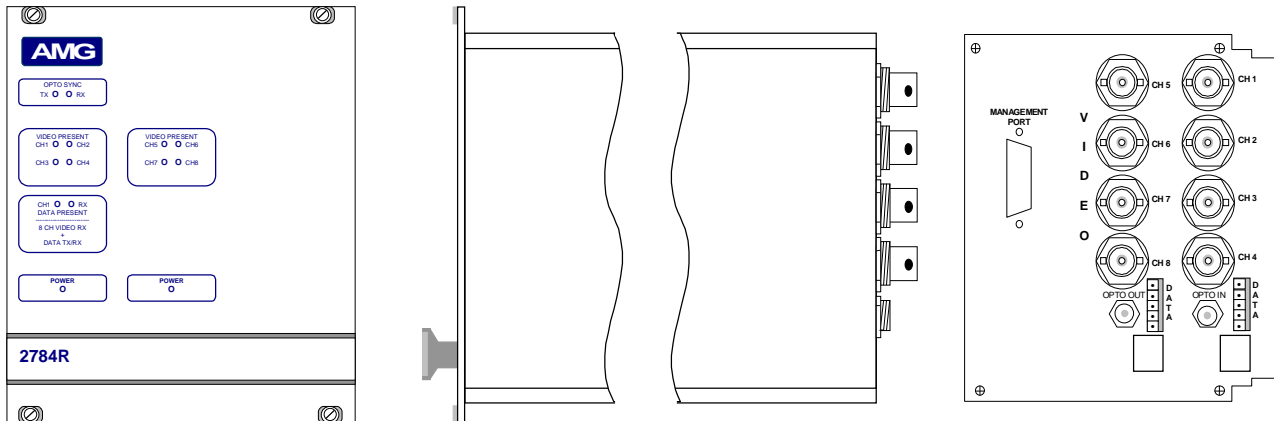




# AMG2784R Instruction Manual

## *Eight Channel Video Receive Unit with Bi-directional Data on a single fibre ring*



**AMG2784R** is a rackmount eight channel video receive unit designed to ‘drop off’ eight video signals from a single optical fibre ring. It also provides a single RS485/RS422 bi-directional data channel to the video insert outstations. The **AMG2784R** is designed to plug into an **AMG2000** or an **AMG2005** subrack which in turn fits into a 19” rack system.

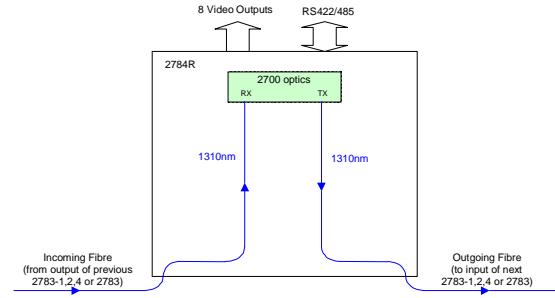
The **AMG2784R** is designed to operate with **AMG2783-1**, **AMG2783-2**, **AMG2783-4** and **AMG2784**, single channel, dual channel, 4 channel and 8 channel video and bi-directional data insert units respectively. Each receiver will ‘drop off’ up to eight video channels which are being transmitted around the single fibre ring. When used with an 8-channel transmitter the ring becomes a point to point system.

<b>Index</b>	<b>Page No.</b>
<b>Introduction</b> .....	<b>2</b>
Unit Functional Schematic .....	2
Optical System Connection .....	2
<b>Connections</b> .....	<b>3</b>
Video Output connections .....	3
Optical Connections .....	3
Power Connections .....	3
Data Connections .....	3
<b>Indicators</b> .....	<b>4</b>
<b>Physical Information</b> .....	<b>5</b>
Dimensions .....	5
Mounting Details .....	5
<b>Configuration of the RS422/RS485 Data Channel</b> .....	<b>5</b>
<b>SW1 Switch Settings</b> .....	<b>6</b>
<b>Removal from the Case</b> .....	<b>6</b>
<b>Safety</b> .....	<b>7</b>
<b>Maintenance and Repair</b> .....	<b>7</b>

