



LVM-1000 LASER VALVE MOTION measurement system

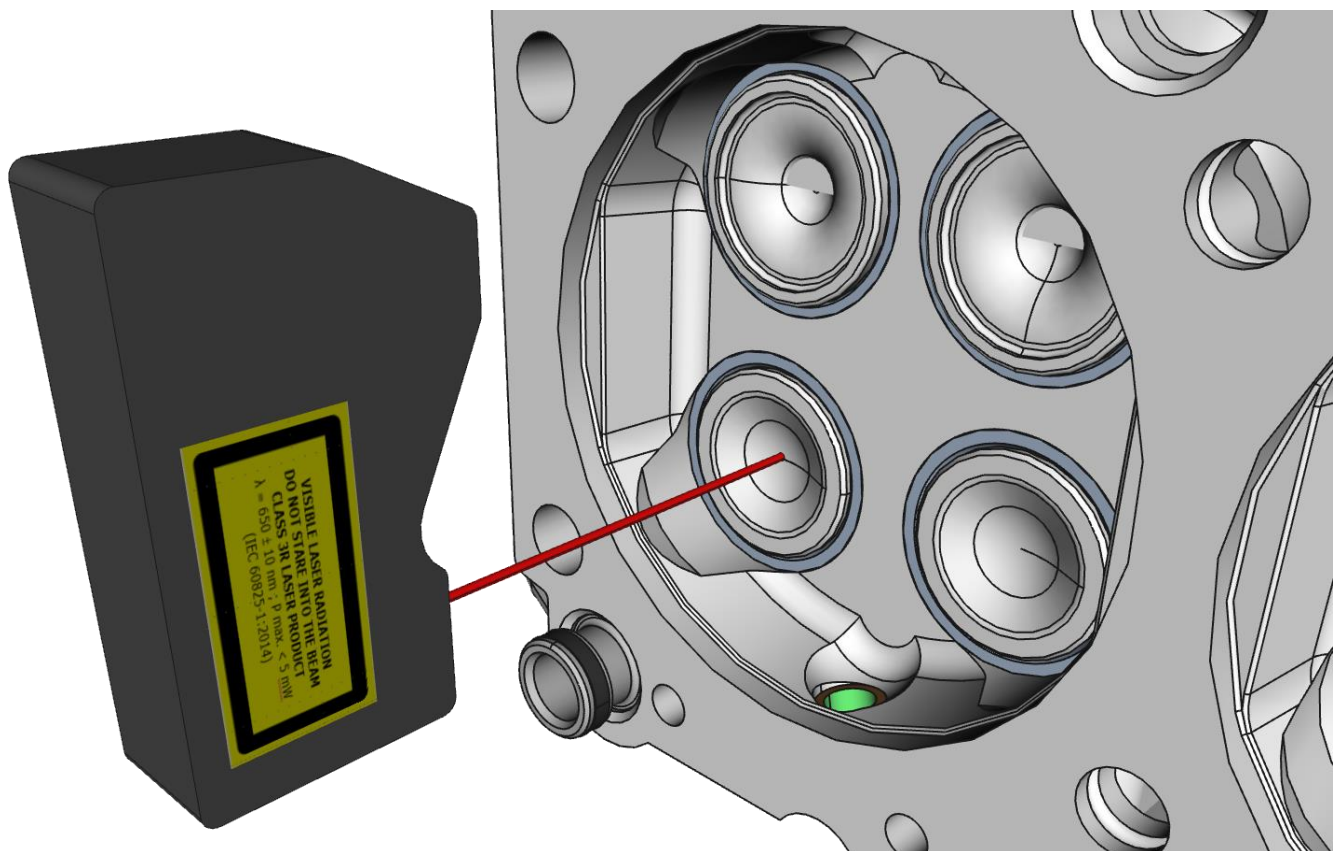
LASER-BASED TECHNOLOGY

SIMULTANEOUS, REAL-TIME DISPLACEMENT,
VELOCITY and ACCELERATION ANALOG OUTPUTS

UP TO 20 kHz BANDWIDTH



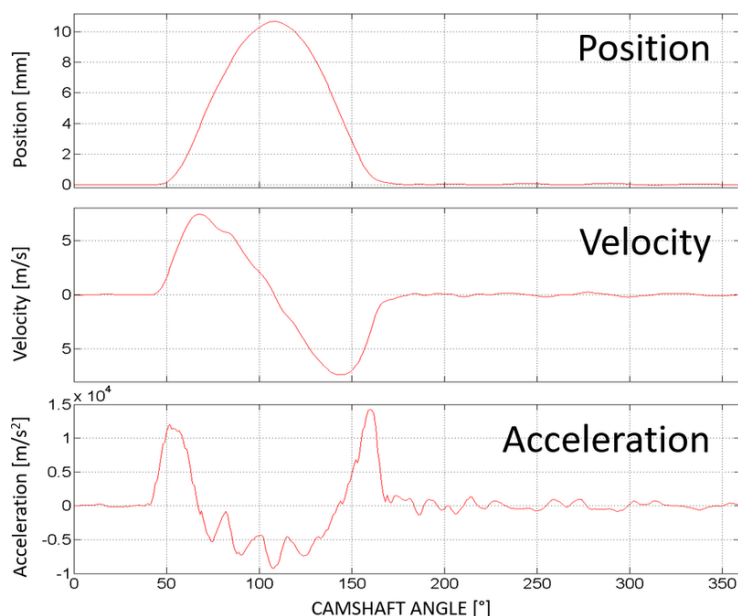
**LT-10025
LASER TRIANGULATION
DISPLACEMENT SENSOR**



STATE-OF-THE-ART LASER DISPLACEMENT SENSORS – The LVM-1000 laser system includes an **LT-10025 laser displacement sensors** for easy and accurate measurement of the valve motion.

