MCR1900

Media Converter
19-Slot Chassis

Installation Guide

Part #5500304-11

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,

Table of Contents

Preface

About This Guide

This guide provides the installation instructions for the Perle MCR1900 Media Converter Chassis.

This preface has the following sections.

- Intended Audience
- Documentation
- Where to find Web-based Guides
- Warranty/Registration
- Contacting Perle

Intended Audience

This guide is for administrators who will be installing the MCR1900.

Documentation

The following documentation is included with the MCR1900.

- MCR1900 Media Converter 19-Slot Chassis Installation Guide

Where to find Web-based Guides

The installation and user guides (in PDF format) for all Perle products can be found at *http://www.perle.com/downloads*

Warranty / Registration

Perle's standard Lifetime Warranty provides customers with the 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

Contacting Perle Systems

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 webpage.
http://www.perle.com/support_services_request.shtml

To chat live with a Technical Support Representative use the link below.

http://www.perle.com/chattechsupp.shtml

Product Information

For more product details and information about Perle products use the link below.

http://www.perle.com/products

Chat Live

To chat live with a Perle Sales Representative use the link below.

http://www.perle.com/chat.shtml

Address

Perle Systems Limited.

60 Renfrew Drive

Markham, Ontario

L3R 0E1

Toll Free North America

1-800-GO-PERLE (467-3753)

Phone 1-905-475-6070

Fax: 1-905-475-2377

Overview

Getting to Know the MCR1900

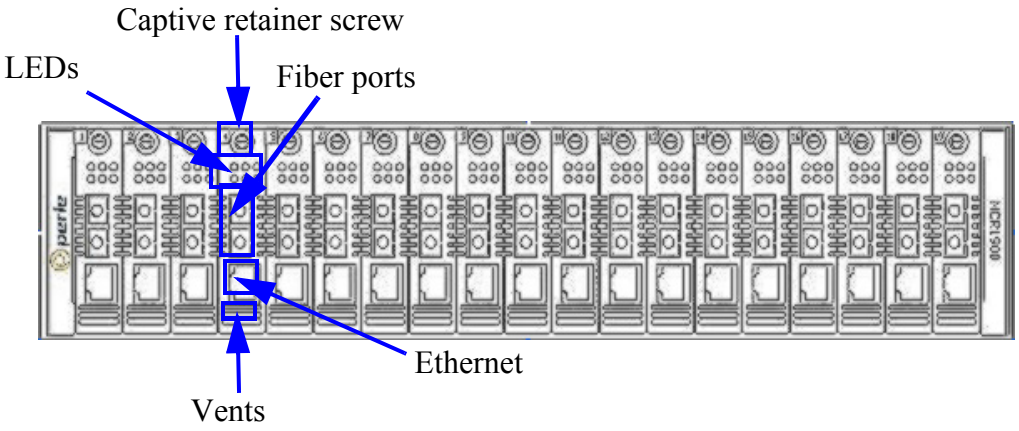
The MCR1900 is used to aggregate large numbers of geographically separated Ethernet, Fast Ethernet and Gigabit Ethernet networks into a central location, over fiber optic cables.

The MCR1900 Chassis features include:

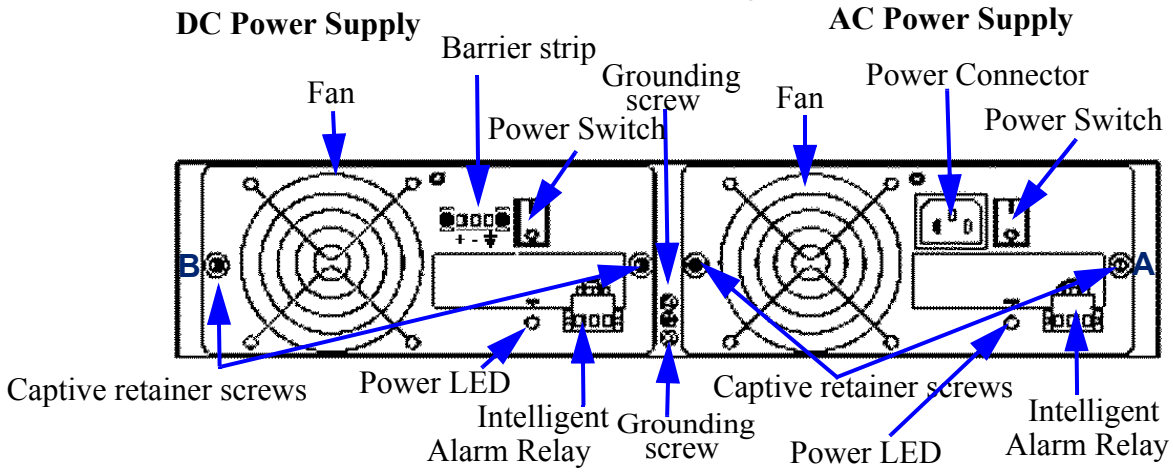
- Nineteen slots for Media Converter Modules.
- Support for all Perle Media Converter Modules.
- Media Converter Modules are individually secured and hot-swappable for maximum connection reliability.
- Dual AC/DC hot-swappable power supplies with load sharing capabilities.
- Power Supply Module and Fan Status monitoring with built-in Intelligent Alarm Relay technology.

Front and Rear Panel Components

Front View (with Media Converter Modules installed)



Rear View (one AC and one DC Power Supply Modules installed)



Power Supply Module

The MCR9100 Chassis has two Bays for Power Supply Modules located at the rear of the Chassis. The MCR1900 Chassis can support two AC or two DC power supplies or a combination of either. Each Power Supply Module has a cooling fan that draws air out of the Chassis through front air vents on all face plates. The Perle MCR1900 Chassis also comes with an Intelligent Alarm Relay feature that will monitor the Chassis, Fans and Power Supply Modules for error conditions. The Chassis and the Media Converter

Modules power requirements can be met with one Power Supply, however a second Power Supply can be added for power redundancy and load-sharing. If the Chassis has two Power Supply Modules, the modules will use a load-sharing arrangement in which they both supply power to the Media Converter Modules and Chassis. If either Power Supply Module should fail, the other Power Supply Module will assume responsibility for powering the entire Chassis, therefore preventing any interruption of service. The backplane of the Chassis will continue to power both fans even if a power supply is in a failed state or the power switch is in the Off position. If either of the Power Supply Modules fail, both alarm relays will be activated. Once the alarm has been set, the backplane will continue to monitor the Power Supply Module to see if the problem has been corrected and if so the alarms will be reset.

Power Supply LED Status

Description	LED
On (solid)	Indicates that the power has been switched On and the Power Supply Module is supplying power to the Chassis.
Off	• The Power Supply Module has been switched Off. • The power plug has been removed. • No power at power source. • Check fuse (DC power supply only). Appendix B, ***Troubleshooting*** on page 28 • The Power Supply Module has failed.
Slow Blinking	(Only applies to a Dual Power Supply Chassis). The Power Supply Modules are establishing load sharing parameters. **NOTE:** This state will activate the alarm relays.
Fast Blinking	• The Power Supply Module is not seated in the Chassis correctly. • A Power Supply Module has been removed from the Chassis without disconnecting the power cable from the power connector and the power switch is in the ON position. • **NOTE:** This is an indication of a potential hazard. The power switch should be immediately turned off and the power disconnected.

Intelligent Alarm Relay

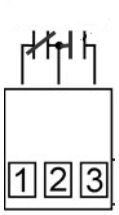
The Perle MCR1900 Chassis is fashioned with an Intelligent Alarm Relay. This relay is engaged after the unit is powered up and the backplane has been initialized. Should a failure occur, the relay will

be disengaged, therefore setting the alarm until the unit returns to a normal state of operation.

