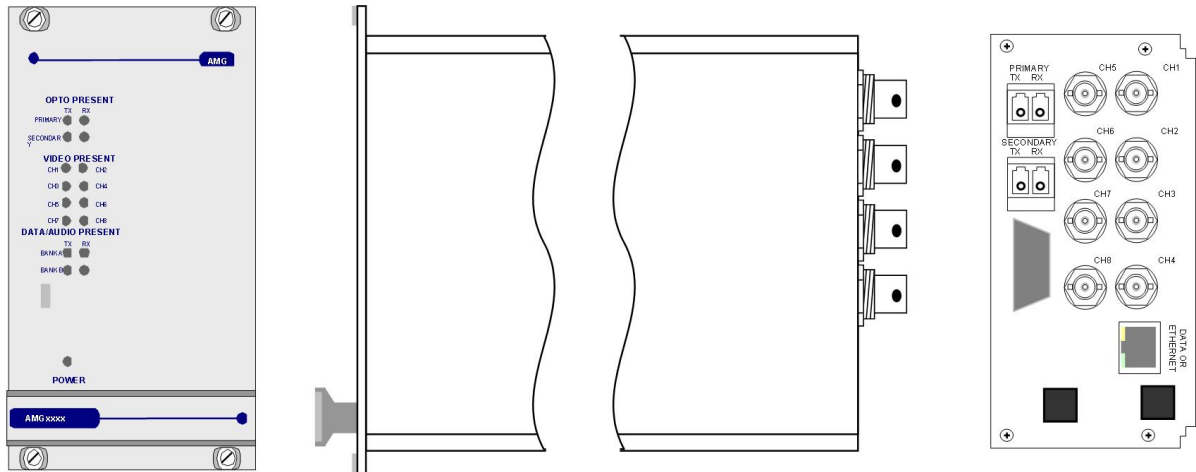


## 8 Channel Video Receive Unit with 1 Bi-directional Data Channel on a Dual Redundant Dual Fibre Ring



The **AMG4784R-DR** is a rackmount eight channel video receive unit designed to receive 8 video signals and transmit and receive 1 data signal over four singlemode fibres providing Dual Redundant operation.

The **AMG4784R-DR** is designed to plug into an AMG2005 subrack, which in turn fits into a 19" rack system.

The **AMG4784R-DR** is designed to operate with **AMG4783-DR** or rackmount equivalent **AMG4783R-DR** eight channel video transmit unit in a point to point configuration.

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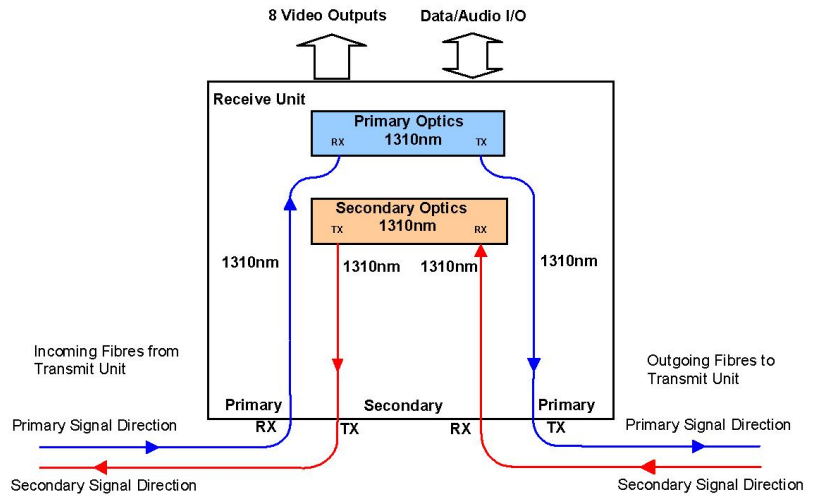
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# Introduction

## Unit Functional Schematic

The **AMG4784R-DR** transmits and receives optical signals from both a primary and secondary optical channel. The primary and secondary channels operate at the same wavelength (1310nm) and are transmitted on separate optical fibres.

The **AMG4784R-DR** receives and drops off video and data signals transmitted from an **AMG4783-DR** transmit unit. It then inserts data signals onto the outgoing optical signal.



