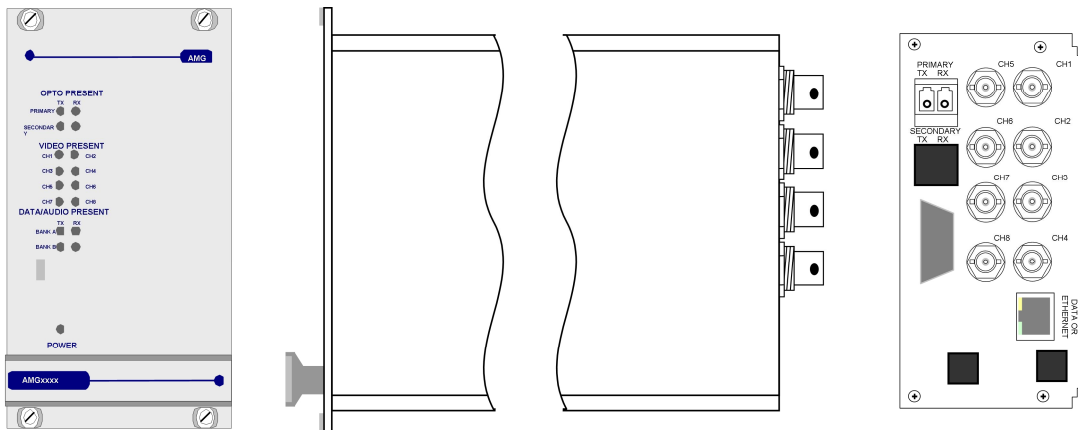


## 8 Channel Video Transmit Unit with 1 Bi-directional Data Channel and integral WDM coupler for a Singlemode Fibre Link



The **AMG4783R-SF-CWDMn-C** is a rackmount eight channel video transmit unit designed to transmit 8 video signals and transmit and receive 1 data signal over one Singlemode fibre. The **AMG4783R-SF-CWDMn-C** transmits on a CWDM wavelength defined by the 'n' in the CWDMn partno. as detailed in the following table, but can receive from any 1310nm or 1550nm band wavelength. It incorporates a CWDM "drop and insert" optical multiplexer. This allows the user to combine a signal from a unit transmitting at an alternative CWDM wavelength onto the same optical fibre.

The **AMG4783R-SF-CWDMn-C** is designed to plug into an AMG2009 or AMG2015 subrack, which in turn fits into a 19" rack system.

The **AMG4783R-SF-CWDMn-C** is designed to operate with **AMG4784-SF-CWDMn-C** or rackmount equivalent **AMG4784R-SF-CWDMn-C** eight channel video receive unit in a point to point configuration.

# Contents

<b>Introduction</b>	<b>3</b>
Unit Functional Schematic.....	3
Standard AMG CWDM Wavelengths.....	3
<b>Optical Connection</b>	<b>4</b>
<b>Connections</b>	<b>5</b>
Video Input Connections .....	5
Optical Connections.....	5
Power Connection.....	5
Data and Audio Channel Connections.....	5
<b>Data and Audio Channel Configuration</b>	<b>6</b>
Data and Audio Channel Configuration.....	6
Data Interface Connections Channel A.....	6
Data Channel A Configuration.....	6
<b>Front Panel Indicators</b>	<b>7</b>
Power LED .....	7
Video Input LEDs .....	7
Fibre Optic LEDs.....	7
Low Speed Data LEDs.....	7
<b>Physical Information</b>	<b>8</b>
Dimensions.....	8
Mounting Details .....	8
Removal / replacement from / to the Case.....	8
<b>Safety</b>	<b>8</b>
<b>Maintenance and Repair</b>	<b>8</b>

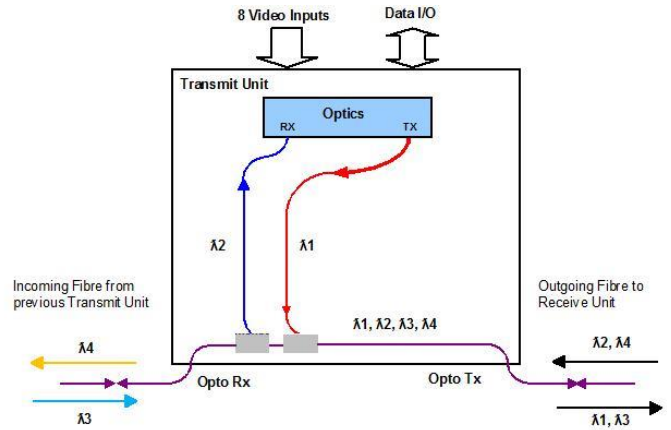
## Introduction

### Unit Functional Schematic

The **AMG4783R-SF-CWDMn-C** transmits up to 8 video and 1 data and audio signals to the **AMG4784R-SF-CWDMn-C** receive unit using a wavelength -  $\lambda$ , defined by 'n' in the CWDMn partno.

It also receives up to 1 data and audio channels transmitted on any 1310nm or 1550nm band wavelength from the **AMG4784R-SF-CWDMn-C**.

The **AMG4783R-SF-CWDMn-C** incorporates an integral CWDM coupler which allows other wavelengths of different wavelengths to be combined on the same Optical Fibre.



