

HARDWARE



CHAPTER 1

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Introduction

1

The Purpose of This User's Manual

Thank you for purchasing our **STRIDE**® SiteLink series Industrial VPN Router. This manual describes AutomationDirect.com's **STRIDE** SiteLink industrial VPN routers, their specifications and included components, and provides you with important information for installation, connectivity and setup.

Technical Support

We strive to make our manuals the best in the industry. We rely on your feedback to let us know if we are reaching our goal. If you cannot find the solution to your particular application, or, if for any reason you need technical assistance, please call us at:

770-844-4200

Our technical support group will work with you to answer your questions. They are available Monday through Friday from 9:00 a.m. to 6:00 p.m. Eastern Time. We also encourage you to visit our web site where you can find technical and non-technical information about our products and our company.

<https://www.AutomationDirect.com>

If you have a comment, question or suggestion about any of our products, services, or manuals, please let us know.

Conventions Used



When you see the “notepad” icon in the left-hand margin, the paragraph to its immediate right will be a special note. The word **NOTE**: in boldface will mark the beginning of the text.



When you see the “exclamation mark” icon in the left-hand margin, the paragraph to its immediate right will be a warning or a caution. This information could prevent injury, loss of property, or even death (in extreme cases). The words **WARNING** or **CAUTION**: in boldface will mark the beginning of the text.

Product Overview STRIDE® SiteLink Industrial VPN Router

Thank you for purchasing the STRIDE® SiteLink router. The STRIDE SiteLink series of industrial VPN routers is the hardware component for the STRIDE SiteLink platform. The STRIDE SiteLink router makes it convenient to remotely connect to your equipment, while the built-in firewall keeps your equipment safe from outside threats.

Configuration is as easy as inserting a USB memory stick, which contains your configuration file, into the STRIDE SiteLink router's USB port. Generate the configuration file from the Tools menu in your STRIDE SiteLink platform account.

Product Family

The STRIDE SiteLink router is available in the following variants that differ in their communication modes:

| STRIDE SiteLink Industrial VPN Router Models | | | |
|----------------------------------------------|----------|------|---------------|
| Part # | Ethernet | WiFi | 4G LTE (AT&T) |
| SE-SL3011 | ✓ | | |
| SE-SL3011-WF | ✓ | ✓ | |
| SE-SL3011-4G | ✓ | | ✓ |

What's in the Box?

In the package you will find the following contents:

- STRIDE SiteLink router
- USB stick used for configuration
- Female 4-pin plug-in connector with screw connection, model Weidmuller BL 5.08/04/180 SN BK BX or equivalent
- Product insert

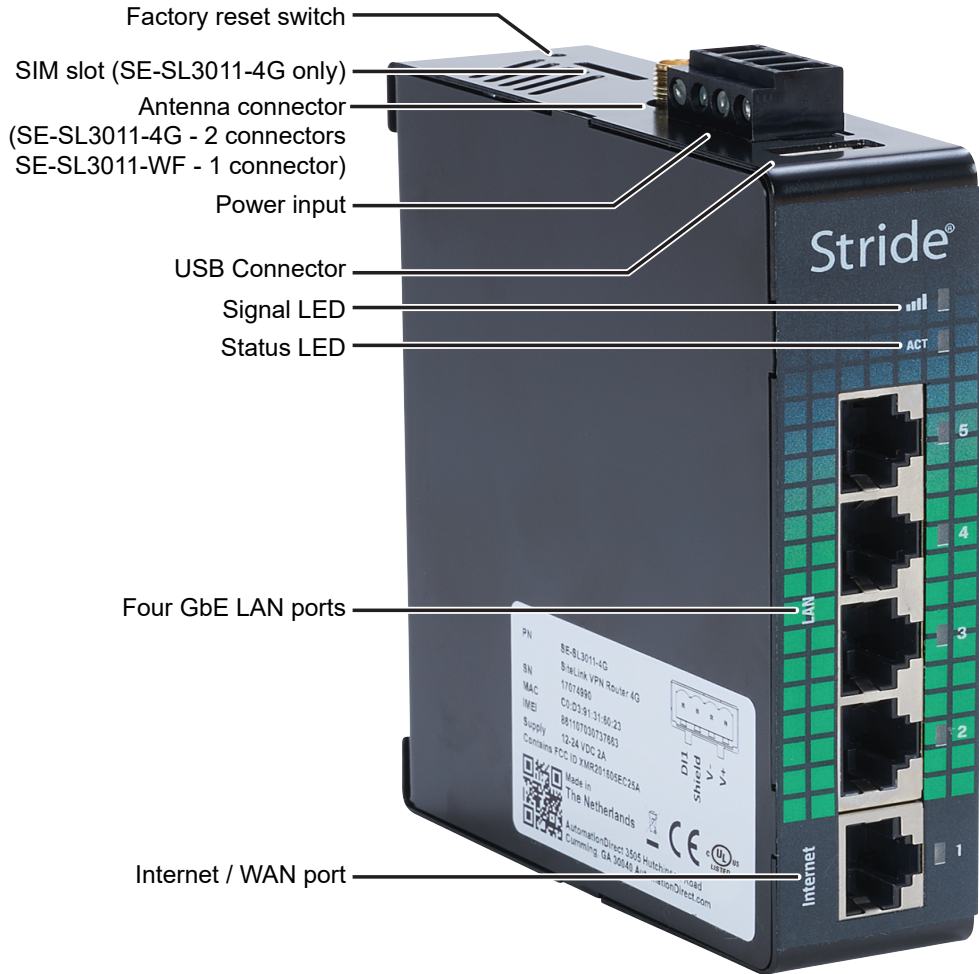
External antennas are required for WiFi and 4G models. Antennas sold separately.



