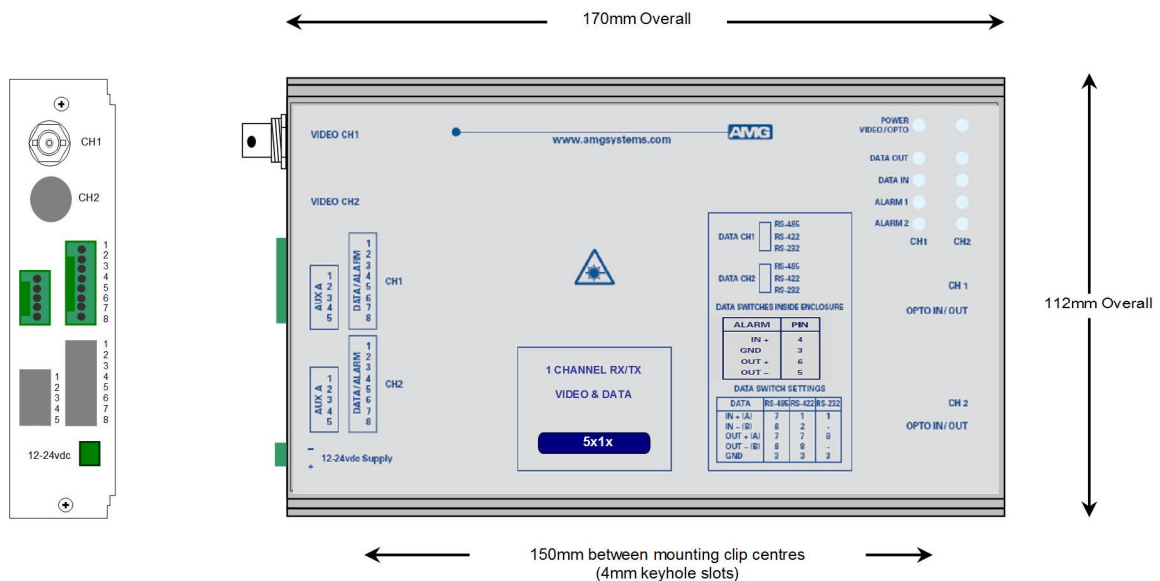




# AMG5613A3 Instruction Manual

## Single Channel Video Transmit Unit with two Bi-directional Data Channels and one Bi-directional Alarm Channel for a Multimode Fibre Link



The **AMG5613A3** is a standalone one channel video transmit unit designed to transmit 1 video signal and transmit & receive 1 RS485/RS232/RS422 data signal and 1 20mA current loop data signal plus 1 Bi-directional alarm over a single Multimode optical fibre.

The **AMG5613A3** is designed to be powered using an **AMG2001** standalone power supply.

The **AMG5613A3** is designed to operate with an **AMG5614A3** / **AMG5614A3R** single channel receive unit in a point to point configuration. The R suffix in the partno. indicates a rackmount configuration.

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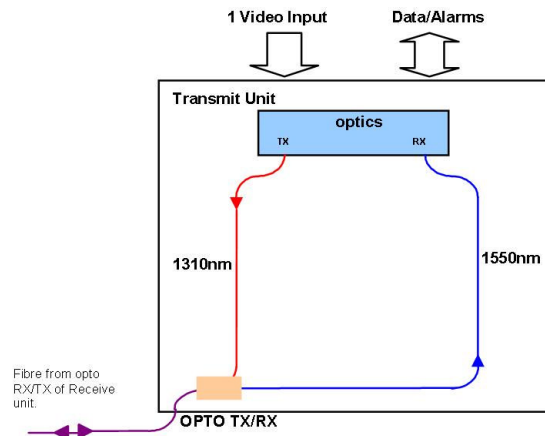
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## Introduction

