

HRE-M Media Converter Handbook

User Guide

HRE-M-HB-1

CR5072

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UK
CA

CE

Instrument Care and Safety Information

Please read the whole of this section before using your **ViaLiteHD** product. It contains important safety information and will enable you to get the most from your Fibre Optic Link system.

Electrical Safety



The **ViaLiteHD** chassis is a Safety Class 1 product (having a metal chassis directly connected to earth via the power cable). When operating the equipment note the following precautions:

- Hazardous voltages exist within the rack-mounted equipment.
- There are no user serviceable parts inside; the covers **MUST NOT** be removed.
- There are no user replaceable fuses in the chassis-mounted equipment or OEM modules.
- The chassis earth stud **SHOULD** be connected to the safety earth.
- When using a 2-pin power supply cable the chassis earth stud **MUST** be connected to the safety earth.
- The **ViaLiteHD** Power Supply modules do not have an isolating switch on the mains voltage inlet. For this reason, the **ViaLiteHD** chassis **MUST** be installed within easy reach of a clearly labelled dual pole mains isolation switch, which supplies the equipment.

ESD Precautions



Precautions for handling electro-static sensitive devices should be observed when handling all **ViaLiteHD** modules. Technicians should ensure that they use effective personal grounding (i.e. ESD wrist strap, etc.) when servicing the equipment. Any equipment or tools used should be grounded to prevent static charge build-up. Good practice should be observed at all times. For reference, see relevant standards: EN 61340-5-1, - 'Protection of Electronic Devices from Electrostatic Phenomena – General Requirements'.

Optical Safety



The **ViaLiteHD** RF Transmitter and Transceiver modules contain laser diode sources operating at nominal wavelengths of 1270 nm to 1610 nm.

These devices are rated as EN60825-1 CLASS 1 radiation emitting devices. A Class 1 laser is safe under all conditions of normal use. When operating the equipment note the following precautions:

- Never look into the end of an optical fibre, directly or by reflection, either with the naked eye or through an optical instrument.
- Never leave equipment with radiating bare fibres – always cap the connectors.
- Do not remove external equipment covers when operating.

Hot surface



The **ViaLiteHD** systems may have hot surfaces when operating under full load. The hot surfaces are not accessible when fitted in an approved chassis installation. Hot surfaces will be appropriately marked.

Suitable precaution should be taken when handling this device:

- Allow to cool for 10 minutes.
- Do not touch metallic surfaces or printed circuit board when hot.
- When handling, hold front panel and handle only.

Handling caution



The **ViaLiteHD** cards are made with folded sheet metal and care should be taken when handling due to the potential for sharp edges.

The front panel lever for retaining and removing the cards is a pinch hazard.

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1 Introduction

The **ViaLiteHD** RF Fibre Optic Links (FOLs) are a family of fibre optically coupled link systems designed for the transmission of RF analogue signals over long distances for the communications market.

ViaLiteHD is a product brand manufactured by Pulse Power and Measurement Ltd (PPM).
ViaLite Communications is a division of Pulse Power and Measurement Ltd (PPM).

The **ViaLiteHD** system offers a family of media converters that provide a range of functions that can be used stand-alone or with its RF Fibre Optic Links (FOLs).

This handbook covers the following **ViaLiteHD** Media Converter modules:

- HRE-M-0E-9R-10-C1550-1310
- HRE-M-0E-9R-10-C1310-1550

For complete information and product familiarisation, this handbook should be read in conjunction with all other relevant handbooks for your **ViaLiteHD** system.

1.1 ViaLiteHD compatibility

18 Laser wavelength options are available for multiplexed applications using CWDM.
44 Laser wavelength options are available for multiplexed applications using DWDM.
Bi-directional wavelengths are available for duplex applications on a single fibre.

Contact **ViaLite Communications** or your local **ViaLite** agent for more details.

1.2 Media Converters

The HRE-M range of media converters are unmanaged modules to provide simple integration with the **ViaLiteHD** chassis in rack-mounted applications. Any necessary configuration options are controlled via DIP switches on the module.

