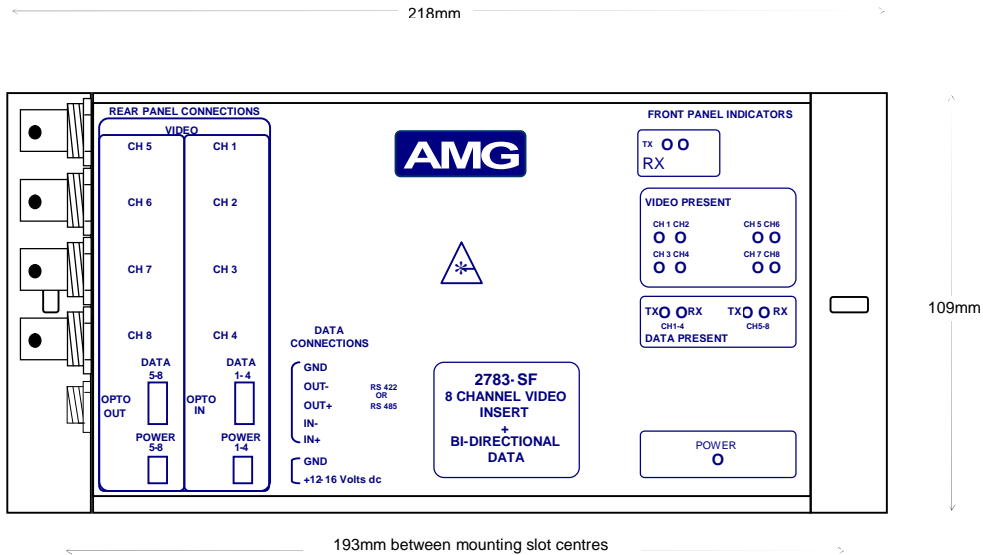




# AMG2783-SF Instruction Manual

## Single Fibre Eight Channel Video TX Unit with Bi-directional Data



The **AMG2783-SF** is a standalone eight channel video insert unit designed to transmit eight video signals. It also provides two RS485/RS422.or RS232 bi-directional data channels. It is designed to be powered from an **AMG2002** power supply.

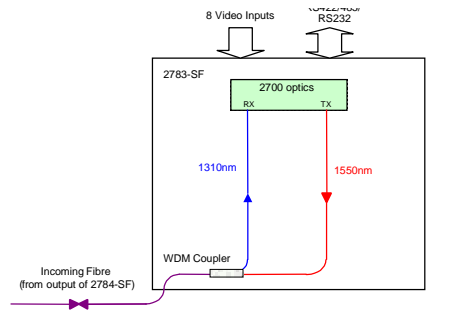
The **AMG2783-SF** is designed to operate with the **AMG2784R-SF** or **AMG2784-SF** eight channel video receivers and data transceiver requiring one fibre for operation of the video and bi-directional data.

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## Introduction

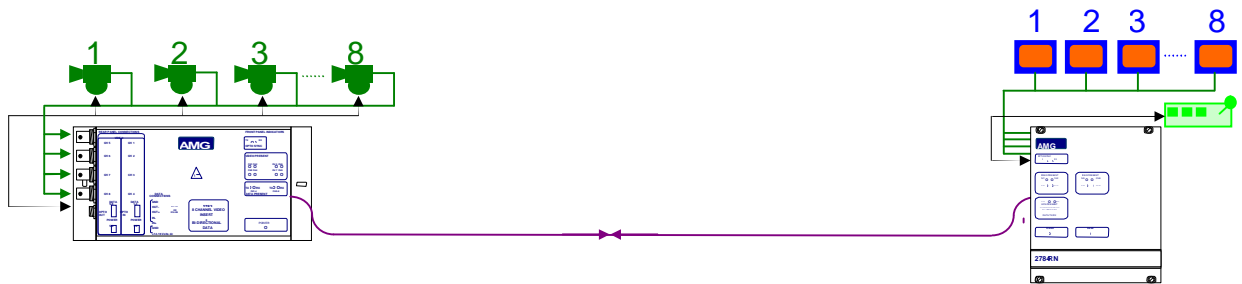
### Unit Functional Schematic

The **AMG2783-SF** receives a 1310nm optical signal and drops of data transmitted from an **AMG2784-SF** receiver. It then inserts eight video and two data signals onto the outgoing 1550nm optical signal. The video signals are inserted on the 8 channels available on the optical fibre.



### Optical System Connection

The **AMG2783-SF** is connected as illustrated below when used with an **AMG2784R-SF** 8 channel receiver.



