



S3290 Carrier Ethernet (CE) Network Interface Device (NID)



Install Guide

33594 Rev. D

Safety Warnings and Cautions

These products are not intended for use in life support products where failure of a product could reasonably be expected to result in death or personal injury. Anyone using this product in such an application without express written consent of an officer of Transition Networks does so at their own risk, and agrees to fully indemnify Transition Networks for any damages that may result from such use or sale.



Attention: this product, like all electronic products, uses semiconductors that can be damaged by ESD (electrostatic discharge). Always observe appropriate precautions when handling.



Warning: Potential for damage to equipment or personal injury.



Warning: Risk of Electrical Shock



Functional grounding point



Protective grounding point



Special considerations

S3290 Install Guide - TN PN 33594 Rev. D

Record of Revisions

Rev	Date	Description of Changes
B	5/1/15	Updated to v 2.1.3 which adds DDMI, HQoS, JSON, LLDP-MED, MEP BFD, MPLS-TP, PFC, Traffic Test Loop, UDLD, and Y.1564 support.
C	9/25/15	Update the Rack Mount Installation information.
D	2/2/16	Updated TT-LOOP, VLAN Translation, and contact information.

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1. Introduction

Product Description

Transition Networks' managed S3290 NID provides advanced packet performance metering and service creation aimed directly at customer premises and cell sites. The S3290 is optimized for business Ethernet and mobile backhaul deployments.

The S3290 is a multi-service NID that provides SLA assurance and advanced fault management that is MEF CE2.0 compliant. IEEE 802.1ag Service OAM, ITU Y.1731 Performance Monitoring and IEEE 802.3ah Link OAM are standard features.

The S3290 supports advanced features such as IPv6 and IPv4, VLANs, QoS, bandwidth allocation, ring protection, jumbo frames and numerous security features. The S3290 can be managed and provisioned with Transition Networks Converge™ EMS or via Web, CLI and SNMP (v1, v2c & v3). The S3290 supports SSL/SSH, RADIUS, TACACS+, Management VLAN and ACL rules.

The S3290 offers AC or DC power inputs for operation in a variety of environments. The SFP ports are triple speed and support 100Mbps, 1000Mbps or SGMII SFPs. CWDM and Bi-Di SFPs are also supported, allowing for flexible network architectures.

Models

The S3290 models are described below.

Model	Description
S3290-24	2xTP 4xSFP NID: Two 10/100/1000Mbps RJ45 ports with four 100/1000Mbps SFP ports. Includes IEEE 1588v2 with RFC 2544 Traffic Generation.
S3290-42	4xTP 2xSFP NID: Four 10/100/1000Mbps RJ45 ports with two 100/1000Mbps SFP ports. Includes IEEE 1588v2 with RFC 2544 Traffic Generation.

Options

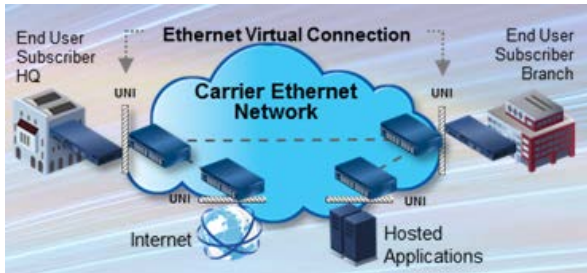
The S3290 options are listed below.

Model	Description
25132	Optional Power Supply supporting an operating environment of -30°C to 70°C.
WMBL	Wall Mount Bracket (Kit) Long.
WMBD	Wall Mount Bracket DIN (DIN Rail Vertical Wall Mount Kit).
S3290-RMB	Single Rack Mount Bracket for S3290 NID.
S3290-RPS	Isolated Wide Input 20W Power Supply Assembly for S3290 Series
SFPs	See the TN SFP webpage for models and specifications.

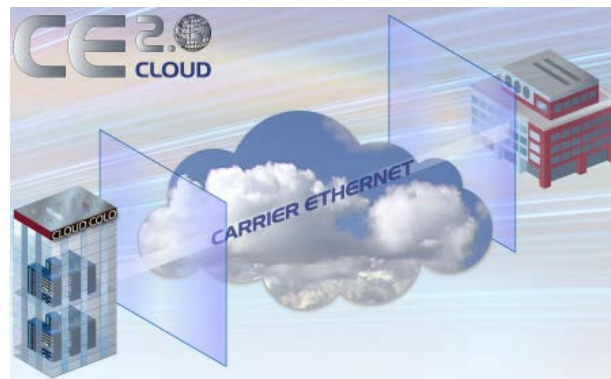
Applications

The S3290 is designed to support a wide range of MEF-based Carrier Ethernet services to include Fiber-to-Desk, Migration to Packet Networks, Small Cell / DAS, and Cloud Services.

Several S3290 application examples are provided below.

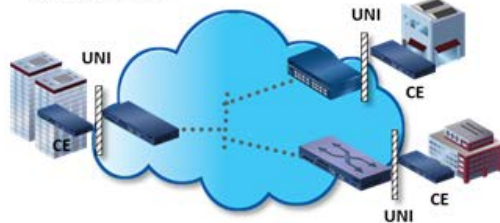


CE Services Example

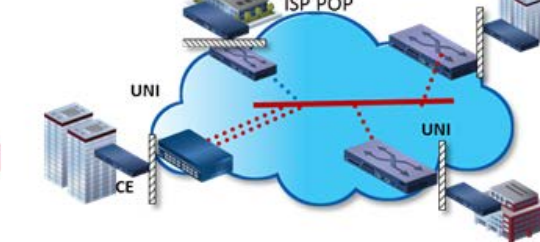


Cloud Services Example

Carrier Ethernet 2.0 EP-LAN Service



Carrier Ethernet 2.0 EVP-LAN Service



E-LAN Services Example

Carrier Ethernet 2.0 EPL Service



Carrier Ethernet 2.0 EVPL Services



E-Line Services Example

Features

- Two/four 10/100/1000Mbps Base-T ports. Four/two 100/1000Mbps SFP ports. Any port can be network (NNI) or client (UNI).
- Two of the SFP ports support a proprietary 2.5Gbps mode.
- TP ports support IEEE 802.3az Energy Efficient Ethernet for power saving.
- Full bandwidth 1000Mbps switching, non blocking.
- SNMP v1, v2c, and v3.
- IPv6 and IPv4 support.
- VLAN (802.1Q) Q-in-Q (C-Tag / S-Tag).
- RMON and Syslog.
- OAM Support: IEEE 802.3ah Link OAM, IEEE 802.1ag Service OAM, ITU-T Y.1731 Performance Monitoring, and MEF E-LMI.
- Loop Protection: ITU G.8032 and IEEE RSTP, MSTP.
- G.8031 Linear Protection switching
- IEEE 1588v2 PTP (Precision Time Protocol).
- DC or AC power input (12VDC Barrel connector or 2-Pin, 21-60VDC Terminal block).
- Jumbo Frame Support (10240 bytes maximum).
- Wire speed loopbacks.
- RFC 2544 Traffic Generation and Reports.
- Last Gasp/Dying Gasp notification via SNMP trap. Monitor Rx and Tx Dying Gasp for each port.
- SNMP traps configurable: System (Warm Start, Cold Start); Interface (Link Up, Link Down, LLDP); AAA (Authentication Fail); Switch (STP, RMON).
- Alarm inputs/outputs: RJ-45 connector with 2-IN and 2-OUT, 10-30VDC, 40mA maximum; optically isolated from main board. Alarm indications via Syslog and SNMP.
- E-LINE (EPL and EVPL) / E-LAN (EP-LAN and EVP-LAN) / E-ACCESS (ACCESS EPL and EVPL) / E-TREE (EP-TREE and EVP-TREE).
- UNI or NNI configuration.
- TOS (Type of Service) and Diffserv (Differentiated services).
- QoS (802.1p Quality of Service): 8 queues; strict priority and DWRR, shaping, policing, P-bit and DSCP.
- Management via Industry standard CLI, Web, SSH/SSL & SNMP (v1, v2c, v3).
- Port configuration, status, statistics, and monitoring.
- RADIUS, TACACS+ and ACL.
- Remote backup / restore configuration / firmware upgrades.
- L2CP (Layer 2 Control Protocol).
- LLDP (Link Layer Discovery Protocol).
- Port Mirroring and Remote Mirroring.
- Link Aggregation Control Protocol (LACP).
- DDMI (Digital Diagnostics Monitoring Interface).
- HQoS (Hierarchical Quality of Service) with Guaranteed Bandwidth Rate.
- JSON (JavaScript Object Notation) RPC.
- LLDP-MED per TIA-1057.
- MEP BFDs (Bidirection Forwarding Detections).
- MEP Route Trace.
- PFC (802.1Qbb Priority Flow Control)
- Traffic Test Loop (Y.1564, RFC2544, and TT-Loop functions).
- UDLD (Uni Directional Link Detection) protocol support (RFC 5171).
- Y.1564 Tests and Reports.

