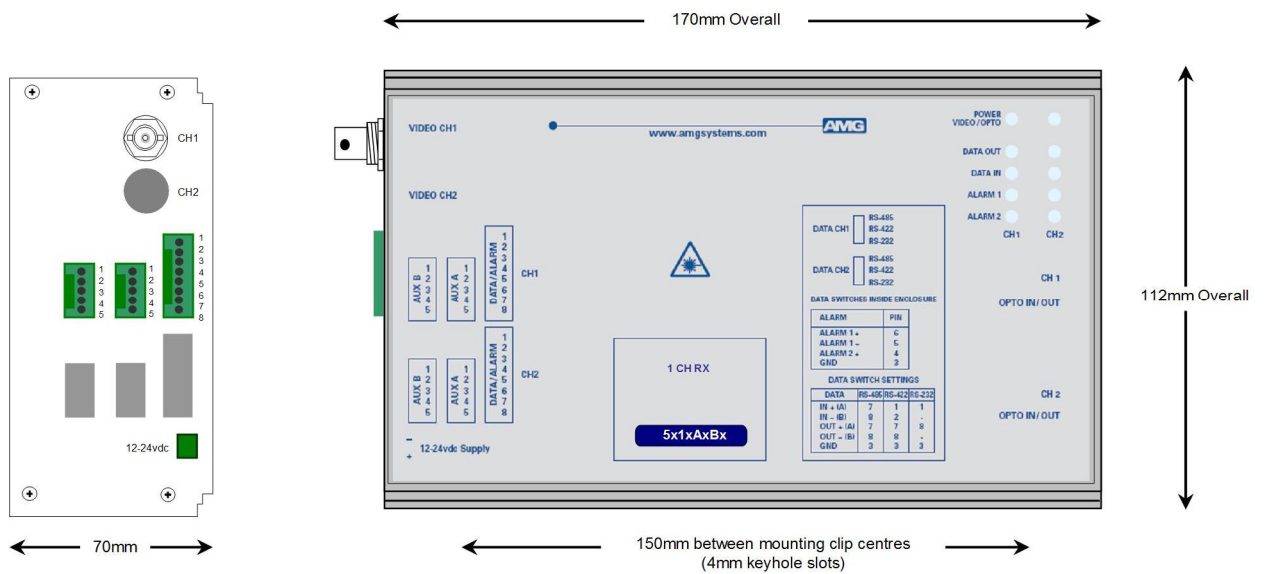




AMG5714A1B9-HP Instruction Manual

Single Channel Video Receive Unit with two Bi-directional Data Channels, one Bi-directional Alarm Channel and one Bi-directional Audio Channel for a Singlemode Fibre Link



The **AMG5714A1B9-HP** is a standalone one channel video receive unit designed to receive 1 video signal and transmit & receive 2 data signals, 1 Bi-directional alarm, plus 1 Bi-directional audio channel over a single Singlemode optical fibre.

The **AMG5714A1B9-HP** is designed to be powered using an **AMG2001** standalone power supply.

The **AMG5714A1B9-HP** is designed to operate with an **AMG5713A1B9-HP / AMG5713A1B9-HP-R** single channel video transmit unit in a point to point configuration. The R suffix in the partno. indicates a rackmount configuration.

Contents

Introduction	4
Unit Functional Schematic.....	4
Optical Connection.....	4
1 Channel Video, 2 Data, Bi-directional Alarm & Audio.....	4
Connections	5
Video Output Connections	5
Optical Connection Singlemode	5
Power Connection.....	5
Data and Alarm Channel Connections.....	5
Audio Connections.....	5
Front Panel Indicators	7
Power LED	7
Auxiliary Data LEDs.....	7
Alarm LEDs	7
Audio LEDs.....	7
Data and Alarm Channel Configuration	9
Data Channel Configuration	9
Data Interface Connections.....	10
Alarm Channel Configuration	10
Alarm Interface Connections	10
Audio Channel Configuration	11
Audio Interface Connections	11
Auxiliary RS-422/RS-485 Data Channel Configuration	12
Data Interface Connections	13
Physical Information	14
Dimensions.....	14
Mounting Details	14

Safety **14**

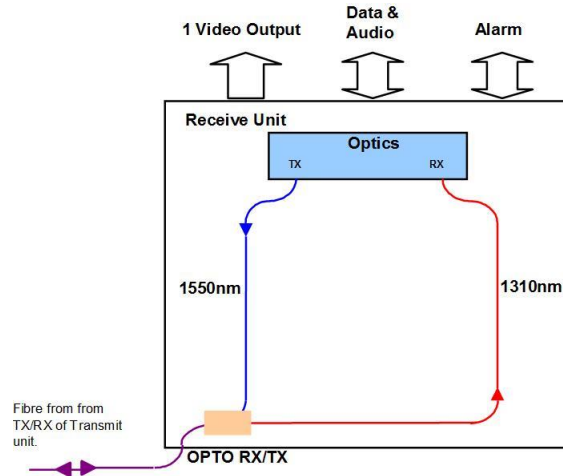
Maintenance and Repair **14**

Introduction

Unit Functional Schematic

The **AMG5714A1B9-HP** receives 1 video, 2 data, 1 audio signal, and 1 Bi-directional alarm signal from the **AMG5713A1B9-HP** transmit unit.

