



Lynx DSS L106-F2G EX / L206-F2G EX

Industrial Ethernet 6-port Switch



General information

Legal information

The contents of this document are provided “as is”. Except as required by applicable law, no warranties of any kind, either express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, are made in relation to the accuracy and reliability or contents of this document. 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 the following Internet address:
www.westermo.com

Software tools

Related software tools are available in the folder software tools under technical support on the Westermo website.

License and copyright for included Free/Libre Open Source Software

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.

WeOS Management Guide

This product runs WeOS (Westermo Operation System). Instructions for quick start, configuration, factory reset and use of USB port are found in the WeOS Management Guide at www.westermo.com.

Safety

Before installation:

Read this manual completely and gather all information on the unit. Make sure that you understand it fully. Check that your application does not exceed the safe operating specifications for this unit.

This unit should only be installed by qualified personnel.

This unit should be built-in to an apparatus cabinet, or similar, where access is restricted to service personnel only. Refer to Specific Conditions of Use.

The power supply wiring must be sufficiently fused, and if necessary it must be possible to disconnect manually from the power supply. Ensure compliance to national installation regulations.

This unit uses convection cooling. To avoid obstructing the airflow around the unit, follow the spacing recommendations (see Cooling section).

"Note that this unit can be connected to two different power sources."

Before mounting, using or removing this unit:

Prevent access to hazardous voltage by disconnecting the unit from power supply.

Warning

Do not open connected unit. Hazardous voltage may occur within this unit when connected to power supply.

Note that this unit can be connected to two different power sources.

When this unit is operated at an ambient temperature above +55°C (+131°F), the External Surface of Equipment may exceed Touch Temperature Limit according to EN/IEC/UL 60950-1.

To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

For more information see General safety 100-5001.

Care recommendations

Follow the care recommendations below to maintain full operation of unit and to fulfil the warranty obligations.

This unit must not be operating with removed covers or lids.

Do not attempt to disassemble the unit. There are no user serviceable parts inside.

Do not drop, knock or shake the unit, rough handling above the specification may cause damage to internal circuit boards.

Do not use harsh chemicals, cleaning solvents or strong detergents to clean the unit.

Do not paint the unit. Paint can clog the unit and prevent proper operation.

Do not expose the unit to any kind of liquids (rain, beverages, etc). The unit is not waterproof. Keep the unit within the specified humidity levels.

Do not use or store the unit in dusty, dirty areas, connectors as well as other mechanical part may be damaged.

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

A readily accessible disconnect device shall be incorporated external to the equipment.

This unit may have hot surfaces when used in high ambient temperature.

Maintenance

No maintenance is required, as long as the unit is used as intended within the specified conditions.

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



ATEX certification number

Baseefa12ATEX0119X

Standards

EN 60079-0:2012, EN 60079-15:2010, EN 60079-28:2007

Certification code

Ex nA [op is T4] IIC T3 Gc ($-40^{\circ}\text{C} \leq \text{Ta} \leq +70^{\circ}\text{C}$)

ATEX code

 II 3G

Specific Conditions of Use

The equipment must be installed in an area of not more than pollution degree 2 in accordance with IEC/EN 60664-1, and in an enclosure that provides a minimum degree of protection of at least IP54 and complies with the relevant requirements of EN 60079-0 and EN 60079-15.

All external connections to the equipment and, where applicable, the SFP modules must not be inserted or removed unless either the area in which the equipment is installed is known to be non-hazardous, or the circuits connected have been de-energized.

The network cables once installed must be properly fixated by the use of cable ties or similar to reduce the risk of accidentally withdrawing the plugs.

Equipment input parameters

Power Connector: +DC1, +DC2 & –COM

Working Voltage Range = 24 V to 48 VDC.

I/O Connector: 'Status +' & 'Status –' and 'Digital in +' and 'Digital in –'

Maximum I/P Voltage = 60 VDC.