Specifications

Standards: IEEE 802.3 for 10Base-T, IEEE 802.3u for 100Base-TX IEEE 802.3z for 1000Base-X, IEEE 802.3ab for 1000Base-T, IEEE 802.3x for Flow control, IEEE 802.3ad for LACP, (Link Aggregation Control Protocol) IEEE 802.1p for COS (Class of Service), IEEE 802.1Q for VLAN Tagging, IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol), IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol), IEEE 802.1x for Authentication, IEEE 802.1AB for LLDP (Link Layer Discovery Protocol), IEEE 802.3ah Link OAM, IEEE 802.1ag SOAM FM, IEEE 1588-2008 (v2) Precision Time Protocol (PTP), ITU Y.1731 PM.

Maximum MAC Addresses: 8K

Maximum VLANs: 4K VLANs

Maximum Frame Size: 1518-10240 bytes including FCS.

Memory: 8Mbit shared buffer memory

Data Rate *Copper ports:* (RJ-45): 10/100/1000 Mbps. ***SFP ports*** (empty): 100/1000 Mbps or SGMII.

Status LEDs: Power, Port Activity and Port Duplex

Dimensions *Width:* 5.95" [151.13 mm] ***Depth:*** 6.5" (165.1 mm) ***Height:*** 1" (25.4 mm)

Weight: S3290-42: 1.45 lb. (0.65 Kg). S3290-24: 1.40 lb (0.63 Kg.)

Input Power AC: 12 VDC (+/- 5%) via barrel connector using 100-250VAC.

DC: 21-60VDC via terminal block.

Power Consumption: These are nominal power measurements with all interfaces connected and active, using standard 1G MM SFP modules:

- Barrel input: 520 mA at 12 VDC
- Terminal block input: 340 mA at 21 VDC

Environment: -20°C to +65°C operating temperature (Note: above 50° C industrial rated SFP modules are required). -40°C to +85°C storage temperature. 5%– 95% operating humidity non-condensing.

Altitude: 0-10,000 feet (with de-rating)

Safety Compliance: CE, EN55022 Class A. The external wall adapter is UL listed.

Immunity Compliance: EN55024

Warranty: 5 Year Hardware

Support: TNCARE packages available for Technical Support, Hardware Support, Training, and Consulting.

Related Manuals and Help

The S3290 ships with a printed documentation postcard that points you to the online product documentation. The S3290 documentation set includes:

- Product Documentation Postcard, 33504 (printed)
- S3290 Quick Start Guide (33615)
- S3290 Install Guide (33594) (this manual)
- S3290 Web User Guide (33595)
- S3290 CLI Reference (33596)

Power Supply Included: To order the corresponding country specific power supply, add the extension to the end of the SKU (e.g., S3290-24-NA = -NA = North America; -LA = Latin America; -EU = Europe; -UK = United Kingdom, -SA = South Africa, -JP = Japan. -OZ = Australia; -BR = Brazil.

2. Installation

Unpacking / Package Contents

Carefully unpack the contents and verify that you have received these items in the packaging:

- One S3290 NID
- One Power Supply (optional - ordered separately)
- One 6' Console Cable, DB9 Female-to-RJ45 Male
- One Product Documentation Postcard
- One S3290 Quick Start Guide
- Four rubber feet

Save the packaging for future use.

Install Cautions and Warnings



Warning: Risk of Electrical Shock. Disconnect power before installing the S3290. Failure to observe this warning could result in an electrical shock.



CAUTION Only qualified persons should install the S3290. Failure to observe this caution could result in poor performance or damage to the equipment.



CAUTION Install the S3290 in an operating environment where the temperature range is from -20°C to $+65^{\circ}\text{C}$, with relative humidity of 5% to 90% non-condensing. Failure to observe this caution could result in poor equipment performance.



CAUTION DO NOT install the S3290 in areas where strong electromagnetic fields (EMF) exist. Failure to observe this caution could result in poor equipment performance and data corruption.

WARNING Disconnect power before installing and wiring the S3290 for power. Failure to observe this warning could result in an electrical shock.



Attention: this product, like all electronic products, uses semiconductors that can be damaged by ESD (electrostatic discharge). Always observe appropriate precautions when handling.

Installation Location

Deciding where to install the S3290 can greatly affect its performance. When selecting an installation location, consider the following:

- Install the S3290 in a fairly cool and dry place. See the “[Specifications](#)” section (page 7) and the cautions below for the acceptable temperature and humidity ranges.
- Install the S3290 where it will not be exposed to liquid.
- Install the S3290 in a location free from strong electromagnetic field generators (such as motors).
- Do not expose or subject the S3290 to excessive vibration, dust, or direct exposure to sunlight.
- Leave at least 5 cm (1.97 in) of space around the S3290 for ventilation purposes.

Desktop Installation

Attach the Rubber Feet to the bottom of the S3290 for added stability when placing on a desktop, table top, or other flat surface. Make sure that air flow is not blocked by any obstacles.

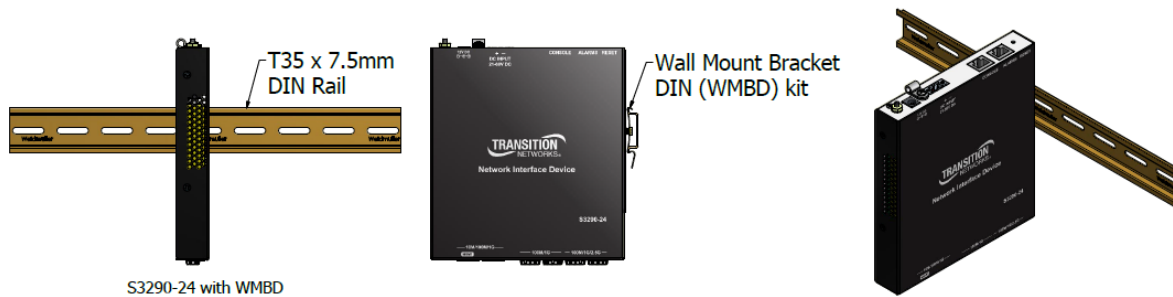
Rack Mount Installation

The S3290-RMB can be used to mount an S3290 on a 19 inch Rack. See the S3290 Single Rack Mount Ear Bracket Install Guide, 33659 for more information.

DIN Rail Installation (WMBD)

Din Rail Brackets allow stand-alone media converters to be mounted to a Din Rail, common in industrial environments, in either a flat mount against the Din Rail or in a vertical mount in which the S3290 mounts on its edge.

To install the S3290 in a standard DIN Rail, follow the instructions provided with the Wall Mount Bracket DIN (WMBD) shown below:



Wall Mount Installation (WMBL)

Wall Mount Brackets are small simple “L-shaped” tabs that allow a single S3290 to be mounted anywhere needed. The brackets are sold in pairs and are available in several sizes and types to match the different sized media converters and space requirements.

