



Models:

SL41N-M – Secure Ethernet Switch

HLT39654 Rev. 1.0

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INTRODUCTION

High Sec Labs' Secure 4-Port Ethernet Switch provides convenience without sacrificing security, allowing access to four completely isolated devices via a single shared device. Its built-in isolated relays ensure isolation between the connected devices, allowing devices of different security levels to share a common port while maintaining separation. This reduces clutter and eliminates the hassle of plugging and unplugging cables to switch between devices.

This guide includes instructions to install and operate the Secure 4-Port Ethernet Switch.

Features

- **Secure Connection:** Connect devices of different security levels to a shared port while keeping them isolated from each other.
- **Fail-Safe Architecture:** All ports remain isolated even during power loss, preventing the possibility of leaks or bridges between ports.
- **EMI/RFI Shielding:** The Switcher's all-metal enclosure protects from electromagnetic and RF interference.
- **Cat 6 Compliance:** The Switcher's Ethernet ports are all Cat 6 compliant for high-speed networking.
- **Transparent Ports:** The Switcher's Ethernet ports are transparent to all data, relaying data between the common device and the connected source device without interference.
- **Break-Before-Make Connection:** Each Ethernet port's RJ45 interface is switched by electromechanical relays that disconnect from the current connection before making a new one. This prevents any overlap between connections, with no risk of data leaks.
- **Manual Pushbutton Controls:** The pushbuttons on the Switcher's front panel allow direct manual control over which device is connected.
- **Remote Commands:** The Switcher can also be controlled by keyboard hotkeys, an HSL programmable remote control, or RS-232 serial commands. These commands enable switching between devices, obtaining information about the Switcher's status and the status of connected devices, and enabling or disabling the ethernet connection.
- **Complete Electrical Isolation Between Ports:** 60dB of isolation between sources to ensure no information sharing on any level.
- **Network Compatibility:** 1Gbps support for compatibility with standard network devices.

INTRODUCTION

Specifications

Model Number	SL41N-M
CONSOLE PORTS	
Console LAN Port	1x 10/100/1000 Mbps with configurable LAN settings
Console USB Port	1x USB 2.0 Type A
Console Serial Port	1x RJ14 female, for RS-232 configuration
DEVICE PORTS	
Device LAN Ports	4x RJ-45 10/100/1000 Mbps CAT 6 shielded
Common LAN Port	1x RJ45 10/100/1000 Mbps CAT 6 shielded
PHYSICAL	
Dimensions	342x148x42mm / 13.4x5.8x1.6in
Weight	0.6kg / 1.32lb
POWER	
Power Consumption	30 Watt max
Power Supply	12V 2.5A DC
Power Protection	Overcurrent, overvoltage, reverse supply, lightning, PoE
ENVIRONMENTAL	
Operating Temperature	-20°C to 60°C / -4°F to 140°F
Storage Temperature	-40°C to 70°C / -40°F to 158°F
Humidity	0-80% RH, non-condensing
Altitude	Up to 50,000ft
GENERAL INFORMATION	
Manufacturer	TAA & BAA Compliant
Product Life Cycle	10 Years
Product Warranty	2 Years

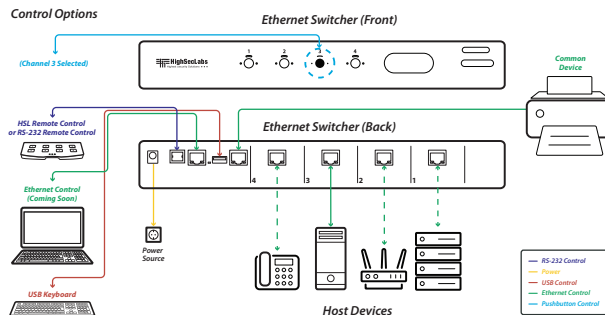
INSTALLATION

Before Installation

Ensure all devices are powered OFF before installing.

Connect Devices

- Connect all Host Devices to the RJ45 Ethernet ports labeled 1-4.
- Connect the shared console device to the Console RJ45 Ethernet port.
- Connect a controller to the corresponding Console control port:
 - Connect a USB keyboard to the Console USB port.
 - If using an Ethernet controller, connect to the Console LAN port labeled NET. (Feature coming soon)
 - If using an HSL WR80PC-4 programmable remote or an RS-232 controller, connect to the Console RJ14 serial port labeled RS-232.