## Introduction

### Unit Functional Schematic

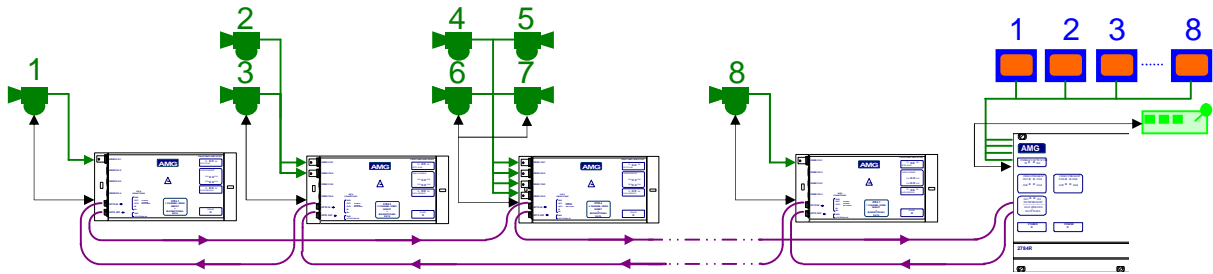
The **AMG2784R** receives a 1310nm optical signal and drops of up to 8 video signals and a combined data signal transmitted from **AMG2783-n** insert units. It transmits out a single data channel back to the insert units on a 1310nm optical signal.



### Optical System Connection

The **AMG2784R** units are designed to be connected in a ring or point to point system.

In a ring system **AMG2783-1**, **AMG2783-2** and **AMG2783-4**, single dual and four channel insert units respectively can be combined to make up an 8 channel video transmission system as illustrated below. As each unit regenerates the optical signal, the optical dynamic range between each optically connected node is 17dB.



Note that where necessary repeaters can be added at nodes to increase the average distance between nodes.

The **AMG2784R** is connected as illustrated below when used with an **AMG2783R** 8 channel insert unit.



## Connections

### Video Output Connections

Connector .....	75 ohm BNC Socket.
Output Impedance .....	75 ohm terminated.
Output Level .....	1 volt p-p nominal
Frequency Response .....	10Hz to 5.75MHz min.
No of output channels .....	8

### Optical Connections

#### OPTO OUT

Connector .....	FC/PC
Optical Launch Power .....	-5dBm
Wavelength.....	1310nm

#### OPTO IN

Connector .....	FC/PC
Optical Sensitivity .....	-22dBm
Wavelength.....	1310nm

### Power Connection

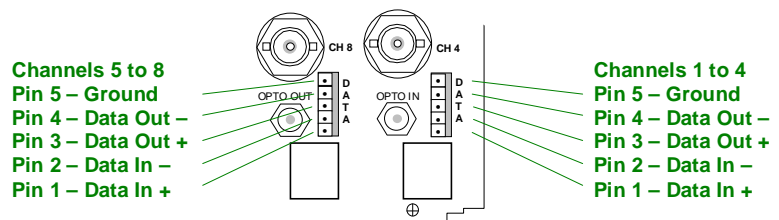
Power supply .....	from plug in connection on the 2000 or 2005 subrack
Power consumption .....	20 Watts max.

### Data Connections

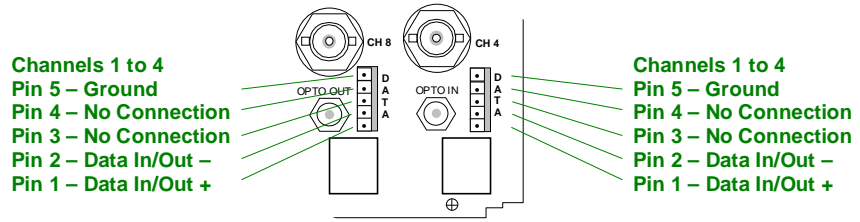
Data Connector.....	5 way removable spring terminal connector (2.5mm spacing) Manufacturers Part No. Phoenix/Combicom FK-MC-0.5/5-ST-2.5 AMG Part No G15098-00
---------------------	--

Data Channels ..... 2 channels, one associated with video channels 1 to 4 and the second associated with video channels 5 to 8. The data into the AMG2784R is broadcast out to the respective insert units. The return data from the insert units is logically OR'ed together to provide two data return signals respectively. When the 2784R is used with a management card, as in a 2784RN, these two data channels are combined and presented on either rear panel connector. See the instruction sheet for the 2700 Management card for how to separate out the data channels in the two banks.

