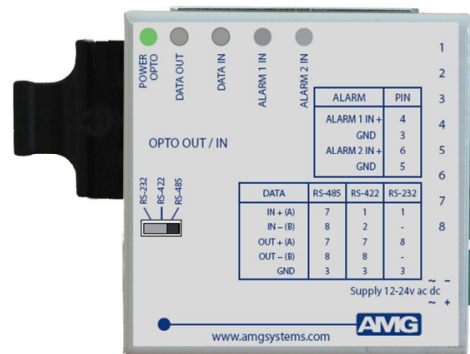


## Transmit Unit with one Bi-directional Data Channel and two Uni-directional Alarms for a Singlemode Fibre Link



The **AMG5515** is a compact standalone transmit unit designed to transmit and receive 1 data channel plus 2 Uni-directional alarms over one Singlemode optical fibre.

The **AMG5515** is designed to be powered using an **AMG2001** standalone power supply.

The **AMG5515** is designed to operate with an **AMG5616 / AMG5516R** single channel or **AMG5526 / AMG5526R** dual channel receive unit in a point to point configuration. The R suffix in the partno. indicates a rackmount configuration.

# Contents

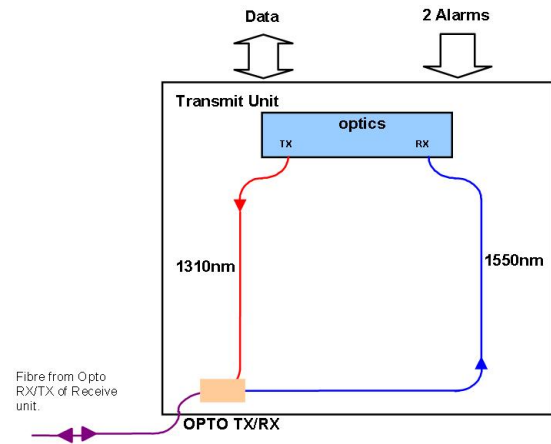
<b>Introduction</b>	<b>3</b>
Unit Functional Schematic.....	3
Optical Connection .....	3
<b>Connections</b>	<b>4</b>
Optical Connections Singlemode .....	4
Power Connection .....	4
Data and Alarm Channel Connections .....	4
<b>Front Panel Indicators</b>	<b>5</b>
Power / Opto LED.....	5
Low Speed Data LEDs .....	5
Alarm LEDs.....	5
<b>Data and Alarm Channel Configuration</b>	<b>6</b>
Data Channel Configuration .....	6
Data Interface Connections .....	6
Alarm Channel Configuration .....	7
Uni-directional Alarm Interface Connections .....	7
<b>Physical Information</b>	<b>8</b>
Dimensions .....	8
Mounting Details .....	8
<b>Safety</b>	<b>8</b>
<b>Maintenance and Repair</b>	<b>8</b>

## Introduction

### Unit Functional Schematic

The **AMG5515** transmits 1 data channel and 2 uni-directional alarm signals to the **AMG5616** receive unit.

It also receives 1 data channel transmitted from the **AMG5616**.



### Optical Connection

The **AMG5515** connections are illustrated in the following example which shows an **AMG5515** transmit unit together with an **AMG5616** standalone receive unit configured as a single channel point to point system.



## Connections

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### **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 +15Vdc  
Maximum Power ..... 1.5 Watts

### **Data and Alarm Channel Connections**

No. of Data Channels ..... 1  
No. of Alarm Channels ..... 2

Connector ..... Removable 8-pin, 3.81mm, Screw Terminal  
Connector Partno. .... Phoenix 1803633

Data Interface ..... RS-232, RS-422 or R-S485. Selected by slide switch above the BNC connector.

RS-232 – Switch Position - Left  
RS-422 – Switch Position - Centre  
RS-485 – Switch Position - Right

Alarm input ..... Contact Closure pull-up is 330R to +3V3

## Front Panel Indicators

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

ALARM 2 IN.....	Green	-	Alarm ON / Contacts closed.
	Off	-	Alarm OFF / Contacts open.

## Data and Alarm Channel Configuration

The **AMG5515** transmit unit sends and receives data to/from an **AMG5616** or rackmount equivalent **AMG5516R** receive unit. The physical data interface RS-485, RS-422 or RS-232 is selectable by the user with the slide switch on the front panel.

There are also two uni-directional alarm channels provided which send on/off signals from the **AMG5515** to the receive unit and are typically used to transmit contact closure status.

### Data Channel Configuration

The 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 mode switch on the front panel. The 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 zero 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 right]	RS-422 [switch mid]	RS-232 [switch left]
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 **AMG5515** provides 2 uni-directional alarm / contact closure inputs. Each alarm input is typically connected to a contact closure switch.

Each ALARM IN+ input incorporates a 330R pull-up resistor to the internal +3V3 supply.

### **Uni-directional Alarm Interface Connections**

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

## **Physical Information**

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### **Dimensions**

Height.....56mm  
Width.....55mm (excluding connectors)  
Depth .....25mm  
Weight.....200grams

### **Mounting Details**

The unit is designed to be mounted using the clip holder supplied, which can be fixed to a wall or panel using 2 off 4mm screws.

## **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.

Phone	+44 (0) 1767 600 777
Technical Support	+44 (0) 1767 604 491
Email	techsupport@amgsystems.com