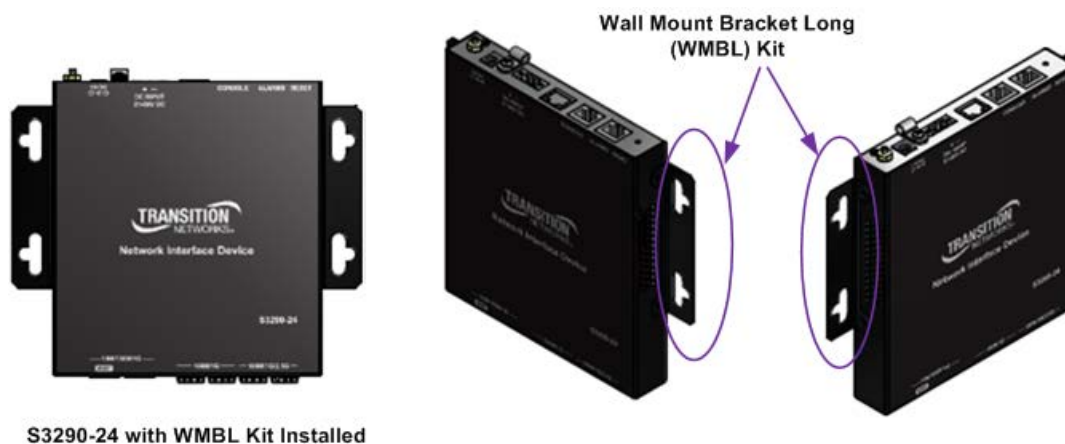
A Wall Mount Kit is required for S3290 wallmount installations. When mounting on a wall ensure that:

- The mounting surface and fasteners used can support the S3290, mounting kit, plus cable pull.
- Cable pull does not exceed the limit.
- The S3290 install position allows proper ventilation.

To mount the S3290 on a wall:

1. Using a Phillips screwdriver, align the WMBL brackets with the holes on the side of the S3290 and attach with the screws provided.
2. Secure to the wall using the screws provided.

The Wall Mount Bracket Long (WMBL) is shown below:



Grounding and Wiring Recommendations

- ⚠ **CAUTION** Connect the S3290 to a well-grounded surface. Failure to observe this caution could result in electromagnetic interference (EMI) problems.
- ⚠ The S3290 can eliminate the effects of noise due to EMI via proper grounding. Always run the ground connection from the ground screw to the grounded surface before connecting power.

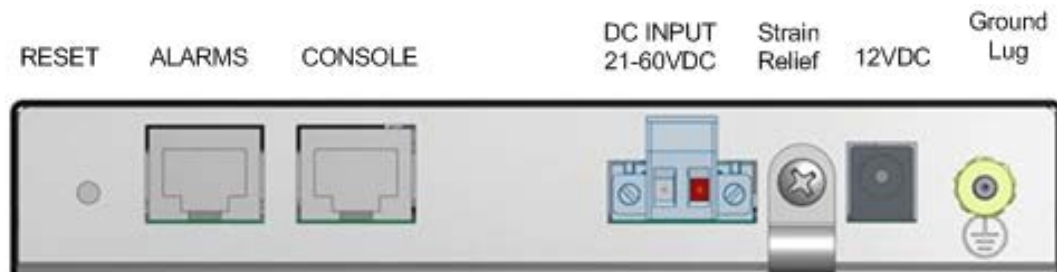
The following wiring considerations are recommended:

- Use separate paths to route wiring for power and device data cables. If power wiring and device data cables must cross, make sure that the wires are perpendicular at the intersection points.
- DO NOT run signal or communications wiring and power wiring in the same conduit. To avoid interference, wire with different signal characteristics should be wired separately.
- Keep input and output wires separated.
- Label the wiring to all devices in the system for clarity.

No power ON/OFF Switch: The S3290 does not include a power ON/OFF switch; therefore, when power is applied to the switch, it immediately powers Up.

Back Panel

The S3290 back panel is shown and described below.



RESET: The RESET button functions include:

- 1) Press and immediately release the RESET button to :
 - a. Restart the device.
- 2) Press and hold the RESET button for more than 5 seconds to:
 - a. Load the factory default configuration,
 - b. copy the running-configuration to the startup-configuration,
 - c. restart the device in factory default configuration (note that this resets the unit IP address).

The RESET button can be disabled (ignored) via the CLI. Refer to the *S3290 CLI Reference* manual.

Note: Restoring factory default can also be performed by making a physical loopback between port 1 and port 2 within the first minute after switch reboot. In the first minute after boot, 'loopback' packets will be transmitted at port 1. If a 'loopback' packet is received at port 2, then the switch will do a restore to defaults.

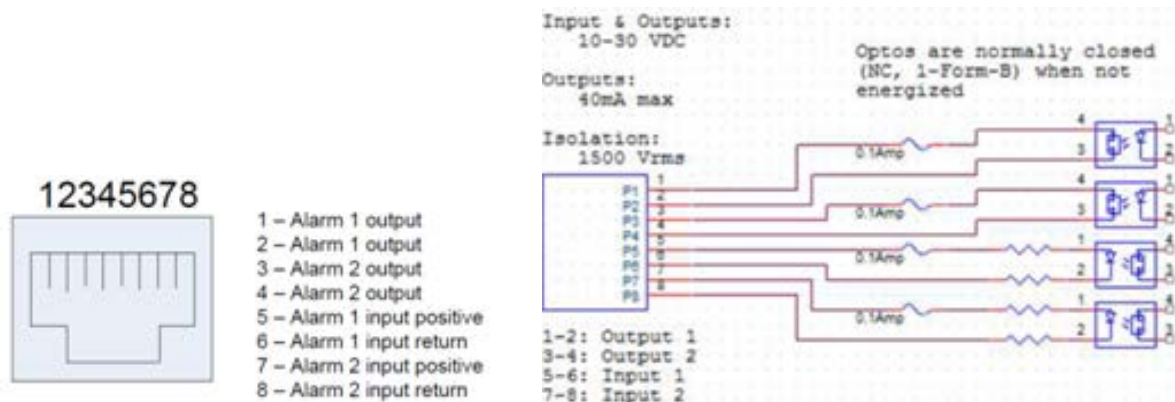
Press the Enter key to display the logon sequence, and then enter your User Name and Password.

ALARMS: Alarm inputs and outputs are RJ-45 connector with 2-IN and 2-OUT; 10-30VDC, 40mA maximum; optically isolated from main board. You can connect up to two alarm inputs from external devices in your environment (e.g., a fire alarm, a door, a temperature gauge) to the alarm input port on the switch front panel. The figure below shows the location of the alarm pinouts. For each alarm input, you can configure an open or closed circuit to trigger an alarm and configure the severity of the alarm. A triggered alarm generates a system message. If you enter a descriptive name for the alarm, that name is included in the system message. A triggered alarm also turns on the LED display. The LED is normally off, meaning no alarm condition exists.

You can set the alarm severity to *Info*, *Warning*, or *Error*. The severity is included in the alarm message and also sets the S2 LED color when the alarm is triggered. The S2 LED is **amber** for an *Info* alarm, **red** for a *Warning* alarm, and **blinking red** for an *Error* alarm. If not set, the default alarm severity is *Info*.

You can use the S3290 web GUI or CLI to configure alarm contacts; see the related manual for details.

The ALARMS port pinning and basic block diagram are shown below.



The Alarm Input and Output truth tables are provided below.