A failure can be one of the following:

- Loss of power to the Power Supply Module(s).
- Fan failure.
- Over temperature heat protection.
- Over voltage protection.

The relay is accessible via a set of three contact connections. These contacts are known as "Normally Closed", “Common” and "Normally Open", and are electrically isolated to the relay. The contacts are rated for voltages up to 30 V DC/AC with a maximum current of 3 A.



Terminal	Description	Usage
1	Normally Closed	Use this with the Common terminal to act as switch contacts that remain closed when the unit is powered off or in a failed state.
2	Common	Use this terminal in conjunction with the Normally Open or Normally Closed terminals.
3	Normally Open	Use this with the Common terminal to act as switch contacts that remain open when the unit is powered off or in a failed state.

For terminals # 1 through 3, strip insulation from wire (7 mm - 8 mm) 9/32-5/16 using stranded wire size 18-12 AWG. Tighten screw to a torque of 4.5 lb. per inch (0.51 Nm).

Media Converter Modules

For information regarding Media Converter Installation, see the appropriate Installation Guide for that product.

Installing the MCR1900

Unpacking the MCR1900 Chassis

Item

- MCR1900-19-Slot Chassis with one or two AC/DC Power Supplies
- country specific power cord
- 19-inch rack mount kit
- MCR1900 Media Converter 19-Slot Chassis Installation Guide (this guide)

Available Accessories

The following accessories can be ordered separately:

Item	Part number
• MCR-ACPWR (AC Power Supply Module)	05059810
• MCR-DCPWR (DC Power Supply Module)	05059820
• Face plate for empty Chassis slots	05059830
• 23-inch rack mount brackets	05059840

What You Need to Supply

Before you can begin, you need to have the following:

- Grounding lug (for improved Chassis grounding).
- Cross-head screwdriver to attach grounding screws.

Site Preparation Requirements

- Easy access to the ports and connectors on the front and back of the Chassis, so that you can connect and disconnect cables as well as view the LEDs.
- The power outlet(s) should be located near the Chassis and supply reliable electrical power to the Chassis.

- For proper cooling of the Chassis, air flow around the unit and through the front vents should be unrestricted.
- Do not expose the Chassis to water or moisture.
- Do not place objects on top of the Chassis.
- Place the Chassis in a dust-free environment.
- If placing the Chassis in a rack, make sure the rack is safely secured.
- If placing the Chassis on a table, make sure the table is level and secure.

Power Requirements

AC Power Requirements

The MCR1900 chassis can be powered via an AC source. The following are the ranges for the AC voltage supported by the unit.

Minimum: 85 VAC Nominal: 110/240 VAC Maximum: 265 VAC.

WARNING

Before servicing this product ensure the power source has been disconnected. For dual power supply models, ensure both sources have been disconnected.

DC Power Requirements

The MCR1900 DC power supply has an integral Terminal Connections block to facilitate connection to a DC source(s). Electrical ground is directly connected by wire to the power supply's metal tray. The DC supply(s) should have adequate over-current protection within the closed rack system and comply with local or national standards applicable to the installation territory.

The following are the ranges for the DC voltage supported by the unit;

Minimum: 24 VDC Nominal: 48 VDC Maximum: 60 VDC

You need wire gauge 14 to 18 AWG to connect the MCR1900 chassis to the power source.

The equipment must be grounded for safety and to ensure ESD protection for correct operation and protection of the internal circuitry.

WARNING

Before servicing this product ensure the power source has been disconnected. For dual power supply models, ensure both sources have been disconnected.

Grounding the MCR1900 Chassis

The MCR1900 should always be chassis grounded for safe and proper operation.