SIM cards for the 4G model may be purchased through AT&T.

Hardware Overview

The STRIDE SiteLink router is created with performance and a multitude of hardware capabilities in mind.



SAFETY NOTICE: The Stride SiteLink VPN router allows the user to connect to remote industrial controls equipment from Ethernet, Wi-Fi, or cellular network connections. The remote user may fully operate and monitor the local control system and affect the function and control of the application just as the local operator controls it. Proper Control, Security and Safety Procedures should be considered and implemented when utilizing the remote access feature.

Specifications

| General Specifications | |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USB | USB 2.0 (for configuration only) |
| Processor | MIPS 800 MHz |
| Digital Input for Local Control | Yes |
| Operating temperature | -20°C to +65°C [-4°F to +149°F] |
| Storage temperature | -20°C to +65°C [-4°F to +149°F] |
| Relative humidity | 10 to 95% non-condensing |
| Operating altitude | Maximum 2000m |
| Storage altitude | Maximum 3000m |
| Environmental Air | For use in Pollution Degree 2 Environment. No corrosive gases permitted. |
| EMI | FCC CFR47 Part 15, EN55022/CISPR22, Class B |
| EMS | IEC61000-4-2 (ESD): ± 8kV (contact), ± 15kV (air) IEC61000-4-3 (RS): 10V/m (80MHz ~ 2GHz) IEC61000-4-4 (EFT): Power Port ± 4kV; Data Port: ± 2kV IEC61000-4-5 (Surge): Power Port: ± 2kV/DM, ± 4kV/CM; Data Port ± 2kV IEC61000-4-6 (CS): 10V (150kHz ~ 80MHz) |
| RoHS and WEEE | RoHS (Pb free) and WEEE compliant |
| Packaging and Protection | Metal case, IP20 |
| Mounting | DIN rail |
| Certification | CE, cULus, RoHS, REACH, AT&T (SE-SL3011-4G), FCC |
| Warranty | 2 years |
| Agency Approvals | UL/cUL 60950-1, CE |

| Power Details | |
|-----------------------------|------------------------------------|
| Input Voltage | Class 2 LPS Power Supply 12-24 VDC |
| Maximum Input Power | 10W |
| Maximum Input Current | 2A |
| Internal Voltage Protection | 29V max |
| Reverse Polarity Protection | Yes |
| Isolation | 1.5 kV |

