Perle Cx-10GR-STS

Media Converter

Modules

Installation Guide
C-10GR-STS
CM-10GR-STS

Overview

This document contains instructions necessary for the installation and operation of the Perle C/CM-10GR-STS Media Converter modules. These models are used in conjunction with a Perle Media Converter chassis. Each module contains two pluggable transceiver ports that permits insertion of two SFP/SFP+ modules. These transceiver ports can use either Perle Systems or third party MSA compatible modules. See the Technical Specifications section in this guide for supported modules.

The C models are the unmanaged models and the CM models are the managed models. For information on the management options of the CM models refer to the Perle MCR-MGT User's Guide that came with your Perle Management Module. All combination of modules within the chassis cannot exceed the chassis power input consumption. The full power consumption for Perle Media Converter chassis can be found on the Perle website.

Model	Port 1	Port 2	Type
C-10GR-STS	SFP/SFP+	SFP/SFP+	unmanaged
CM-10GR-STS	SFP/SFP+	SFP/SFP+	managed

Note: The C/CM-10GR-STS media converter module can operate as a 1G media converter module if 1G fiber transceivers have been inserted into the SFP+ transceiver ports.

Visit Perle's web site for the most up to date Installation guides, models and specifications: **http://www.perle.com/**
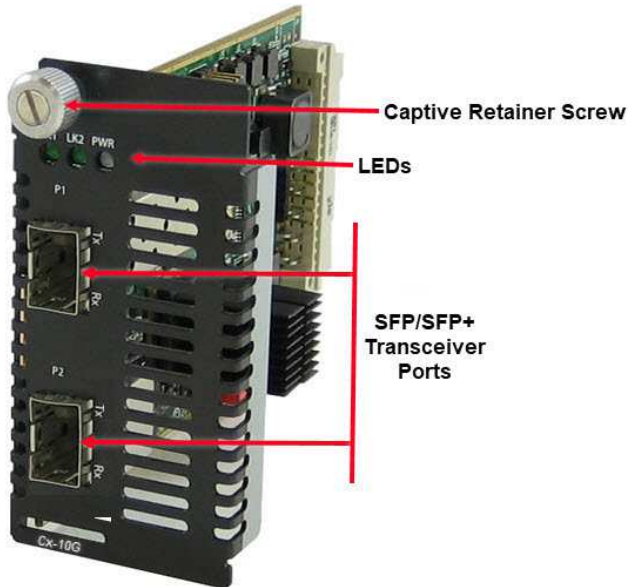
Getting to know your C/CM-10GR-STS Media Converter

Your C/CM-10GR-STS Media Converter package consists of the following items:

- C/CM-10GR-STS module with two transceiver ports (SFP/SFP+)
- This guide

Front View

Captive Retainer Screw

LEDs

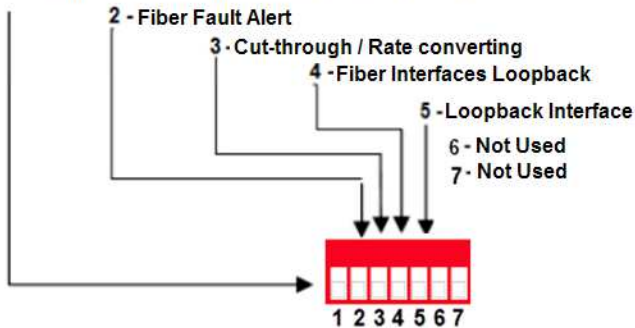SFP/SFP+ Transceiver Ports

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 C/CM-10GR-STS module.

1. Set the DIP switch settings. (optional). (Refer to the Auto Config jumper section for CM models)

2. Install the module into the chassis.

3. Insert the appropriate SFP/SFP+ into the transceiver ports.

4. Connect the fiber cables.

DIP Switches

1 - Link Mode -Smart Link Pass-through /Standard

2 - Fiber Fault Alert

3 - Cut-through / Rate converting

4 - Fiber Interfaces Loopback

5 - Loopback Interface

6 - Not Used

7 - Not Used

1 2 3 4 5 6 7

DIP Switch Settings

The DIP switches are located on the module.

