	10 mm
Circuit type	SELV
Maximum voltage/ current	60 VDC/80 mA

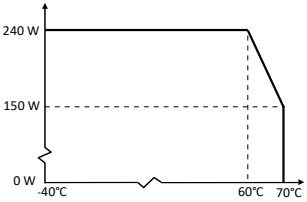
[a.] Not applicable for Lynx 3306 and Lynx 3310 models

[b.] External circuits connected to I/O connectors shall be SELV-rated circuits, galvanic isolated from mains

Ethernet TX (non-PoE models)[a.]	
Electrical specification	IEEE std 802.3.
Data rate	10 Mbit/s, 100 Mbit/s, 1000 Mbit/s[b.], manual or auto
Duplex	Full or half, manual or auto
Circuit type	SELV
Transmission range	Up to 100 m with CAT5e cable or better
Isolation	All other ports
Cabling	Shielded cable CAT5e or better is recommended
Conductive chassis	Yes

[a.] 10/100/1000 Mbit/s ports are no. 3 to 10

[b.] Not applicable for Lynx 3306 and Lynx 3310 models

Ethernet TX (PoE models)[a.]	
Output voltage	48-57 VDC
Output power	Max 30 W on one port (802.3.at; "PoE+")
Total output power	 Max 240 W at -40°C to +60°C (-40°F to 140°F) Linear derating with 9 W/°C (5 W/°F) between +60°C to +70°C (+140°F to 158°F) Max 150 W at +70°C (+158°F)
Electrical specification	IEEE std 802.3. Active PoE Pair: mode A
Data rate	10 Mbit/s, 100 Mbit/s, 1000 Mbit/s, manual or auto
Duplex	Full or half, manual or auto
Circuit type	SELV
Transmission range	Up to 100 m with CAT5e cable or better
Isolation	All other ports except DC, Power port
Cabling	Shielded cable CAT5e or better is recommended
Conductive chassis	Yes

[a.] 10/100/1000 Mbit/s ports are no. 3 to 10

NOTE
The product is to be connected to internal Ethernet networks without exiting a facility and being subjected to TNVs.

SFP ports[a.]	
Optical/Electrical specification	IEEE std 802.3
Data rate	1 Gbit/s, 2.5 Gbit/s[b.]
Duplex	Full or half, manual or auto
Transmission range	Depending on transceiver
Connector	SFP slot holding fibre transceiver

[a.] SFP ports are 1 to 2.

[b.] Only applicable for models which support 2.5 Gbit/s SFP ports. Note: 2.5 Gbit/s ports also support 1 Gbit/s transceivers.

Console port	
Electrical specification	USB 2.0 device interface
Data rate	Up to 480 Mbps (high-speed mode). Emulates UART, settings 115200 bps.
Circuit type	SELV
Maximum supply current	100 mA
Connector	USB-C connector in device mode

Micro SD[a.]	
Electrical specification	Secure Digital 2.0
Circuit type	SELV
Maximum supply current	100 mA
Connector	Micro SD connector

[a.] Not applicable for Lynx 3306 and Lynx 3310 models

5.2. Type Tests and Environmental Conditions

Environmental phenomena	Basic standard	Description	Test levels
ESD	EN 61000-4-2	Enclosure	Contact: ±6 kV Air: ±8 kV
Fast transients	EN 61000-4-4	Power port	± 2 kV, 5 kHz, 100 kHz Direct coupling
		Earth port	
		I/O port	± 2 kV, 5 kHz, 100 kHz Capacitive coupling clamp
		Ethernet ports	
Surge	EN 61000-4-5	Power port	L-E: ± 1 kV, 12 Ω, 9 µF, 1.2/50 µs L-E: ± 2 kV, 42 Ω, 0.5 µF, 1.2/50 µs L-L: ± 0,5 kV, 2 Ω, 18 µF, 1.2/50 µs L-L: ± 1 kV, 42 Ω, 0,5 µF, 1.2/50 µs
		I/O port	L-E: ± 2 kV, 42 Ω, 0.5 µF, 1.2/50 µs L-L: ± 1 kV, 42 Ω, 0.5 µF, 1.2/50 µs
		Ethernet ports	L-E: ± 2 kV, 2 Ω, direct on shield, 1.2/50 µs
Power frequency magnetic field	EN 61000-4-8	Enclosure	100 A/m, 16.7, 50 and 60 Hz 300 A/m DC
Pulsed magnetic field	EN 61000-4-9	Enclosure	300 A/m
Radiated RF immunity	EN 61000-4-3	Enclosure	20 V/m, 80 MHz to 2,7 GHz 10 V/m, 2.7 to 6 GHz
Conducted RF immunity	EN 61000-4-6	Power port	10 V, 80% AM, 1 kHz, 0.15 to 80 MHz Spot frequencies: 2, 3, 4, 6.2, 8.2, 12.6, 16.5, 18.8, 22, 25 MHz
		Earth port	
		I/O port	
		Ethernet ports	
Radiated RF emission	CISPR 16-2-3	Enclosure	Class A (30 MHz to 6 GHz) DNV-CG; Bridge and Deck Zone (0.15 to- 6 GHz) Class A, FCC Part 15 B (30 MHz to 8 GHz) (non-PoE models) Class A, FCC Part 15 B (30 MHz to 7 GHz) (PoE models)
	ANSI C63,4		
Conducted RF emission	CISPR 16-2-1	Power port	Class A (0.15 to 30 MHz)
	ANSI C63.4		DNV-CG - Bridge and Deck Zone (0.01 to 30 MHz)
			Class A, FCC Part 15 B (0.15 to 30 MHz)
	CISPR 22	Ethernet ports	Class A (0.15 to 30 MHz)
Compass safe distance	IEC 60945	Enclosure	Minimum safe distance to: standard compass: 15 cm steering compass: 10 cm
Power supply failure	DNV-CG-0339	Power port	U_N-100%, 30 s