SFP option approved transceivers



| SFP Transceivers, 100 Mbit | |
|------------------------------------|--|
| 1100-0131 | MLC2, Multimode, LC-Connector, 2 km, 1310 nm |
| 1100-0132 | SLC20, Singlemode, LC-Connector, 20 km, 1310 nm |
| 1100-0133 | SLC40, Singlemode, LC-Connector, 40 km, 1310 nm |
| 1100-0134 | SLC80, Singlemode, LC-Connector, 80 km, 1550 nm |
| 1100-0140 | SLC120, Singlemode, LC-Connector, 120 km, 1550 nm |
| BiDi Transceivers, 100 Mbit | |
| 1100-0145 | SLC15-BiDi-A, Singlemode, BiDi, 20 km, 1310 nm TX, 1550 nm RX |
| 1100-0146 | SLC15-BiDi-B, Singlemode, BiDi, 20 km, 1550 nm TX, 1310 nm RX |
| 1100-0152 | MLC2-BiDi-A, Multimode, BiDi, 2 km, 1310 nm TX, 1550 nm RX |
| 1100-0153 | MLC2-BiDi-B, Multimode, BiDi, 2 km, 1550 nm TX, 1310 nm RX |
| SFP Transceivers, 1 Gbit | |
| 1100-0144 | GMLC550-SX, Multimode, LC-Connector, 550 m, 850 nm, SX |
| 1100-0147 | GMLC2-SX+, Multimode, LC-Connector, 2 km, 1310 nm, SX+ |
| 1100-0141 | GSLC10-LX, Singlemode, LC-Connector, 10 km, 1310 nm, LX |
| 1100-0142 | GSLC50-XD, Singlemode, LC-Connector, 50 km, 1550 nm, XD |
| 1100-0143 | GSLC80-ZX, Singlemode, LC-Connector, 80 km, 1550 nm, ZX |
| 1100-0171 | GSLC110-EZX, Singlemode, LC-Connector, 110 km, 1550 nm, EZX |
| BiDi Transceiver, 1 Gbit | |
| 1100-0156 | GSLC20-BiDi-A, Singlemode, BiDi, 20 km, 1310 nm TX, 1490 nm RX |
| 1100-0157 | GSLC20-BiDi-B, Singlemode, BiDi, 20 km, 1490 nm TX, 1310 nm RX |
| Copper Transceiver, 1 Gbit | |
| 1100-0148 | GC100, Copper, RJ45, 100 m, 1000BaseT |



ATEX-Zulassungsnummer

Baseefa12ATEX0119X

Standards

EN 60079-0:2012, EN 60079-15:2010, EN 60079-28:2007

Zertifizierungscode

Ex nA [op ist T4] IIC T3 Gc ($-40\text{ °C} \leq T_a \leq +70\text{ °C}$)

ATEX-Code

 II 3G

Spezifische Einsatzbedingungen

Die Geräte müssen in einem Bereich welcher einem maximalen Verschmutzungsgrad der Stufe 2 gemäß IEC/EN 60664-1 entspricht und in einem Gehäuse, das einen Schutzgrad von mindestens IP54 bietet und die relevanten Anforderungen von N 60079-0 und EN 60079-15 erfüllt, installiert werden.

Alle äußeren Anschlüsse des Gerätes und auch die SFP-Module dürfen nur dann verbunden oder getrennt werden, wenn entweder der Bereich, in dem das Gerät installiert ist, nachweislich ungefährlich ist, oder die verbundenen Stromkreise spannungsfrei sind.

Die Netzkabel müssen nach der Installation mithilfe von Kabelbindern oder ähnlichem Material ordnungsgemäß befestigt werden, um ein versehentliches Abziehen der Stecker zu verhindern.

Eingangsparameter der Geräte

Stromversorgung: +DC1, +DC2 & -COM

Betriebsspannungsbereich = 24 V to 48 VDC.

I/O-Anschluss: 'Status +' & 'Status -' und 'Digital in +' und 'Digital in -'

Maximale I/P-Spannung = 60 VDC.



Für SFP-Option zugelassene Transceiver



| SFP-Transceiver, 100 Mbit | |
|-----------------------------------|--|
| 1100-0131 | MLC2, Multimode, LC-Anschluss, 2 km, 1310 nm |
| 1100-0132 | SLC20, Singlemode, LC-Anschluss, 20 km, 1310 nm |
| 1100-0133 | SLC40, Singlemode, LC-Anschluss, 40 km, 1310 nm |
| 1100-0134 | SLC80, Singlemode, LC-Anschluss, 80 km, 1550 nm |
| 1100-0140 | SLC120, Singlemode, LC-Anschluss, 120 km, 1550 nm |
| BiDi-Transceiver, 100 Mbit | |
| 1100-0145 | SLC15-BiDi-A, Singlemode, BiDi, 20 km, 1310 nm TX, 1550 nm RX |
| 1100-0146 | SLC15-BiDi-B, Singlemode, BiDi, 20 km, 1550 nm TX, 1310 nm RX |
| 1100-0152 | MLC2-BiDi-A, Multimode, BiDi, 2 km, 1310 nm TX, 1550 nm RX |
| 1100-0153 | MLC2-BiDi-B, Multimode, BiDi, 2 km, 1550 nm TX, 1310 nm RX |
| SFP-Transceiver, 1 Gbit | |
| 1100-0144 | GMLC550-SX, Multimode, LC-Anschluss, 550 m, 850 nm, SX |
| 1100-0147 | GMLC2-SX+, Multimode, LC-Anschluss, 2 km, 1310 nm, SX+ |
| 1100-0141 | GSLC10-LX, Singlemode, LC-Anschluss, 10 km, 1310 nm, LX |
| 1100-0142 | GSLC50-XD, Singlemode, LC-Anschluss, 50 km, 1550 nm, XD |
| 1100-0143 | GSLC80-ZX, Singlemode, LC-Anschluss, 80 km, 1550 nm, ZX |
| 1100-0171 | GSLC110-EZX, Singlemode, LC-Anschluss, 110 km, 1550 nm, EZX |
| BiDi-Transceiver, 1 Gbit | |
| 1100-0156 | GSLC20-BiDi-A, Singlemode, BiDi, 20 km, 1310 nm TX, 1490 nm RX |
| 1100-0157 | GSLC20-BiDi-B, Singlemode, BiDi, 20 km, 1490 nm TX, 1310 nm RX |
| Kupfer-Transceiver, 1 Gbit | |
| 1100-0148 | GC100, Kupfer, RJ45, 100 m, 1000BaseT |



