



Perle 10G Media Converters

Installation Guide

S-10G-STs

S-10G-XTs

S-10G-XTX

S-10G-XTSH

S-10G-XTXH



Overview

This document contains instructions necessary for the installation and operation of the Perle S-10G Standalone Media Converters. The Perle S-10G Standalone Media Converters are 10 Gigabit Media Converters with two pluggable transceiver ports. The S-10G supports low power transceivers, whereas the S-10G-XTSH and the S10G-XTXH support high power (power level 4) transceivers.

Model	Port 1	Port 2
S-10G-STS	SFP+	SFP+
S-10G-XTS	XFP	SFP+
S-10G-XTSH	XFP	SFP+
S-10G-XTX	XFP	XFP
S-10G-XTXH	XFP	XFP

Note: *The S-10G Media Converter must be populated with two 1G fiber/copper modules to operate at 1G.*

Note2: *When used with 1G modules, the S-10G does not support the Loopback Auto Detect feature.*

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-10G Media Converter

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

- S-10G chassis with two pluggable transceiver ports
- 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



Rear View



Installation

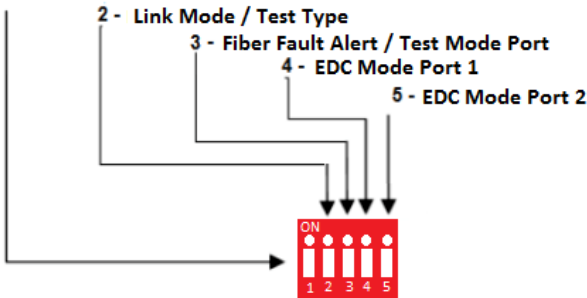
The default switch setting (all switches in the UP position) will work for most installations. These are the steps required to configure the Perle S-10G standalone media converter:

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 or copper modules.
5. Connect the fiber or copper cables.
6. Using the Perle supplied power adapter, plug the power cord into the power cord connector at the rear of the chassis.
7. Plug the other end of the power adapter into an appropriate power outlet.

Note: The S-10G Chassis should always be grounded for safe and proper operation. See **Grounding the S10-G Chassis**

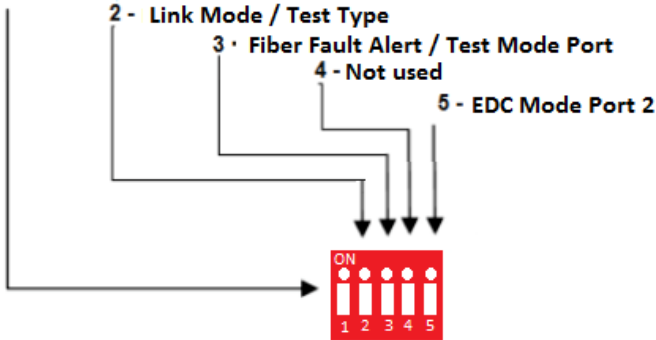
S-10G-STS

1 - Operating Mode



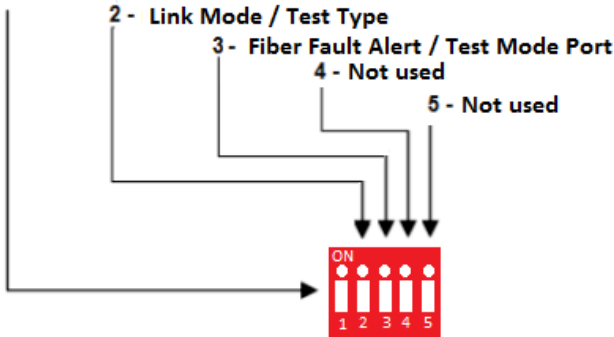
S-10G-XTS, S-10G-XTSH

1 - Operating Mode



S-10G-XTX, S-10G-XTXH

1 - Operating Mode



DIP Switch Settings

The DIP switches are accessible through the opening in the side of the enclosure. The function of the DIP switches varies by model, so please refer to the appropriate model.