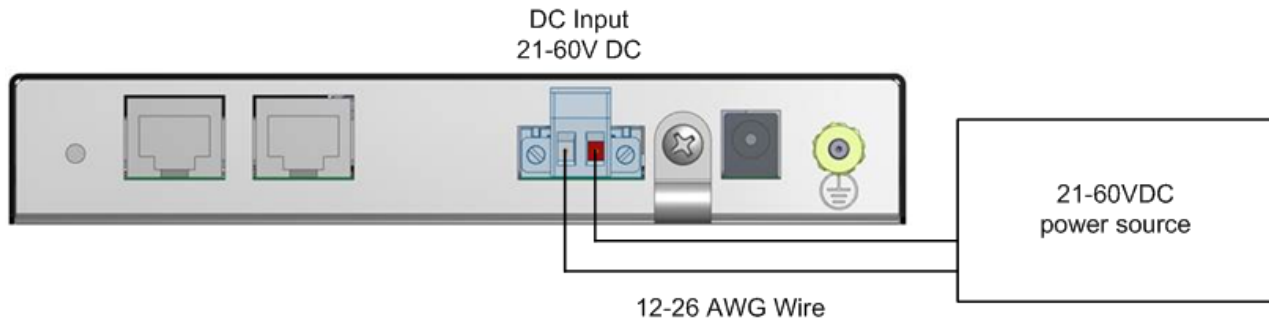
Alarm Outputs		
Alarm State & LED behavior	Trigger setting	Alarm relay out state
<i>Asserted & Active</i>	Close	relay closed
<i>De-asserted & Not active</i>	Close	relay open
<i>Asserted & Active</i>	Open	Relay open
<i>De-asserted & Not active</i>	Open	Relay closed

Alarm Inputs		
Wire state	Trigger setting	Alarm state & LED behavior
Energized	Close	<i>Asserted & Active</i>
De-energized	Close	<i>De-asserted & Not active</i>
Energized	Open	<i>De-asserted & Not active</i>
De-energized	Open	<i>Asserted & Active</i>

CONSOLE: RJ-45 serial port 115200 baud CLI port. The S3290 RJ-45 console port allows root access to its CLI (Command Line Interface) via a computer, regardless of the state of the switch (unless it is completely dead). By connecting to the console port, out-of-band remote access to the CLI of the switch is possible. This creates a secondary path to the switch outside the bandwidth of the network, which needs to be secured without relying on the primary network.

DC INPUT: 21-60 VDC EuroBlock. One of two power input options (not redundant power inputs).

⚠ CAUTION : only one power input should be connected at any time.



Strain Relief:

Provides an optional means to offload cable strain.



12V DC: The barrel input requires 12VDC +/-5%. One of two power input options (not redundant power inputs).

⚠ CAUTION : only one power input should be connected at any time.

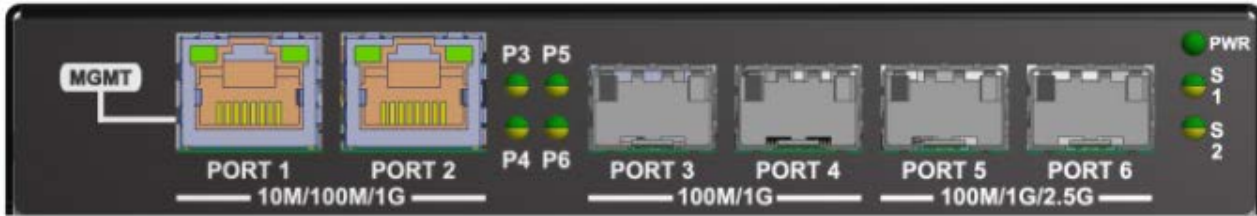


Grounding Lug: Provides an option for grounding the S3290. See “[Grounding and Wiring Recommendations](#)” on page 10.

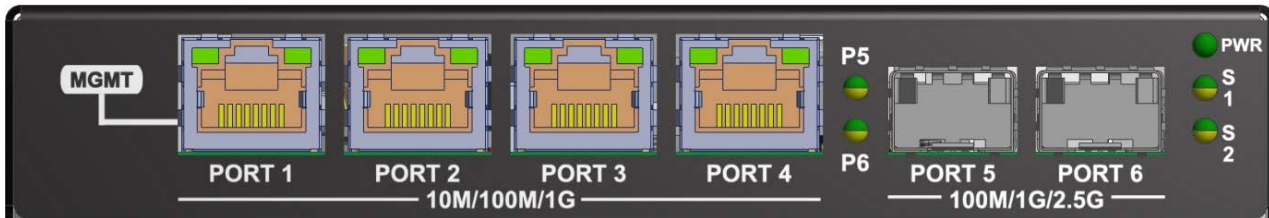


Front Panel

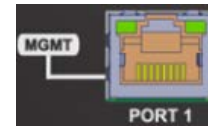
The S3290 front panels are shown and described below.



S3290-24 (above) / S3290-42 (below).



MGMT / PORT 1: Port 1 (MGMT) is a normal data port, but by default it will be in a separate private VLAN (PVLAN 1) that you can remove. You can enable or disable out-of-band management on PORT 1. PORT 1 can be optionally configured to support either out-of-band management or it can be used as a normal data UNI/NNI port.



See Connecting Via the MGMT Port / Web GUI on page 18. By default, PORT 1 is enabled as a Management port with a default IP and subnet mask. See Factory Defaults on page 19. Full instructions for disabling the management function and how to use the port as a normal data port are provided in the CLI Reference and Web User Guide manuals. See also Switching MGMT / PORT 1 Modes on page 21.

GigabitEthernet 1/1 (Port 1) is configured by default to act as a management port. This is achieved by placing Port 1 in Private VLAN 6 which isolated traffic at layer 2 on this port from other front ports which are by default placed into Private VLAN 1.

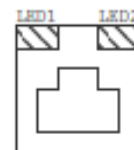
PORT 2 - PORT 4 (or PORT 1 & 2): Ethernet RJ-45 (10M/100M/1 Gbps) twisted pair ports (IEEE 10/100/1000Base-T interfaces). The Port 1 and Port 2 (or PORT 1-4) LEDs are shown and described below:

LED1: Link/Activity/Duplex: ON = Link, OFF= No link

BLINK = Activity

Green = Full duplex, Yellow = Half duplex

LED2: Speed: Green = 1000Mbs, Yellow = 100Mbs, OFF = 10Mbs

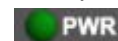


PORT 5 & 6 (or PORT 3 - PORT 6 on the S3290-42): Two (or four) SGMII interfaces. The Serial Gigabit Media-independent Interface (SGMII) interfaces can operate at multiple speeds of 100M/1G/2.5G bps.

P3 - P6 LED (P5 - P6 on the S3290-42): fiber link status. When lit in green, indicates a 1G fiber link / activity. When lit in amber, indicates a 100M fiber link / activity. When off indicates no fiber link established.



PWR LED: Green Power LED: On = power applied to the PC board. Flashes Green during S3290 boot up.



S1 LED: System Status LED (Bi-color Green and Amber):

During boot up – Amber

Normal operation – Green

Firmware upgrade – Flashes Green

Fatal condition logged – Flashes Amber



S2 LED: S2 is used for alarms. You can set the alarm severity to Info, Warning, or Error. The severity is included in the alarm message and also sets the S2 LED color when the alarm is triggered. The S2 LED is amber for an Info alarm, red for a Warning alarm, and blinking red for an Error alarm. If not set, the default alarm severity is Info. See the back panel **ALARMS** port description on page 13.



S2 LED is **green** when at least one alarm source is being monitored (enabled) if the severity level is **Info**.
 S2 LED is **amber** when at least one event source has triggered if the severity level is **Warning**.
 S2 LED is flashing **amber** when at least one event source has triggered if the severity level is **Error**.
 S2 LED is off when all event sources are disabled if the severity level is **Error**.

Connecting Power

You can connect S3290 power either via the 12V DC Connector or via the DC INPUT Connector (not redundant power inputs).



⚠ CAUTION : only one power input should be connected at any time.

Note that when power is initially applied (or when power is recycled) the S3290 front panel LEDs all light for approximately 10 seconds. Some LEDs will remain lit, depending on the S3290 operating status and port connections.

Power via the 12V DC (Barrel) Connector

Connect the Barrel connector to the DC INPUT Connector.