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

## Connections

### Video Input Connection

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

### Optical Connections

#### OPTO OUT

Connector ..... FC/PC  
 Optical Launch Power ..... -5dBm  
 Wavelength ..... 1550nm

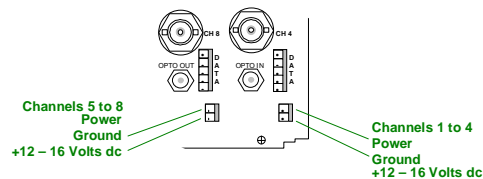
#### OPTO IN

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

**Power Connection**

Connector .....removable screw terminal connector (3.5mm spacing)  
 Manufacturers Part No. Phoenix/Combicom MC1-5/2-ST-3.5  
 AMG Part No.G00047-00  
 Power requirement .....12 volts to 16 volt DC @  
 700mA (1 amp turn on  
 current)

Connections..... See schematic  
 +12 – 16 Volts on lower pin  
 0 Volts on upper pin



**Data Connections**

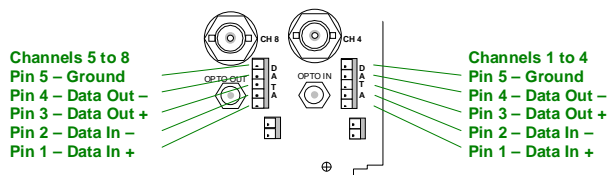
Number of Channels..... Two independent data channels, one associated with video channels 1-4 and another associated with video channels 5-8.

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

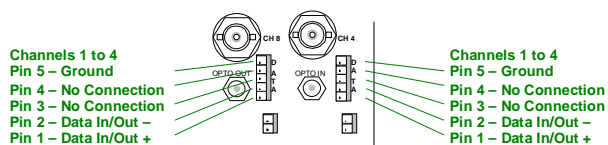
SW1 used to select between RS232 and RS485/422, SW2 is used to select between RS422 and RS485.

**NOTE: The unit is shipped from the factory as RS485 unless otherwise requested.**

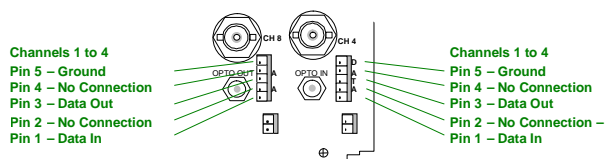
Connections RS422 4 wire ..... See schematic



Connections RS485 4 wire ..... See schematic



Connections RS232 ..... See schematic



Protocol..... RS232  
 SW1 switch position 9 on, switch position 10 on  
 SW2 all off

RS485 2wire  
 SW1 switch position 9 off, switch position 10 off  
 SW2 see below

RS422 4 wire Bus'ed or point to point  
 SW1 switch position 9 off, switch position 10 off  
 SW2 see below

See below for **Configuration of the RS485 / RS422 data channel** and description of tristate operation

Each of the two data channels can be set up independently.

### **Indicators**

Power.....	Green Off	– unit powered – no power applied to unit
Opto Sync TX .....	Green Off	- optical channel transmitting - optical channel not transmitting
Opto Sync RX .....	Green Off	- optical channel receiving - optical channel not receiving
Video Present CH1 .....	Green Off	– video signal present on video CH1 input BNC – no video present on video CH1 input BNC
Video Present CH2 .....	Green Off	– video signal present on video CH2 input BNC – no video present on video CH2 input BNC
Video Present CH3 .....	Green Off	– video signal present on video CH3 input BNC – no video present on video CH3 input BNC
Video Present CH4 .....	Green Off	– video signal present on video CH4 input BNC – no video present on video CH4 input BNC
Video Present CH5 .....	Green Off	– video signal present on video CH5 input BNC – no video present on video CH5 input BNC
Video Present CH6 .....	Green Off	– video signal present on video CH6 input BNC – no video present on video CH6 input BNC
Video Present CH7 .....	Green Off	– video signal present on video CH7 input BNC – no video present on video CH7 input BNC
Video Present CH8 .....	Green Off	– video signal present on video CH8 input BNC – no video present on video CH8 input BNC
Data Present TX .....	Green Red Off	– logic one present on the data input – logic zero present on the data input – 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 output Red Off	– logic one present on the corresponding data – logic zero present on the data output – tri-state off on the data output
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This represents the data signals being received on the optical fibre

### **Physical Information**

#### **Dimensions**

Height .....	109mm
Width.....	218mm
Depth .....	120mm
Weight.....	800grams

#### **Mounting Details**

The unit is designed to mount into a panel via the two mounting slots of 4.5mm x 10mm.

## 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 of the PCB** 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 logic high and logic low for systems which require bus-ing of the RS422 four-wire connection.

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

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 a tri-state condition is detected by the AMG2700 equipment, 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	Not Used	OFF
7	Not Used	OFF
8	On board data / Separate data card	ON
9	RS232 or RS422/485	OFF for RS485/422
10	RS232 or RS422/485	OFF for RS485/422

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	Not Used	OFF
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8	On board data / Separate data card	ON
9	RS232 or RS422/485	OFF for RS485/422
10	RS232 or RS422/485	OFF for RS485/422

### **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 stamps) 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.

However 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**

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.