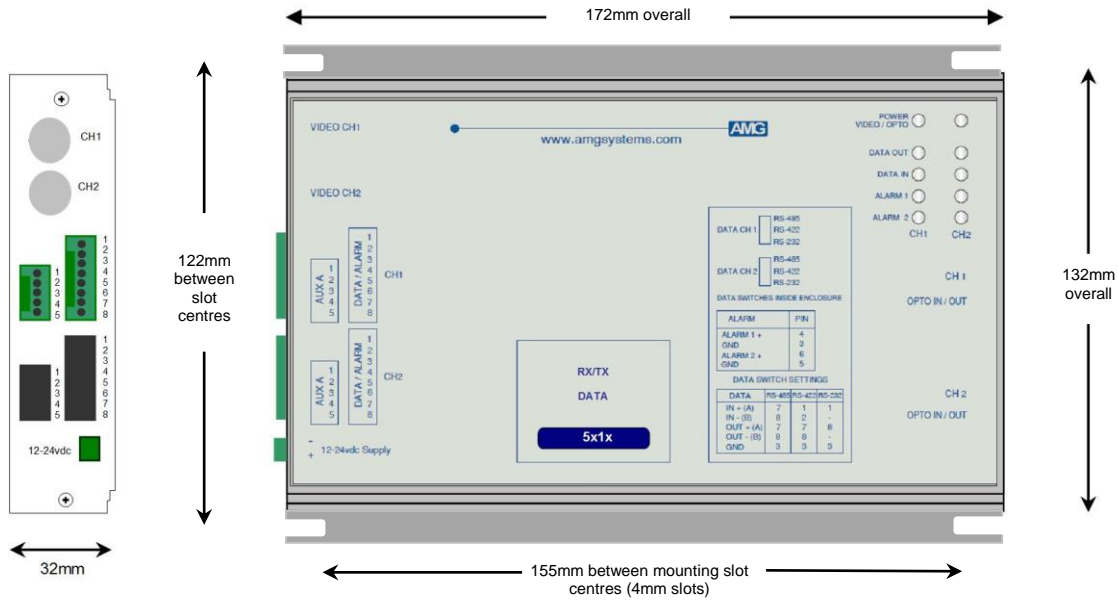




# AMG5514A9-DF-MP Instruction Manual

## Receive Unit with one Bi-directional Data Channel, one Bi-directional Alarm and one Bi-directional Audio Channel for a Singlemode Fibre Link



The **AMG5514A9-DF-MP** is a standalone receive unit designed to transmit & receive one Bi-directional alarm, one Bi-directional audio channel and one Bi-directional data signal over two Singlemode optical fibres.

The **AMG5514A9-DF-MP** is designed to be powered using an **AMG2001** standalone power supply.

The **AMG5514A9-DF-MP** is designed to operate with an **AMG5513A9-DF-MP / AMG5513A9R-DF** receive unit in a point to point configuration. The R suffix in the part no. indicates a rackmount version.

# Contents

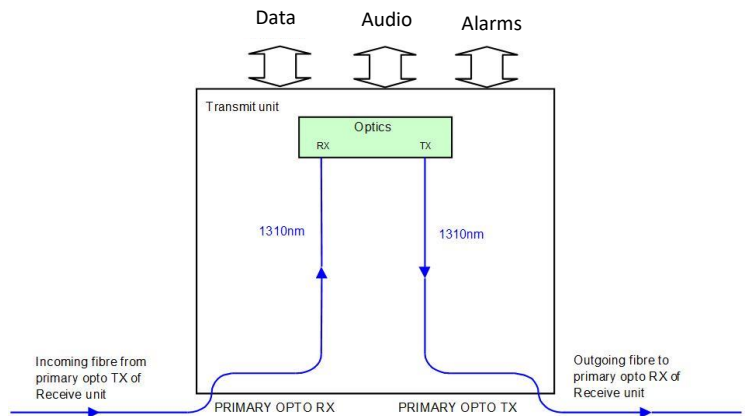
<b>Introduction</b>	<b>3</b>
Unit Functional Schematic.....	3
Optical Connection .....	3
<b>Connections</b>	<b>4</b>
Optical Connections Singlemode .....	4
Power Connection .....	4
Data and Alarm Channel Connections .....	4
Audio Connections .....	4
<b>Front Panel Indicators</b>	<b>6</b>
Power / Opto LED.....	6
Low Speed Data LEDs .....	6
Alarm LEDs.....	6
Audio LEDs.....	6
<b>Data and Alarm Channel Configuration</b>	<b>7</b>
Data Channel Configuration .....	7
Data Interface Connections .....	8
Alarm Channel Configuration .....	8
Alarm Interface Connections .....	8
Audio Channel Configuration.....	8
Audio Interface Connections .....	9
<b>Physical Information</b>	<b>10</b>
Dimensions .....	10
Mounting Details.....	10
<b>Safety</b>	<b>10</b>
<b>Maintenance and Repair</b>	<b>10</b>

