

Instruction manual ALTM 500 laser altimeter



Laser altimeter system for airborne applications

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Protocoll and connection

When power is applied to the laser it will go through a start up routine and then start to take range measurements at a rate of 1000 Hz. A range measurement consists of a single laser pulse, the received signal from this pulse is processed and the corresponding range data is sent out in serial RS232 format.

The range data is sent in two (8 bit) bytes as a 12 bit binary word. The first byte contains the 6 MSB's and the second byte contains the 6 LSB's of the word. The most significant bit is set to a '1' for the most significant byte and to a '0' for the least significant byte.

Example:

MSB	LSB	RANGE
10101001	00010111	2647dm
10101011	00111110	2814dm
10000011	00000001	193dm
10001101	00101100	876dm

If no range is detected the data output is:

MSB	LSB	RANGE
10111111	00111111	4095dm

The data output rate is 1000Hz

The range reference point is the rear most mounting hole, which is 60mm back from the lens face (see mounting diagram).

The power supply should be connected to the red and black wires, RED is positive BLACK is zero volts.

(The voltage must be in the range of 11 to 48 volts D.C.)

Note, although the power consumption of the laser is less than 5 watts the power source should be able to tolerate current pulses of 2 amp.

The data output provided is RS232 at 38400 baud 8 bits no parity 1 stop bit.

There are only two connections used in the 9 way 'D'

Pin 2 is data out of the laser
Pin 5 is zero volts

Technical characteristics ALTM 300/500

Laser	
Type	GaAs Laser Diode
Wavelength	905nm
Beam Divergence	3 x 2.3 mrad
Range	5m to 300m
Accuracy	30cm (typical y)
Measuring Rep Rate	1000Hz
Eye Safety	Class 1
Communication	
Data Output	Serial RS232 at 38400 baud
Connection	
	Supplied with 2m flying lead
Power	
	12 to 48 volts DC <5 watts
Environmental	
Operating Temp	-10°C to +60°C
Storage Temp	-30°C to +90°C
Protection Class	IP67
Physical	
Construction	Hard black anodised aluminium
Dimensions (LxWxH)	154mm x 78mm x 49mm
Weight	950g

All altimeters are set to 1000 Hz and class 1

Laser safety. This is a class 1 laser device

6. Safety

The is classified as a Class 1 eye safe laser product in compliance with the European eye safety regulation CENELEC EN60825-1 (2001)



WITH THE OPTIONAL RED DOT ALIGNMENT LASER FITTED THE EYE SAFETY CLASSIFICATION BECOMES

The is classified as a Class 2 eye safe laser product in compliance with the European eye safety regulation CENELEC EN60825-1 (2001)



This product is intended for use in a locale where the emitted radiation is unlikely to be viewed with optical instruments.

CAUTION! Use of controls or adjustments, of performance of procedures specified herein, may result in hazardous radiation exposure. **Never open the instrument's housing!** Do not operate evidently damaged instruments! If the instrument is handled incompetently, the manufacturers absolve themselves from honouring any guarantee or insurance whatsoever.

DO NOT UNNECESSARILY LOOK INTO THE TRANSMITTER LENS OF THE Laser

Certifications and standards ALTM 500

meets or exceeds the requirements of the following European Standards:

EN 50081-1 (1992) EN 50082-1 (1997) European Community Requirements:

Electromagnetic Compatibility

Generic Emission Standard

Part 1: Residential, Commercial and Light Industry

Generic Immunity Standard

Part 1: Residential, Commercial and Light Industry

The tests are carried out in compliance with:

EN 55022 (1998)

Limits and methods of measurement of radio interference characteristics of information technology equipment.

Radiated Emissions.

Conducted Emissions.

EN 55014-1 (1993) A1(1997) A2(1999)

Limits and methods of measurement of radio disturbance characteristics of electrical motor-operated and thermal appliances for household and similar purposes, electrical tools and similar apparatus.

Discontinuous Emissions.

EN 61000-4-2 (1995) A1(1998) A2(2000)

Testing and measurement techniques.

Electrostatic discharge immunity test.

EN 61000-4-3 (1996) A1(1998) A2(2000)

Electromagnetic compatibility – Basic immunity standard.

Radiated radio frequency electromagnetic field immunity test.

DD ENV 50204 (1996)

Radiated electromagnetic field from digital radio telephones.

Immunity test.

EN 61000-4-4 (1995) A1(2000)

Testing and measurement techniques.

Electrical fast transient/burst immunity test.

EN 61000-4-5 (1995) A1(2000)

Testing and measurement techniques.

Surge immunity test.

EN 61000-4-6 (1996) A1(2000)

Testing and measurement techniques.

Immunity to conducted disturbances induced by radio frequency fields.

EN 61000-4-8 (1994) A1(2000)

Testing and measurement techniques.

Section 8. Power frequency magnetic field immunity test.

EN 61000-4-11(1994) A1(2000)

Testing and measurement techniques.

Voltage dips, short interruptions and voltage variations immunity tests.

