



# Managed Ethernet Switch with Routing Functionality

## Switch and Router one box solution

Lynx+ is an Ethernet switch with an enhanced set of functions for advanced layer 2 switching as well as layer 3 routing. Static and dynamic routing is possible and the most widely used routing protocols, OSPFv2 and RIPv1/v2 are supported. OSPFv2 and RIPv1/v2. Lynx+ has a wide range of Layer 3 network features for improved security such as VRRP, NAT, Port Forward, Firewall, IPSec VPN etc.

## Features for complex networks

Our unique FRNT technology is the fastest protocol on the market to re-configure a large network in the event of any link or hardware failure. Lynx+ also supports STP/RSTP in case of need for standard protocol. STP/RSTP and FRNT can also be combined meaning that the Lynx+ can be integrated with products from other vendors in redundant network solutions. IGMPv2/v3 with stop filter and the unique Westermo protocol 'Fast Reconnect' allow a video stream to reconfigure very fast (20 ms) (20 ms). Advanced functionality for VLANs with support for up to 64 virtual network, combined with Layer 3 Protocols allows unprecedented levels of network security.

## Made easy and secure configuration

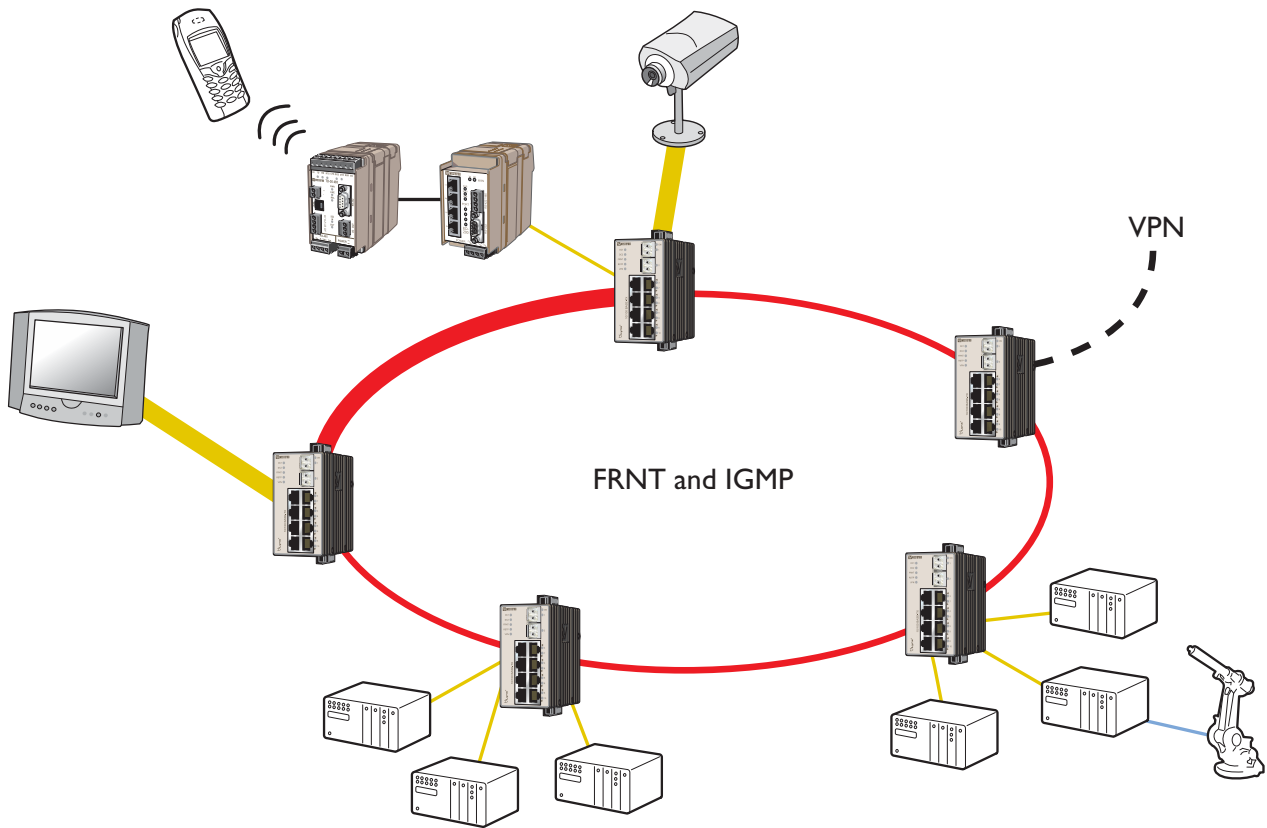
You can safely access your switch from anywhere in the network, or directly to the product via a console port. The HTTPS secured web configuration interface has been designed 'Made Easy', setting up a redundant ring or a VLAN is just a few clicks away. For more advanced configuration, you will find an SSH encrypted industry standard CLI which allows extremely detailed settings. For safe handling and MIB readout the switch is also equipped with SNMPv3.