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

Link Mode (Switch 1)

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

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 link is lost on one of the connections, then the other link will be brought down by the media converter.

Standard: 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.

Fiber Fault Alert (Switch 2)

Switch Position	Mode
Up (default)	Enabled
Down	Disabled

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

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

Fiber Fault Alert Sample Config

Media Converter Module A Configuration

- Link Mode – Standard Mode
- Fiber Fault Alert

Media Converter Module B Configuration

- Link Mode–Smart Link Pass through Mode
- Fiber Fault Alert

Sequence of Events

1. Media Converter Module A loses fiber connection (RX).

2. Media Converter Module A notifies the remote Media Converter Module that there is a fault on the Link.

3. Media Converter Module B detects loss of fiber link on receiver (RX).

4. Media Converter Module B turns off transmitter (TX).

Media Converter Module or Media Converter
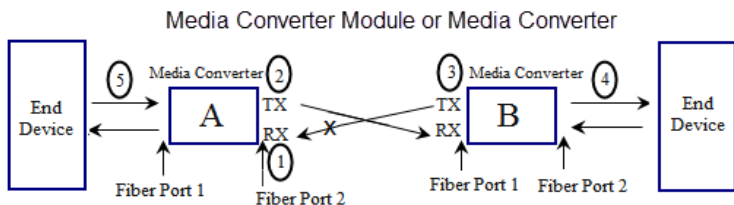
Cut-through / Rate converting (Switch 3)

Switch Position	Type
Up (default)	Rate converting
Down	Cut-through

Rate converting: Both ports can operate at the same or different speeds.
Cut-through: Both ports need to be the same speed and set for full duplex mode.

Fiber Interface Lookback (Switch 4)

Switch Position	Mode
Up (default)	Disabled
Down	Enabled

Enabled: When enabled, the media converter will enable loopback on the fiber interface.
Disabled: The media converter will not enable fiber loop back.

Fiber Loopback Interface (Switch 5)

Switch Position	Mode
Up (default)	Port 1
Down	Port 2

UP: The media converter will perform loopback testing on Port 1.
Down: The media converter will perform loopback testing on Port 2.

Not Used (Switch 5)

Not Used (Switch 6)

AUTO-Config Jumper (CM model only)

The Auto-Config jumper is located on the outer edge, at the midpoint of the module. Jumper the top and middle pin to select Auto mode. Jumper the middle and bottom pin to select SW mode.

AUTO: When set to Auto the module will, at power-up, check its internal flash memory to see if configuration information has been downloaded to it from a management module. If so it will use this configuration as its running configuration. If there is no configuration in flash it will read the settings of the DIP switches and use those as its running configuration.

SW: When set to SW (Switch), the module will, at power-up, read the settings of the DIP Switches and use those as its running configuration. It will ignore any configuration information in its flash memory.

NOTE: The default jumper setting is AUTO

P3

Pin 3 — AUTO
Pin 2
Pin 1 — SW
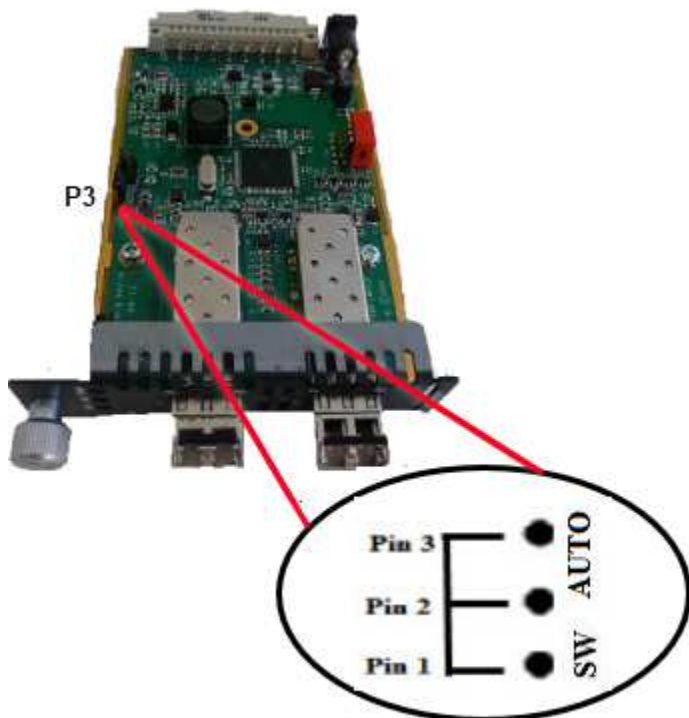
# SGMII Interface Hardware Support (C Model only)