Certification ATEX



Numéro de certification ATEX

Baseefa12ATEX0119X

Normes

EN 60079-0:2012, EN 60079-15:2010, EN 60079-28:2007

Code de certification

Ex nA [op is T4] IIC T3 Gc ($-40^{\circ}\text{C} \leq \text{Ta} \leq +70^{\circ}\text{C}$)

Code ATEX

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Conditions spéciales d'utilisation

L'équipement doit être installé dans une zone où le degré de pollution ne dépasse pas le degré 2 conformément à l'IEC/EN 60664-1, et dans un boîtier qui fournit un niveau de protection au moins égal à IP54 et conforme aux exigences applicables à EN 60079-0 et EN 60079-15

Toutes les connexions externes à l'équipement et, le cas échéant, les modules SFP ne doivent pas être insérés ou retirés sauf si la zone dans laquelle l'équipement est installé est reconnue comme non dangereuse, ou si les circuits raccordés sont hors-tension.

Une fois les câbles réseau installés, ils doivent être correctement fixé grâce à des attaches de câbles ou autre élément semblable afin de réduire le risque de débranchement accidentel.

Paramètres d'entrée des équipements

Connecteur d'alimentation : +DC1, +DC2 & -COM

Double entrée d'alimentation 24 V à 48 VCC

Connecteur E/S : « Statut + » et « Statut - » et « Entrée digitale + » et « Entrée digitale - »

Tension maximale I/P = 60 VCC.



Transmetteurs optionnels SFP certifiés



| Transmetteurs SFP, 100 Mbit | |
|--------------------------------------|--|
| 1100-0131 | MLC2, multimode, connecteur LC, 2 km, 1310 nm |
| 1100-0132 | SLC20, monomode, connecteur LC, 20 km, 1310 nm |
| 1100-0133 | SLC40, monomode, connecteur LC, 40 km, 1310 nm |
| 1100-0134 | SLC80, monomode, connecteur LC, 80 km, 1550 nm |
| 1100-0140 | SLC120, monomode, connecteur LC, 120 km, 1550 nm |
| Transmetteurs Bi-Di, 100 Mbit | |
| 1100-0145 | SLC15 Bi-Di A, monomode, Bi-Di, 20 km, 1310 nm TX, 1550 nm, RX |
| 1100-0146 | SLC15-Bi-Di-B, monomode, Bi-Di, 20 km, 1550 nm TX, 1310 nm RX |
| 1100-0152 | MLC2-BiDi-A, multimode, Bi-Di, 2 km, 1310 nm TX, 1550 nm RX |
| 1100-0153 | MLC2-BiDi-B, multimode, Bi-Di, 2 km, 1550 nm TX, 1310 nm RX |
| Transmetteurs SFP, 1 Gbit | |
| 1100-0144 | GMLC550-SX, multimode, connecteur LC, 550 m, 850 nm, SX |
| 1100-0147 | GMLC2-SX+, multimode, connecteur LC, 2 km, 1310 nm, SX+ |
| 1100-0141 | GSLC10-LX, monomode, connecteur LC, 10 km, 1310 nm, LX |
| 1100-0142 | GSLC50-XD, monomode, connecteur LC, 50 km, 1550 nm, XD |
| 1100-0143 | SLC80, monomode, connecteur LC, 80 km, 1550 nm, ZX |
| 1100-0171 | GSLC110, monomode, connecteur LC, 110 km, 1550 nm, EZX |
| Transmetteurs Bi-Di, 1 Gbit | |
| 1100-0156 | GSLC20-BiDi-A, monomode, Bi-Di, 20 km, 1310 nm TX, 1490 nm RX |
| 1100-0157 | GSLC20-BiDi-B, monomode, Bi-Di, 20 km, 1490 nm TX, 1310 nm RX |
| Transmetteurs cuivre, 1 Gbit | |
| 1100-0148 | GC100, cuivre, RJ45, 100 m, 1000BaseT |