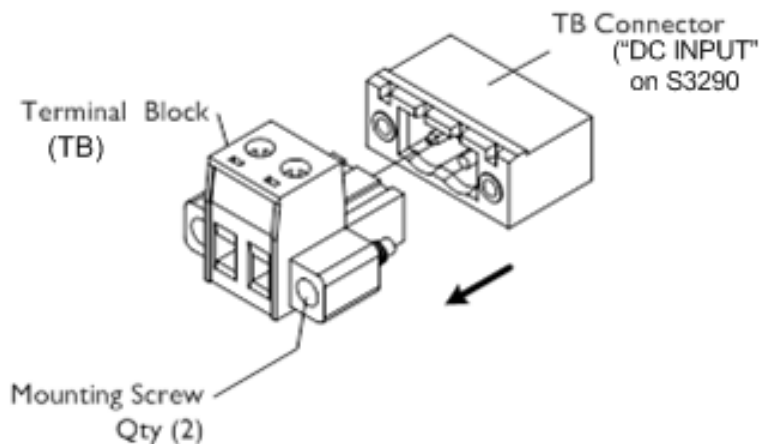
Power via the DC INPUT (EuroBlock) Connector

DC INPUT: 21-60 VDC EuroBlock (Terminal Block). The procedures below describe how to remove the terminal block, connect the Power wires to the Terminal Block, and then reinstall the terminal block and verify the Power wire connections.



Removing the Terminal Block (TB)

1. Loosen the “2” mounting screws that attach the “primary” Terminal Block (TB) to the S3290 chassis.
2. Pull the TB from the S3290 chassis connector as shown below.



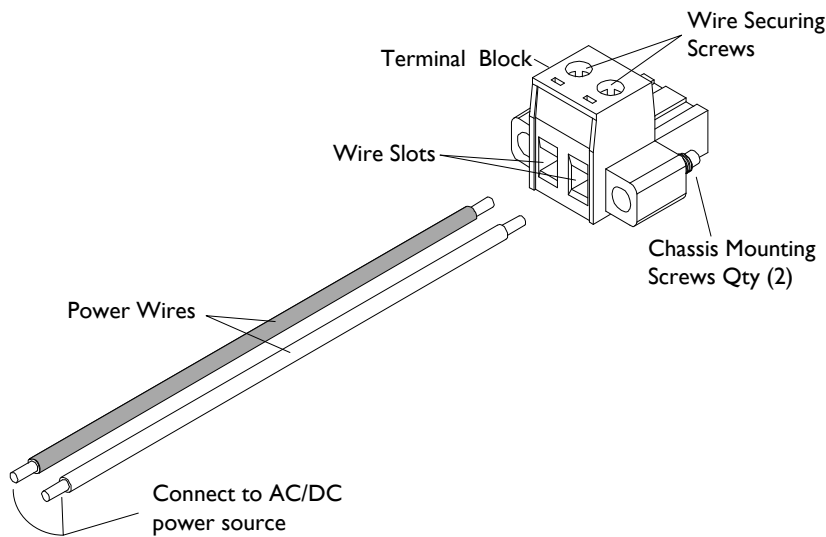
Notes: It is a good practice to turn OFF input and load power, and unplug the power Terminal Block before making wire connections. Otherwise, a metal screwdriver blade can inadvertently short the terminal connections to the grounded enclosure. However, in some instances this is not possible as this may be a bussed power rail providing power to numerous other devices.

Also note:

- The range of suitable wire for the terminal block is 12 to 26 AWG.
- The power source must be safety certified.

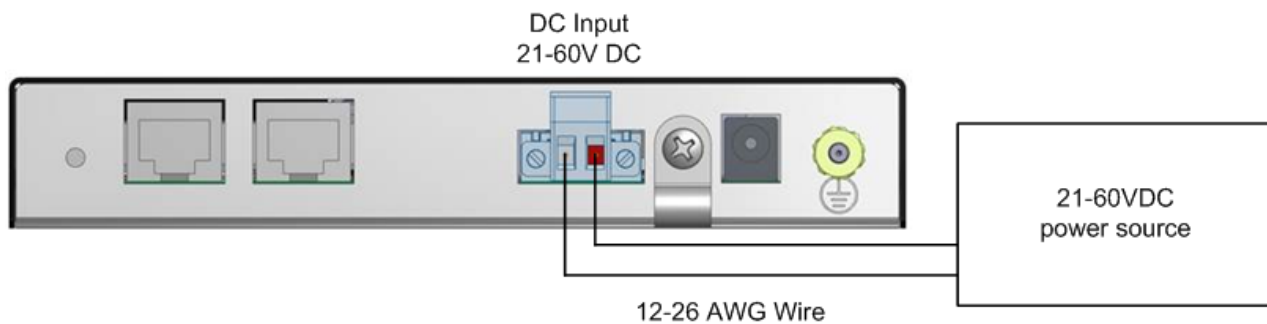
Connecting Power Wires to the Terminal Block

1. Strip the wires to the proper length.
2. Insert the positive and negative power wires into V+ and V- contacts respectively of the Terminal Block (note polarity on the chassis of the switch). Make sure the wires are secure. See figure below.
3. Insert the positive and negative power wires into V+ and V- contacts respectively into the power source—make sure the wires are secure. See the figures above. Insert the positive and negative power wires into V+ and V- contacts respectively into the power source—make sure the wires are secure. See the figure below.



Reinstalling the Terminal Block and verifying power wire connections

4. Reinstall the Terminal Block into the primary location on the S3290.
5. Tighten the two screws to secure the Terminal Block to the S3290 chassis.
6. Turn the power source ON and observe that the green front panel PWR (power) LED is lit, indicating that power is applied to the S3290.



Installing SFP Modules and Fiber Cables

Warning

Visible and invisible laser radiation when open: DO NOT stare into the beam or view the beam directly with optical instruments. Failure to observe this warning could result in an eye injury or blindness.

Use of controls, adjustments or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

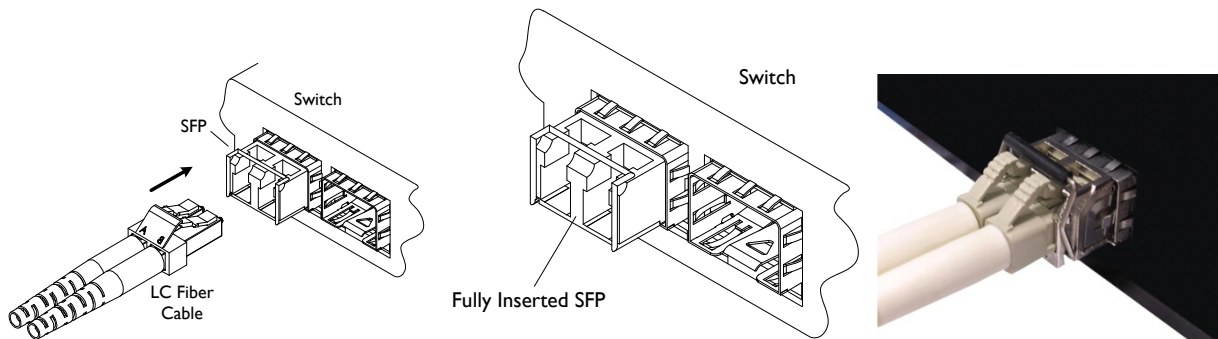
Avoid bending fiber-optic cable beyond its minimum bend radius—any arc smaller than a few inches in diameter can damage the cable and cause problems that are difficult to diagnose.

Installing SFPs

1. Attach an ESD-preventive wrist strap to your wrist and to a bare-metal grounded surface.
2. Have a replacement SFP or a transceiver-cage plug ready, as well as an antistatic mat and a rubber safety cap for the SFP.
3. Locate the proper fiber cable.
4. Position the cable at the SFP as shown below.

Caution: Disconnect all cables before removing or installing an SFP module to prevent damage to the fiber cable.

5. Insert the fiber cable ends completely into the SFP as shown below.
6. Insert the SFP fully into the cage as shown below.