Both the C/CM models have 1000 Mbps SGMII interface support on port 1. For the Managed CM-10GR-STS the configuration must be set within the software option. For information on SGMII support options for the CM modules refer to the Perle MCR-MGT User's Guide that came with your Perle Management Module The unmanaged model the C-10GR-STS supports the SGMII via the jumper setup as shown below.
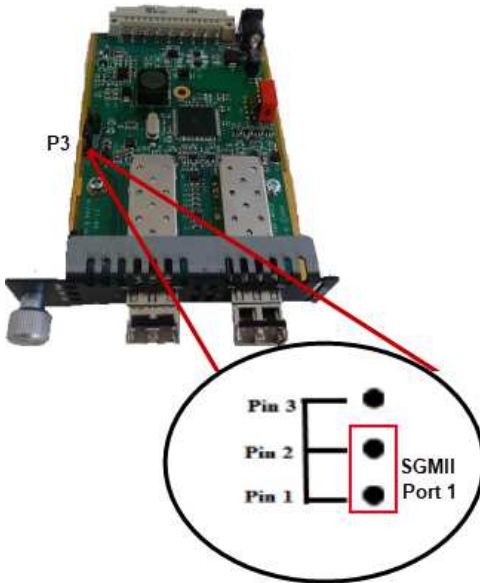
Operation

Status LED

The Perle C/CM-10GR-STS media converter modules LEDs.
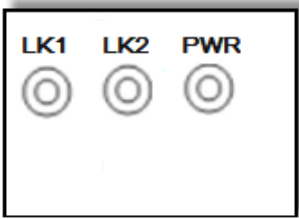
PWR – Power/Test
Green On: Power is on and the module is in normal operation mode.
Green blinking slowly: The module is in test or loopback mode.
Red Solid: Hardware error detected. (See PWR Red LED Errors)
Red Blinking quickly: Error detected. (See LK1/LK Errors)

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: 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.

LK1 / LK2 Error Codes

LK1	LK2	Meaning
Off	Off	Incompatible SFP/SFP+
On	On	Internal Error
Off	On	Mismatch in Cut-though mode
On	Off	SFP/SFP+ communication error

PWR RED LED Errors

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

Installing or Replacing Media Converter Modules

Caution: Observe electrostatic discharge precautions when installing the media converter module(s) into the chassis. Failure to observe this caution could result in damage to the media converter module(s) and /or chassis.

Perle media converter modules can be installed in any available slot and in any order within the chassis.

1. Remove the media converter module from its packaging.

2. Using a cross-head screwdriver, remove the screw holding the face plate to the chassis to reveal the slot opening.

3. Set the jumpers and DIP switches on the media converter module to the desired operating mode.

4. Locate the top and bottom alignment guides inside the chassis.

5. Using the module alignment guides gently slide the module into the slot until it becomes flush with the front of the chassis. Light pressure may be needed to seat the module. Do not force the module as you might cause some damage. If there is resistance, remove the module, check the module connector for damaged or incorrectly aligned pins, if there is no damage, retry to insert the module.

6. Tighten the captive retainer screw to ensure the media converter module is locked in place.

7. Remove the dust cap from the fiber connector and connect the fiber cables.

captive
retainer screw
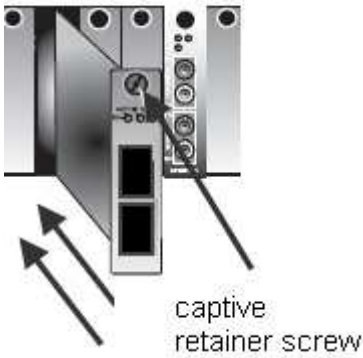
Removing Media Converter Modules

1. Loosen the captive retainer screw on the front of the media converter module and gently pull the media converter module out.