Agency approvals and standards compliance

| Type | Approval / Compliance |
|--------|--|
| EMC | EN 61000-6-1, Immunity residential environments |
| | EN 61000-6-2, Immunity industrial environments |
| | EN 61000-6-3, Emission residential environments |
| | EN 61000-6-4, Emission industrial environments |
| | EN 50121-4, Railway signalling and telecommunications apparatus |
| | IEC 62236-4, Railway signalling and telecommunications apparatus |
| Safety | UL/IEC/EN 60950-1, IT equipment |
| Marine | DNV GL rules for classification – Ships and offshore units |
| Ex | EN 60079-0, EN 60079-15 and EN 60079-28 |

FCC Part 15.105

Notice:

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

Corrosive environment

Notice:

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*.

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

Declaration of Conformity



Westermo Teleindustri AB

Declaration of Conformity

The manufacturer Westermo Teleindustri AB
SE-640 40 Stora Sundby, Sweden

Herewith declares that the product(s)

| | | |
|-----------------------------------|--------------------|------------|
| Type of product | Model ¹ | |
| Industrial Ethernet 6-port Switch | Lynx | Lx06-F2G-y |

is in conformity with the following EU directive(s).

| No | Short name |
|------------|--|
| 2014/30/EU | Electromagnetic Compatibility (EMC) |
| 2014/35/EU | Low Voltage Directive (LVD) |
| 2014/34/EU | Equipment Explosive Atmospheres (ATEX) |
| 2011/65/EU | Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) |

References of standards applied for this EU declaration of conformity.

| No | Title | Issue |
|--------------------------|--|--|
| EN 61000-6-1 | Electromagnetic compatibility – Immunity for residential environments | 2007 |
| EN 61000-6-2 | Electromagnetic compatibility – Immunity for industrial environments | 2005 |
| EN 61000-6-3 | Electromagnetic compatibility – Emission for residential environments | 2007 + A1:2011 |
| EN 61000-6-4 | Electromagnetic compatibility – Emission for industrial environments | 2007 + A1:2011 |
| EN 50121-4 | Railway applications - Electromagnetic compatibility Emission and immunity of the signalling and telecommunications apparatus | 2015 |
| EN 60950-1 | Information technology equipment - Safety - Part 1: General requirements | 2006 +A11: 2009 +A1: 2010 +A12: 2011 +A2: 2013 |
| EN 60079-0 ² | Explosive atmospheres Equipment – General requirements | 2012 |
| EN 60079-15 ² | Electrical apparatus for explosive gas atmospheres – Construction, test and marking of type of protection “n” | 2010 |
| EN 60079-28 ² | Explosive atmospheres - Protection of equipment and transmission systems using optical radiation | 2007 |
| EN 50581 | Technical documentation for the assessment of electrical and electronic products w.r.t the restriction of hazardous substances | 2012 |

Signature

Pierre Öberg
Technical Manager
10th January 2018

¹ x = 1 or 2 and indicates Software Class. y = optional and may indicate customer specific models.

² Only valid for y = EX model(s). Certificate: Baseefa12ATEX0119X. Issued by: SGS Baseefa Limited, Rockhead Business Park, Staden Lane, Buxton, Derbyshire, SK17 9RZ, United Kingdom.

| | | | | | | |
|---------------------------------|-------------------------------|-------------------------------|------------|-----------|----------------------------------|-------------------|
| Postadress/Postal address | Tel | Telefax | Postgiro | Bankgiro | Org.nr/ Corp. identity number | Registered office |
| S-640 40 Stora Sundby Sweden | 016-428000 Int+46 16428000 | 016-428001 Int+46 16428001 | 52 72 79-4 | 5671-5550 | 556361-2604 | Eskilstuna |

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 μ F L-L: ± 0.5 kV, 2 Ω , 18 μ F L-E: ± 2 kV, 42 Ω , 0.5 μ F L-L: ± 2 kV, 42 Ω , 0.5 μ F L-E: ± 2 kV, 12 Ω , 9 μ F L-L: ± 1 kV, 12 Ω , 9 μ F |
| | | Signal ports | L-E: ± 1 kV, 2 Ω L-E: ± 2 kV, 42 Ω , 0.5 μ F |
| 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 | 20 V/m @ (80 – 2700) MHz 10 V/m @ (2700 – 6000) 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 | CISPR 16-2-3 ANSI C63.4 (FCC Part 15) | Enclosure | Class A Class A |
| | | Conducted RF emission | Class B 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 |
| Environmental | | | |
| Temperatures | EN 60068-2-1 | Operating | -40 to +70°C (-40 to +158°F)* |
| | EN 60068-2-2 | Storage and transport | -50 to +85°C (-58 to +185°F) |
| Humidity | EN 60068-2-30 | 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 |
| Reliability prediction (MTBF) | MIL-HDBK- 217F | Operating | 615 000 hours |
| 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** |
| Shock | IEC 60068-2-27 | Operating | 30 g, 11 ms 100 g, 6 ms** |
| | | | Bump |
| Packaging | | | |
| Enclosure | EN 60950-1 | Zinc | Fire enclosure |
| Dimension W x H x D | | | 52.5 x 100 x 101 mm |
| With connectors | | | 52.5 x 119 x 101 mm |
| Weight | | | 0.7 kg |
| Degree of protection | EN 60529 | Enclosure | IP 40 |
| Cooling | | | Convection |