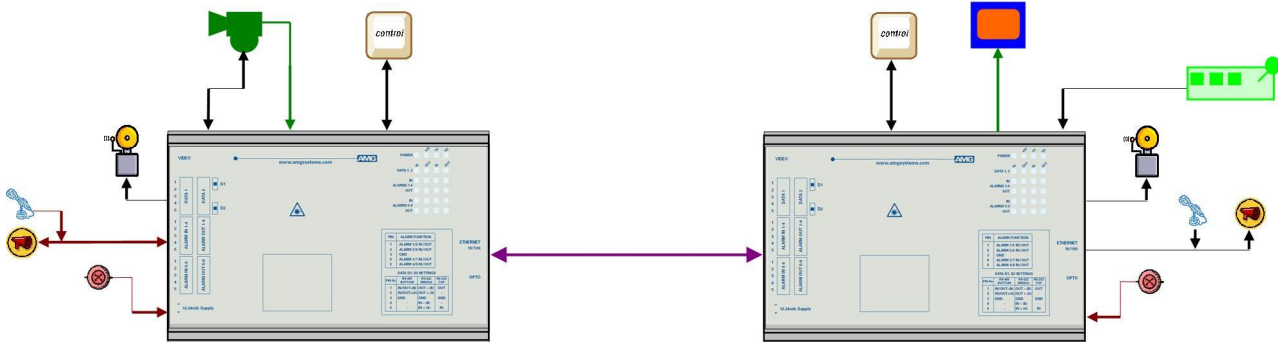
It also transmits 2 data, 1 audio signal and 1 Bi-directional alarm signal to the **AMG5713A1B9-HP**.



Optical Connection

The **AMG5714A1B9-HP** connections are illustrated in the following example which shows an **AMG5713A1B9-HP** transmit unit together with an **AMG5714A1B9-HP** standalone receive unit configured as a single channel point to point system.

1 Channel Video, 2 Data, Bi-directional Alarm & Audio



Connections

Video Output Connections

No. of channels..... 1
Connectors 75 ohm BNC Socket.
Output Impedance 75 ohm terminated.
Output Level 1 Volt p-p nominal
Frequency Response 10Hz to 7MHz.

Optical Connection Singlemode

Optical Fibre Singlemode
Connector SC/PC

Primary Optical Launch Power 0 to +5dBm
Transmit Wavelength 1550nm

Primary Optical Sensitivity -34dBm
Receive Wavelength 1310nm

Minimum Optical Dynamic Range 34dB.

Power Connection

Connector Type Removable 2-pin, 3.81mm, Screw Terminal
Connector Partno..... Phoenix 1803578
Supply Voltage..... +12 to +15 Volts DC
Maximum Power 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 RS-422/RS-485
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 < 6.5

Audio Connections

No. of Audio Channels 1 per video channel.

Connectors Removable 5-pin, 2.5mm, Spring Terminal
Connector Partno..... Phoenix 1881354

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

Input impedance 10k / 600
Output impedance..... 600

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
- 2-3 . Balanced 600

Front Panel Indicators

Power LED

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

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

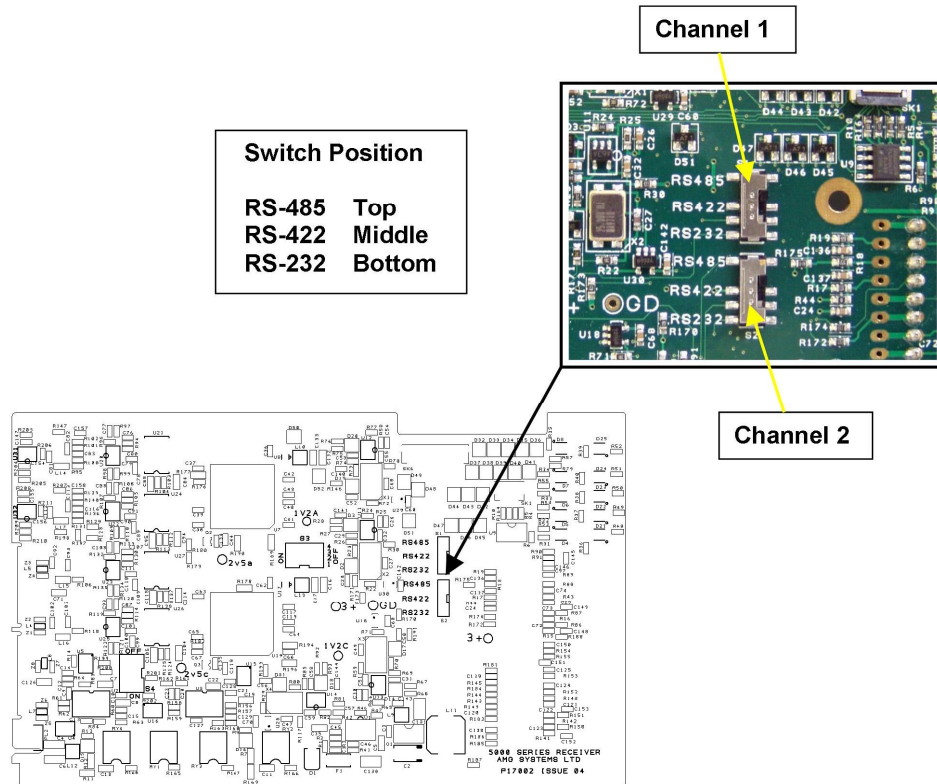
Audio Present RX	Green	-	audio present > -40dBm
	Red	-	audio present > 0dBm (overload at +6dBm)
	Off	-	audio not present or < -40dBm

