

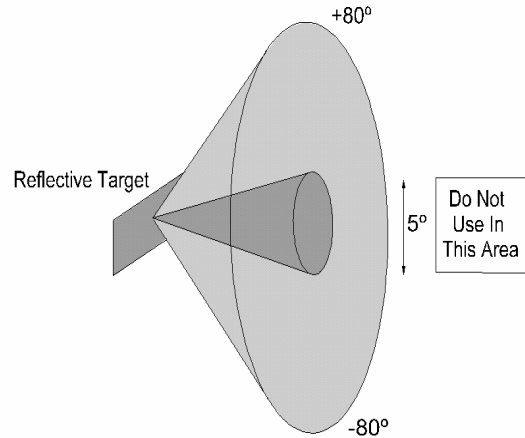
### REFLECTIVE TAPE TARGET

It is recommended that tape be used whenever possible to ensure ease of measurement and maximum range and angle features.

When reflective tape is used it is possible to use tape down to a minimum width of 3mm (laser only), 6mm recommended.

Because of the ability of the unit to use surface imperfections as a target, problems may occur if the angle of the beam to the target is too close to the perpendicular. It is recommended that the instrument is not used in the cone of angles (5°) shown in the darker colour in the following diagram.

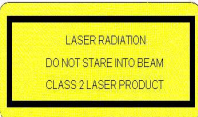
Angles stated assume datum to be at 90° to the reflective tape surface.



### Warning

As conditions can vary greatly from application to application some experimentation may be required to determine the best method. In all cases where an existing target is used the angular range of the instrument will be greatly reduced and will have to be used as close to the perpendicular to the feature being used as a target as possible.

If the target disc or shaft has holes, gaps or cut-outs it is possible to fix the reflective tape in a stationary position behind the target disc and shine the beam through the hole on to the tape.



### LASER SAFETY

Lasers produce an intense beam of monochromatic light, which can cause a biological hazard. Laser safety is covered by BS(EN)60825 which requires lasers to be classified according to the output power level of radiation. The laser used in this instrument is a class 2 laser.

Class 2 lasers are not intrinsically safe but eye protection is normally afforded by aversion responses including the blink reflex. Accidental viewing is not hazardous even if optical aids (Spectacles, telescopes and similar devices) are used. Wherever reasonably practical the beam should be terminated at the end of its useful path, and the laser should NOT be aimed at personnel (at head height). Although the instrument has a working range of 2 metres the laser beam can still dazzle at far greater distances. The laser aperture is situated at the front of the instrument. Do not open the instrument and attempt to adjust the output of the laser, this could cause the output to increase beyond that allowed for a class 2 laser.



## Tachoprobe Operating Instructions

### A2108 Series

#### A2108—Optical Multimeter Tachoprobe

#### A2108/LSR—Laser Optical Tachoprobe—Analogue Output

#### A2108/LSR/232—Laser Tachoprobe—RS232 Output

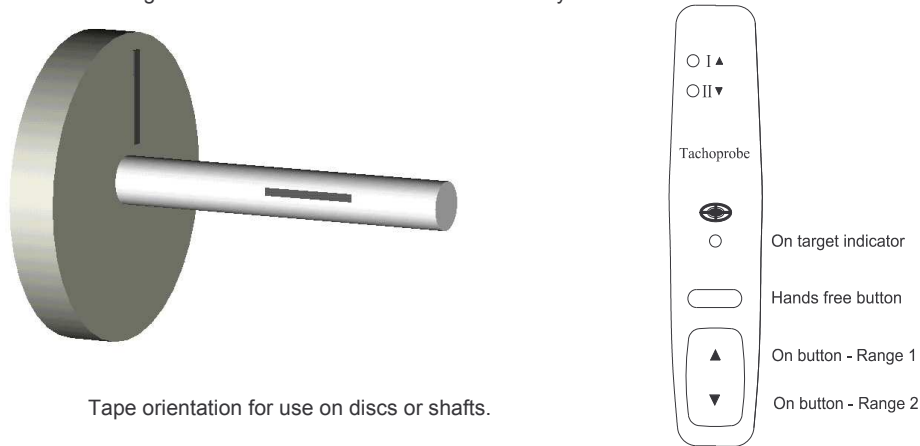
Compact Instruments Ltd  
[www.compactinstruments.co.uk](http://www.compactinstruments.co.uk)