OPERATION

Channel Switching

The Secure Ethernet Switch has multiple methods for switching between the shared device's connection to the connected channels.

- Pushbutton Controls
- Keyboard Hotkeys
- HSL Configurable Remote Control
- RS-232 Serial Control

When a channel is selected, the LED above the corresponding channel button on the Ethernet Switch's front panel will light up to indicate the channel is active.

When the Ethernet Switch switches channels, it breaks the connection to the current channel before connecting to the new active channel, ensuring that the connected source devices are kept completely isolated from each other and that there is never an instance where two devices are connected simultaneously.

Keyboard Hotkeys

The interface to operate the KVM Switch uses keyboard hotkeys that can be entered at any time. These hotkeys are based on a QWERTY keyboard layout.

Keyboard Hotkey Terms

- **|** Separates keys pressed in sequential order. for example, to select Channel 1, the key combination is two presses of the
- Left Control (**LCtrl**) key, one press of the 1 key, so the combination is shown as **LCtrl | LCtrl | 1**.

Notes:

- Always use the left Control key (**LCtrl**) unless otherwise specified.
- Do not use the numeric pad for number keys, unless otherwise specified.
- All hotkey combinations are configured using a QWERTY keyboard. When using a non-QWERTY keyboard, use the key location corresponding to the QWERTY layout.

OPERATION

Disable the Ethernet Connection

The Ethernet Switch's connection can be disabled with a keyboard hotkey or serial command, disconnecting the shared device from all channels. When the connection is enabled again, the Ethernet Switch will connect to the last connected channel.

Channel	Pushbutton	Keyboard Hotkey	RS-232
Channel 1	Button 1	LCtrl LCtrl 1	#ANATL 1
Channel 2	Button 2	LCtrl LCtrl 2	#ANATL 2
Channel 3	Button 3	LCtrl LCtrl 3	#ANATL 3
Channel 4	Button 4	LCtrl LCtrl 4	#ANATL 4
Disable Ethernet Connection	-	LCtrl LCtrl d	#ANATL D
Enable Ethernet Connection	-	LCtrl LCtrl e	#ANATL E

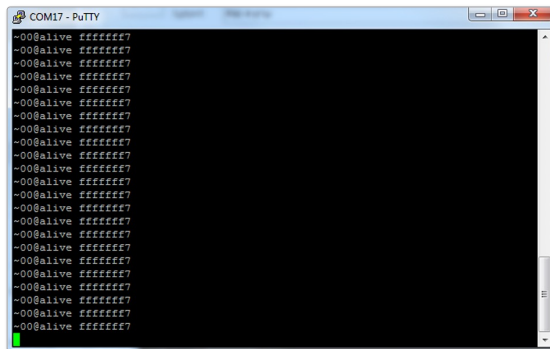
APPENDIX

Controlling the Ethernet Switch with a Windows PC and PuTTY

The Ethernet Switch sends keepalive messages to report its current status to a connected controlling device. Keepalive messages are sent at a regular interval, which can be adjusted with an RS-232 command using a serial terminal such as PuTTY.

For complete instructions to connect the Ethernet Switch to a serial command terminal, consult the HSL RS-232 Administrator Guide, which can be found here:

https://highseclabs.com/dow_type/admin-guidance/



To set the keepalive interval, open a serial terminal and enter the command **#ANATA [x]** into the command line, where **[x]** is the interval of time between messages, measured in 0.1 seconds. For example, to set the interval to 5 seconds, the command would be **#ANATA 50**.

Additional commands can be entered into the terminal's command line to replicate pressing the Switcher's front-panel buttons.

Ethernet Switch Status	Keepalive Message	Keyboard Shortcut	Serial Command
Keepalive Message Interval	-	-	#ANATA [x] [x] = time interval in 0.1 seconds
Channel 1 Active	~~00alive fffffffe	LCtrl LCtrl 1	#ANATL 1
Channel 2 Active	~~00alive fffffffd	LCtrl LCtrl 2	#ANATL 2
Channel 3 Active	~~00alive fffffffe	LCtrl LCtrl 3	#ANATL 3
Channel 4 Active	~~00alive fffffff7	LCtrl LCtrl 4	#ANATL 4
Ethernet Connection Disabled	~~00alive fffffff7	LCtrl LCtrl d	#ANATL D
Ethernet Connection Enabled	-	LCtrl LCtrl e	#ANATL E

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