Optodyne Laser Metrology S.r.l.
Via Veneto,5
I-200440 Bernareggio Tel +30 039 6093618
Milano Italy Fax +39 039 6800147
optodyne@attglobal.net
www.OPTODYNE.com

LDS-1000 Positioning System

GENERAL DESCRIPTION

The LDS-1000 Laser Doppler Scale (LDS) provides high speed, high accuracy and long range positioning for single or multiple axis applications, such as linear motors, large gantry machines, CNC machine tools, CMM's, precision stages, supermicrometers and other linear measurement devices. Based on the Laser Doppler Displacement Meter (LDDM), the LDS is compact, easy installation, easy alignment, less Abbe off-set, no cross coupling, high accuracy, high speed and cost effective. Supplying automatic temperature compensation, home position, TTL AQuadB squarewaves, Up/Down pulses or sinusoidal output, the LDS is compatible with all mainstream controller feedback systems. The LDS has been installed in many high performance machine tools. It is insensitive to dirt, oil and hostile environments.

HIGHER RELIABILITY

The LDS withstands exposure to the hostile machine tool environment. And there aren't any moving parts to wear out. The LDS comes with a one year warranty on parts and labor.

QUALITY ASSURED

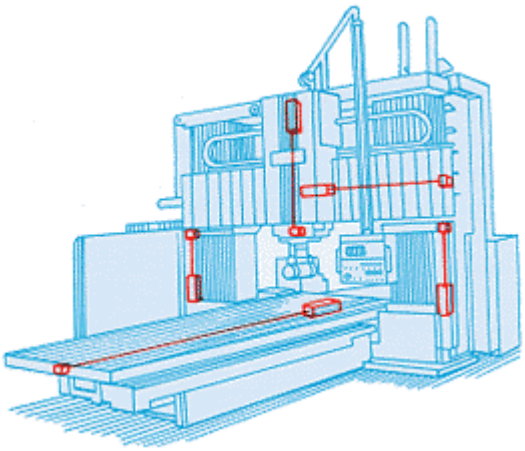
The LDS meets most industry practices, including Total Quality Management (TQM), Mil-Spec 45662 and Economic Value-Added (EVA). The laser is N.I.S.T. traceable.

PRECISION IN MOTION

The LDS provides a high degree of accuracy including automatic environmental compensation, such as air temperature, barometric pressure, and machine/material temperature.

Laser stability check is better than 0.1 PPM. Typical system accuracy is 1.0 PPM and resolution is up to 0.002 µm. Range is up to 50m.

LINEAR MOTOR APPLICATION



LINEAR MOTOR FUNCTIONS

Higher attainable stiffness because of the LDS's inherent mechanical stability.

High slew rate (5msec) does not limit linear motor control

Isolates orthogonal disturbance to minimize axis cross coupling (for multi-axis applications).

High device bandwidth.

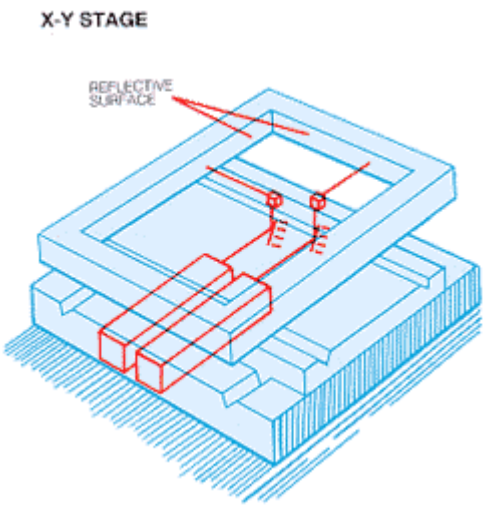
High resolution (0.002 μm) promotes servo stiffness

Axis thrust centerline mounting capability. Accuracy is independent of the X-Y stage for a low-cost, high precision stage.