* Refer to "Safety" section.

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

Description

L106-F2G EX / L206-F2G EX is an Industrial switch made for harsh environments. The switch can be used in either 100 Mbit or Gigabit networks due to our multi-rate SFP solution.

L106-F2G EX / L206-F2G EX can also be used together with our previous Lynx-series of switches. Our unique FRNT

(Fast Recovery of Network Topology) technology is the fastest protocol on the market to re-configure a network in the event of any link or hardware failure. That is why our products are used in safety critical applications such as tunnels, traffic signal control and railway systems.

Installations in harsh environments and places with heavy electrical interference require the use of a reliable media. Lynx provides a number of solutions using fibre optic transceivers.

Multi- or singlemode transceivers can be used to build point-to-point or redundant ring networks with ranges up to 120 km between each switch. Our BIDI transceiver, which transmits and receives data on a single fibre can be used in applications where the number of fibre cores are limited.

Real-time properties are implemented in the switch in order to achieve determinism for real time critical applications. Lynx supports QoS (Quality of Service) with four priority queues and strict priority scheduling as well as HoL (Head of Line Blocking Prevention). All to assure that the data network is deterministic.

Interface specifications

| Power | |
|-----------------------------------|---|
| Operating voltage | Rated: 24 to 48 VDC Operating: 19 to 60 VDC |
| Rated current | 180 mA (330 mA) @ 24VDC (with 500 mA USB load) 90 mA (170 mA) @ 48VDC (with 500 mA USB load) |
| Rated frequency | DC |
| Inrush current, I^2t | $22.7 \cdot 10^{-3} \text{ A}^2\text{s}$ @ 48 VDC |
| Startup current* | 2 x Rated current |
| Polarity | Reverse polarity protected |
| Redundant power input | Yes |
| Isolation to | All other |
| Connection | Detachable screw terminal |
| Conductor cross section | 0.2 – 2.5 mm ² (AWG 24 – 12) |
| Stripping length cable | 7 mm |
| Tightening torque, terminal screw | 0.5 -0.6 Nm |
| Tightening torque, screw flange | 0.3 Nm |
| 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 | 4 |

* Refer to Safety section.

** 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.

| 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 |

| I/O / Relay output | |
|-----------------------------------|--|
| Maximum voltage/current | 60 VDC / 80 mA |
| Contact resistance | Max 30 Ω |
| Isolation to | All other |
| Connection | Detachable screw terminal |
| Conductor cross section | 0.14 – 1.5 mm ² (AWG 28 – 16) |
| Stripping length cable | 7 mm |
| Tightening torque, terminal screw | 0.22 -0.25 Nm |
| Tightening torque, screw flange | 0.3 Nm |

| 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 |
| Conductor cross section | 0.14 – 1.5 mm ² (AWG 28– 16) |
| Stripping length cable | 7 mm |
| Tightening torque, terminal screw | 0.22 -0.25 Nm |
| Tightening torque, screw flange | 0.3 Nm |

| USB | |
|--------------------------|-----------------------------------|
| Electrical specification | USB 2.0 host interface |
| Data rate | Up to 12 Mbit/s (full-speed mode) |
| Circuit type | SELV |
| Maximum supply current | 500 mA |
| Connection | USB receptacle connector type A |

| 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 |
| Connection | 2.5 mm jack, use only Westermo cable 1211-2027 |

SFP Transceivers

Supported transceivers

Firmware prior to 4.4.0 accepts Westermo branded transceivers only. From 4.5.0 other transceivers are accepted with a notice and the unit will no longer be UL approved. Temp.specifications are also depending on the used transeivers.

Note: To comply with UL60950-1 only UL recognized SFP transceivers should be used.