## Introduction

### Unit Functional Schematic

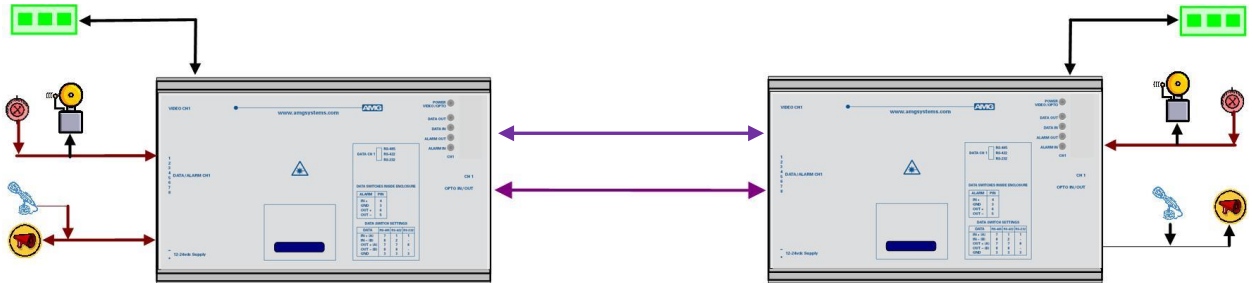
The **AMG5514A9-DF-MP** transmits 1 data, 1 Bi-directional alarm and 1 audio signal to the **AMG5513A9-DF-MP** receive unit.

It also receives 1 data, 1 Bi-directional alarm and 1 audio signal transmitted from the **AMG5513A9-DF-MP**.



### Optical Connection

The **AMG5514A9-DF-MP** connections are illustrated in the following example which shows an **AMG5514A9-DF-MP** transmit unit together with an **AMG5513A9-DF-MP** standalone receive unit configured as a single channel point to point system.



## Connections

---

### **Optical Connections Singlemode**

No. of Optical Connections .....2  
Optical Fibre .....Singlemode  
Connector .....SC/PC

Primary Optical Launch Power .....-20dBm  
Transmit Wavelength..... 1310nm

Primary Optical Sensitivity .....-35dBm  
Receive Wavelength..... 1310nm

Minimum Optical Dynamic Range .....15dB.

### **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 Data Channels .....1  
No. of Alarms .....1

Connectors .....Removable 8-pin, 2.5mm, Screw Terminal  
Connector Partno.....Phoenix 1881383

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

### **Audio Connections**

No. of Audio Channels.....1

Connectors .....Removable 5-pin, 2.5mm, Spring Terminal  
Connector Part no.....Phoenix 1881354

Input level .....0dBm  
Input overload level.....+6dBm

Input impedance .....10kΩ / 600Ω  
Output impedance .....600Ω

Frequency response .....10Hz to 20KHz

Audio Input impedance is selected by removable jumper JP1 or JP2 on Audio Expansion board inside enclosure. \*See appropriate section on how to remove the case for access to the data/audio switches.

1-2 – High Impedance 10k $\Omega$

2-3 – Balanced 600 $\Omega$

## Front Panel Indicators

---

### Power / Opto LED

Power / Opto .....	Green	-	Unit powered, Opto sync.
	Red	-	Unit powered, 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.