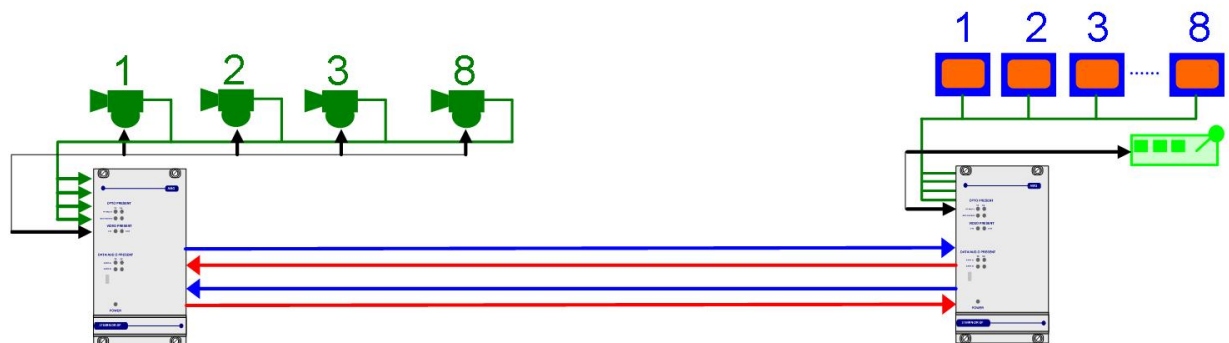
## Dual Redundant Operation

In normal operation the video and data signals are transmitted on the primary output and the data received from the primary input.

At the **AMG4784-DR** or **AMG4784R-DR** rackmount receive unit, the secondary optical input is independent and is regenerated on the secondary output. However if the primary input signal is not present, the receive unit will shut down its secondary output to inform the **AMG4783-DR** transmit unit that the signal route is not OK. The **AMG4783-DR** transmit unit will then send out the video and data signals on its secondary output along the alternative optical route. At the **AMG4784-DR** receive unit, since the primary input is no longer present, the data signal is now taken from the secondary optical input, thus maintaining integrity of the data transmission.

## Optical Connection

The **AMG4784R-DR** is connected as illustrated below when used with an **AMG4783R-DR** 8-channel transmit unit acting as a point to point system.



## **Connections**

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### **Video Output Connections**

No. of channels .....8  
Connectors .....75 ohm BNC Socket.  
Output Impedance .....75 ohm terminated.  
Output Level .....1 Volt p-p nominal  
Frequency Response.....10Hz to 7MHz.

### **Optical Connections**

#### **PRIMARY OPTO OUT**

Connector .....LC/PC  
Primary Optical Launch Power .....-5dBm  
Wavelength .....1310nm  
Optical Fibre .....Singlemode

#### **PRIMARY OPTO IN**

Connector .....LC/PC  
Primary Optical Sensitivity .....-22dBm  
Wavelength .....1310nm  
Optical Fibre .....Singlemode

#### **SECONDARY OPTO OUT**

Connector .....LC/PC  
Secondary Optical Launch Power .....-5dBm  
Wavelength .....1310nm  
Optical Fibre .....Singlemode

#### **SECONDARY OPTO IN**

Connector .....LC/PC  
Secondary Optical Sensitivity .....-22dBm  
Wavelength .....1310nm  
Optical Fibre .....Singlemode

### **Power Connection**

Power supply .....from plug in connection on the AMG2009 / AMG2015 subrack  
Power consumption .....10 Watts max.

### **Data and Audio Channel Connections**

#### **DATA CHANNEL A**

Data Channel A .....1 channel  
Data Connector.....RJ45

Channel A Interface     On Board Data Interface – RS232, RS422 or RS485. Selected by slide switch above RJ45 connector.

RS485 – switch position - high (closest to BNC connections)  
RS422 – switch position – middle  
RS232 – switch position – low (furthest from BNC connections)

#### **DATA CHANNEL B**

Data Channel B .....Not Present

## Data and Audio Channel Configuration

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### Data and Audio Channel Configuration

The **AMG4784-DR** and rackmount equivalent **AMG4784R-DR** sends and receives data to/from Channel A. Channel B is not available. Channel A is a single data interface selectable by the user with the slide switch on the rear panel.

### Data Interface Connections Channel A

RJ45 Pin No.	Channel A			Cat 5/6 Cable Colour Code T568B
	RS485 [switch high]	RS422 [switch mid]	RS232 [switch low]	
1		IN + (A)	GND	White/orange
2		IN - (B)	IN	Orange
3				White/green
4				Blue
5				White/blue
6				Green
7	IN/OUT + (A)	OUT + (A)	N/A	White/brown
8	IN/OUT - (B)	OUT - (B)	OUT	Brown

Note: (A) or (B) in brackets in above table refers to RS485 / RS422 data specification, not Channel A, Channel B.

### Data Channel A Configuration

Channel A is always present and allows for a RS232, RS422 (full duplex, four wire) or RS485 (half duplex, two wire) interface depending on the position of the switch located above the RJ45 connector. The switch signifies the presence of the X16004 Low Speed Data/Audio Interface Board. If there are LED's present on the RJ45 connector then an X16003 Ethernet Interface Board is fitted.