Connections RS422 4 wire..... See schematic



Connections RS485 4 wire..... See schematic



Protocol ..... RS485 2wire (switch selectable SW2)  
 RS422 4 wire Bus'ed or point to point (switch selectable SW2)  
 See below for **Configuration of the RS485 / RS422 data channel** and description of tristate operation

**Indicators**

Power .....	Green	– unit powered
	Off	– no power applied to unit
Opto Sync TX .....	Green	- optical channel transmitting
	Off	- optical channel not transmitting
Opto Sync RX.....	Green	- optical channel receiving
	Off	- optical channel not receiving
Video Present CH1-8 .....	Green	– video signal present on video output BNC
	Red/Green	- Channel present , no video
	Red	- Fibre Loop Present, no TX selected on this channel
	Off	– no Fibre Loop Present thus no video present on video channel input BNC
Data Present TX .....	Green	– logic one present on the data input
	Red	– logic zero present on the data input
	Off	– tri-state off or no connection on the data input

This represents the data signals being transmitted on the optical fibre

Data Present RX.....	Green	– logic one present on the corresponding data output
	Red	– logic zero present on the data output
	Off	– tri-state off on the data output

This represents the data signals being received on the optical fibre

**Physical Information**

**Dimensions**

Height.....	3U Plug-in
Width.....	21HP
Depth.....	170mm excluding connectors
Weight.....	1100grams

**Mounting Details**

The unit is designed to be mounted within a 2000 or 2005 Subrack on standard card guides. Note the AMG standard racks are supplied with guide rails every 7HP. In order to fit this unit in the subrack, 2 sets of card guides have to be removed by pulling gently on the card guides.

The 2000 series subrack is fitted with a 50 watt power supply. A maximum of 2 units may be fitted into one 2000 series subrack.

The 2005 series subrack is fitted with a 100 watt power supply. A maximum of 3 units may be fitted into one 2005 series subrack limited by the 70HP rack space.

### **Configuration of the RS422/485 Data Channel**

The RS422/485 data channel can operate in two modes that are set by SW2 on the main PCB. (See below for **removal from the case** and access to SW2)

- Mode 1 – RS485 two wire half duplex transmission.
- Mode 2 – RS422 four wire full duplex transmission. In this mode the RS422 output will transmit a tristate condition as well as a logic high and a logic low for systems which require bus-ing of the RS422 four-wire connection.

<b>MODE</b>	<b>Configuration Details</b>	<b>SW2 position 1</b>	<b>SW2 position 2</b>	<b>SW2 position 3</b>	<b>SW2 position 4</b>
1	RS-485 2 wire BUS systems	OFF	ON	ON	ON
2	RS-422 4 wire Point-to-Point - and RS-422 BUS system	OFF	OFF	OFF	OFF

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 500mV positive or negative will be detected as a tristate condition. A level above 500mV 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 120ohms 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 AMG2700 equipment detects a tri-state condition, then these resistors should have a value above 1kohm.

## SW1 Switch Settings

All SW1 switch settings are set at the factory as follows:  
Channels 1-4 Card

Switch Position	Description	Setting
1	Video channel configuration	OFF
2	Video channel configuration	OFF
3	Video channel configuration	OFF
4	Primary / Secondary Board Setting	ON
5	Dual Redundant / Not dual redundant	OFF
6	Master	ON
7	Full Scale Calibration Output	OFF
8	On board data / Separate data card	ON

Channels 5-8 Card

Switch Position	Description	Setting
1	Video channel configuration	OFF
2	Video channel configuration	OFF
3	Video channel configuration	ON
4	Primary / Secondary Board Setting	OFF
5	Dual Redundant / Not dual redundant	OFF
6	Master	ON
7	Full Scale Calibration Output	OFF
8	On board data / Separate data card	ON

## Removal from the Case

**Note:** - The 2700 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.

In order to remove the case (to access SW1 and SW2)

- 1.1. Loosen and remove the four screws on the top and bottom of the unit's rear panel.
- 1.2. Slide the PCB assembly connected to the rear panel out of the case.
- 1.3. Ensure that the optical fibre is not trapped.

SW1 and SW2 can be found on the bottom right hand corner of each board and are labelled, close to the rear panel. The switch position are labelled on the switch, switch position 1 is always the furthest from the edge of the PCB.

When re-inserting the main PCB into the housing take care not to trap the optical fibre or the board interconnection cables.

Fasten the rear panel with the screws.

## **Safety**

The 2700 series of products uses a Class 1 laser system 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 the optical fibres systems see EN 60825-2:2000 or your local safety officer.

## **Maintenance and Repair**

There are no user serviceable parts within the AMG2700 products.

In case of problem or failure contact your local support centre or AMG Systems Ltd, Technical Support Department on tel. +44 (0) 1767 600777.

See unit data sheet for full specification.