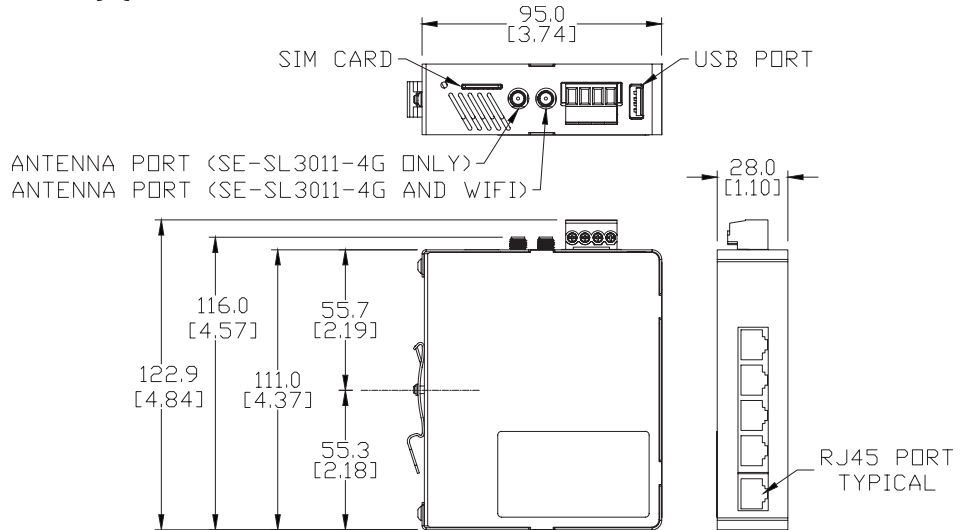
| Ethernet Interface | |
|------------------------|-------------------------------------------------------------------|
| Ethernet ports | Five GbE (4x LAN, 1x WAN) |
| Port Type | Shielded RJ45 |
| Auto-Crossover | Yes, allows you to use straight-through or crossover wired cables |
| Auto-Sensing Operation | Yes, full and half duplex |
| Auto-Negotiating Speed | Yes |
| Flow Control | Automatic |
| Operating Mode | Store and forward wire speed switching, non-blocking |
| Devices Supported | All IEEE 802.3 compliant devices are supported |
| Protection | Built-in 1.5 kV magnetic isolation |
| Cable Requirements | Twisted pair (Cat5e or better) (shielded recommended) |
| Max. Cable Distance | 100 meters |

| 4G LTE Specifications (P/N SE-SL3011-4G Only) | |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protocols and Frequencies (AT&T) | LTE-FDD - B2, B4, B5, B12, B17 WCDMA - B2, B4, B5 GSM/GPRS/EDGE - 850, 1900 MHz |
| Speed | LTE-FDD - Max. 100 Mbps (DL)/Max. 50 Mbps (UL) DC-HSPA+ - Max. 42 Mbps (DL)/Max. 5.76 Mbps (UL) WCDMA - Max. 384 kbps (DL)/Max. 384 kbps (UL) EDGE - Max. 236.8 kbps (DL)/Max. 236.8 kbps (UL) GPRS - Max. 85.6 kbps (DL)/Max. 85.6 kbps (UL) |
| Antenna Connection | Two (2) SMA plugs (male) |
| Antenna Connector Torque | 3–5 lb-in [0.3–0.6 N·m] |
| SIM size | Standard SIM (2FF) |
| FCC ID | XMR201605EC25A |

| WiFi Specifications (P/N SE-SL3011-WF Only) | |
|---------------------------------------------|----------------------------------------|
| WiFi IEEE 802.11 Version | b/g/n |
| WiFi Modes | Station (Client) Mode and Access Point |
| Speed | 72 Mbps |
| Antenna Connection | RP-SMA plug (male) |
| Antenna Connector Torque | 3–5 lb-in [0.3–0.6 N·m] |
| FCC ID | Q0QWF111 |

Dimensions

units: mm [in]



STRIDE SiteLink router dimensions



NOTE: Maintain 25mm clearance around device.

Compatible Accessories

SE-SL3011-4G and SE-SL3011-WF require antennas, purchased separately. The SE-SL3011-4G router contains two standard SMA screw antenna connectors for 4G LTE antennas and the SE-SL3011-WF router contains an RP-SMA screw antenna connector for a 2.4 GHz WiFi antenna.

For compatible antennas, see Appendix A or visit www.AutomationDirect.com.