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

Data and Alarm Channel Configuration

The **AMG5714A1B9-HP** sends and receives data to/from a **AMG5713A1B9-HP** single channel standalone transmit unit. The physical data interface RS-485, RS-422 or RS-232 is individually selectable by the user with the corresponding 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 **AMG5713A1B9-HP** 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 120 Ω 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 5k Ω . If the third party bias resistors are less than 750 Ω 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 **AMG5714A1B9-HP** provides one 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 **AMG5713A1B9-HP** 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 < 6.5 .

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 **AMG5714A1B9-HP** provides one bi-directional audio channel for each video channel.

Each audio channel input can be configured as a single-ended high impedance 10k Ω input with GND reference or alternatively as a balanced 600 Ω 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 Ω .

JP1/JP2 1-2 . High Impedance 10k
JP1/JP2 2-3 . Balanced 600

Audio Interface Connections

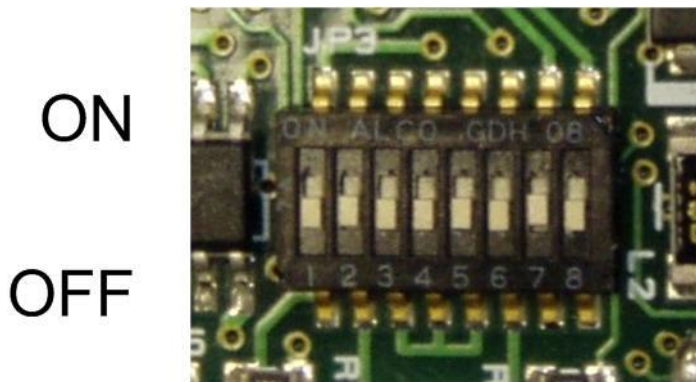
Connector Pin No.	Balanced Input 600 Ω	High Z input 10k Ω
1	OUT -	OUT -
2	OUT +	OUT +
3	GND	GND
4	IN +	IN
5	IN -	GND

Auxiliary RS-422/RS-485 Data Channel Configuration

The **AMG5714A1B9-HP** receive unit sends and receives RS-422/RS-485 data to/from an **AMG5713A1B9-HP** or rackmount equivalent **AMG5713A1B9-HP-R** transmit unit.

The auxiliary data channel is provided by an X04057 RS-422/RS-485 Daughter Board. It is used when an additional RS-422 or RS-485 data interface is required and provides one bi-directional RS-422 or RS-485 data channel.

The X04057 daughter board is pre-configured at manufacture using the multiway 8-way DIP switch JP3. It is set to RS-485 mode by default. This switch is not usually accessible by the user, and the following instructions are for INFORMATION only.



The switch functions are as follows: Default (RS-485) settings are shown in the last column.

SW. No.	Function	RS-422	RS-485	DEFAULT
1.	Mode Selection - PCB Identification	Off	On	On
2.	390 RX- Pre-bias to +5V. Note when off, the pre-bias is set at 10k to +5V.	Off	On	Off
3.	390 RX+ Pre-bias to gnd. (note when off pre-bias set at 10k to GND)	Off	On	Off
4.	120 RX termination	Off	On	Off
5.	RX+ connected to TX+	Off	On	On
6.	RX- connected to TX-	Off	On	On
7.	TX data enabled from logic one on the data stream. TX output tri-state after 5µs of a logic zero. See Note 1.	Off	On	On
8.	RX data disabled when TX enabled	Off	On	On

Note 1: Resistor R7 = 1k for 5µS Tx dwell time. (10k for 50µs)

The switches are used as follows:

SW. No.	4 Wire RS-422 Point to Point	4 Wire RS-422 Bussed	DEFAULT 2 wire RS-485	Additional 120Ω Termination	Additional High Bias
1.			On		
2.					On
3.					On
4.				On	
5.			On		
6.			On		
7.		On	On		
8.			On		

Data Interface Connections

Connector Pin No	RS-422	RS-485
1	OUT + (A)	IN/OUT + (A)
2	OUT - (B)	IN/OUT - (B)
3	GND	GND
4	IN + (A)	IN/OUT + (A)
5	IN - (B)	IN/OUT - (B)

Physical Information

Dimensions

Height..... 112mm
Width..... 170mm (excluding connectors)
Depth..... 70mm
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

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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