### Specification

	<u>A2108</u>	<u>A2108/LSR</u>	<u>A2108/LSR/232</u>
Optical range:	50 - 1000 mm typ.	50 - 2000 mm typ.	50 - 2000 mm typ.
Optical angle:	± 45°	± 80°	± 80°
Range 1 (0 - 6,000 rpm): 1V = 1,000 rpm (6,000 max).			N/A
Range 2 (0 - 60,000 rpm): 1V = 10,000 rpm (60,000 max).			N/A
Accuracy:	±0.5%	±0.5%	± 0.1%
Resolution:	1.5mV.	1.5mV.	± 1 rpm
Zero Offset	±3mV max.	±3mV max.	N/A

### Instructions for use

1. Fix a piece of reflective tape as shown below.
2. The minimum size of the reflective target in the direction of travel should be twice the size of the light source image (6 to 25mm).
3. Connect the unit to a voltmeter or other required equipment.
4. Press and hold the **on** button (range 1 or 2 as required).
5. Point the beam roughly in the centre of the tape (with the bulb version align the filament pattern along the tape).
6. When a reflected signal is received the green **on target** indicator will light.
7. Releasing the **on** button turns the unit off immediately.



Tape orientation for use on discs or shafts.

### Hands free operation

1. Turn the unit on as above. While the unit is on, press the **hands free** button. The unit will now operate in hands free mode (i.e. with no buttons pressed).
2. The unit remains on whilst a signal is received, it will automatically turn off after about 45 seconds if no signal is received.
3. The range can be changed by pressing the relevant **on** button.
4. To turn the unit off, press the **hands free** button

### General

A2108—Analogue output for use with a voltmeter. Any type of meter (digital or analogue) may be used provided it has a high input impedance. Choose a measuring range that can accommodate the maximum output voltage of the A2108, i.e. 6V FSD. For 3 and 3 1/2 digit meters it will be necessary to use the 20V range. Where more accurate readings are required a 4 1/2 digit meter will be required.

A2108/LSR—For use with data acquisition equipment (must have a high input impedance). The unit may be remotely controlled by connecting the blue & red wires (pins 1 & 2) in the input lead.

### Instructions for use of RS232 Version (A2108/LSR/232)

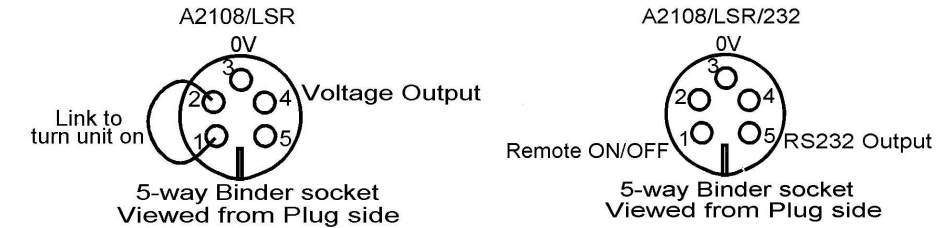
1. With the cable supplied, connect the 5-pin plug into the socket on the rear of the Tachoprobe, and the D type connector into the RS232 port on the PC.
2. Run the A2108 import software on the PC, the A2108 will now be under remote control (assuming it has previously been configured correctly (comms port, etc.).
3. Using the PC software, turn the A2108 on.
4. Point the Tachoprobe so the beam is roughly in the centre of the tape.
5. When a reflected signal is received the A2108 green **on target** indicator will light.
6. The A2108 software running on the PC should now display a live speed-reading.
7. Data may now be logged if required on the PC.

RS232 Data Output: 57600 Baud, 8 data, 1 stop bit. Output in rpm updated once per revolution. Format: ASCII coded Hexadecimal (4 data bytes, MSD first to LSD last, then C.R. terminator).

E.g. '0','5','2','B', 0x0D = 1323 rpm.

The A2108 import software uses the RTS line to turn the A2108 on/off. Setting RTS to TRUE will turn the A2108 on.

### Connections



A2108/LSR	
5-way Binder	
Pin 1 Blue	Link
Pin 2 Red	Link
Pin 3 Green	0V
Pin 4 Yellow	Output

A2108/LSR/232		
5-way Binder		9-way D type
1	On/Off	7 (RTS)
3	0V	5
5	Data	2 (Data in)

### APPLICATION NOTES

#### Use Without Reflective Tape (laser models only)

Under controlled conditions reflective tape may not be required. If there is an existing difference in reflectivity on part of the object to be monitored then this may be used e.g. keyways and slots in bright shafts, spokes of a wheel, fan blades etc.

If there is more than one target per revolution of the shaft then the resulting reading must be divided by the number of targets to obtain the correct reading. In the case of multiple targets these must be equally spaced around the shaft or disc otherwise jitter will occur in the measured value, this effect is most apparent at slow speeds.

On bright shafts it is possible to paint a non-reflective segment and conversely on non-reflective shafts a reflective mark can be painted.