

MINIVLS311 / 312

REMOTE LASER SENSOR

GENERAL SPECIFICATION

Speed range 3 - 250,000 rpm

Optical range 50mm - 2000mm
(2" - 6ft)

Optical angle $\pm 80^\circ$ to reflective marker

Target Reflective tape

Power Supply 4-7.5 Vdc

Power 400mw

Output pulse +ve 0-5v

Output current 100mA max

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.

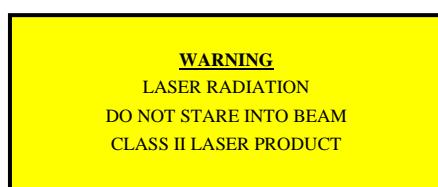
Class 2 lasers are not intrinsically safe, but eye protection is normally afforded by aversion responses including the blink reflex. Accidental viewing is not hazardous even if optical aids (Spectacles, telescopes and similar devices) are used.

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. The following safety labels are affixed to the instrument

Always ensure safety guards are in place before operating machinery



APPLICATION NOTES

The main benefits of using a laser light source are as stated below:-

Long Optical range - up to 2 metres this is useful in application were close proximity to the machine would be a risk to the operator or close access is not possible because of machine guards. The small diameter of the laser spot allows measurements to be made even through small apertures.

Large angular range - the ability to use the instrument at angles of $\pm 80^\circ$ from perpendicular to the target surface, is very useful in those instances where the shaft to be monitored is in a difficult or relatively inaccessible position.

High visibility red laser beam spot - enables easy target location and aim especially in conditions of high ambient light.

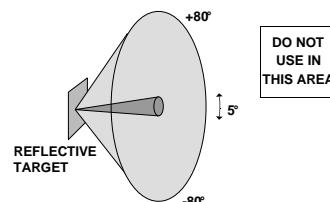
Operation without reflective tape target - this is useful when reflective tape cannot be applied such as in the case of high temperature shaft where the tape will not adhere or very high-speed application were the tape detaches due to velocity problems. See notes below

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.

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.



NON-REFLECTIVE TARGETS

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 or jitter will occur in the measured value. This effect is most apparent at slow speeds.

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

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.

OPTIONAL ACCESSORIES

MVLS-BR1 (Excluding 311/004)

Sensor Bracket Mounting bracket for optical sensor

RT5

5 metre roll of reflective tape

CONNECTIONS

311 & 312	Wire Ends
311/001	3.5mm stereo jack plug
311/003	5-pin Din plug
311/004	7-way Fischer

Function	Wire colour Wire tails	Pin No Din Plug	Jack Plug
0v	Green	2 Body	
+ve	Red	4 Middle	
Signal	Blue	1 Tip	