1.3 **Installation**

All **ViaLiteHD** plug-in modules are hot-swappable, so it is not necessary to power-down the chassis before inserting an HRE-M. All standard connectors are retained by the module, so it will be necessary to either disconnect any cables or have a sufficiently long service loop when removing modules.



To install a 5HP HRE-M:

- The protective covers on the connectors may be left in place.
- Push the release button of the handle down and simultaneously pull the top of the handle towards you.
- Align the HRE-M upright and perpendicular to the front face of the chassis so that the PCB slides into the 'crow's feet' card guides at the top and bottom.
- Gently push the HRE-M down its guide, applying pressure via the handle – you may also apply pressure above the LED window on the **ViaLite** logo.
- As the HRE-M is fully mated, the top of the handle should snap back and lock in position.
- The pawls of the handle should be fully engaged in the matching slots.
- If power is applied to the chassis, the HRE-M power LED should light as soon as the module is fully inserted.
- Remove protective covers and connect any interface cables.

To remove a 5HP HRE-M:

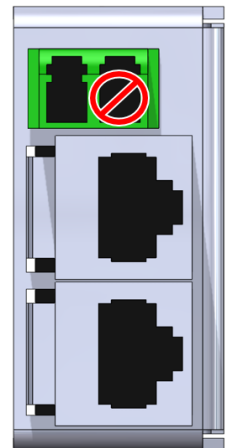
- Disconnect any cables if necessary.
- Push the release button of the HRE-M handle down and simultaneously pull the top of the handle forwards.
- Apply pressure via the handle and gently withdraw the HRE-M from the chassis.

2 Module Types

2.1 Bi-directional Media converter

The HRE-M-0E-9R-10-CXXXX-XXXX is a 3-port unmanaged media converter. The optical port is a 1000BASE-BX Bi-Directional 20 km rated SMF transceiver. The two RJ45 ports are 10/100/1000Base-T Ethernet connections.

There is a bank of DIP switches on the side of the card, which by default are all set to off (shown pushed down in the picture below). By altering these settings, the following features are supported:



Switch	Function	Setting	
1	Reserved	X	Reserved
2	Jumbo frames	OFF ON	Normal 1500 Bytes Jump up to 9 KB
3	RJ45 isolation	OFF ON	Disabled Layer 2 traffic not forwarded between RJ45 ports in same VLAN
4	FX Speed	OFF ON	1000 Mbps 100 Mbps



2.1.1 Versions

Parameter	Specification
HRE-M-0E-9R-10-C1550-1310	1550 nm Transmit / 1310 nm Receive Single Duplexed LC/APC connection Tx Power: -9 dBm to -3 dBm Rx Sensitivity: -23 dBm Max. Data Rate: 1000 Mbps Protocols Fast Ethernet, Gigabit Fibre Channel
HRE-M-0E-9R-10-C1310-1550	1310 nm Transmit / 1550 nm Receive Single Duplexed LC/APC connection Tx Power: -9 dBm to -3 dBm Rx Sensitivity: -23 dBm Max. Data Rate: 1000 Mbps Protocols Fast Ethernet, Gigabit Fibre Channel

3 Monitoring and Control

The HRE-Ms register with the chassis Monitoring & Control (M&C) module (if present) to display its presence and electronic ID information using the standard web GUI.

The HRE-M devices are unmanaged and therefore no control functions are available.

The screenshot displays the web GUI for the HRC-5-ED-0R-00 chassis. The left pane shows a rack of modules with a green box highlighting Module 12. The right pane provides detailed information for this module.

HRC-5-ED-0R-00 Status

Module 12 - Passive RF/Optical Card

General Information

- Part number: HRE-M-0E-9R-10-C13101550
- Type: Passive RF/Optical Card
- Firmware Part Number: ViaLiteHD 82098
- Firmware Version: 102
- Firmware Date: 23May22
- Serial Number: SN1274553
- OEM Number: MC
- Customer ID: NONE
- Life Counter: 31454hrs (3 years 215 days 14 hours)
- Name:

[Toggle Maintenance Mode](#)

Alarms

- Major Alarm
- Minor Alarm

Monitoring

[Refresh](#) [Apply](#) [Close](#)

Visual Display

4 Fibre Optic Interfaces

4.1 Connector and cable types

All **ViaLiteHD** optical HRE-M modules use single-mode (9 µm / 125 µm) cable terminated in a range of optical connectors detailed below.