Installation

1

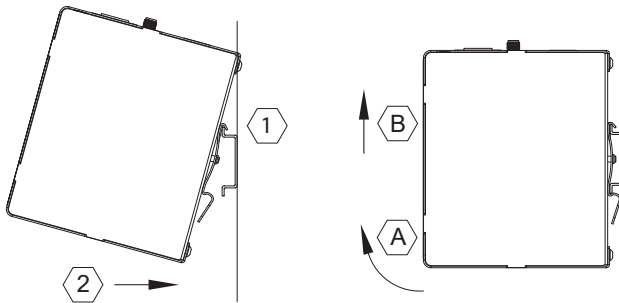
Installation and Removal Procedures



NOTE: These devices are open-type and are meant to be installed in an enclosure which is only accessible with the use of a tool and suitable for the environment.

Installing and Removing from DIN rail

The STRIDE SiteLink router can be easily installed on a standard DIN rail. (1) Hang the device on the rail and (2) push the unit down until you feel a click. To remove the unit, (A) pull/rotate the device up and (B) lift off the rail.



Installing the SIM Card (for SE-SL3011-4G)

The SIM card slot uses a standard (size 2FF) SIM card.



NOTE: AT&T SIM card and data plan required for 4G LTE operation. These can be purchased at <https://marketplace.att.com/data-plans>.



WARNING: DO NOT insert or remove the SIM card when power is applied to the router.

To insert, push the SIM card into the slot until you feel a click; this is approximately 1mm inside the device. Release the card and the card will stay in the device. The end of the SIM card should be aligned with the outside of the enclosure.

To remove, push the SIM card firmly into the slot until you hear a click. Releasing will then cause the SIM card to partially eject, allowing you to easily take out the card.

Guidelines for Installing the STRIDE SiteLink Router

When designing the layout of your system, always separate the devices that generate high voltage and high electrical noise from the low-voltage, logic-type devices such as the STRIDE SiteLink router. Also consider the heat-generating devices and locate the electronic-type devices in the cooler areas of your cabinet. Reducing the exposure to a high-temperature environment will extend the operating life of the STRIDE SiteLink router.

Consider also the routing of the wiring for the devices in the panel. Avoid placing low-voltage signal wires and communications cables in the same tray with AC power wiring and high-energy, rapidly-switched DC wiring.

The STRIDE SiteLink router is designed to be cooled using natural convection. For proper cooling, you must provide a clearance of at least 25 mm above and below the device. Also, allow at least 25 mm of depth between the front of the device and the inside of the enclosure.

Wiring

Wiring Guidelines



WARNING: To minimize the risk of potential safety problems, you should follow all applicable local and national codes that regulate the installation and operation of your equipment. These codes vary from area to area and it is your responsibility to determine which codes should be followed, and to verify that the equipment, installation, and operation are in compliance with the latest revision of these codes.

Equipment damage or serious injury to personnel can result from the failure to follow all applicable codes and standards. We do not guarantee the products described in this publication are suitable for your particular application, nor do we assume any responsibility for your product design, installation, or operation.

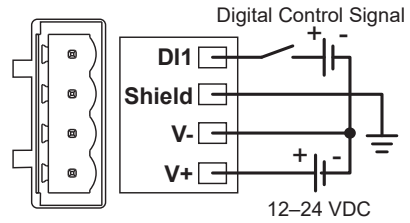
If you have any questions concerning the installation or operation of this equipment, or if you need additional information, please call technical support at 1-800-633-0405 or 770-844-4200.

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Proper grounding and wiring of all electrical equipment is important to help ensure the optimum operation of the SiteLink router and to provide additional electrical noise protection for your application.

The SiteLink router comes with a female 4-pin plug-in connector with screw connection (type: Weidmuller BL 5.08/04/180 SN BK BX).

| Wiring Details | |
|-----------------------|---------------------|
| Wire Size Range | 18–12 AWG |
| Wire Strip Length | 7mm [0.28 in] |
| Terminal Screw Torque | 0.4 N·m (3.5 lb-in) |
| Max Wire Length | 3m [9.84 ft] |
| Min Ground Conductor | 16 AWG |



Power Supply

The STRIDE SiteLink router can be powered from the same DC source that is used to power your other devices. To maintain the UL listing, this must be a Limited Power Supply (LPS) or Class 2 power supply. A DC voltage in the range of 12 to 24 VDC needs to be applied between the V+ terminal and the V- terminal as shown above. A recommended DC power supply is AutomationDirect.com part number PSL-24-030.