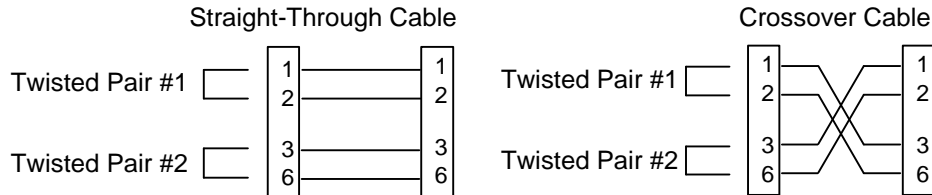
Removing SFPs

7. Attach an ESD-preventive wrist strap to your wrist and to a bare-metal grounded surface.
8. Have a replacement SFP or a transceiver-cage plug ready, as well as an antistatic mat and a rubber safety cap for the SFP.
9. Disconnect the LC cable for the SFP.
10. Pull the bale clasp handle out from the SFP to unlock the SFP.
11. Grasp the SFP bale clasp and pull the SFP approximately 0.5 inches (1.3 cm) out of the cage.
12. Using your fingers, grasp the body of the SFP and pull it completely from the cage.
13. Insert the rubber protector into the SFP module to protect it.
14. Place the SFP module in an antistatic bag or other protective environment.

Installing Copper Cables

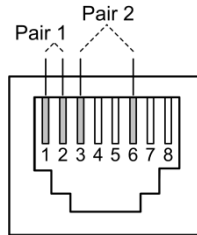
Copper Cable Configuration

Depending on the equipment type, data terminal equipment (DTE) or data communication equipment (DCE), use a crossover or straight-through cable. See figure below.



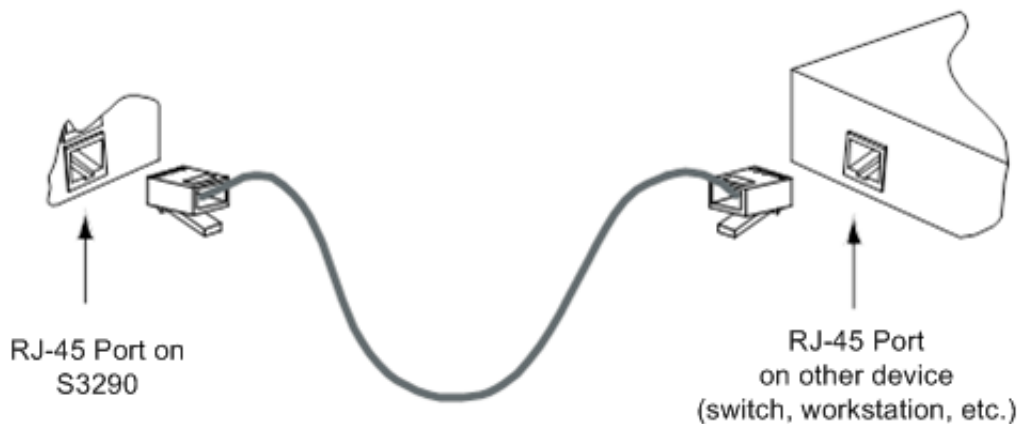
Connecting Ethernet Cables

1. Locate or build an IEEE 802.3 compliant cable with male RJ-45 connectors installed at both ends as shown below.



Pin	Out Jack Pin Assignments
1	Outgoing Data 1 (+)
2	Outgoing Data 2 (-)
3	Incoming Data 1 (+)
4	Not Connected
5	Not Connected
6	Incoming Data 2 (-)
7	Not Connected
8	Not Connected

2. Connect the RJ-45 connector at one end of the cable to the S3290 RJ-45 port.
3. Connect the RJ-45 connector at the other end of the cable to the RJ-45 Ethernet network port.



Connecting Via the Serial CONSOLE / CLI

The S3290 CLI interface is an Industry standard CLI and consists of different configuration commands structure with ability to configure and view the configuration using the Serial Console, Telnet, or SSH.

Connecting Via the MGMT Port / Web GUI

The S3290 supports the current version of most popular Web browsers.

See the *S3290 Web User Guide* or the *S3290 CLI Reference* manual for details on configuration and management methods.

To login using the serial interface (e.g., HyperTerminal) use the setup 115200, 8, none, 1, none. See the *S3290 CLI Reference* manual for details.

Type **help**, **?**, or press the Enter key to display the commands as shown below.

The screenshot shows a HyperTerminal window titled "S3290-24 - HyperTerminal". The window contains the following text:

```

Press ENTER to get started

Username: admin
Password:
# help
Help may be requested at any point in a command by entering
a question mark '?'. If nothing matches, the help list will
be empty and you must backup until entering a '?' shows the
available options.
Two styles of help are provided:
1. Full help is available when you are ready to enter a
command argument (e.g. 'show ?') and describes each possible
argument.
2. Partial help is provided when an abbreviated argument is entered
and you want to know what arguments match the input
(e.g. 'show pr?'.)

# ?
clear      Reset functions
configure  Enter configuration mode
copy       Copy from source to destination
delete     Delete one file in flash: file system
dir        Directory of all files in flash: file system
disable    Turn off privileged commands
do         To run exec commands in config mode
dot1x      IEEE Standard for port-based Network Access Control
enable     Turn on privileged commands
erps      Ethernet Ring Protection Switching
exit       Exit from EXEC mode
firmware   Firmware upgrade/swap
help       Description of the interactive help system
ip         IPv4 commands
ipv6       IPv6 configuration commands
link-oam   Link OAM configuration
logout     Exit from EXEC mode
more       Display file
no         Negate a command or set its defaults
ping       Send ICMP echo messages
ptp        Misc non persistent 1588 settings
reload     Reload system.
-- more --, next page: Space, continue: g, quit: ^C_

```

At the bottom of the window, there is a status bar with the following information: Connected 4:34:37, ANSIW, 115200 8-N-1, SCROLL, CAPS, NUM, Capture, Print echo.

Factory Defaults

The S3290 comes with the following defaults:

DHCP	Ipv4 Address	Ipv6 Address
Enabled	192.168.0.1	::192.0.2.1

Note: after power up, the S3290 has DHCP enabled. If a DHCP server is available, the S3290 will obtain an IP address from the DHCP server. If no DHCP server is available, after 70 seconds, the S3290 will fall back to the default IP address of 192.168.0.1/24.

Static IP configuration

You can change the defaults via the CLI. **Note:** you may want to save the existing config to startup config first by using the **copy running-config** command. See the CLI Reference manual for details. To manually configure the IP address:

1. At the command prompt type # **configure terminal** and press the Enter key to enter config mode.
2. Enter the command (config)# **interface vlan 1** and press the Enter key to enter the interface config mode.
3. Set the IP to 192.168.1.110 and subnet to 255.255.255.0 (substitute what you would like the static IP and subnet to be). You can change the current IP address using the following command:

```
(config-if-vlan)# ip address 192.168.1.110 255.255.255.0
```

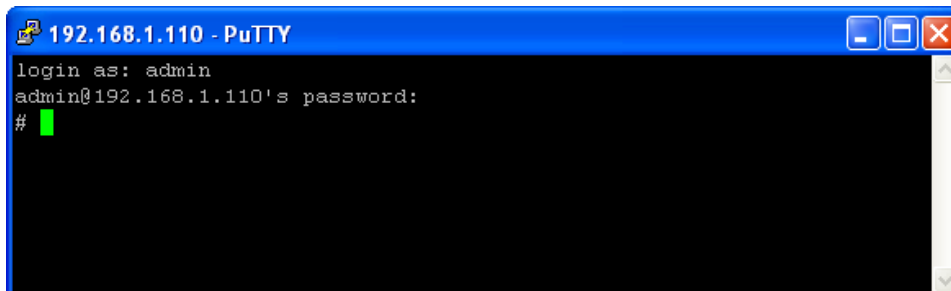
See the *S3290 CLI Reference* manual for CLI command information for CLI details.

4. To verify the change, you can log in to the S3290 Web GUI using IP address **192.168.1.110**. See the *S3290 Web User Guide* for more information.

Login using PuTTY Terminal Emulator Software

1. Start a PuTTY session. In the PuTTY dialog box in the “Host Name {or IP Address}” field, enter the IP address of the switch (e.g., 192.168.1.110). In the Port field, enter 22.
2. Name the session in the “Saved Sessions” field (e.g., as *S3290 SW*).
3. Click the **Save** button and the dialog box displays.
4. Click the **Open** button to launch the login screen.