### 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.

### Audio LEDs

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

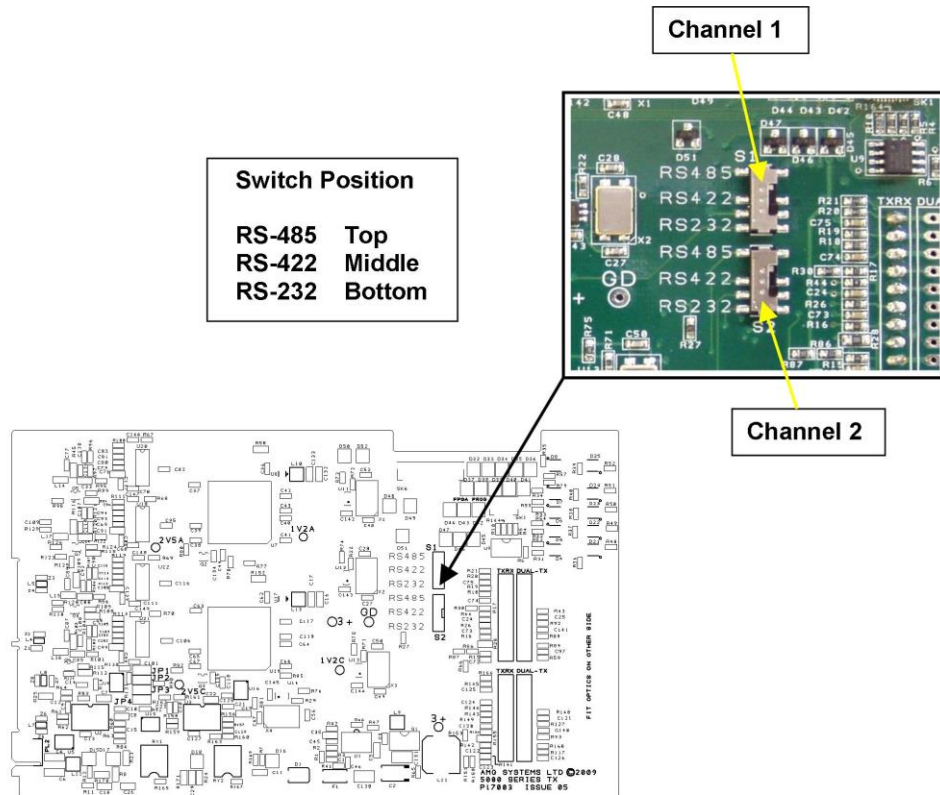
Audio Present RX .....	Green	-	audio present > -40dBm
	Red	-	audio present > 0dBm (overload at +6dBm)
	Off	-	audio not present or < -40dBm

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

## Data and Alarm Channel Configuration

The **AMG5514A9-DF-MP** transmit unit sends and receives data to/from an **AMG5513A9-DF-MP** or rackmount equivalent **AMG5513A9R-DF** 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 **AMG5513A9** 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 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 **AMG5514A9-DF-MP** provides 1 Bi-directional alarm output / contact closure input.

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 **AMG5514A9-DF-MP** 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 Ron < 6.5Ω.

### 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		

### Audio Channel Configuration

The **AMG5513A9** provides one bi-directional audio channel.



The audio channel input can be configured as a single-ended high impedance 10k $\Omega$  input with GND reference or alternatively as a balanced 600 $\Omega$  input pair. The input impedance is selected using jumpers on the audio expansion board JP1 (Channel 1) or JP2 (Channel 2), the default setting is balanced 600 $\Omega$ .

JP1/JP2      1-2 – High Impedance 10k $\Omega$   
 JP1/JP2      2-3 – Balanced 600 $\Omega$

**Audio Interface Connections**

Connector Pin No.	Balanced Input 600 $\Omega$	High Z input 10k $\Omega$
1	OUT -	OUT -
2	OUT +	OUT +
3	GND	GND
4	IN +	IN
5	IN -	GND

## **Physical Information**

---

### **Dimensions**

Height.....132mm  
Width.....172mm (excluding connectors)  
Depth .....35mm  
Weight.....600grams

### **Mounting Details**

The AMG unit is supplied with a mounting plate which should be attached to a panel or wall using 4 off 4.0mm screws, see diagram on page 1 for dimensions.

## **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.

This page is intentionally blank.