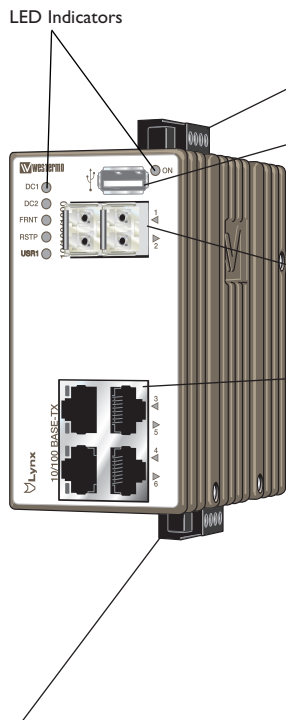
Deviations

With copper transceiver 1100-0148 the specified operating temperature on Lynx is 0 to +50°C (32 to +122°F).

FRNT reconfiguration times can not be guaranteed with copper transceivers.

Safety control drawing

Location of interface ports and LED's



Power connection

USB

| Position | Direction* / description | Output values |
|----------|--------------------------|---|
| 1 | Out / VBUS | $U_{out} = 5 \text{ VDC max}$ $I_{out} = 500 \text{ mA max}$ |
| 2 | In/out / D- | |
| 3 | In/out / D+ | |
| 4 | GND | |
| Shield | PE | |

SFP transceivers

Ethernet connection TX (4 ports)

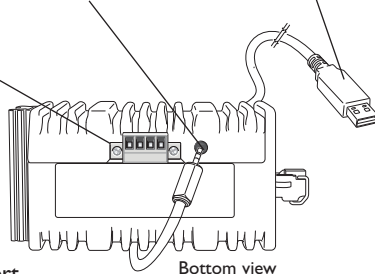
| Position | Signale | Direction | Description | Input/output values |
|----------|---------|-----------|---------------------------|---|
| No.1 | TD+ | In/Out | Transmitted/Received data | Per port: $U = \pm 1 \text{ V (4V/\mu s)}$ $I = \pm 20 \text{ mA}$ Data rate: 10/100 Mbit/s |
| No. 2 | TD- | In/Out | Transmitted/Received data | |
| No. 3 | RD+ | In/Out | Transmitted/Received data | |
| No. 4 | - | | Not Connected | |
| No. 5 | - | | Not Connected | |
| No. 6 | RD- | In/Out | Transmitted/Received data | |
| No. 7 | - | | Not Connected | |
| No. 8 | - | | Not Connected | |
| Shield | | | Connected to PE | |

Galvanically isolated via signal transformers and capacitively isolated to GND/PE through a 2kV 1000pF capacitor.
See user manual for proven transient protection.

I/O connection

Console port

Cable 1211-2027



Connection to console port

The console port can be used to connect to the CLI (Command Line Interface).

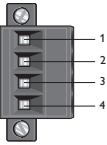
The following steps needs to be taken

1. Connect the serial diagnostic cable to the console port (use only Westermo cable 1211-2027).
2. Connect cable to your computer (USB port, if drivers are needed they can be downloaded from our Web page).
3. Use a terminal emulator and connect with correct speed and format (115200, 8N1) to the assigned port.

For more information about the CLI, see the WeOS management guide.

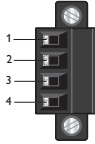
Safety control drawing

Power connection

|  | 4-position | Product marking | Direction | Description | Input values |
|---|------------|-----------------|-----------|--------------------------|--|
| | No. 1 | +DC1 | Input | Supply voltage input DC1 | $U_{in} = (19 - 60) \text{VDC}$ $I_{in} = 330 \text{ mA @ } 24 \text{VDC}$ $P_{in} = 8 \text{ W @ } 24 \text{VDC}$ |
| | No. 2 | +DC2 | Input | Supply voltage input DC2 | |
| | No. 3 | -COM | Input | Common | |
| | No. 4 | -COM | Input | Common | |

Lynx supports redundant power connection. The positive inputs are +DC1 and +DC2, the negative input for both supplies are -COM. Connect the primary voltage (e.g. +24VDC) to the +DC1 pin and return to one of the -COM pins on the power input.

I/O connection

|  | 4-position | Product marking | Direction | Description | Input / Output values |
|---|------------|-----------------|-----------|------------------------------|------------------------------|
| | No. 1 | Status + | Output | Alarm relay (status) contact | $U_{in} = 60 \text{VDC max}$ |
| | No. 2 | Status - | Output | Alarm relay (status) contact | $I_{in} = 80 \text{ mA max}$ |
| | No. 3 | Digital in + | Input | Digital in + | $U_{in} = 60 \text{VDC max}$ |
| | No. 4 | Digital in - | Input | Digital in - | $I_{in} = 2 \text{ mA max}$ |

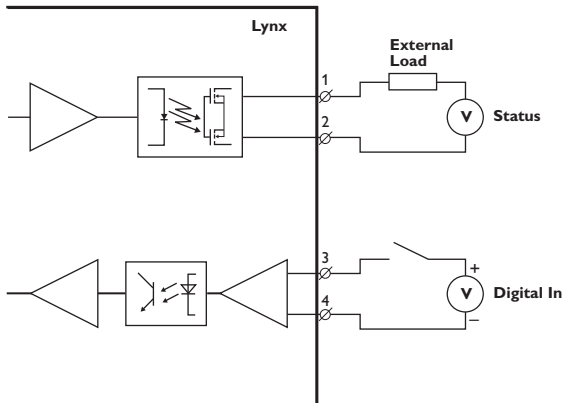
The Status output is a potential free, opto-isolated normally closed solid-state relay. This can be configured to monitor various alarm events within the Lynx unit, see WeOS Management Guide. An external load in series with an external voltage source is required for proper functionality. For voltage/current ratings, see Interface Specification section.