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 two fiber connections.

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

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

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 fiber connection is directly reflected through the media converter to the other fiber connection. If fiber link is lost on one of the connections, then the other fiber 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 fiber connection can occur without affecting the other fiber connection

Test Function (Switch 2 – Test Mode)

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

Built In Link Test: Switch 2 causes the S-10G to initiate the Built In Link Tests on the specified port. Switch 3 determines the specified port for the Built In Link Tests. If Switch 3 is Up, the tests will be run on Port 1. If the Switch is Down the tests will be run on Port 2. The other port will be disabled during these tests.

These tests consist of the media converter module generating test patterns to be sent out the selected port to the remote media converter. If the remote media converter is an S-10G, it will automatically be put into loopback mode.

Loopback: If Switch 2 is down, the specified port will be put into loopback mode. In this mode the port will be ready to receive the test patterns generated by the S-10G running the Built in Link Test. Switch 3 determines which port will be put into loopback mode. The other port will be disabled during the tests. If the remote device is also an S-10G media converter, this unit does not need to be put into test mode and there is no need to set the loopback switch. This will be taken care of by the Auto Loopback feature.

Illustration of the Built In Link Test / Loopback



Local S-10G Configuration

Test Mode (Switch 1 – Down)

Test Function (Switch 2 –Up)

Remote-S-10G Configuration

All switches in the Up position

Note: *If the remote media converter is not a Perle S-10G then the remote media converter will need to be put into loopback mode. See the documentation that came with that media converter.*

Sequence of Events

1. The Local S-10G sends the Remote S-10G a signal to go into loopback mode.
2. The Remote S-10G media converter turns on loopback mode.
3. Built In Test data is sent from the Local S-10G media converter to the Remote S-10G media converter.
4. The Remote S-10G media converter loops the received data back to the Local S-10G media converter.
5. Any test errors detected are displayed with the LEDs on the front of the Local S-10G media converter.
6. The Built in Link Tests continue to run until Switch 1 on the Local S-10G media converter is set to Data mode.

Port Selection (Switch 3 – Test Mode)

Switch Position	Port
Up (default)	1
Down	2

Fiber Fault Alert (Switch 3 – Data Mode)

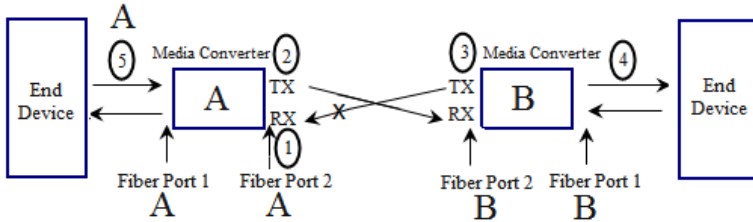
Switch Position	Mode
Up (default)	Enabled
Down	Disabled

Enabled: If the media converter detects a loss of fiber, the media converter will immediately notify the fiber link partner that an error condition exists.

If the remote media converter is set up for Fiber Fault Alert (FFA) Enabled and the local media converter is set up with Smart Link Pass-Through, a loss of fiber link on either the transmit or receive line will be passed through to the other fiber connection.

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).

EDC AutoDetect Mode (Switch 4 and Switch 5) SFP+ Models Only

Switch Position	Mode
Up (default)	On
Down	Off

On: When AutoDetect Mode is turned On, the S-10G media converter will establish the linear or limiting settings based on the contents of the EPROM on the module and the module type.

Off: When AutoDetect Mode is turned OFF, the S-10G media converter will select the alternative mode that was established by the determination above.

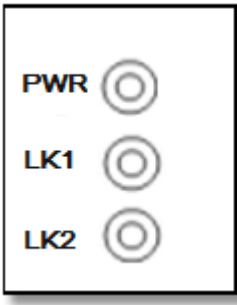
Operation

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 10G 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.

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

Red (*Solid or Blinking*) – A module has been inserted that is requesting more than the specified maximum power for that port.

