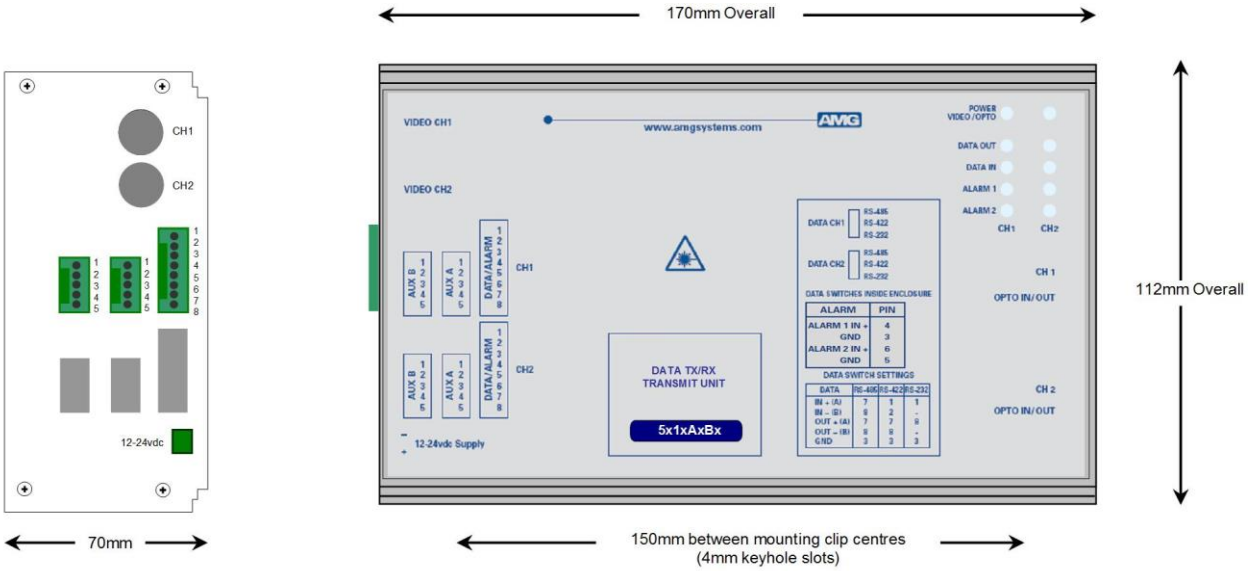
AMG5513A6B9
Instruction Manual

Transmit Unit with one Bi-directional Data Signal, one Bi-directional Alarm, one Echelon FTT-10A Data Channel and one Bi-directional Audio Channel for a Singlemode Fibre Link



The **AMG5513A6B9** is a standalone transmit unit designed to transmit & receive 1 data signal, 1 Bi-directional alarms plus 1 Echelon FTT10A data channel plus 1 Bi-directional audio channel over one Singlemode optical fibre.

The **AMG5513A6B9** is designed to be powered using an **AMG2001** standalone power supply.

The **AMG5513A6B9** is designed to operate with an **AMG5514A6B9 / AMG5514A6B9R** receive unit in a point to point configuration. The R suffix in the partno. indicates a rackmount configuration.

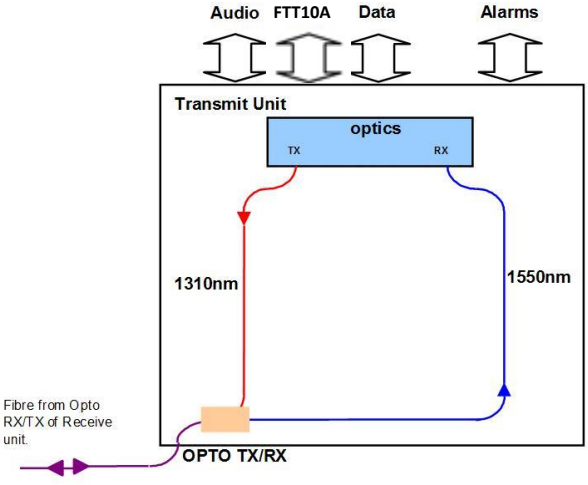
Contents

Introduction

Unit Functional Schematic

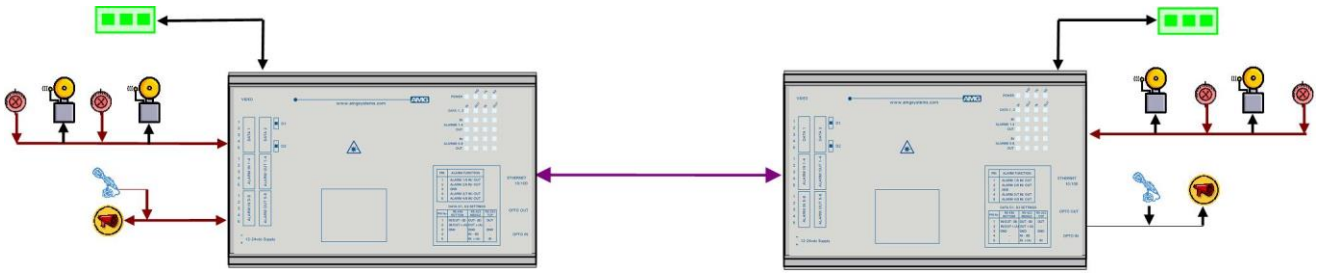
The **AMG5513A6B9** transmits 1 data, 1 Bi-directional alarm, 1 FTT10A and 1 audio signal to the **AMG5514A6B9** receive unit.

It also receives 1 data, 1 Bi-directional alarm, 1 FTT10A and 1 audio signal transmitted from the **AMG5514A6B9**.