Warning!

Angle polished (APC) and standard (PC) connectors must not be confused. The two connector types are not interchangeable and mating one with the other may damage both the cable and the module connectors.

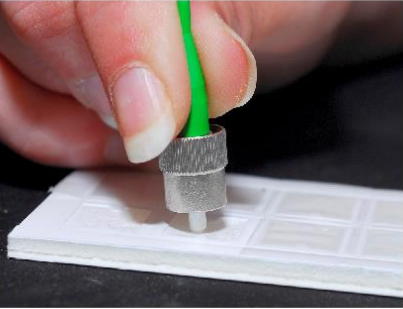
The specification of optical connector is critical to the performance of the complete Fibre Optic Link. System performance can only be guaranteed with fibre optic cables and connectors supplied by **ViaLite Communications**. When FC/APC connectors are specified they must be 'narrow key width'.

4.2 Connecting and disconnecting

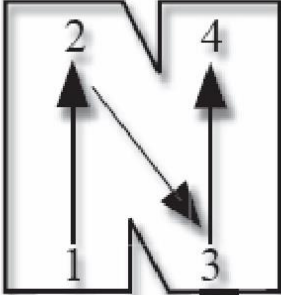
Before connecting optical fibres to the module or to each other, ensure that the mating connectors are clean (see below).

4.3 Cleaning optical connectors, cleaning before every use

Optical connectors **MUST** be cleaned before use, even where they have been protected with dust caps. A large percentage of performance issues can be attributed to dirty fibres.



- Peel the plastic cover from an unused 'N' cleaning pad.
- Hold the connector between your thumb and forefinger.
- Clean the connector using firm pressure by swiping in a pendulum motion through each segment of the 'N' shape, following the diagram.
- Do not swipe over the same space twice.



For more details, please read the cleaning instruction that accompanies the connector cleaning kit.

4.4 Cleaning optical connectors, high levels of contamination

If there are performance issues that are not resolved by basic cleaning in Section 4.3, then the following procedure should be used. If the level of contamination is high it will be necessary to repeat this procedure.

Cleaning items required:

- Lint-free fibre cleaning tissues and/or cleaning sticks (normal cosmetic tissues produce dust and are not suitable).
- Reagent grade isopropyl alcohol (IPA).
- Air duster or filtered, compressed air line.

Cable connector cleaning:

- Dampen a patch of cleaning tissue with IPA and clean all surfaces of the plug ferrule.
- Using a dry cleaning tissue, dry the ferrule and clean the end face.
- Using the air duster, blow away any residue from the end of the connector.

Module female receptacle cleaning (only recommended if problems are being experienced):

- Either use an optical cleaning stick or twist a cleaning tissue to form a stiff probe and moisten with IPA. Gently push the probe into the receptacle and twist around several times to dislodge any dirt.
- Repeat the above process with a dry tissue.
- Using the air duster, blow away any residue from the receptacle.

Important notes:

- IPA is flammable. Follow appropriate precautions / local guidelines when handling and storing.
- IPA can be harmful if spilt on skin. Use appropriate protection when handling.
- It should only be necessary to clean the female receptacles on the modules if problems are being experienced.



Never inspect an optical fibre or connector with the naked eye or an instrument unless you are certain that there is no optical radiation being emitted by the fibre. Remove all power sources to all modules and completely disconnect the optical fibres.