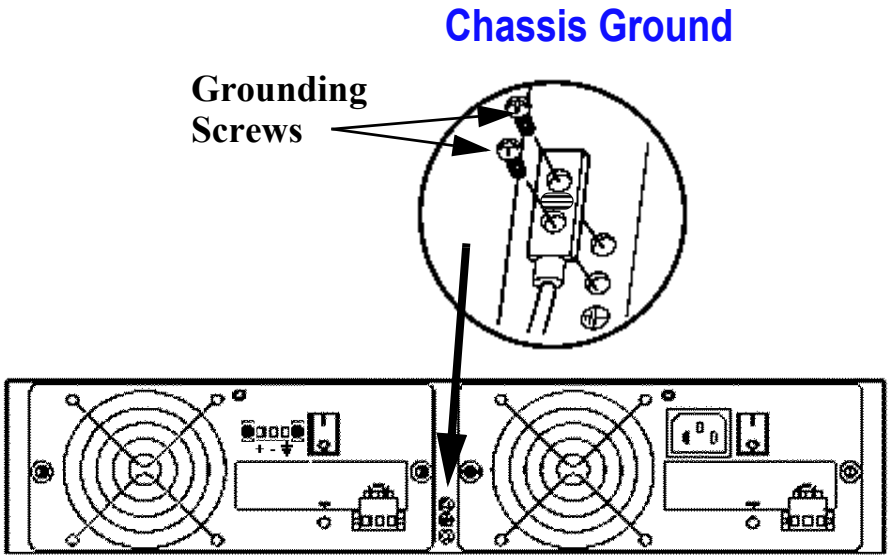
Grounding the Chassis requires the following items:

- One grounding lug (not provided).
- One 12 AWG stranded or 14 AWG solid wire (not provided).
- Crimping tool (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.***

To attach the Chassis Ground, perform the following steps:

1. Using a crimping tool, attach the grounding lug to one end of a 12 AWG stranded wire or 14 AWG solid ground wire.
2. Remove the grounding screws located on the back middle of the Chassis.
3. Attach the grounding lug to the Chassis and secure with the grounding screws.



Installing the Media Converter Modules

To install or remove a Perle Media Converter Module refer to ***Installing or Replacing Media Converter Modules*** on page 21 in this guide.

Connecting the Alarm Relays (optional)

The MCR1900 provides a method of allowing you to connect an external powered device such as a siren or light in order to inform you should a power loss or failure occur. The Common relay connection is used in conjunction with the Normally Closed or Normally Open terminals. The Common terminal in conjunction with the Open or Closed terminal acts as a switch contact that remains open or closed when the Chassis is in a loss of power state.

Powering On an AC Powered Chassis

To power on an AC powered Chassis, perform the following procedure.

1. Using the Perle supplied power cord, plug the power cord into the AC power connector at the rear of the Chassis (repeat this procedure if you have a second power supply installed in the Chassis).
2. Plug the other end of the power cord to an appropriate power outlet (repeat this procedure if you have a second power supply installed in the Chassis).
3. Turn the power switch(s) to the On position.
4. A solid green LED indicates the chassis is powered up.

Powering On an DC Powered Chassis

To power on an DC powered Chassis, perform the following procedure.

Note: ***Ensure power is NOT applied to the wires prior to connection.***

1. Locate the Barrier strip connector on the back of the DC power supply module. Remove the covering plastic shield to expose the three screw terminals (+ - Gnd)
2. On each end wire, remove the insulation from the copper wire 5 mm (3/16 of an inch).
3. First connect the electrical ground wire by loosening the right screw terminal (Gnd) and wrap the end wire tightly around the screw. Tighten the screw securely.
4. Loosen the left screw terminal (positive +) and wrap the end wire tightly around the screw. Tighten the screw securely.
5. Loosen the middle screw terminal (negative -) and wrap the end wire tightly around the screw. Tighten the screw securely.
6. Repeat this procedure if you have a second DC power supply.
7. Apply power at source.
8. A solid green LED indicates the chassis is powered up.

