



# Perle 10GT Media Converters

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## Installation Guide

S-10GT-SFP

S-10GT-XFPH



# Overview

This document contains instructions necessary for the installation and operation of the Perle S-10GT Standalone Media Converters. Each media converter contains one pluggable transceiver port that permits insertion of a SFP+ / XFP fiber module or SFP+ / XFP copper module and one integrated RJ-45 (copper) port. These media converter can use either Perle Systems or third party MSA compatible 10G XFP or SFP+ modules including support for the following standards: 10GBase-SR, 10GBase-LR, 10GBase-ER, 10GBase-LRM and 10GBase-ZR. The S-10GT supports one low power transceiver (SFP+), whereas the S-10GT-XFPH supports one high power (up to power level 4) transceiver (XFP).

Model	Port 1	Port 2
S-10GT-SFP	SFP+	RJ-45
S-10GT-XFPH	XFP	RJ-45

**Note:** *The S-10GT Media Converter can operate as a 1G Media Converter if a 1G fiber transceiver has been inserted into the SFP+ transceiver port.*

Visit Perle's web site for the most up to date Installation guides, models and specifications: <http://www.perle.com/>

## **Getting to know your S-10GT Media Converter**

Your S-10GT Media Converter consists of the following items:

- ✓ S-10GT chassis with one RJ-45 port and one transceiver port
- ✓ Grounding screws (for improved chassis grounding)
- ✓ Country specific power adapter
- ✓ Power cord strain relief clip
- ✓ Four rubber feet
- ✓ This guide

## Front and Rear Panel Components

### Front View



LEDs

Port 1  
(XFP or SFP+)

Port 2  
(RJ-45)

### Rear View



Power  
Cord  
Connector

Power Cord Strain  
Relief Clip Hole

Fan

Grounding Lug  
Holes

# Installation

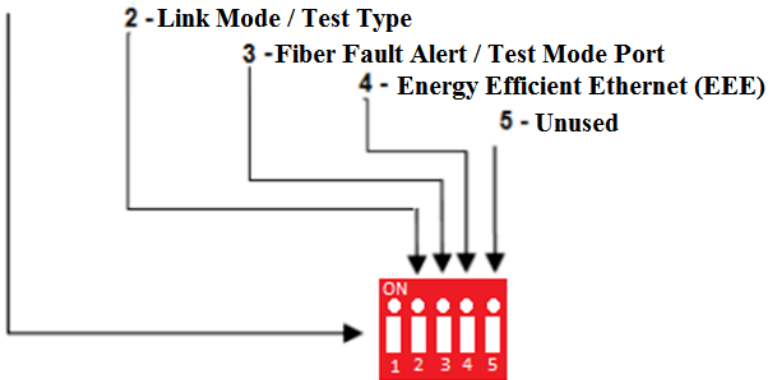
The default switch setting (all switches in the UP position) will work for most installations. These are the steps required to configure the Perle S-10GT standalone media converter:

1. Set the DIP switch settings. (optional)
2. Connect the grounding lug. (optional)
3. Connect the power cord strain relief clip. (optional)
4. Insert the fiber module.
5. Connect the fiber.
6. Connect the RJ-45 (copper cable).
7. Using the Perle supplied power adapter, plug the power cord into the power cord connector at the rear of the chassis.
8. Plug the other end of the power adapter into an appropriate power outlet.

**Note:** The S-10GT Chassis should always be grounded for safe and proper operation. See

## S-10GT-SFP or S-10GT-XFP

### 1 - Operating Mode



# DIP Switch Settings

The DIP switches are accessible through the opening in the side of the enclosure.

**Note:** Switch changes made when the product is powered up take effect immediately and will result in a link reset on both ports.

## **Operating Mode (Switch 1)**

Switch Position	Mode
Up (default)	Data
Down	Test

**Data:** In Data mode, data will flow between the fiber connection and the copper port.

**Test:** Test Mode is used to run diagnostics, enable loopback and for running the Built In Link Test.

**Note:** The Operation Mode (Switch 1) affects the function of DIP Switch 2 and 3 when in Test Mode.

## **Link Mode (Switch 2 – Data Mode)**

Switch Position	Mode
Up (default)	Smart Link Pass-Through Mode
Down	Standard Mode

**Smart Link Pass-Through:** In this mode, the link state on one port connection is directly reflected through the media converter to the other port connection. If the link is lost on one of the connections, then the other link will be brought down by the media converter.

**Standard Mode:** In this mode, the links can be brought up and down independently of each other. A loss of link on either connection can occur without affecting the other fiber connection

### Test Function (Switch 2 – Test Mode)

Switch Position	Type
Up (default)	Built In Link Test (BILT)
Down	Loopback

**Built In Link Test:** Set Switch 2 to the UP position for the S-10GT media converter to initiate the Built In Link Test on port 1. These tests consist of the media converter generating test patterns to be sent out on port 1 to the remote media converter. If the remote media converter is also a compatible 10GBaseT media converter then the remote media converter will automatically be put into test mode.

**Note:** The BILT can operate on 10G modules. This feature can also be used with Perle C-10GT or CM-10GT media converters.