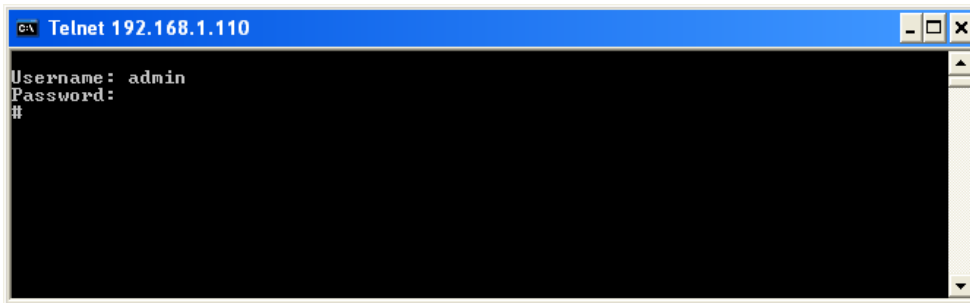
Note: If a Security Alert displays, click YES, if you trust the host and the key will be added to the PuTTY cache. Click NO if you do not want to register the key for this session.
5. At the login prompt, type “**admin**” (default/lowercase).
6. Press the Enter key twice to bring up the Root (top) level commands as shown below.



See the *S3290 CLI Reference* manual for CLI command information for CLI details.

Login Using Telnet

1. Use the Windows Start > Command Prompt menu path to display the command.
2. At the command prompt type **Telnet** and then 192.168.1.110 and press the Enter key
3. At the Username prompt, enter admin (lower case) and press the Enter key.
4. At the Password prompt press the Enter key to display the # prompt.
5. At the # prompt enter CLI commands as desired.



See the *S3290 CLI Reference* manual for CLI command information for CLI details.

Login Using the Web Interface

1. Launch a web browser (Internet Explorer/FireFox).
2. Enter the S3290 IP address (e.g., 192.168.0.1) in the browser URL field.
3. Press the Enter key to launch the login dialog box.
4. In the user name field type “**admin**” (lowercase) and leave the password field empty (no password).
5. Press the Enter key to launch the S3290 web GUI.
6. See the *S3290 Web User Guide* manual for web GUI configuration, monitoring, diagnostics, and maintainance.

Re-Access the Web GUI via CLI Commands

You can use the following CLI commands to regain web GUI access (e.g., after a Software Upload).

```
# show ip int brief
Vlan Address Method Status
-----
# conf term
(config)# int vlan 1
(config-if-vlan)# ip addr 192.168.1.110 255.255.255.0
(config-if-vlan)# end
# show ip int brief
Vlan Address Method Status
-----
1 192.168.1.110/24 Manual UP
#
```

You can then access the web GUI via the IP address and netmask entered (e.g., 192.168.1.110 and 255.255.255.0 in the example above). See the *S3290 CLI Reference* manual for details.

Switching MGMT / PORT 1 Modes

The S3290 MGMT / PORT 1 is a normal data port, but by default it will be in a separate private VLAN that you can remove. You can enable or disable out-of-band management on Port 1. Port 1 can be optionally configured to support either out-of-band management or it can be used as a normal data UNI/NNI port. By default, Port 1 is enabled as a management port with a default IP (192.168.0.1/24) and subnet mask. By default, all ports are VLAN unaware and members of VLAN 1 and Private VLAN 1.

To configure Port 1 as a normal front panel data port, use the settings below.

Normal front port:

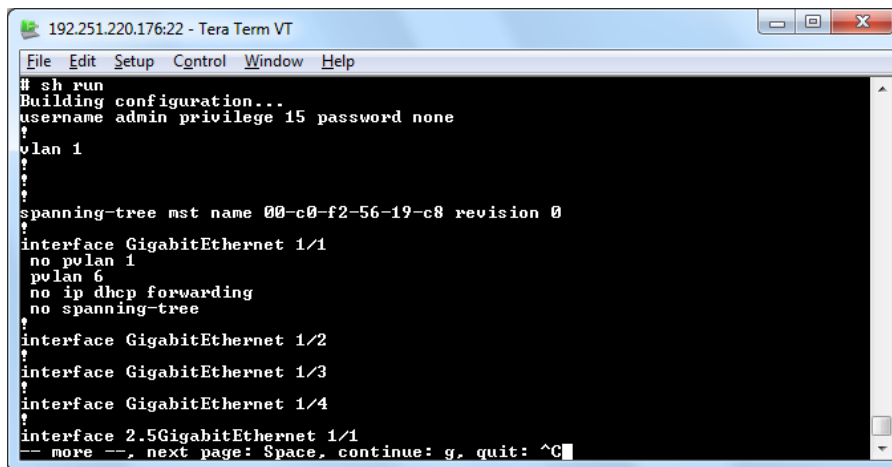
```
interface GigabitEthernet 1/1
!
```

Management Port:

```
interface GigabitEthernet 1/1
no pvlan 1
pvlan 6
no ip dhcp forwarding
no spanning-tree
!
```

Configure the Default Management Port as a Data Port

The GigabitEthernet 1/1 (**MGMT / PORT 1**) is configured as a Management Port by default:



```
192.251.220.176:22 - Tera Term VT
File Edit Setup Control Window Help
# sh run
Building configuration...
username admin privilege 15 password none
!
vlan 1
!
spanning-tree mst name 00-c0-f2-56-19-c8 revision 0
!
interface GigabitEthernet 1/1
no pvlan 1
pvlan 6
no ip dhcp forwarding
no spanning-tree
!
interface GigabitEthernet 1/2
!
interface GigabitEthernet 1/3
!
interface GigabitEthernet 1/4
!
interface 2.5GigabitEthernet 1/1
-- more --, next page: Space, continue: g, quit: ^C
```

Alternatively, any port can be designated as a Management port. To change GigabitEthernet 1/1 to act as a data port:

1. Disable spanning-tree on the port designated for Management. Remove pvlan 1 from the new interface and disable dhcp forwarding, and add pvlan6:

```
(config)# int Gi 1/2
(config-if)# no spanning-tree
(config-if)# no pvlan 1
(config-if)# no ip dhcp forwarding
(config-if)# pvlan 6
```

2. Physically connect to the newly designated Management port.
3. Enable pvlan 1 for the new port designated as a data port.
4. If necessary enable spanning-tree on the new data port.

Additional instructions for disabling management are provided in CLI and Web manuals.

3. Troubleshooting

This section provides basic S3290 troubleshooting procedures.

1. Verify the Product Description, Models, Applications, Features, and Specifications in the “[Introduction](#)” section starting on page [4](#) of this manual.
2. Verify the procedures in section [2. Installation](#) starting on page [8](#) of this manual.
3. Make sure your particular model supports the function attempted.
4. Verify the Installation. Check the Operating System, Web Browser, Telnet Client, and/or Terminal Emulation package support.
5. Respond to any S3290 error messages (see the Error Messages section of the *S3290 CLI Reference* or the *S3290 Web User Guide*).
6. Run the S3290 Diagnostics tests and verification functions (e.g., Ping, VeriPHY). See the “Diagnostics” section of the *S3290 Web User Guide* manual.
7. Check the S3290 operating parameters (e.g., Information, CPU Load, Log, Detailed Log). See the “Operation” section of the *S3290 Web User Guide* manual.
8. If you can access the S3290 via PuTTY or HyperTerminal but not via the web interface, in config mode, enter the **default keep_ip** CLI command and try accessing the S3290 web interface again.
9. If you have problems displaying the S3290 web interface in IE, try displaying in Compatibility View from the IE Tools > Compatibility View menu path.
10. Record the error condition. See “[Recording Model and System Information](#)” below.
11. Contact TN Tech Support. See section “[4. Service, Warranty and Tech Support](#)” on page [25](#).