## Designed for harsh industrial environments

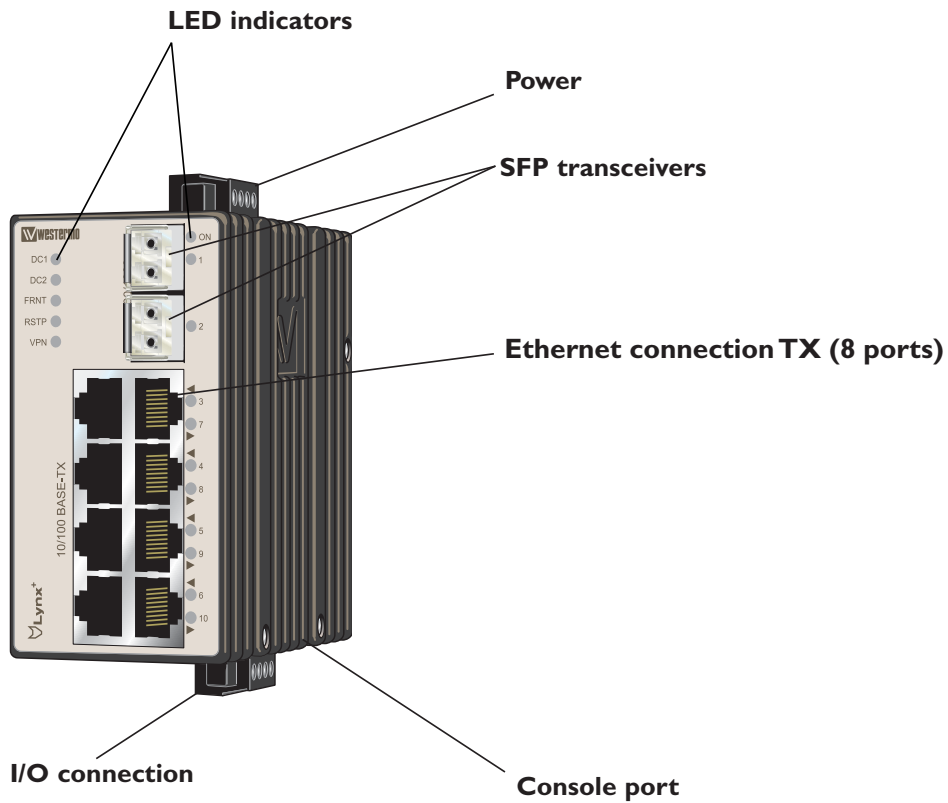
Lynx+ is designed for use in industrial environments. No fans or other moving parts and only industrial grade components are used. The product is type-tested and approved according to a variety of industrial standards. Lynx+ can handle a wide input range from 24 to 48 VDC and can operate in temperatures from -40° to +70°C degrees.