**Loopback:** If Switch 2 is down, the specified port will be forced into loopback mode (switch 3 determines the port number). Data received on the receiver (RX) will be looped back to the transmitter (TX) connection. This mode is not used in conjunction with BILT. It can be used when other data generation methods are used.

### Illustration of the Built In Link Test



**Built In Link Test**

### Local S-10GT Configuration

Test Mode (Switch 1 – Down)

Test Function (Switch 2 –Up)

### Remote-S-10GT Configuration

All switches in the Up position

## **Sequence of Events**

1. The Local S-10GT sends the Remote S-10GT a signal to go into test mode.
2. The Remote S-10GT media converter turns on test mode.
3. Built In test data is sent from the Local S-10GT media converter to the Remote S-10GT media converter.
4. The Remote S-10GT media converter analyses the received test data and sends its own test data plus a diagnostic code back to the Local S-10GT media converter.
5. If the PWR LED on the Local S-10GT blinks red, this connection may require further testing. The PWR LED should flash green to indicate that there have been no errors in the last second.
6. The Built in Link Test continues to run until Switch 1 on the Local S-10GT media converter is set to Data mode.

## **Fiber Fault Alert (Switch 3 – Data Mode)**

<b>Switch Position</b>	<b>Mode</b>
Up (default)	Enabled
Down	Disabled

**Enabled:** If the media converter detects a loss of signal on the fiber port, the media converter notifies the link partner on that same port that an error condition exists by bringing down the link.

**Disabled:** The media converter will not monitor for fiber fault.

## **Illustration of the FFA feature**

### **Media Converter A Configuration**

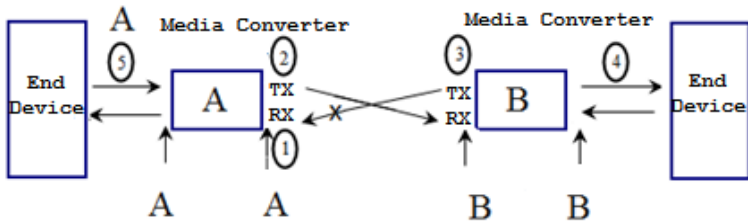
Link Mode—Standard Mode

Fiber Fault Alert

### **Media Converter B Configuration**

Link Mode—Smart Link Pass through Mode

Fiber Fault Alert



## Sequence of Events

1. Media Converter **A** loses fiber connection (RX).
2. Media Converter **A** notifies the remote Media Converter that there is a fault on the Link.
3. Media Converter **B** detects loss of fiber link on receiver RX.
4. Media Converter **B** turns off transmitter (TX).

## Port Selection (Switch 3 – Test Mode)

Switch Position	Port
Up (default)	1
Down	2

When loopback mode is selected (Switch 1 and Switch 2 down), this switch specifies which port to enable loopback mode on.

This switch is not used for BILT test mode, since it only runs on port 1.

## Energy Efficient Ethernet (EEE) (Switch 4)

Switch Position	Mode
Up (default)	Enabled
Down	Disabled

**Enabled:** When enabled, the media converter will auto negotiate this capability with the attached EEE compliant devices/servers.

**Disabled:** The media converter will not auto negotiate this capability with the attached EEE compliant devices/servers.



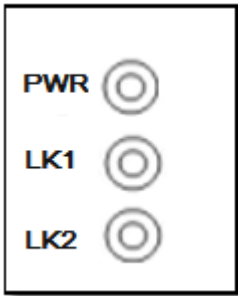
# Operation

## ***Powering up the Perle Media Converter***

1. Connect the Perle supplied power adapter to the media converter.
2. Turn on the power at the source.
3. Check that the PWR LED light is lit.

## **Status LED**

The Perle 10GT Media converters have three status LEDs located on the front panel of the unit.



## **PWR - Power/Test**

**Green On:** Power is on and the unit is in normal operation mode.

**Green blinking *slowly*:** the unit is in test or loopback mode.

**Red blinking *slowly while in Test mode*:** indicates an error within the last second.

**Red Solid:** During power up: Hardware error detected. (See PWR Red LED Errors)

**Red Blinking *quickly*:** Error detected. (See LK1/LK2 Errors)

## LK1- Port 1 Activity

**On:** Fiber link present.

**Blinking *quickly*:** Fiber link present and receiving data.

**Blinking *slowly*:** The fiber link has been taken down as a result of Smart Link Pass-Through.

**Off:** No fiber link present.

## LK2 – Port 2 Activity

**On:** Copper link present.

**Blinking *quickly*:** Copper link present and receiving data.

**Blinking *slowly*:** The copper link has been taken down as a result of Smart Link Pass-Through.

**Off:** No copper link present.

### LK1 LK2 Error Codes

LK1	LK2	Meaning
Off	Off	Incompatible SFP+ or XFP
Off	On	Power Budget exceeded – XFP's requesting more power than specified port rating.
On	On	Internal Error

### PWR-Red LED Errors

LK1	LK2	Meaning
Blinking	n/a	Blinking one second on, 3 seconds off: the maximum specified operating temperature within the inserted module has been exceeded
Off	Off	Internal Hardware.