### Unit Functional Schematic

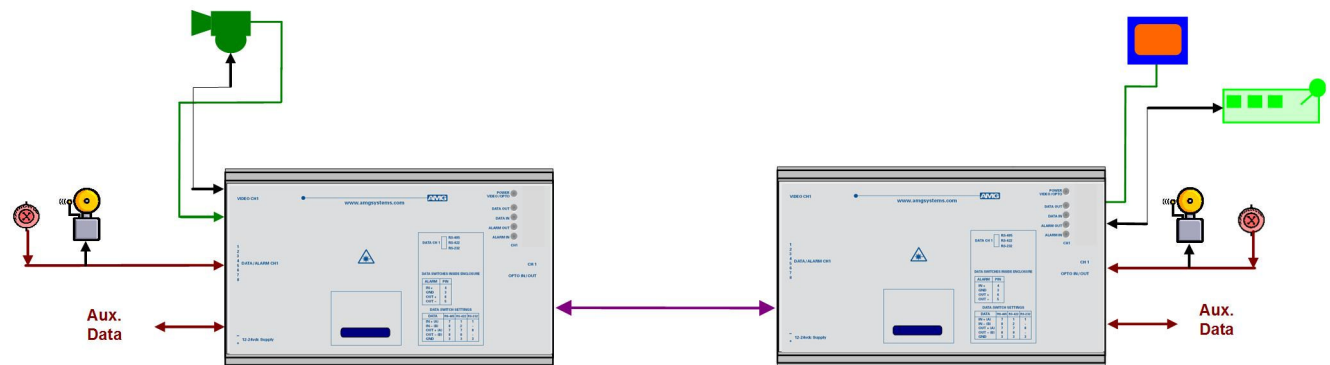
The **AMG5613A3** transmits 1 video, 2 data, and 1 Bi-directional alarm signal to the **AMG5614A3** receive unit.

It also receives 2 data and 1 Bi-directional alarm signal transmitted from the **AMG5614A3**.



### Optical Connection

The **AMG5613A3** connections are illustrated in the following example which shows an **AMG5613A3** transmit unit together with an **AMG5614A3R** rackmount receive unit configured as a single channel point to point system.



## Connections

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### Video Input Connections

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

### Optical Connections Multimode

No. of Optical Connections ..... 1 per video channel  
Optical Fibre ..... Multimode 50/125 or 62.5/125\*\*  
Connector ..... SC/PC

Minimum Optical Launch Power ..... -10dBm  
Transmit Wavelength..... 1310nm

Minimum Optical Sensitivity..... -30dBm  
Receive Wavelength..... 1510nm

Minimum Optical Dynamic Range ..... 20dB.

\*\*Note: the transmission distance is limited by the bandwidth of the Multimode optical fibre. The optical data rate is 155Mbps/s, which may restrict operation to a maximum fibre length of 7km, although in most cases the units will operate successfully over longer fibre lengths. It is advisable however for distances greater than 7km, to have the optical fibre tested.

### Power Connection

Connector Type ..... Removable 2-pin, 3.81mm, Screw Terminal  
Connector Partno..... Phoenix 1803578  
Supply Voltage..... +12 to +15 Volts DC  
Maximum Power ..... 1.5 Watts

### Data and Alarm Channel Connections

No. of Integral Data Channels ..... 1 Selectable RS-232 / RS-422 / RS-485  
No. of Aux. Data Channels ..... 1 20mA  
No. of Alarms ..... 1

Connectors ..... Removable 5-pin, 8-pin, 2.5mm, Spring Terminal  
Connector Partnos..... Phoenix 1881354, 1881383

Integral Data Interfaces RS-232, RS-422 or R-S485. Selected by slide switch inside enclosure. \*See appropriate section on how to remove the case for access to the data switches

RS-485 – Switch Position - Top  
RS-422 – Switch Position - Middle  
RS-232 – Switch Position - Bottom

Alarm Input ..... Contact Closure pull-up is 330R to +3V3  
Alarm Output..... Solid-state Relay, maximum 150mA at 125Vac/dc, Ron < 6.5Ω

## Front Panel Indicators

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### Power LED

Power / Video / Opto .....	Green	-	Video present & opto sync.
	R/G	-	Opto sync. but no video present.
	G/R	-	Video present but no opto sync.
	Red	-	No opto sync.
	Off	-	No power applied to unit

### Low Speed Data LEDs

Data Present IN (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 IN (RS232) .....	Green	-	logic zero (+V) present on input IN+
	Red	-	logic transitions present on input IN+
	Off	-	logic one (-V) present on input IN+

IN corresponds to the data signals being transmitted onto the optical fibre.