Optical Connection

The **AMG5513A6B9** connections are illustrated in the following example which shows an **AMG5513A6B9** transmit unit together with an **AMG5514A6B9** standalone receive unit configured as a single channel point to point system.



Connections

Optical Connections Singlemode

No. of Optical Connections 1

Optical Fibre .....Singlemode

Connector .....SC/PC

Primary Optical Launch Power .....-10dBm

Transmit Wavelength.....1310nm

Primary Optical Sensitivity.....-30dBm

Receive Wavelength.....1510nm

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

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 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

Audio Connections

No. of Audio Channels 1

Connectors ..... Removable 5-pin, 2.5mm, Spring Terminal

Connector Partno. ..... 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 10kΩ

2-3 – Balanced 600Ω

Echelon FTT-10A Data Channel Connection

No. of Echelon FTT-10A Data Channels 1

Connectors ..... Removable 5-pin, 2.5mm, Spring Terminal

Connector Partno. ..... Phoenix 1881354

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

Channel 1

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

FTT10A LEDs

Channel 2

FTT10A IN	Green	-	Data channel present but not transmitting
	R/G	-	Data channel transmitting
	Off	-	Data channel not present or no connection
FTT10A OUT	Green	-	Data channel present but not transmitting
	R/G	-	Data channel transmitting
	Off	-	Data channel not present or no connection

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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

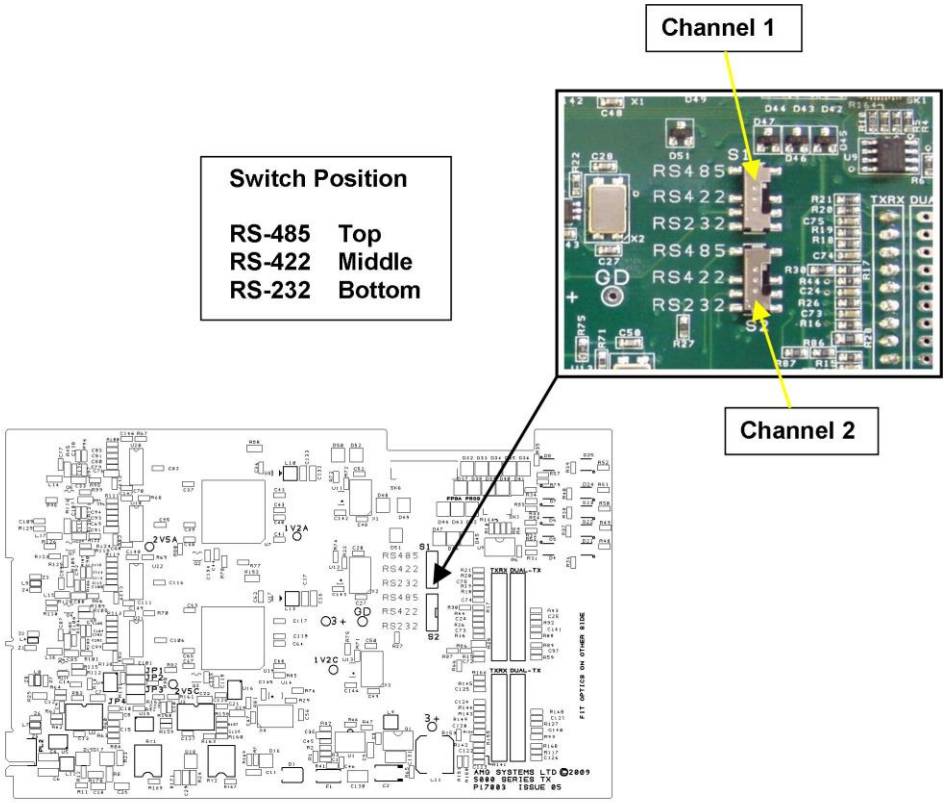
Audio Present RX	Green	-	audio present > -40dBm
	Red	-	audio present > 0dBm (overload at +6dBm)
	Off	-	audio not present or < -40dBm

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

Data and Alarm Channel Configuration

The **AMG5513A6B9** transmit unit sends and receives data to/from an **AMG5514A6B9** or rackmount equivalent **AMG5514A6B9R** 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.

Two bi-directional alarms are also provided. Each alarm input is typically connected to a contact closure switch. An alarm output can receive an on/off signal from an **AMG5514A6B9** 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 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 **AMG5513A6B9** provides 2 bi-directional contact closure inputs / alarm outputs. Each ALARM IN input is via an internal 10kΩ series resistor with a 47kΩ pull-up resistor to the internal +3V3 supply.

Each ALARM OUT output can receive an on/off signal from an **AMG5514A6B9** and is typically used to convey contact closure status. Each alarm output is an NPN open collector circuit with a maximum rated continuous load of 500mA / 24Vdc.

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		

FTT10A Interface Connections

Connector Pin No.	FTT10A
1	FTT-10A CH7 NET_B
2	FTT-10A CH7 NET_A
3	GND
4	FTT-10A CH7 NET_B
5	FTT-10A CH7 NET_A

Audio Interface Connections

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

Audio Channel Configuration

The **AMG5513A6B9** provides one bi-directional audio channel.

The audio channel input can be configured as a single-ended high impedance 10kΩ input with GND reference or alternativly as a balanced 600Ω 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 600Ω.

JP1/JP2	1-2 – High Impedance 10kΩ
JP1/JP2	2-3 – Balanced 600Ω

Physical Information

Dimensions

Height 112mm

Width ..... 170mm (excluding connectors)

Depth 70mm

Weight 750grams

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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