Console port

| Position | Direction* / description | Input/output values |
|----------|--------------------------|---|
| No.1 | In / out / GND | $U = 3.3 \text{VDC max}$ $I = 24 \text{ mA max}$ |
| No. 2 | Out / Tx | |
| No. 3 | In / Rx | |

* Direction relative to this unit.

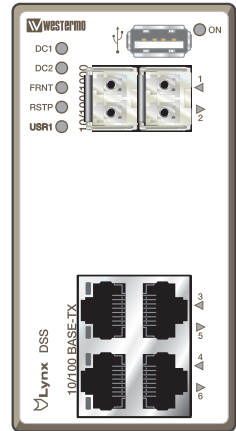
The Digital in is an opto-isolated digital input which can be used to monitor external events. For voltage/current ratings, see Interface Specification section:



LED indicators

| LED | Status | Description |
|--------|-------------|--|
| ON | OFF | Unit has no power. |
| | GREEN | All OK, no alarm condition. |
| | RED | Alarm condition, or until unit has started up. (Alarm conditions are configurable, see "WeOS Management Guide"). |
| | BLINK | Location indicator ("Here I am!"). Activated when connected to IPConfig Tool, or upon request from Web or CLI. |
| DC1 | OFF | Unit has no power |
| | GREEN | Voltage present on DC1* |
| | RED | No voltage present on DC1 |
| DC2 | OFF | Unit has no power |
| | GREEN | Voltage present on DC2* |
| | RED | No voltage present on DC2. |
| FRNT | OFF | FRNT disabled. |
| | GREEN | FRNT OK. |
| | RED | FRNT Error. |
| | BLINK | Unit configured as FRNT Focal Point. |
| RSTP | OFF | RSTP disabled. |
| | GREEN | RSTP enabled. |
| | BLINK | Unit elected as RSTP/STP root switch. |
| USR1 | OFF | Configurable, see WeOS Management Guide. |
| | GREEN | |
| | RED | |
| 1 to 6 | OFF | No Link. |
| | GREEN | Link established. |
| | GREEN FLASH | Data traffic indication. |
| | YELLOW | Port alarm and no link. Or if FRNT or RSTP mode, port is blocked. |

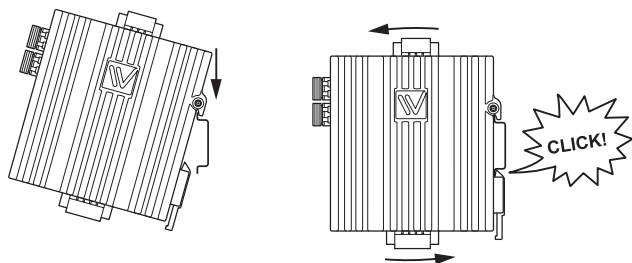
*Note: Supply voltage levels must be ensured externally. A green LED may not guarantee a valid operating voltage level.



Mounting

This unit should be mounted on 35 mm DIN-rail, which is horizontally mounted inside an apparatus cabinet or similar. It is recommended that the DIN-rail is connected to ground. Snap on mounting, see figure.

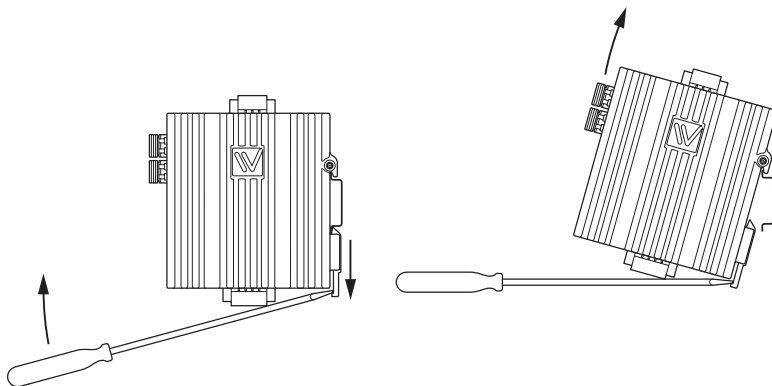
Mounting Lynx with integrated DIN-clip:



Removal

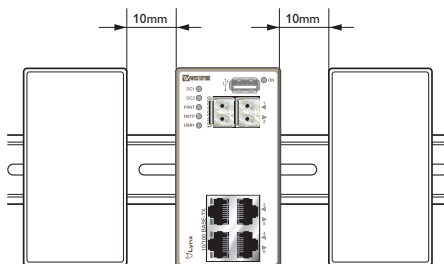
Removing Lynx with integrated DIN-clip:

Press down the support at the back of the unit using a screwdriver. See figure.