**Application**



**Interfaces**



## Technical Data

Power	
Operating voltage	Rated: 24 to 48 VDC Operating: 19 to 60 VDC
Rated current	240 mA @ 24 VDC 120 mA @ 48 VDC
Rated frequency	DC
Inrush current, I <sub>t</sub>	6.4 · 10 <sup>-3</sup> A <sup>2</sup> s @ 48 VDC
Startup current*	2 * Rated current
Polarity	Reverse polarity protected
Redundant power input	Yes
Isolation to	All other
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm <sup>2</sup> (AWG 24 – 12)
Shielded cable	Not required

\* External supply current capability for proper start-up

Ethernet TX	
Electrical specification	IEEE std 802.3. 2005 Edition
Data rate	10 Mbit/s, 100 Mbit/s, manual or auto
Duplex	Full or half, manual or auto
Circuit type	TNV-1
Transmission range	Up to 150 m with CAT5e cable or better
Isolation to	All other
Connection	RJ-45, auto MDI/MDI-X
Shielded cable	Not required, except when installed in Railway applications as signalling and telecommunications apparatus and located close to rails.*
Conductive housing	Yes
Number of ports	8

Ethernet SFP pluggable connections (FX or TX)	
Electrical specification	IEEE std 802.3. 2005 Edition
Data rate	100 Mbit/s or 1000 Mbit/s transceivers supported
Duplex	Full or Auto, depending on transceiver
Transmission range	Depending on transceiver
Connection	SFP slot holding fibre transceiver or copper transceiver
Number of ports	1 or 2

\* To minimise the risk of interference, a shielded cable is recommended when the cable is located inside 3 m boundary or the cable is longer than 30 m and inside 10 m boundary to the rails and connected to this port.

I/O / Relay output	
Maximum voltage/current	60 VDC / 80 mA
Contact resistance	Max 30 Ω
Isolation to	All other
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm <sup>2</sup> (AWG 24 – 12)

I/O / Digital input	
Maximum voltage/load current	60 VDC / 2 mA
Voltage levels	Logic one: >12V Logic zero: <1V
Isolation to	All other
Connection	Detachable screw terminal
Connector size	0.2 – 2.5 mm <sup>2</sup> (AWG 24 – 12)

Console	
Electrical specification	TTL-level
Data rate	115.2 kbit/s
Data format	8 data bits, no parity, 1 stop bit, no flow control
Circuit type	SELV
Isolation to	All other
Connection	2.5 mm jack, use only Westermo cable 1211-2027

## Protocols and Functionality

<b>Ethernet Technologies</b>	IEEE 802.3 for 10BaseT IEEE 802.3u for 100BaseTX and 100Base FX IEEE 802.3ab for 1000BaseT IEEE 802.3z for 1000BaseX
<b>Resiliency and High Availability</b>	Fast Reconfiguration of Network Topology (FRNT) FRNT Link Health Protocol (FLHP) IEEE 802.1D Spanning Tree Protocol (STP) IEEE 802.1w Rapid STP (RSTP)
<b>Layer-2 Switching</b>	IEEE 802.1Q Static VLAN and VLAN Tagging IEEE 802.3x Flow Control IGMPv2/v3 snooping AVT Dynamic VLAN (Westermo Adaptive VLAN Trunking) Management VLAN (Westermo Management Interface concept)
<b>Layer-2 QoS</b>	IEEE 802.1p Class of Service Flexible classification VLAN tag, VLAN ID, IP DSCP/ToS, Port ID)
<b>IP Routing, Firewall and VPN</b>	Static IP routing Dynamic IP routing <ul style="list-style-type: none"> <li>• OSPFv2</li> <li>• RIPv1/v2</li> </ul> VRRP Firewall, NAT, Port Forwarding IPSec VPN
<b>Manageability</b>	Management tools <ul style="list-style-type: none"> <li>• Web interface (HTTP and HTTPS)</li> <li>• Command Line Interface (CLI) via console port and SSHv2</li> <li>• Westermo IPConfig tool</li> <li>• SNMPv1/v2c/v3</li> <li>• Flexible management of configuration and log files</li> <li>• Secure Copy (SCP) for remote file upload and download</li> <li>• Local file management via HTTP, FTP, TFTP and SCP</li> <li>• Load/save files from/to USB memory stick</li> </ul> Syslog (log files and remote syslog server) Digital I/O Port Monitoring SNTP (NTP client) DHCP client DHCP server DDNS
<b>SNMP MIB support</b>	RFC1213 MIB-2 RFC2863 Interface MIB (ifXTable) RFC2819 RMON MIB (etherStatsTable) RFC4188 Bridge MIB RFC4318 RSTP MIB RFC4363 Q-BRIDGE MIB (dot1qVlan and dot1qVlanStaticTable) RFC4836 MAU MIB (dot3IfMauBasicGroup and dot3IfMauAutoNegGroup) RFC4133 Entity MIB (entityPhysical) RFC3433 Entity Sensor MIB WESTERMO PRIVATE MIB