Environmental phenomena	Basic standard	Description	Test levels
Power supply variation	DNV-CG-0339	Power port	1.3 x U_N (62.4 VDC), 0.75 x U_N (18 VDC), 15 min
Immunity to conducted low frequency interference	DNV-CG-0339	Power port	3 Vrms, 0.05 to 10 kHz
Insulation resistance (non-PoE models)	DNV-CG-0339	Power port and Ethernet ports to all other ports, incl. chassis	500 VDC, 60 s
		I/O port to all other ports	
	IEEE 802.3	Ethernet ports to all other ports incl. chassis	
Insulation resistance (PoE models)	DNV-CG-0339	Power port and Ethernet PoE ports to all other ports, incl. chassis	500 VDC, 60 s
		I/O port to all other ports	
	IEEE 802.3	Power port and Ethernet PoE ports to all other ports, incl. chassis	
Dielectric strength (non-PoE models)	DNV-CG-0339	I/O port to all other ports, incl. chassis	1500 VAC rms, 60 s
	DNV-CG-0339	Power port to all other ports, incl. chassis	2250 VDC, 60 s
	IEEE 802.3		
	IEEE 802.3	Ethernet ports to all other ports incl. chassis	
Dielectric strength (PoE models)	DNV-CG-0339	I/O port to all other ports, incl. chassis	1500 VAC rms, 60 s
	DNV-CG-0339	Power port and Ethernet PoE ports to all other ports, incl. chassis	2250 VDC, 60 s
	IEEE 802.3		

Table 6. EMC and electrical conditions

Environmental phenomena	Basic standard	Description	Test levels
Temperatures (non-PoE models)	EN 60068-2-1 EN 60068-2-2	Operational	-40 to +70°C
		Storage and transport	-40 to +85 °C (-40 to +185 °F)
Temperatures (PoE models)	EN 60068-2-1 EN 60068-2-2	Operational	-40 to +70°C (-40 to +158°F) at maximum 150 W PoE budget -40 to +60°C (-40 to +140°F) at 240 W PoE budget
		Storage and transport	-40 to +85 °C (-40 to +185 °F)
Humidity	EN 60068-2-30	Damp heat, cyclic	+25 to 55°C, 95% RH 2 cycles (12+12 hours) = 48 hours
Corrosive gases	IEC 60068-2-60	Operational	Method 3, 21 days[a.]
Altitude		Operational	2000 m/80 kPa
MTBF (non-PoE models)	Telcordia		Lynx 3310-(E)F2G-T8-LV: 1,138,000 hours All others: 1,035,000 hours
	MTBF MIL-HBDK-217F		Lynx 3310-(E)F2G-T8-LV: 974,000 hours All others: 879,000 hours
MTBF (PoE models)	Telcordia		638,000 hours
	MTBF MIL-HBDK-217F		583,000 hours
Vibration[b.]	IEC 60068-2-6 (sine)	Operational	5 to 8 Hz at ± 7.5 mm 8 to 500 Hz at 2 g 5 sweep cycles in each axis (3 x 5), 1 octave/min
	IEC 60068-2-64 (random)	Operational	2.3 m/s^2 random, 5 to 2000 Hz, 3 x 1.5 h
Shock	IEC 60068-2-27	Operational	15 g/11 ms, 3 x 6 shocks
Enclosure	EN 61010-1	Aluminum	Fire enclosure
Weight			1100 gr
Degree of protection	EN 60529	Enclosure	IP40
Cooling			Convection
Overvoltage category	EN/IEC 61010-1		OVC II
Pollution degree	EN/IEC 61010-1, EN 50124-1		PD2 macro and micro environment

Environmental phenomena	Basic standard	Description	Test levels
Location	EN/IEC 61010-1		Indoor

[a.]Method 3, 21 days corresponds to Harsh Industrial Environment G3 which is defined in ANSI/ISA 17.04: 2015

[b.]The power and I/O cables need to be fastened 200 mm or closer to the unit. The same recommendation applies to the Ethernet cables.

Table 7. Environmental and mechanical conditions

6. Revision Notes

Revision	Date	Change description
Rev. G	2024-08	3.5 LED Indicators updated (illustration)
Rev. F	2024-03	3.2 Available Models; models that have I/O and SD slot are updated, 5.2 Type Tests and *Environmental Conditions; deleted temperature reference to old CT-models
Rev. E	2023-10	Added Lynx 3306 models and their data
Rev. D	2023-06	CT-models deleted
Rev. C	2023-03	Non-PoE models added and their specific data information. Name changed to Lynx 3000 throughout the user guide. 2.5.1 Environmental: NEMA TS2 added, 3.5 LED Indicators updated.
Rev. B	2022-09	Name changed to Lynx 3510 PoE throughout the user guide
Rev. A	2022-04	First revision

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