### Grounding the S-10-GT Chassis

If your installation requires additional grounding follow this procedure.

Grounding the chassis requires the following items:

- ✓ One grounding lug (not provided)
- ✓ One 18-12 AWG wire (not provided)
- ✓ Cross-head screwdriver (not provided)

**Note:** For your safety, when installing this equipment, always ensure that the chassis ground connection is installed first and disconnected last.

### **Attaching the Grounding Lug**



1. Attach the grounding lug to one end of an 18-12 AWG wire.
2. Attach the grounding lug to the chassis and secure with the grounding screw(s).

### **Attaching the Power Cord Strain Relief Clip**



1. Feed the power cord through the opening in the power cord relief clip.
2. Attach the power cord relief clip to the chassis and secure with the provided screw.
3. Plug the power cord into the AC power connector at the rear of the chassis.
4. Plug the other end of the power cord into an appropriate power outlet.

### ***Module Temperature Protection***

Every S-10GT comes equipped with an internal fan to provide cooling to the unit. The fan will come on during power up and then turn off. It will only come on when the temperature inside the case becomes elevated. If the module is operating above its specified maximum operating temperature, the S-10GT will reduce the power to the module. The S-10GT will continue to monitor the operating temperature of the unit until the temperature is below the maximum operating temperature and then the S-10GT will return the module to normal operating.

# Troubleshooting

## **General**

- ✓ Ensure power is supplied to the media converter – use of the Perle supplied power adapter is highly recommended.
- ✓ Ensure that the SFP+ or XFP module is inserted into the transceiver port.
- ✓ Ensure that the copper cabling (RJ-45) meets Ethernet copper cabling requirements. See [Copper Cable Requirements](#) in this guide.

## **No connectivity**

If unable to get full connectivity with all DIP switches in the UP position, these procedures can be used for troubleshooting.

## **Built In Link Test**

Choose one side of the link to generate the test data (master side) and one side to receive and analyse the test data (slave side).

1. Set Switch 1 down and Switch 2 to the Up position (Built In Link Test) on the master side.
2. The master side automatically sends test data to the slave side.
3. The slave side analyses the received test data and sends its own test data plus a diagnostic code back to the master side.
4. If the PWR LED on the master side blinks red then this connection may require further testing.
5. If the PWR LED on the master side blinks green after several seconds of testing, then the SFP+/XFP link is passing the Built In Link Test.
6. The Built in Link Test continues to run until Switch 1 on the master side is set back to Data mode.

# Loopback Test

This mode is not used in conjunction with BILT.

1. If either media converter is not a Perle 10GT unit then you need to set loopback mode on one of the media converters. (See the User's Guide that came with that media converter).
2. Use an alternative way to generate data to the unit set in loopback mode. Data received on the receiver (RX) will be looped back to the transmitter (TX) connection. Use a third party application to analyse the received data.

## Technical Specifications

Maximum Power Consumption 9-30 vDC, unregulated (12vDC Nominal)

<b>S-10GT-SFP+</b>	
Operating Temperature	0°C -50°C (32°F - 122°F)
Maximum Power Consumption	10*
Storage Temperature	-25°C -70°C (-13°F -158°F)
Operating Humidity	5% to 90% non-condensing
Storage Humidity	5% to 95% non-condensing
Operating Altitude	Up to 3,048 m (10,000 ft)

Maximum Power Consumption 9-30 vDC, unregulated (12 vDC Nominal)

<b>S-10GT-XFPH</b>	
Operating Temperature	0°C -50°C (32°F - 122°F)
Maximum Power Consumption	15*
Storage Temperature	-25°C -70°C (-13°F -158°F)
Operating Humidity	5% to 90% non-condensing
Storage Humidity	5% to 95% non-condensing
Operating Altitude	Up to 3,048 m (10,000 ft)

**(\*See Perle Datasheet for more detailed information)**

### **SFP+ and XFP Support**

- MSA Compliant SFP+
- MSA complaint Class 1,2,3 and 4 XFP modules for the S-10GT-XFPH
- 1G copper modules
- 1G fiber modules
- SFP+ supports CX1 modules
- XFP supports CX4 modules

### **Fiber Cabling Requirements**

**MM:** 50/125 microns, 62.5/125 microns

**SM:** 9/125 microns

### **Copper Cable Requirements**

- Category 6A
- Straight through or Ethernet crossover

## Compliance Information

### FCC

This product has been 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 instructions in this Guide, 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/her own expense.

### EN 55022 Class A

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

### EN 55024 Class A

#### Contacting Technical Support

Contact information for the Perle Technical Assistance Center (PTAC) can be found at the link below. A Technical Support Query may be made via this web page.

[www.perle.com/support\\_services/support\\_request.shtml](http://www.perle.com/support_services/support_request.shtml)

#### Warranty / Registration

Perle's standard Lifetime Warranty provides customers with return to factory repairs for Perle products that fail under the conditions of the warranty coverage. Details can be found at:

[http://www.perle.com/support\\_services/warranty.shtml](http://www.perle.com/support_services/warranty.shtml)

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