Julight's unique signal processing electronic system makes available the **displacement**, and also the instantaneous **velocity and acceleration** of the valve. All the signals are obtained in **real-time with no delays**, to ease synchronization with the encoder signal from the rotating crankshaft.

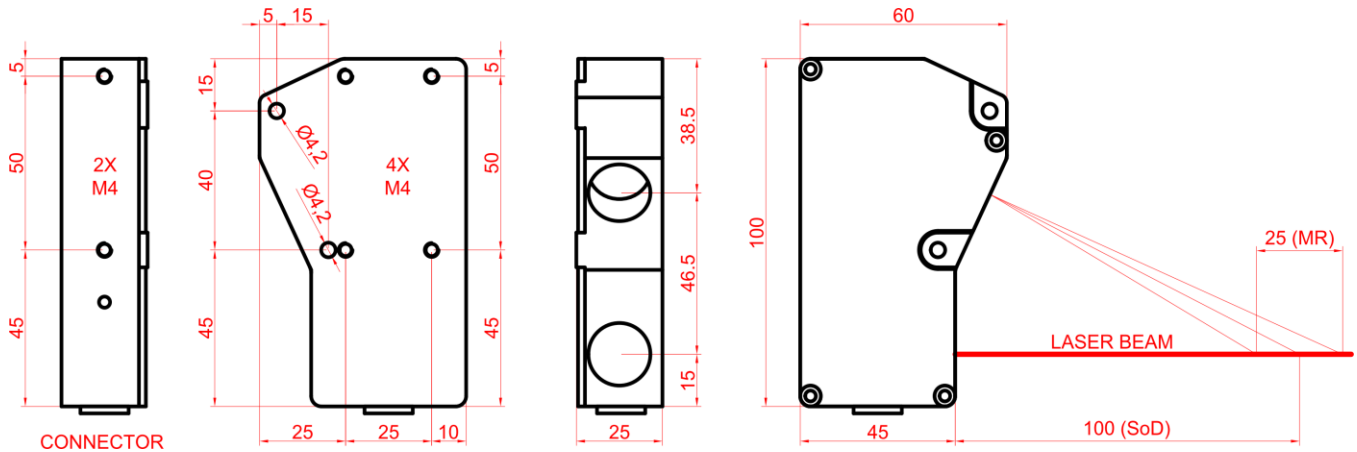
The high-accuracy is guaranteed by **the low noise level**, which is less than 15 µm peak-to-peak in the time domain. The best performance is obtained on matte white painted surface



LT-10025 – LASER DISPLACEMENT SENSOR TECHNICAL DATA

Stand-off Distance (SoD)	100 mm
Measuring Range (MR)	87.5 ÷ 102.5 mm (SoD ± 12.5 mm)
Maximum measurable valve lift	25 mm
Bandwidth	Selectable low-pass filters at 2 kHz and 20 kHz
Linearity	< 20 µm (for SoD ±7 mm) ; < 50 µm (for SoD ±12.5 mm)
Analog outputs	Displacement [0.5 V/mm] Velocity [0.5 V/(m/s)] Acceleration [0.5 mV/(m/s²)]
Displacement Resolution and Accuracy (time-domain)	15 µm (0.05% full scale), limited by noise, for 2 kHz bandwidth
Noise Equivalent Displacement	0.1 µm/√Hz
Spatial transverse resolution	0.5 mm
Target surface	Diffusive, matte white painted recommended
Laser wavelength	630 ± 10 nm, or 660 ± 10 nm
Laser Power	80 mW (in standard operating condition) < 1 mW (in safety mode)
Laser Safety Class (according to IEC 60825-1:2014)	Class 3B in standard operating condition Class 2 in safety mode (i.e. when target surface is not present)
Optical head cable length	2.5 m (5 m optional)
Sensor head dimensions (L x H x W)	60 mm x 100 mm x 25 mm
Weight (sensor's head only)	0.3 kg
Operating temperature (optical head)	+5 °C to +70 °C (non-condensing humidity)

LT-10025 – LASER DISPLACEMENT SENSOR OPTICAL HEAD



(all dimensions in mm)

LVM-1000 MAIN UNIT

FRONT VIEW



TECHNICAL DATA

Dimensions	200 mm x 360 mm x150 mm
Power supply	<ul style="list-style-type: none"> • 110-120 VAC / 60 Hz • 220-240 VAC / 50 Hz
Maximum power consumption	8 VA
Weight	4 kg (max)
Temperature (operating)	+10 °C to +50 °C (non-condensing humidity)

LT-10025
LASER DISPLACEMENT SENSOR CHANNEL

- displacement + velocity + acceleration
- selectable low-pass filters