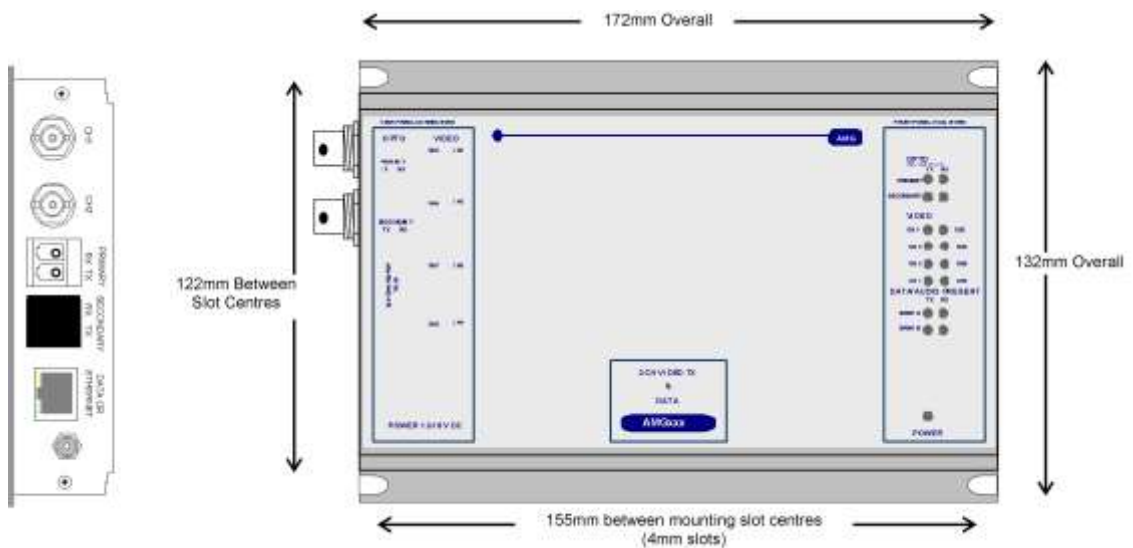




# AMG4723-CWDMn-MP Instruction Manual

## 2 Channel Video Transmit Unit with Bi-directional Data Channel for CWDM



The **AMG4723-CWDMn-MP** is a standalone two channel video transmit unit designed to transmit 2 video signals and transmit and receive 1 data signal over two singlemode fibres.

The **AMG4723-CWDMn-MP** transmits on a CWDM wavelength defined by the 'n' in the CWDMn partno. as detailed in the table overleaf, but can receive from any 1310nm or 1550nm band wavelength.

The **AMG4723-CWDMn-MP** is designed to be powered using an **AMG2003** standalone power supply.

The **AMG4723-CWDMn-MP** is designed to operate with **AMG4724-CWDMn-MP** or rackmount equivalent **AMG4724-CWDMn-R** two 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
Optical Connection .....	3
<b>Connections</b>	<b>4</b>
Video Input Connections .....	4
Optical Connections .....	4
Power Connection .....	4
Data and Audio Channel Connections .....	4
<b>Data and Audio Channel Configuration</b>	<b>5</b>
Data and Audio Channel Configuration.....	5
Data Interface Connections Channel A .....	5
Data Channel A Configuration.....	5
<b>Front Panel Indicators</b>	<b>6</b>
Power LED.....	6
Video Input LED's.....	6
Fibre Optic LED's .....	6
Low Speed Data LEDs .....	6
<b>Physical Information</b>	<b>7</b>
Dimensions .....	7
Mounting Details.....	7
Removal / replacement from / to the Case.....	7
<b>Safety</b>	<b>7</b>
<b>Maintenance and Repair</b>	<b>7</b>

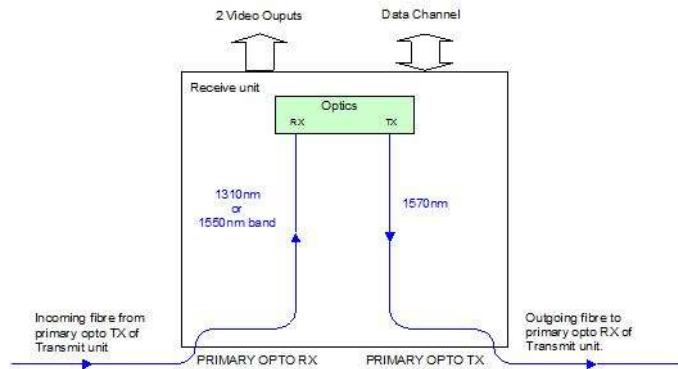
## Introduction

### Unit Functional Schematic

The **AMG4723-CWDMn-MP** transmits up to 2 video and 1 data signal to the **AMG4724-CWDMn-MP** receive unit using a wavelength defined by 'n' in the CWDMn partno.

The example shown in the schematic is where 'n' = 3, i.e. the Tx wavelength is 1550nm.

It also receives 1 data signal transmitted on any 1310nm or 1550nm band wavelength from the **AMG4724-CWDMn-MP**.



### 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	6	1490	11	1350	16	1450
2	1530	7	1590	12	1370	17	1270
3	1550	8	1610	13	1390	18	1290
4	1570	9	1310	14	1410		
5	1470	10	1330	15	1430		

For CWDM wavelengths 11-16, ITU-T G652C or D fibre is recommended.

### Optical Connection

The **AMG4723-CWDMn-MP** is connected as illustrated below when used with an **AMG4724-CWDMn-MP** receive unit acting as a point to point system.



Alternatively, the **AMG4723-CWDMn-MP** and **AMG4724-CWDMn-MP** may be interconnected with additional system units operating at different optical wavelengths on the same fibre using external couplers.

## **Connections**

---

### **Video Input Connections**

No. of channels .....2  
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 to +5dBm  
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**

Connector Type .....2.1mm screw lock long power jack – centre positive  
Connector Partno.....Switchcraft S761K, AMG G16125-00  
Supply Voltage.....13.5 to 18.0 Volts DC.  
Maximum Power .....5 Watts

### **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

---

### Data and Audio Channel Configuration

The **AMG4723-CWDMn-MP** and rackmount equivalent **AMG4723-CWDMn-R** 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

---

### Power LED

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

### Video Input LED's

Video Present CH1-2 .....	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**

---

### **Dimensions**

Height ..... 112mm  
Width ..... 170mm (excluding connectors)  
Depth ..... 35mm  
Weight ..... 750grams

### **Mounting Details**

The AMG unit is supplied with a clip-on mounting bracket which should be attached to a panel or wall using 2 off 4.0mm screws. The unit is clipped into the mounting bracket, and is then held firmly in position.

### **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**

---

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**

---

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.

Phone	+44 (0) 1767 600 777
Technical Support	+44 (0) 1767 604 491
Email	techsupport@amgsystems.com

This page is intentionally blank.