Recording Model and System Information

After performing the troubleshooting procedures, and before calling or emailing Technical Support, please record as much information as possible in order to help the Transition Networks Tech Support Specialist.

1. Select the S3290 **Configuration > System > Information** menu path. (From the CLI, use the **show** commands needed to gather the information below or as requested by the TN Support Specialist).

2. Record S3290 **Model Information**: Product ID: _____
 Serial #: _____ Board Rev: _____
 MAC Address: _____ Chip ID: _____
 System Uptime: _____ Software Version: _____

3. Record the **Monitor** menu information:

Monitor > System > Information: _____

Monitor > System > IP Status: _____

LED Status: _____

4. Provide additional Model and System information to your Technical Support Specialist. See the “[Troubleshooting](#)” section above.

Your Transition Networks service contract number: _____

A description of the failure: _____

A description of any action(s) already taken to resolve the problem (e.g., changing mode, rebooting, etc.): _____

The serial and revision numbers of all involved Transition Networks products in the network:

A description of your network environment (layout, cable type, etc.): _____

Network load and frame size at the time of trouble (if known): _____

The device history (i.e., have you returned the device before, is this a recurring problem, etc.):

Any previous Return Material Authorization (RMA) numbers: _____



Serial Label on S3290-24 Bottom

4. Service, Warranty and Tech Support

Contact Us

Technical Support: Technical support is available 24-hours a day

US and Canada: 1-800-260-1312

International: 00-1-952-941-7600

Main Office

tel: +1.952.941.7600 | toll free: 1.800.526.9267 | fax: 952.941.2322

sales@transition.com | techsupport@transition.com | customerservice@transition.com

Address

Transition Networks
10900 Red Circle Drive
Minnetonka, MN 55343, U.S.A.

Web: <https://www.transition.com>

Warranty

Five-Year Limited Hardware Warranty

Transition Networks warrants to the original consumer or purchaser that each of its S3290 products and all components thereof, will be free from defects in material and/or workmanship for a period of five years from the original factory shipment date. Any warranty hereunder is extended to the original consumer or purchaser and is not assignable. Transition Networks makes no express or implied warranties including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose, except as expressly set forth in this warranty. In no event shall Transition Networks be liable for incidental or consequential damages, costs, or expenses arising out of or in connection with the performance of the product delivered hereunder. Transition Networks will in no case cover damages arising out of the product being used in a negligent fashion or manner.

Return Authorization

To return a defective product for warranty coverage, contact Transition Networks's technical support department for a return authorization number. Transition's technical support department can be reached through any of the following means:

Service Hours

USA: 8:00 PM Sunday through 8:00 PM Friday CST

After Hours: Calls will be answered by an on call engineer.

Return Instructions

Send the defective product postage and insurance prepaid to the following address:

Transition Networks, Inc.
10900 Red Circle Drive
Minnetonka, MN 55343 USA
Attn: RETURNS DEPT: CRA/RMA # _____

Failure to properly protect the product during shipping may void this warranty. The return authorization number must be written on the outside of the carton to ensure its acceptance. We cannot accept delivery of any equipment that is sent to us without a CRA or RMA number.

CRA's are valid for 60 days from the date of issuance. An invoice will be generated for payment on any unit(s) not returned within 60 days.

Upon completion of a demo/ evaluation test period, units must be returned or purchased within 30 days. An invoice will be generated for payment on any unit(s) not returned within 30 days after the demo/ evaluation period has expired.

The customer must pay for the non-compliant product(s) return transportation costs to Transition Networks for evaluation of said product(s) for repair or replacement. Transition Networks will pay for the shipping of the repaired or replaced in-warranty product(s) back to the customer (any and all customs charges, tariffs, or/and taxes are the customer's responsibility).

Before making any non-warranty repair, Transition Networks requires a \$200.00 charge plus actual shipping costs to and from the customer. If the repair is greater than \$200.00, an estimate is issued to the customer for authorization of repair. If no authorization is obtained, or the product is deemed ?not repairable,? Transition Networks will retain the \$200.00 service charge and return the product to the customer not repaired. Non-warranted products that are repaired by Transition Networks for a fee will carry a 180-day limited warranty. All warranty claims are subject to the restrictions and conventions set forth by this document.

Transition Networks reserves the right to charge for all testing and shipping incurred, if after testing, a return is classified as "No Problem Found."

THIS WARRANTY IS YOUR ONLY REMEDY. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. TRANSITION NETWORKS IS NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY. AUTHORIZED RESELLERS ARE NOT AUTHORIZED TO EXTEND ANY DIFFERENT WARRANTY ON TRANSITION NETWORKS'S BEHALF.

Compliance Information

Standards

CISPR22/EN55022 Class A, CE Mark, and IEC 61850-3

FCC Regulations

NOTE: 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.

Canadian ICES-003

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérisé de la classe A est conforme à la norme NMB-003 du Canada.

CE Marking

This is a Class A product. In a domestic environment, this product could cause radio interference; as a result, the customer may be required to take adequate preventative measures.

UL Listed Power Supply

The Power Supply is tested and recognized by the Underwriters Laboratories, Inc.

Declaration of Conformity

<i>Declaration of Conformity</i>			
<i>Transition Networks, Inc.</i>			
<small>Manufacturer's Name</small>			
<i>10900 Red Circle Drive, Minnetonka, Minnesota 55343 U.S.A.</i>			
<small>Manufacturer's Address</small>			
<i>Declares that the product(s)</i>			
<i>S3290-24 and S3290-42</i>			
<i>Conforms to the following Product Regulations:</i>			
FCC Part 15 Class A, EN 55022:2010, EN 55024:2010			
Directive 2004/108/EC			
Low-Voltage Directive 2006/95/EC			
IEC/EN 60950-1			
EMC Directive 89/336/EEC			
I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).			
<i>Minnetonka, Minnesota</i>	<i>October 29, 2014</i>	<i>Stephen Anderson</i>	
<small>Place</small>	<small>Date</small>	<small>Signature</small>	
		<i>Stephen Anderson</i>	<i>Vice President of Engineering</i>
		<small>Full Name</small>	<small>Position</small>
			<small>101415</small>

European Regulations

WARNING: This is a Class A product. In a domestic environment, this product could cause radio interference in which case the user may be required to take adequate measures.

Achtung ! Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fall ist der Benutzer für Gegenmaßnahmen verantwortlich.

Attention ! Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.



In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstößt gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

Electrical Safety Warnings

Electrical Safety

IMPORTANT: This equipment must be installed in accordance with safety precautions.

Elektrische Sicherheit

WICHTIG: Für die Installation dieses Gerätes ist die Einhaltung von Sicherheitsvorkehrungen erforderlich.

Elektrisk sikkerhed

VIGTIGT: Dette udstyr skal 29nstillers I overensstemmelse med sikkerhedsadvarslerne.

Elektrische veiligheid

BELANGRIJK: Dit apparaat moet in overeenstemming met de veiligheidsvoorschriften worden geïnstalleerd.

Sécurité électrique

IMPORTANT : Cet équipement doit être utilisé conformément aux instructions de sécurité.

Sähköturvallisuus

TÄRKEÄÄ : Tämä laite on asennettava turvaohjeiden mukaisesti.

Sicurezza elettrica

IMPORTANTE: questa apparecchiatura deve essere installata rispettando le norme di sicurezza.

Elektrisk sikkerhet

VIKTIG: Dette utstyret skal 29nstillers I samsvar med sikkerhetsregler.

Segurança eléctrica

IMPORTANTE: Este equipamento tem que ser instalado segundo as medidas de precaução de segurança.

Seguridad eléctrica

IMPORTANTE: La instalación de este equipo deberá llevarse a cabo cumpliendo con las precauciones de seguridad.

Elsäkerhet

OBS! Alla nödvändiga försiktighetsåtgärder måste vidtas när denna utrustning används.



Transition Networks
10900 Red Circle Drive
Minnetonka, MN 55343 USA
Tel: 952-941-7600 or 1-800-526-9267
Fax: 952-941-2322

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S3290 Install Guide 33594 Rev D