4.5 FC/APC connectors

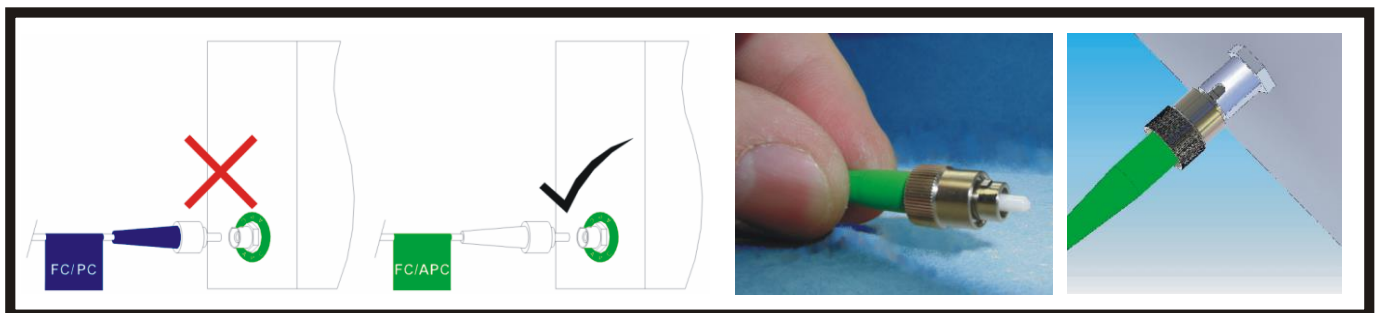
To connect FC/APC optical connectors:

- Remove the dust caps and align the white ceramic centre ferrule on the cable connector with the mating receptacle.
- There is a key (lug) on the side of the ferrule, which must match the keyway (gap) in the receptacle shroud.
- When they are aligned, gently push the plug home.
- Finger tighten the knurled collet nut onto the threaded receptacle.

To disconnect FC/APC optical connectors:

- Using fingers, fully unscrew the knurled collet nut and gently withdraw the connector.
- Replace the dust caps on both the receptacle and the cable plug.

Warning! It is possible to tighten the knurled collet without aligning the lug and gap. This will result in poor light transmission. Check that the lug and gap are aligned before tightening the knurled collet.



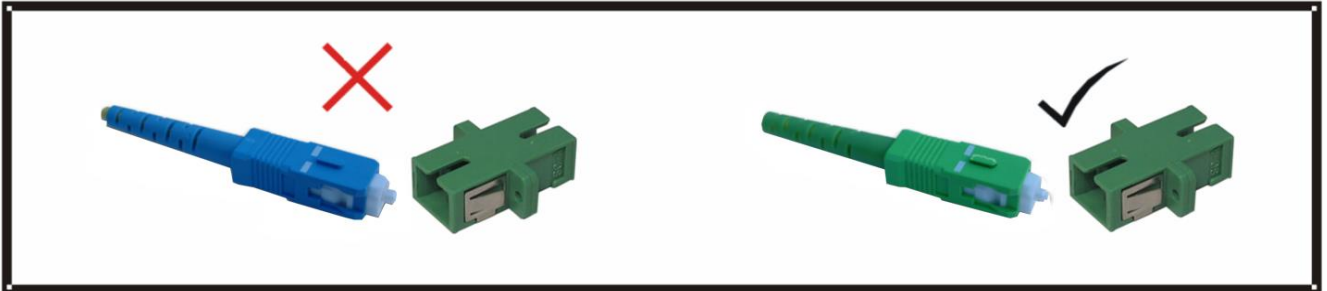
4.6 SC/APC connectors

To connect SC/APC optical connectors:

- Remove the protective plug cover.
- Align the connector keyway slot in the adaptor to the key of the plug.
- Gently push the plug into the adapter until a click is heard and the connector locks.

To disconnect SC/APC optical connectors:

- Grip the body of the plug and gently pull the plug from the adaptor, then replace the protective cover.



Only connect SC/APC cable to SC/APC. Do not mix green and blue connections.