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.



Getting Started

This product runs Westermo Operating System (WeOS) which provides several management tools that can be used for configuration of the unit.

- **IPConfig tool**
This is a custom Westermo tool used for discovery of attached Westermo units.
- **Web**
Configuration of the unit using the web browser.
- **CLI**
Configuration of the unit via the Command Line Interface.
Username: admin
Password: westermo

If the computer is located in the same subnet as the switch you can easily use a web browser to configure the unit. Within the web you can configure most of the available functions.

For advanced network settings and more diagnostic information, please use the CLI. Detailed documentation is available in the chapter "The Command Line Management Tool" in the WeOS management guide.

| | | |
|-----------------|--------------------|---------------|
| Factory default | <i>IP address:</i> | 192.168.2.200 |
| | <i>Netmask:</i> | 255.255.255.0 |
| | <i>Gateway:</i> | Disabled |

Note! If you are not sure about the subnet – consult your network administrator.

Configuration

Configure the unit via Web browser

The unit can easily be configured via a Web browser.

Open the link <http://192.168.2.200> in your web browser, and you will be prompted with a Login screen, where the default settings for Username and Password are:

Username: admin

Password: westermo

Once you have logged in, you can use the extensive integrated help function describing all configuration options. Two common tasks when configuring a new switch are to assign appropriate IP settings, and to change the password of the admin account.

The password can be up to 64 characters long, and should consist of printable ASCII characters (ASCII 33-126); 'Space' is not a valid password character.

Note! Version of IP Config tool must be 10.3.0 or higher.

Referring documents

| Type | Description | Document number |
|------------------|------------------------------|-----------------|
| Management Guide | Westermo OS management guide | 6101-3201 |

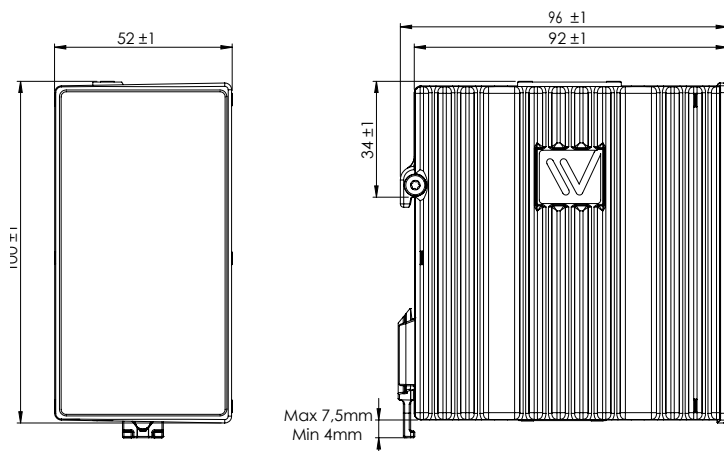
Factory default on L106-F2G EX / L206-F2G EX

It is possible to set the unit to factory default settings by using two straight standard Ethernet RJ-45 cables.

1. Power off the switch and disconnect all Ethernet cables (copper and fibre).
 2. Connect one Ethernet cable between Ethernet ports 3 and 6, and the other between Ethernet ports 4 and 5.
The ports need to be connected directly by an Ethernet cable, i.e., not via a hub or switch. Use a straight cable – not a cross-over cable – when connecting the ports.
 3. Power on the unit.
 4. Wait for the unit to start up. Control that the ON LED is flashing red.
The ON LED flashing indicates that the unit is now ready to be reset to factory default. You now have the choice to go ahead with the factory reset, or to skip factory reset and boot as normal.
 - Go ahead with factory reset:
Acknowledge that you wish to conduct the factory reset by unplugging the Ethernet cables. The ON LED will stop flashing.
This initiates the factory reset process*, and the unit will restart with factory default settings. When the switch has booted up, the ON LED will show a green light, and is now ready to use.
 - Skip the factory reset:
To skip the factory reset process, just wait for approximately 30 seconds (after the ON LED starts flashing RED) without unplugging the Ethernet cables.
The switch will conduct a normal boot with the existing settings.
- * **Note** Do not power off the unit while the factory reset process is in progress.

Dimensions

Measurements are stated in millimeters.





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