Digital Input (DI1)

The digital input may be configured to restrict remote access to the router when the input is in either an ON or OFF state. Instructions for enabling can be found in the “STRIDE SiteLink platform” chapter. The V- from the power supply is used as common ground.

This feature can provide an extra level of security or safety, by allowing remote connections only when certain conditions are met, such as when an operator is present or safety interlocks are engaged. The input can be wired directly through a switch, or a series of interlocks, or can be controlled via PLC for more complex control conditions.

A video providing an overview of using the SiteLink router’s Digital Input as a part of your safety lockout procedures is accessible by clicking the thumbnail at the right, or by copying the following URL to your browser:

<https://www.AutomationDirect.com/VID-CM-0034>



| Digital Input Specifications | |
|------------------------------|--------------------|
| Type | Optocoupler |
| DI Voltage Range | 0–29 VDC |
| DI OFF State Voltage Range | 0–3 VDC |
| DI ON State Voltage Range | 7–29 VDC |
| DI ON State Current Range | 2–5 mA (typically) |

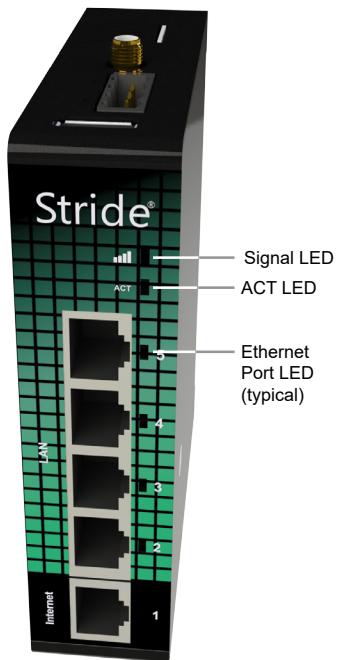
Shield

Connect the Shield pin of the STRIDE SiteLink router to the protective earth conductor (PE) with minimum 16 AWG copper wire.

Operation

LED Status Indicators

The SiteLink router has two LEDs for router status, and one LED per Ethernet port.



Signal LED (SE-SL3011-4G & -WF models)

| Color | Mode | Description |
|--------|-----------------------|-----------------------------------------------|
| Red | Blinking continuously | No reception |
| Red | Blinking 2 pulses | SIM card invalid, PIN invalid or PUK required |
| Red | Constant | Low reception |
| Purple | Constant | Medium reception |
| Blue | Constant | Good reception |
| Blue | Blinking | Initializing |

ACT LED

| Color | Mode | Description |
|-------|-------------------------|--------------------------------------------------------------------------------|
| Red | Constant | Booting or not registered |
| Red | Blinking 1 short pulse | Waiting for internet access |
| Red | Blinking 3 short pulses | LAN/WAN conflict ¹ |
| Red | Blinking 4 long pulses | The router was removed from the STRIDE SiteLink platform ² |
| Red | Blinking 5 long pulses | The router was already registered to the STRIDE SiteLink platform ³ |
| Blue | Blinking 1 short pulse | Connecting to STRIDE SiteLink platform |
| Blue | Blinking 2 short pulses | Setting up VPN connection |
| Blue | Constant | VPN connection active |

1. The network range on the LAN side is in conflict with the settings on the WAN side. The router cannot reliably access the internet because of this. Changing the LAN side IP range generally resolves the conflict.

2. If you want to access the device again, you will have to reconfigure it via a USB stick.

3. This means someone removed the router from the company after registration without performing a factory reset. Fix this by performing factory reset and configuring the router.

Ethernet activity LEDs

| Color | Mode | Description |
|-------|----------|---------------|
| Blue | Constant | Link up |
| Blue | Blinking | Data activity |

1**Resetting the STRIDE SiteLink Router**

The STRIDE SiteLink router can be reset to the factory default settings by pressing and holding the reset button on top for 3 seconds. The ACT LED will blink while the reset button is pressed. Upon release of the button, the ACT LED will rapidly blink if the button was pressed long enough to trigger a reset. Wait for the STRIDE SiteLink router to restart. Your device will not be able to set up a VPN connection until it is configured again.