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.

Blinking one second on, 3 seconds off: the maximum specified operating temperature within the inserted module has been exceeded.

Off: No fiber link present.

LK2 – Port 2 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.

Blinking one second on, 3 seconds off: the maximum specified operating temperature within the inserted module has been exceeded.

Off: No fiber link present.

LK1 LK2 Error Codes

LK1	LK2	Meaning
Off	Off	Incompatible SFP+ or XFP or speed mismatch on SFP+
Off	On	Power Budget exceeded – XFP's requesting more power than specified port rating.
On	Off	SFP+ or XFP communication error – S-10G unable to communicate with module
On	On	Internal Error

Grounding the S10-G 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.

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 modules are of the same speed and are operating properly.
- ✓ Ensure both devices on either end of each fiber are compatible.
- ✓ For fiber connections, ensure the RX and TX have been reversed between the two media converters.

No connectivity

If unable to get full connectivity with all DIP switches in the UP position, this procedure is recommended for troubleshooting.

1. **Built In Link Test:** Set Switch 2 to the Up position.
2. Set Switch 3 to the Up position to test port 1 or Switch 3 to the Down position to test Port 2.
3. **Loopback:** If the remote media converter is a Perle S-10G, then the Local Perle S-10G media converter will signal the Remote media converter to go into loopback mode. (If the remote media converter is not a Perle S-10G, then the remote media converter will need to be put into Loopback Mode (See the User's Guide that came with that media converter).
4. Test Data will be sent from the local S-10G to the Remote media converter.
5. If the PWR LED on the Local S-10G turns red or blinks red on a repeated basis, the fiber connection may require further testing.
6. If the PWR LED on the Local S-10G stays green after several seconds of testing, then the link is passing the Built In Link Test. Proceed to testing the other link.

Module Temperature Protection

Every S-10G comes equipped with an internal fan to provide cooling to the unit. However, if any of the modules are operating above their specified maximum operating temperature, the S-10G will reduce the power to these modules. The S-10G will continue to monitor the operating temperature of the unit until the temperature is below the maximum operating temperature and then the S-10G will return the modules to normal operating.

Loopback Auto Detect

Perle S-10G media converters have the ability to automatically put remote Perle S-10G media converters in loopback mode. This allows the remote S-10G media converter to be located in distant or inaccessible locations. The remote S-10G will remain in loopback mode as long as the tests are in progress.

Note: *Depending on the manufacturer some copper cabling may not support our Loopback Auto Detect feature, however Loopback Mode can always be obtained by setting switch 2 to the down position on your Perle Media converter.*

Technical Specifications

The following applies to all Perle Standalone S-10G Media converters.

	Power Input/Consumption	9-30VDC
STS	1.0A Max, 600mA at 12VDC	
XTS	1.2A Max, 800mA at 12VDC	
XTX	1.5A Max, 1.0A at 12VDC	
XTSH	1.5A Max, 1.0A at 12VDC	
XTXH	2.0A Max, 1.4A at 12VDC	

Operating Temperature: 0°C -50°C (32°F - 122°F)
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)
Weight: 0.38 kg (0.3 lbs.)

SFP+ and XFP Support

- MSA Compliant SFP+
- MSA complaint Class 1,2 and 3 XFP modules for the S-10G-XTX and S-10G-XTS
- MSA complaint Class 1,2,3 and 4 XFP modules for the S-10G-XTXH and S-10G-XTXSH
- 1G copper modules
- 1G fiber modules
- SFP+ supports Cx1 (direct attach) interfaces
- XFP supports CX4 modules

Fiber Cabling Requirements

MM: 50/125 microns
62.5/125 microns

SM: 9/125 microns

Note: Please refer to the product page on the Perle website for the most up to date specifications.

<http://www.perle.com/>

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

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

Copyright © 2012 Perle Systems Limited

All rights reserved. No part of this document may be reproduced or used in any form without written permission from Perle Systems Limited.