2. If not inserting a replacement, cover the opening slot with a face plate and secure the screw.
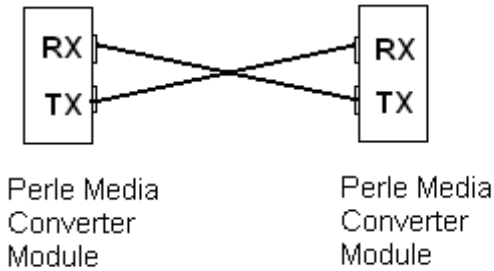
Installing the SFP Fiber Modules

1. Locate appropriate fiber modules and insert into opening.

2. Ensure the SFP module is properly seated.

3. SFP module may be inserted before or after the media converter module is inserted into the chassis.

4. Proceed with fiber cable connections.

Installing the Duplex Fiber Cable

1. Locate a 1000/10GBase-X compliant duplex (2 strands) fiber cable with appropriate connectors.

2. Connect the fiber cables from the SFP/SFP+ to the other media converter/switch/fiber device ensuring that the RX and TX are reversed (crossed) at the opposite end.

```
RX ┤      ╲  ╱      ├ RX
   │       ╲╱       │
TX ┤       ╱╲       ├ TX
```

Perle Media   Perle Media
Converter   Converter
Module   Module

Installing the Simplex Fiber Cable

1. Locate a 1000/10GBase-X compliant simplex (1-strand) fiber cable with appropriate connectors.

2. Connect the fiber cable from the SFP/SFP+to the other Media Converter/switch/fiber device.

Module Temperature Protection

All media converter modules come equipped with module temperature protection. Should an inserted SFP/SFP+ module operate above its specified maximum operating temperature, the media converter module will reduce the power to that module/s. The media converter module will continue to monitor the modules' temperature until the temperature is below the maximum operating temperature and then the media converter module will return the module/s to normal operating mode.

Loopback Mode

The media converter modules can be put into Loopback mode for diagnosis purposes. A packet generator and analyzer must be used to generator and capture the packets in this mode.

Technical Specifications

Maximum power consumption (watts)	17.2
Pluggable 10G Fiber Transceivers	Power levels 1 and 2 EEE 802.3ae (10G-Base-R) 10 Gigabit SFP+ slot support 10GBase-R Standard SFP Power level 1 (1 watt) and level 2 (1.5 watts) as per SFP-8431
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:	0.1kg, 0.22 lbs

The following applies to the Perle Cx-10GR-STS Media Converter.
*Actual rating is dependent on the power consumption of the SFP/SFP+ modules inserted.

Supported 10 Gigabit Fiber pluggable transceivers

IEEE 802.3as compliant

- 10GBase-SR
- 10GBase-LMR
- 10GBase-LR
- 10GBase-ER
- 10GBase-ZR

CWDM/DWDMBase

Supported 10 Gigabit Copper pluggable transceivers

SFP+ Direct Attach Cable (DAC). Also known as:

- Twinax
- 10GBase-CU
- 10GSFP+Cu
- 10GBase-CX1
- 10GBase-CR1

Note: Passive and Active cable types are supported

Supported Gigabit Fiber SFP's

- 1000Base-SX
- 1000Base-LX/LH
- 1000Base-EX
- 1000Base-ZX
- 1000-Base-BX

Note: In this mode both SFPs need to operate at 1000Base-X

Fiber Cabling Requirements
MM: 50/125 microns or 62.5/125 microns
SM: 9/125 microns

Note: Please refer the product page on the Perle website for the most up to date specifications. http://www.perle.com/

Troubleshooting

General

Ensure that the SFP/SFP+ modules are inserted correctly into the transceiver ports.

No connectivity

Set all DIP switches to the UP position.

Loopback Mode

The media converter module can be put into Loopback mode for diagnosis purposes. A packet generator and analyzer must

be used to generate and capture the packets in this mode.

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 55032 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

For information and details about product warrantee and registration, please refer to

http://www.perle.com/support_services/warranty.shtml