Power Supply LED Status

Description	LED
On (solid)	Indicates that the power has been switched On and the Power Supply Module is supplying power to the Chassis.
Off	• The Power Supply Module has been switched Off. • The power plug has been removed. • No power at power source. • If the power supply is a DC model see Appendix B, Troubleshooting on page 28 • see the Troubleshooting section for information on replacing the fuse. • The Power Supply Module has failed.
Slow Blinking	(Only applies to a Dual Power Supply Chassis). The Power Supply Modules are establishing load sharing parameters.
Fast Blinking	• The Power Supply Module is not seated in the Chassis correctly. • A Power Supply Module has been removed from the Chassis without disconnecting the power cable from the power connector and the power switch is in the ON position. **NOTE:** This is an indication of a potential hazard. The power switch should be immediately turned off and the power disconnected.

Warning	***For your safety, before attempting to connect or modify any of the electrical connections to the unit, please be sure all wiring is disconnected from any live power source. Power should only be applied when you are sure that the wiring is correct and any safety covers are properly installed.***

3 Media Converter Modules

Installing or Replacing Media Converter Modules

Warning ***Observe electrostatic discharge precautions when installing the Media Converter Module(s) into the Chassis. Failure to observe this precaution could result in damage to the Media Converter Module.***

The Perle Media Converter Modules may be installed in any order and in any available installation slot. All Perle Media Converter Modules are hot-swappable and can be removed or installed while the Chassis is powered on.

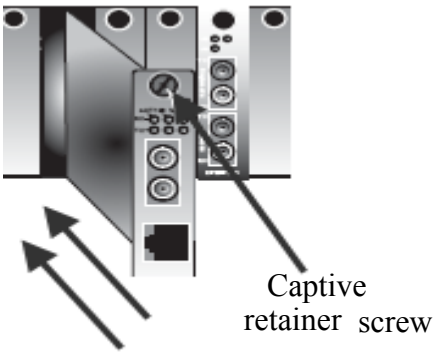
Removing Media Converter Modules

1. Loosen the captive retainer screw on the front of the Media Converter Module and gently pull the module towards you.
2. If not inserting a replacement Media Converter Module then cover the opening slot with a face plate and secure the screw.

Installing or Replacing Media Converter Modules

1. If installing or replacing your Media Converter Module, remove the Media Converter Module from its packaging.
2. Using a cross-head screwdriver, remove the screw holding the face plate to reveal the slot opening.
3. Set the Modules DIP switches to the desired operating mode (refer to the Installation Guide that came with the Media Converter Module).
4. Locate the top and bottom alignment guides inside the Media Converter Module slot.
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 damage the module. If there is resistance, remove the module and check the module's backplane connector for damage to the pins. If the module's backplane conector is not damaged, retry the insertion.



6. Tighten the Captive retainer screw to ensure the Media Converter Module is locked in place.
7. Remove the dustcap from the fiber connector and connect the fiber and copper cables.

Note: ***All open slots in the Chassis must be covered with a face plate in order to maintain proper air circulation throughout the Chassis.***

Power Supply Modules

Installing or Replacing the Power Supply Module

Warning ***Never attempt to open or service a Power Supply Module. Opening the Power Supply Module may cause serious injury or death.***

Use these procedures for AC or DC power supply modules.

The MCR1900 Power Supply Module is hot-swappable and can be removed or installed while the Chassis is powered on. The MCR1900 comes with two Power Supply Bays with one or two Power Supply Module(s) installed.

To remove or replace a Power Supply Module, perform the following procedure:

Removing the Power Supply Module

1. Turn the power switch to the Off position.
2. Disconnect the power cord from its source.
3. Disconnect the power cord from the MCR1900 Power Supply Module.

Warning ***Failure to follow these steps may result in a live Power Supply Module and present a potential hazard.***

4. Disconnect the alarm relay connections if connected.
5. Using a screwdriver remove the one screw located at the top of the Power Supply Module.