## 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	
		Signal ports	±2 kV	
		Earth port	±1 kV	
Surge	EN 61000-4-5	Power port	L-E: ±0.5 kV, 12 Ω, 9 μF L-L: ±0.5 kV, 2 Ω, 18 μF L-E: ±2 kV, 42 Ω, 0.5 μF L-L: ±2 kV, 42 Ω, 0.5 μF L-E: ±2 kV, 12 Ω, 9 μF L-L: ±1 kV, 12 Ω, 9 μF	
		Signal ports	L-E: ±1 kV, 2 Ω L-E: ±2 kV, 42Ω, 0.5 μF	
Power frequency magnetic field	EN 61000-4-8	Enclosure	300 A/m; 0, 16.7, 50 Hz	
Pulsed magnetic field	EN 61000-4-9	Enclosure	300 A/m	
Radiated RF immunity	EN 61000-4-3	Enclosure	10 V/m @ (80 – 800) MHz 20 V/m @ (800 – 1000) MHz 10 V/m @ (1400 – 2100) MHz 5 V/m @ (2100 – 2500) MHz 1 V/m @ (2500 – 2700) MHz 1 kHz sine, 80% AM	
Conducted RF immunity	EN 61000-4-6	Power port	10 V, 80% AM, 1 kHz; (0.15 – 80) MHz	
		Signal ports	10 V, 80% AM, 1 kHz; (0.15 – 80) MHz	
		Earth port	10 V, 80% AM, 1 kHz; (0.15 – 80) MHz	
Radiated RF emission	EN 55022	Enclosure	Class A	
	FCC Part 15		Class A	
Conducted RF emission	EN 55022	Power port	Class B	
		Signal ports	Class B	
Dielectric strength	EN 60950-1	Power port to all other ports	1.5 kVrms, 50 Hz, 1 min	
		Signal ports to all other ports	1.5 kVrms, 50 Hz, 1 min	
<b>Environmental</b>				
Temperature		Operating	-40 to +70 °C	
		Storage and transport	-50 to +85 °C	
Humidity		Operating	5 to 95 % relative humidity	
		Storage and transport	5 to 95 % relative humidity	
Altitude		Operating	2 000 m / 70 kPa	
Service life		Operating	10 year	
Vibration	IEC 60068-2-6 (sine)	Operating	3 – 13.2 Hz: 1mm 13.2 – 100 Hz: 0.7 g	5.5 – 30 Hz: 1.5 g 30 – 50 Hz: 0.42 mm 50 – 500 Hz: 4.2 g*
	IEC 60068-64 (random)		Operating	5 – 20 Hz: 2 m <sup>2</sup> /s <sup>3</sup> 20 – 2000 Hz: -3 dB/oct
Shock	IEC 60068-2-27	Operating	30 g, 11 ms 100 g, 6 ms*	
Bump	IEC 60068-2-27	Operating	10 g, 11 ms	
<b>Packaging</b>				
Enclosure	EN 60950-1	Zinc	Fire enclosure	
Dimension W x H x D			52.5 x 100 x 101 mm 52.5 x 119 x 101 mm	
Weight			0.7 kg	
Degree of protection	EN 60529	Enclosure	IP 40	
Cooling			Convection	

\* Might require Ethernet cables to be fastened close to the unit.

## Approvals