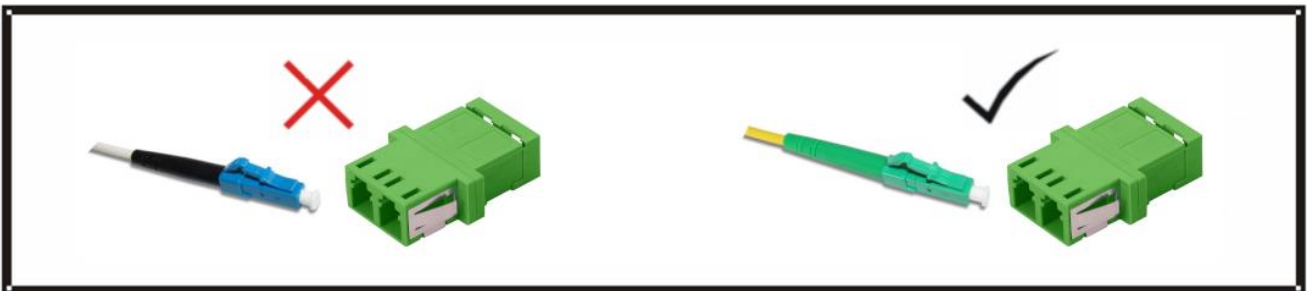
4.7 LC/APC connectors

To connect LC/APC optical connectors:

- Remove the protective plug cover.
- Align the plug retaining clip with the socket key.
- Gently push the plug into the socket until a click is heard and the connector locks.

To disconnect LC/APC optical connectors:

- Grip the body of the plug and whilst depressing the retaining clip, gently pull the plug from the socket. Replace the protective cover.



Only connect LC/APC cable to LC/APC. Do not mix green and blue connections.

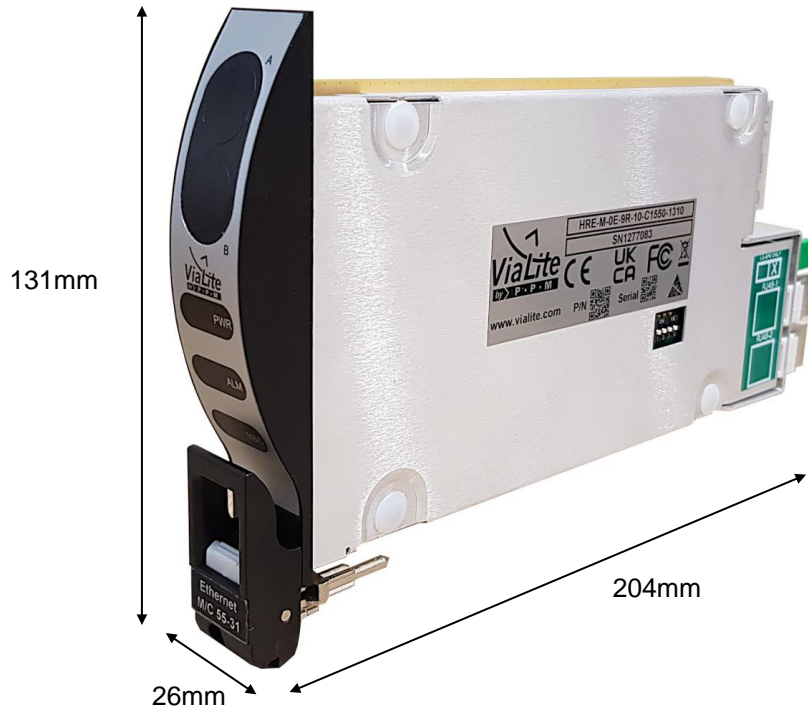
4.8 Minimum bend radius

Because optical fibre is made of glass, it is important not to subject it to excessive stress. For this reason, each type of cable has a minimum bend radius (MBR) specification, beyond which the cable cannot be bent without permanent damage occurring.

The minimum bend radius (MBR) of fibre optic cable fitted to **ViaLite** modules is 50 mm. MBR specifications for **ViaLite Communications** supplied fibre optic cables are given in the **ViaLiteHD** System Handbook Hxx-HB.

5 Mechanical Dimensions

5.1 HRE-M module - dimensions



Weight: 220 g typical
300 g maximum

6 **Product Warranty**

The guarantee / warranty period, unless otherwise agreed in writing, shall be as stated in document 'F292 - PPM Manufactured Product – Warranty', which is available at: <https://ppm.co.uk/warranty-periods/>. Extended warranty options are available at the time of purchase.

Prior to returning any goods for warranty or non-warranty repairs, please contact PPM / **ViaLite Communications** for a returns reference.

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