Data Present OUT (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 OUT (RS232) .....	Green	-	logic zero (+V) present on OUT+
	Red	-	logic transitions present on OUT+
	Off	-	logic one (-V) present on OUT+

OUT corresponds to the data signals being received from the optical fibre.

### Auxiliary Data LEDs

Data type depends on AMG system: RS-232, RS-422, RS-485, 20mA,TTL, or FTT-10A

Data Present IN .....	Green	-	Data channel present but not transmitting
	R/G	-	Data channel transmitting
	Off	-	Data channel not present or no connection

IN corresponds to the data signals being transmitted onto the optical fibre.

Data Present OUT .....	Green	-	Data channel present but not transmitting
	R/G	-	Data channel receiving
	Off	-	Data channel not present or no connection

OUT corresponds to the data signals being received from the optical fibre.

### Alarm LEDs

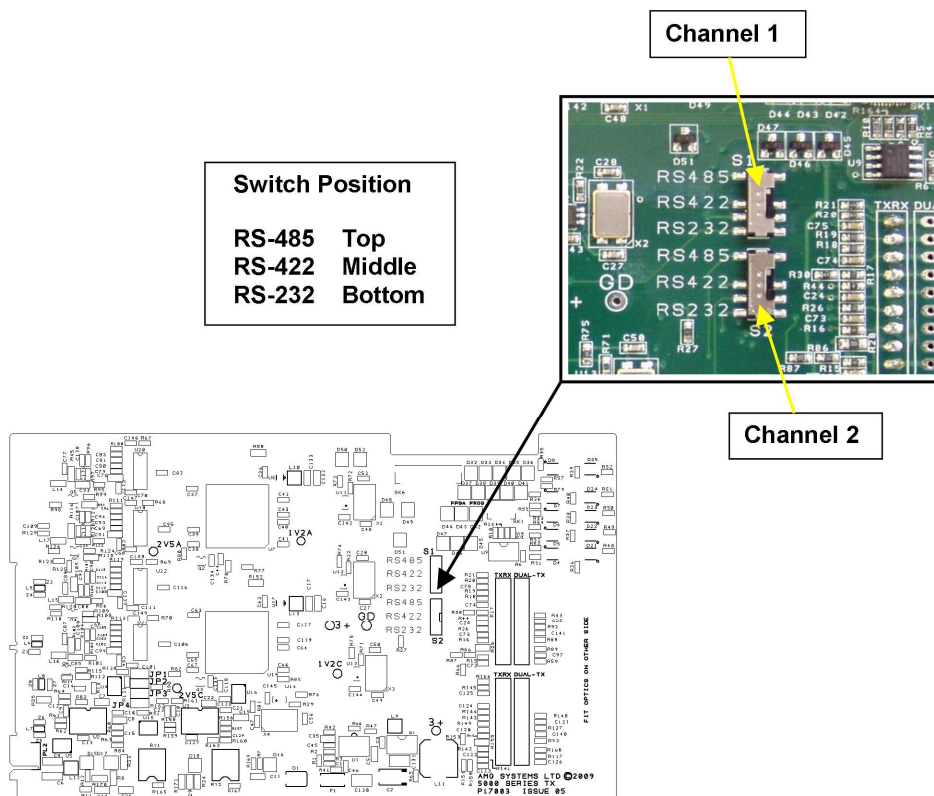
ALARM IN.....	Green	-	Alarm ON / Contacts closed.
	Off	-	Alarm OFF / Contacts open.