WARNING: This action cannot be undone. You'll have to re-register your device on the STRIDE SiteLink platform and complete the configuration steps before connecting by VPN.

SiteLink Router Connectivity Requirements for Local IT

Connection to the STRIDE SiteLink Platform

The STRIDE SiteLink router uses well-known outgoing ports to establish a secure connection to our STRIDE SiteLink platform. This means there is no need to open any incoming ports in your firewall.

| STRIDE SiteLink Router Outgoing Ports and Protocols | | |
|-----------------------------------------------------|-----------------|--------------------------|
| <i>Port</i> | <i>Protocol</i> | <i>Application</i> |
| 443 | TCP | HTTPS, MQTT/TLS, OpenVPN |
| 53 | TCP & UDP | DNS ¹ |

1. DNS requests are often handled by local DNS servers. In those cases the listed DNS port does not apply.

DNS Requests

The STRIDE SiteLink router connects to different STRIDE SiteLink servers: REST API, MQTT and OpenVPN servers. The IP addresses of these servers, as well as the number of servers, may change over time and are thus not pre-defined. This is why the SiteLink router needs to be able to perform DNS requests; otherwise it can't connect to the STRIDE SiteLink platform servers.

MAC or IP Address Filtering

The local IT department may choose to only allow internet access to specific devices, based on the MAC address or IP address. The MAC address can be obtained from the label on the side of the STRIDE SiteLink router or in the Devices Info tab of your SiteLink account. The IP address can be set to a static IP address. However, by default the IP address is set to be obtained automatically via DHCP.

Agency Approvals

1

Applicable European Directives

The Stride SiteLink router is in conformity with the provisions of the following European Directives.

| Applicable European Directives | |
|--------------------------------------|------------------------------------------|
| <i>Directive</i> | <i>Description</i> |
| EMC Directive 2014/30/EU | Product safety |
| Radio Equipment Directive 2014/53/EU | Use of the radio spectrum |
| RoHS Directive 2015/863 | Restriction of hazardous substances |
| REACH Directive 1907/2006 | Regulation and registration of chemicals |
| WEEE Directive 2012/19 | Waste of electronic equipment |

Applicable Safety Standards

The STRIDE SiteLink router was tested and passed the following standards.

| Applicable Safety Standards | |
|--------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <i>Standards</i> | <i>Description</i> |
| EN 55032 | Electromagnetic Compatibility of Multimedia Equipment |
| EN 301 489-1 | EMC Standard for Radio Equipment and Services, Part 1: Common technical requirements |
| EN 301 489-3 | EMC Standard for Radio Equipment and Services, Part 3: Specific conditions for Short-Range Devices |
| EN 61000-4-2 | Electrostatic discharge immunity test |
| EN 61000-4-3 | Radiated, Radio-frequency, Electromagnetic Field Immunity Test 80-1000 MHz |
| EN 61000-4-4 | Burst Immunity Test |
| EN 61000-4-5 | Surge Immunity Test |
| EN 61000-4-6 | Immunity to Conducted Disturbances, Induced by Radio-frequency Fields |
| IEC 60950-1 + Amendment 1 and Amendment 2 | Information Technology Equipment Safety, Part 1: General Requirements - Edition 2 |
| UL 60950-1 | Information Technology Equipment Safety, Part 1: General Requirements - Edition 2 |
| CSA C22.2 No. 60950-1-07 + Amendment 1 and Amendment 2 | Information Technology Equipment Safety, Part 1: General Requirements - Edition 2 |

FCC Compliance

The product described in this User Manual complies with Part 15 of the FCC Rules. The STRIDE SiteLink router is a class B Information Technology Equipment (ITE) device.

Operating is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.



WARNING for WiFi and 4G models: The antenna used with this transmitter must be installed with a separation distance of at least 20cm from all persons and must not be co-located or operated in conjunction with any other antennas or transmitters. Only an antenna tested with the wireless transmitter or a similar antenna with equal or lesser gain may be used.

Certifications

The STRIDE SiteLink router has been tested and certified for:

- CE certification
- FCC verification
- cULus listed (UL File #E495151)
- AT&T certification