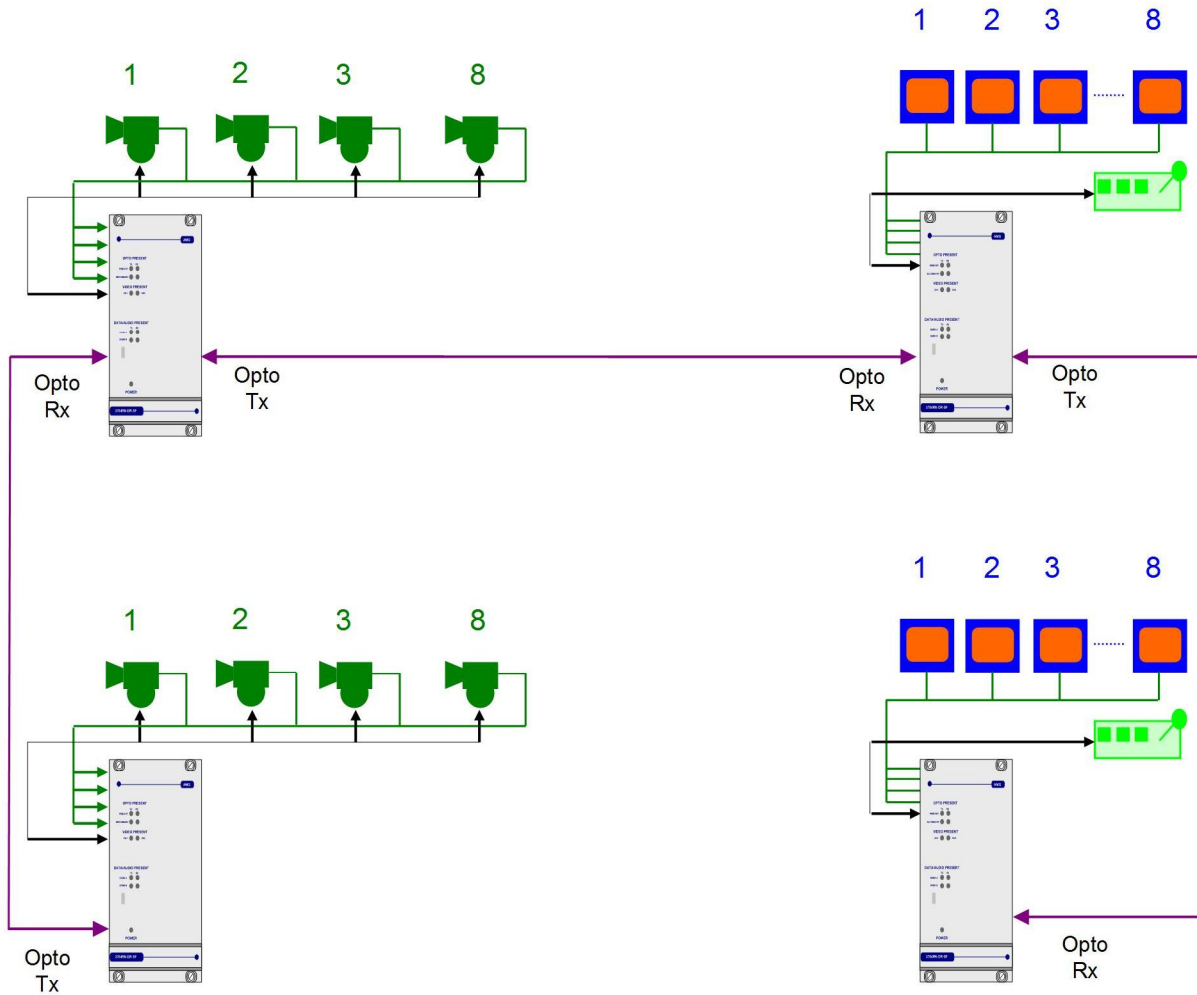
### Standard AMG CWDM Wavelengths

CWDM n/m	Wavelength (nm)	CWDM n/m	Wavelength (nm)	CWDM n/m	Wavelength (nm)	CWDM n/m	Wavelength (nm)
1	1510	5	1470	9	1310	13	1390
2	1530	6	1490	10	1330	14	1410
3	1550	7	1590	11	1350	15	1430
4	1570	8	1610	12	1370	16	1450

For CWDM wavelengths 11-14, ITU-T G652C or D fibre is recommended.

## Optical Connection

The **AMG4783R-SF-CWDMn-C** is connected as illustrated below when used with two **AMG4784R-SF-CWDMn-C** 8-channel receive units and an additional **AMG4783R-SF-CWDMn-C** 8-channel transmit unit acting as a 16-channel point to point system over a single optical fibre.



## Connections

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### Video Input Connections

No. of channels..... 8  
Connector ..... 75 ohm BNC Socket.  
Input Impedance ..... 75 ohm terminated.  
Input Level ..... 1 volt p-p nominal  
Frequency Response ..... 10Hz to 7MHz.

### Optical Connections

#### PRIMARY OPTO OUT

Connector ..... LC/PC  
Primary Optical Launch Power ..... 0dBm  
Wavelength..... Defined by 'n' in the AMG Partno.  
Optical Fibre ..... Singlemode

#### PRIMARY OPTO IN

Connector ..... LC/PC  
Primary Optical Sensitivity..... -22dBm  
Wavelength..... Any 1310nm or 1550nm band  
Optical Fibre ..... Singlemode  
Optical Overload ..... -5dBm

NOTE: The optical launch power may overload the input of an AMG receiver if connected directly. A minimum of 5dB loss is required to ensure correct operation.

### 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 **AMG4783-SF-CWDMn-C** and rackmount equivalent **AMG4783R-SF-CWDMn-C** 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 120  $\Omega$  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 5k  $\Omega$ . If the third party bias resistors are less than 750  $\Omega$  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 Input LED's

Video Present CH1-8 .....	Green	-	video signal present on input BNC
	R/G	-	channel present but no video on I/P BNC

### 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 transmitting

### 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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