ALARM OUT.....	Green	-	Alarm ON / Contacts closed.
	Off	-	Alarm OFF / Contacts open.

## Data and Alarm Channel Configuration

The **AMG5613A3** transmit unit sends and receives data to/from an **AMG5614A3** or rackmount equivalent **AMG5614A3R** receive unit. The physical data interface RS-485, RS-422 or RS-232 is selectable by the user with the slide switch mounted on the main PCB inside the enclosure.

One bi-directional alarm is also provided. The alarm input is typically connected to a contact closure switch. The alarm output can receive an on/off signal from an **AMG5614A3** and is typically used to convey contact closure status.



### Data Channel Configuration

Each low speed data channel provides an RS-232, RS-422 (full duplex, four wire) or RS-485 (half duplex, two wire) interface defined by the corresponding mode switch inside the enclosure. Every data channel as shipped from the factory is set up for RS-485 operation unless otherwise requested.

The data input for both the RS-485 and the RS-422 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 0 respectively. It is important therefore to terminate the RS-485 bus or the RS-422 input bus using 120Ω if a pre-bias is present on the RS-485 or RS-422 bus.

A large number of third party equipment manufacturers apply a pre-bias on their RS-485 bus. This pre-bias is applied by pulling one arm of the RS-485 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 than the 750Ω the bus can be multiple terminated as required to ensure that a tri-state level is detected.

The system detects a tri-state input condition on the data channel bus when in RS-485 or RS-422 mode.

### Data Interface Connections

Connector Pin No.	Data Channel		
	RS-485 [switch top]	RS-422 [switch middle]	RS-232 [switch bottom]
1		IN + (A)	IN
2		IN - (B)	
3	GND	GND	GND
4			
5			
6			
7	IN/OUT + (A)	OUT + (A)	
8	IN/OUT - (B)	OUT - (B)	OUT

Note: (A) or (B) in brackets in the above table refers to RS-485 / RS-422 data specification.

### Alarm Channel Configuration

The **AMG5613A3** provides 1 bi-directional alarm output / contact closure input per video channel.

The alarm input is typically connected to a contact closure switch. An ALARM IN+ input incorporates a 330R pull-up resistor to the internal +3V3 supply.

The alarm output can receive an on/off signal from an **AMG5614A3** and is typically used to convey contact closure status. An alarm output uses a solid-state relay, with a maximum load current of 150mA at 125Vac/dc and  $R_{on} < 6.5\Omega$ .

### Alarm Interface Connections

Connector Pin No.	Alarm Interface	
	Alarm IN	Alarm OUT
1		
2		
3	GND	
4	ALARM IN +	
5		ALARM OUT -
6		ALARM OUT +
7		
8		

## ***Auxiliary 20mA Current Loop Data Channel Configuration***

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The **AMG5613A3** transmit unit sends and receives 20mA data to/from an **AMG5614A3** or rackmount equivalent **AMG5614A3R** receive unit.

The auxiliary data channel is provided by an X04058 daughter board which provides one bi-directional 20ma current loop data channel over 4-wires.

The current loop will detect a 20mA current signal input through the IN+, I- terminals. It requires an active signal source, and will generate a matching 20mA signal at the other end of the link. The input IN+/IN- is isolated from GND, the output OUT- is connected to GND.

The maximum bit rate available is 2400bps.

The X04058 20mA current loop daughter board is pre-configured during manufacture to operate in Active Transmit / Passive Receive mode. There are no user adjustable features on this device.

### ***Data Interface Connections***

<b>Connector Pin No</b>	<b>20mA current loop</b>
<b>1</b>	OUT +
<b>2</b>	OUT -
<b>3</b>	GND
<b>4</b>	IN +
<b>5</b>	IN -



## **Physical Information**

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### **Dimensions**

Height ..... 112mm  
Width ..... 170mm (excluding connectors)  
Depth ..... 35mm  
Weight ..... 600grams

### **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, see diagram on page 1 for dimensions. The unit is clipped into the mounting bracket, and is then held firmly in position.

## **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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