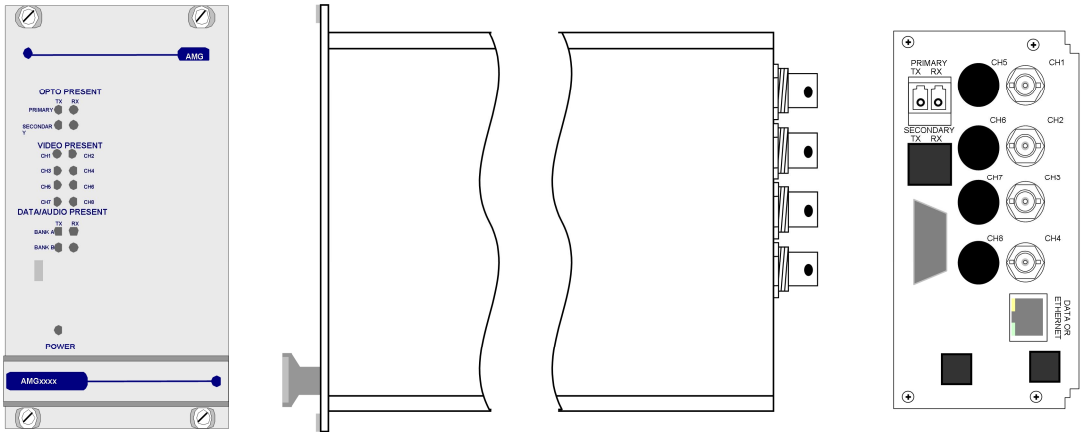
4 Channel Video Receive Unit with up to 2 Bi-directional Data and Audio Channels for a Multimode Fibre Link



The **AMG4644BxR-SF** is a rackmount four channel video receive unit designed to receive 4 video signals and transmit and receive up to 2 data or audio signals over one Multimode fibre.

The **AMG4644BxR-SF** is designed to plug into an AMG2009 or AMG2015 subrack, which in turn fits into a 19" rack system.

The **AMG4644BxR-SF** is designed to operate with **AMG4643Bx-SF** or rackmount equivalent **AMG4643BxR-SF** four channel video transmit unit in a point to point configuration.

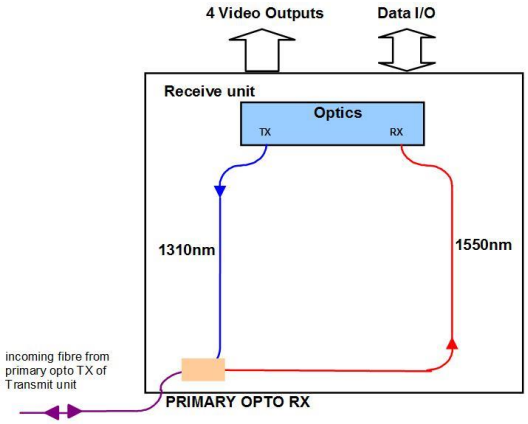
Contents

Introduction

Unit Functional Schematic

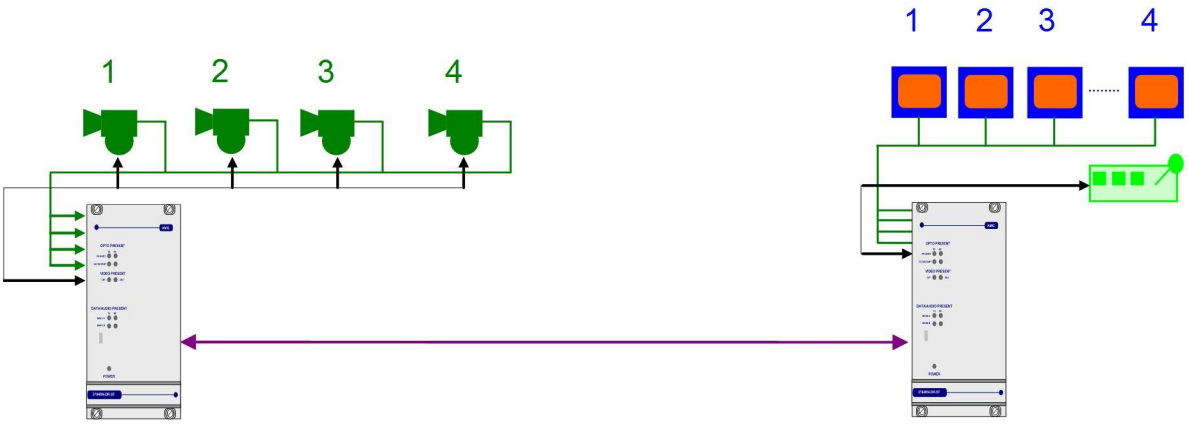
The **AMG4644BxR-SF** drops off up to 4 video and 2 data or audio signals transmitted from the **AMG4643Bx-SF**.