6. Loosen the captive retainer screws on either side of the Power Supply Module.
7. Gently pull the Power Supply Module towards you. If replacing the Power Supply Module, follow the procedure below. If not replacing the Power Supply Module then cover the open Bay with a Power Supply Bay cover and replace the screws.

Installing or Replacing the Power Supply Module

1. If installing or replacing the Power Supply Module, remove it from its packaging.
2. Using a cross-head screwdriver, remove the screw from the top of the Power Supply Bay cover on the back of the Chassis and remove the cover.
3. Locate the bottom alignment guide inside the Power Supply Bay.
4. Using the Power Supply module alignment guide gently slide the module into the Bay until it becomes flush with the back of the Chassis. Light pressure may be needed to seat the module. Do not force the module as you might damage the connector. If there is resistance, remove the module and try again.
5. Using a screwdriver secure the one screw located at the top of the Power Supply Module.
6. Tighten the Captive retainer screws on either side of the Power Supply Module.
7. Connect the power cord to the MCR1900 Power Supply Module.
8. Connect the power cord its source.
9. If this is a DC Power Supply see section "Powering On an DC Powered Chassis"
10. Connect the alarm relays (optional).

11. Turn the power switch to the On position.

Warning	***If the Intelligent Alarm Relay has been connected to an audible or visual alarm, the insertion of a second Power Supply Module will engage the alarms until the power switch has been set to the On position.*** ***All Bay openings must be covered with or a Power Supply Bay cover in order to maintain proper air circulation throughout the Chassis.***

For Power Module LED status "Power Supply LED Status" in this guide.

A Technical Specifications

Environmental Specifications

Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)
Storage Temperature	-25 °C to 70 °C -13 °F to 150 °F
Operating/Storage Humidity	5% to 95% (non condensing).
Operating Altitude	Sea level to 3048 m (10,000ft)*

* Designed and tested for normal operation for altitudes up to 3048 m (10,000 ft.): safety approvals apply only to an operating altitude of 2000 m (6500 ft.).

Physical Specifications

Weight	6.32 kg. (13.9 labs.)
Size	2U
Dimensions (D X H X W)	356 mm by 435 mm by 89 mm 14 in. by 17.2 in. by 3.5 in.
Ventilation Method	Front to back of Chassis

AC Power Specifications

Nominal Input Voltage	100/240 V AC
Input Voltage range	90 to 264 V AC
AC Input Frequency	50 to 60 Hz
Capacity	2 A

DC Power Specifications

Minimum Input	24 VDC
Nominal Input	48 VDC
Maximum Input	60 VDC
Capacity	8 A

B Troubleshooting

This chapter provides information that can help resolve issues with your Perle MCR1900 Chassis.

Intelligent Alarm Relay

The relay can be engaged for any of the following conditions.

Condition	Possible Cause
Loss of Power	• Loss of power source to the Power Supply Module. • Power switch is in the Off position. • Power Supply Module hardware failure.
Fan not running	• The fan is running at less then 50% speed rate. • The fan has failed.
Over Temperature Protection	• Ensure that the fans are operational. • Ensure the ambient temperature is within the specifications.

Power Supply LED Status

Description	LED
On (solid)	Indicates that the power has been switched On and the Power Supply Module is supplying power to the Chassis.
Off	• The Power Supply Module has been switched Off. • The power plug has been removed. • No power at power source. • Replace fuse (DC power supply only). • The Power Supply Module has failed.
Slow Blinking	(Only applies to a Dual Power Supply Chassis). The Power Supply Modules are establishing load sharing parameters.
Fast Blinking	• The Power Supply Module is not seated in the Chassis correctly. • A Power Supply Module has been removed from the Chassis without disconnecting the power cable from the power connector and the power switch is in the ON position. **NOTE:** This is an indication of a potential hazard. The power switch should be immediately turned off and the power disconnected.

Note: ***DC power supplies have reversed polarity protection. Fuse types Cooper/Bussmann GMA-8-R and Littelfuse 0477008.MXP are recommended.***