The data input for both the RS485 and the RS422 modes detects a tri-state input condition by monitoring the differential voltage level across the input. A differential level below 600mV positive or negative will be detected as a tri-state condition. A level above 600mV positive or negative will be detected as a logic 1 or logic zero respectively. It is important therefore to terminate the RS485 bus or the RS422 input bus using 120Ω if a pre-bias is present on the RS485 or RS422 bus.

A large number of third party equipment manufacturers apply a pre-bias on their RS485 bus. This pre-bias is applied by pulling one arm of the RS485 bus high (+5 volts) and the other arm low (0 volts) using high value resistors within the third party equipment. In order to ensure that the AMG equipment detects a tri-state condition, then these resistors should have a value above 5kΩ. If the third party bias resistors are less the 750Ω the bus can be double or triple terminated as required to ensure that a tri-state level is detected.

Note: The Data Channel A is shipped from the factory set up for RS485 operation unless otherwise requested.

## Front Panel Indicators

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### Power LED

Power .....	Green	-	unit powered
	Off	-	no power applied to unit

### Video Output LED's

Video Present CH1-8 .....	Green	-	video signal present on output BNC
	Org	-	channel present but no video on O/P BNC
	Off	-	no video channel present

### Fibre Optic LED's

Primary Opto Sync TX .....	Green	-	optical channel transmitting
	Off	-	optical channel not transmitting
Primary Opto Sync RX .....	Green	-	optical channel receiving
	Org	-	optical channel receiving but not sync.
	Off	-	optical channel not receiving
Secondary Opto Sync TX .....	Green	-	optical channel transmitting
	Off	-	optical channel not transmitting
Secondary Opto Sync RX .....	Green	-	optical channel receiving
	Org	-	optical channel receiving but not sync.
	Off	-	optical channel not receiving

### Low Speed Data LEDs

#### Channel A

Data Present TX (RS485 or RS422) ...	Green	-	logic zero (+V, -V) present on IN+, IN-
	Red	-	logic one (-V,+V) present on IN+, IN-
	Off	-	tri-state off or no connection on IN+, IN-
Data Present TX (RS232) .....	Green	-	logic zero (+V) present on input IN+
	Red	-	logic transitions present on input IN+
	Off	-	logic one (-V) present on input IN+

This represents the data signals being transmitted on the optical fibre

Data Present RX (RS485 or RS422) ...	Green	-	logic zero (+V,-V) present on OUT+, OUT-
	Red	-	logic one (-V,+V) present on OUT+, OUT-
	Off	-	tri-state off or no connection on OUT+, OUT-
Data Present RX (RS232) .....	Green	-	logic zero (+V) present on OUT+
	Red	-	logic transitions present on OUT+
	Off	-	logic one (-V) present on OUT+

This represents the data signals being received on the optical fibre

## **Physical Information**

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### **Dimensions**

Height ..... 3U Plug-in  
Width ..... 14HP  
Depth ..... 170mm excluding connectors  
Weight ..... 1000grams

### **Mounting Details**

The unit is designed to be mounted within an AMG2009 or AMG2015 Subrack on standard card guides.

### **Removal / replacement from / to the Case**

Note: - The AMG unit PCB's are static sensitive. Handle with proper care and use normal electrostatic discharge (ESD) procedures. Use properly grounded protection (for example, wrist straps) when handling the PCB.

To remove units from the case to access the data expansion boards and the daughter boards, remove the 2 or 4 fixing screws on the rear panel and slide the PCB's out of the case. Ensure that the fibres do not snag or get trapped.

To replace the PCB's into the case, slide the PCB's gently into the case aligning the boards with the appropriate slots. Ensure that the fibre do not snag or get trapped.

## **Safety**

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AMG Optical Fibre Products use Class 1 laser systems in accordance with EN 60825-2:2000.

It is always advisable to follow good practice when working with optical fibre systems. This includes:

- Do not stare with unprotected eyes or with any unapproved collimating device at fibre ends or connector faces, or point them at other people.
- Use only approved filtered or attenuating viewing aids

For other safety issues and advice on good practice associated with optical fibre systems, please see EN 60825-2:2000 or your local safety officer.

## **Maintenance and Repair**

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There are no user serviceable parts within AMG products. See unit data sheet for full specification.

In case of problem or failure, please call your local support centre or contact: **AMG Systems Ltd.** at 3 The Omega Centre, Stratton Business Park, Biggleswade, Beds., SG18 8QB, UK.

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