It also transmits up to 2 data or audio channels to the **AMG4643Bx-SF**.



Optical Connection

The **AMG4644BxR-SF** is connected as illustrated below when used with an **AMG4643BxR-SF** 4-channel transmit unit acting as a point to point system.



Connections

Video Output Connections

No. of channels..... 4
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 IN

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

Primary Optical Sensitivity..... -22dBm
Receive Wavelength..... 1550nm

Optical Fibre ..... Multimode 50/125 or 62.5/125**

**Note: the transmission distance is limited by the bandwidth of the Multimode optical fibre. The optical data rate is 1.25Gbits/s. The maximum bandwidth specification at this data rate for Multimode fibre is 2km. although in most cases the units will operate successfully over longer fibre lengths. It is advisable however for distances greater than 2km, to have the optical fibre tested.

Power Connection

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

Data and Audio Channel Connections

Total No. of Data Channels..... 2 channels

DATA CHANNEL A

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

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

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

DATA CHANNEL B

Data Channel B ..... 1 channel
Data Connector..... RJ45
Channel B Interface ..... Defined by data/audio interface daughter board fitted into Slot 1 on main board and indicated by the 'x' in the AMG partno.

Data and Audio Channel Configuration

Data and Audio Channel Configuration

The **AMG4644Bx-SF** and rackmount equivalent **AMG4644BxR-SF** sends and receives data to/from Channel A and Channel B. Channel A is a single data interface selectable by the user with the slide switch on the rear panel. Channel B carries a second channel of data / audio, the function and physical interface being determined by the type of daughter board fitted to the B Channel data slot.

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 120q 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 5kq . If the third party bias resistors are less the 750q 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.

Data / Audio Channel B Configuration

Data Channel B is operational when fitted with the appropriate daughter board.

Data Interface Daughter Board Options

The data interface daughter board options are as follows:

Option Code 'x'	Part No.	Description
0	X12542	4 Wire Audio Interface Daughter Board
1	X04057	RS422/485 Data Interface Daughter Board
2	X04049	RS232 Data Interface Daughter Board
3	X04058	20mA Current Loop Data Interface Daughter Board
4	X12579	TTL Data Interface Daughter Board
5	X12578	Contact Closure Data Interface Daughter Board
6	X13038	FTT10A Echelon Lonworks Data Interface Daughter Board

Audio / Data Interface Connections RJ45 - Channel B

RJ45 Channel B low speed data/audio interface connections:

RJ45 Pin No.	Channel B Data / Audio Daughter Board	Cat 5/6 Cable Colour Code T568B
1		**White/orange**
2		**Orange**
3	OUT + (A)	**White/green**
4	IN - (B)	**Blue**
5	IN + (A)	**White/blue**
6	OUT - (B)	**Green**
7		**White/brown**
8		**Brown**

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

Front Panel Indicators

Power LED

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

Video Output LED's

Video Present CH1-4	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 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

Channel B (When RS232 data daughter board fitted)

Data Present TX	Green	-	logic zero (+V) present on IN+
	Red	-	logic transitions present on IN+
	Off	-	logic one (-V) present on IN+

This represents the data signals being transmitted on the optical fibre

Data Present RX.....	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

Channel B (When RS485 / RS422 data daughter board fitted)

Data Present TX	Green	-	logic zero (+V, -V) present on IN+, IN-
	Red	-	logic transitions present on IN+, IN-
	Off	-	logic one (-V, +V) present on IN+, IN-

This represents the data signals being transmitted on the optical fibre

Data Present RX	Green	-	logic zero (+V, -V) present on OUT+, OUT-
	Red	-	logic transitions present on OUT+, OUT-
	Off	-	logic one (-V , +V) present on OUT+, OUT-

This represents the data signals being received on the optical fibre

Channel B (When audio daughter board fitted)

Audio Present TX	Green	-	audio present > -40dBm
	Red	-	audio present > 0dBm (overload at +6dBm)
	Off	-	audio not present or < -40dBm

This represents the audio signals being transmitted on the optical fibre

Audio Present RX	Green	-	audio present > -40dBm
	Red	-	audio present > 0dBm (overload at +6dBm)
	Off	-	audio not present or < -40dBm

This represents the audio signals being received from the optical fibre.

Physical Information

Dimensions

Height ..... 3U Plug-in
Width 14HP
Depth ..... 170mm excluding connectors
Weight 750grams

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

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.

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