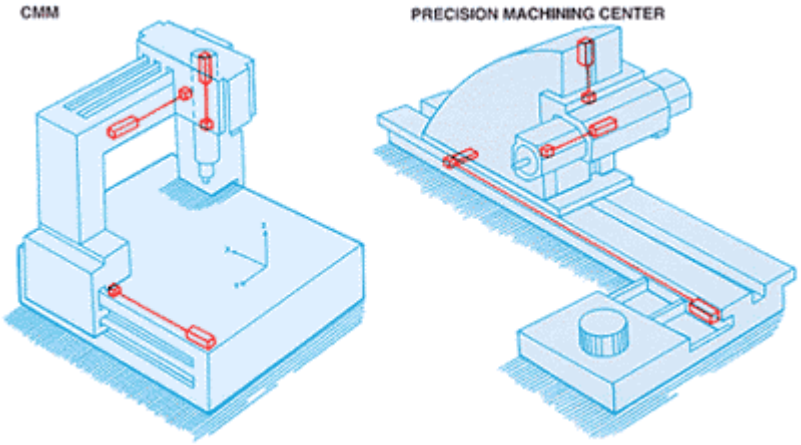
Center-mount reduces Abbe error, saves space.

Measurement scales are independent of ways for increased accuracy.

Detects and compensates for wobble along the X-axis.



2-AXIS APPLICATIONS:
X-Y Stage/PC Board Drill/Grinding/IC Fabrication/Projector



- Centerline mounting improves accuracy by minimizing Abbe Error.
- Compensates for temperature to reduce effects of thermal expansion
- Electrical noise has minimal effect.
- Increased servo stiffness for smooth cutting.
- LDS characteristics minimize pitch error compensation.
- Increased tool path and material removal accuracy.
- Precision-machined surface not required for installation.
- Wiring required for laser head only.
- Minimal installation and alignment time.

3-AXIS APPLICATIONS:
Precision Machining Center / CMM

LASER DOPPLER SCALE CHARACTERISTICS

- High Accuracy
- High Speed
- HighReliability
- Ruggedized
- Long Range
- Compact
- Low maintenance

LDS 1000 standard CONFIGURATION

- Laser head (L-109)
- Processor box (P-108AC)
- 12 mm Dia. Retroreflector (R-102A)
- 4m cable set (LD-21R)

OPTIONS

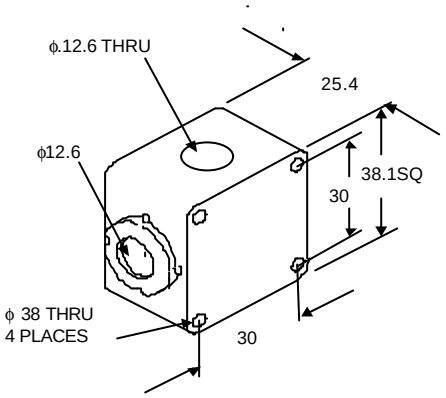
- Reference marker for home positioning (IHS)
- Automatic material and air temperature and pressure compensation, with Sensors (IATCM)
- Extended range to 10m (ER-400)
- Extended range to 50m (ER-2000)
- Narrow beam laser head (L109N) for flat mirror target
- Extended range, 8mm beam (L109R)
- 90 degree beam bender (LD-15C)

environmental protection :

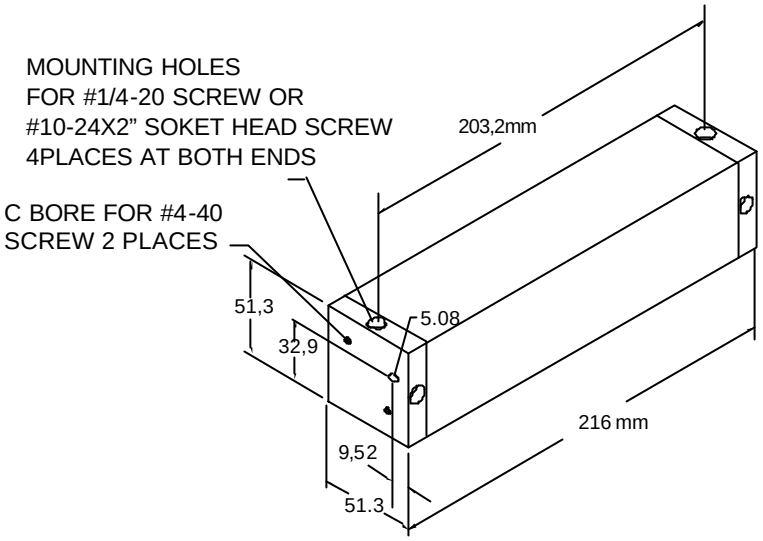
- 90 degree turret beam bender (LD-15TT)
- Laser head gun barrel (LD57PL)
- Retroreflector gun barrel (LD57PR)
- 90 degree beam bender (LD51S)
- Hermetically sealed (LHS1)

AVAILABLE INTERFACES

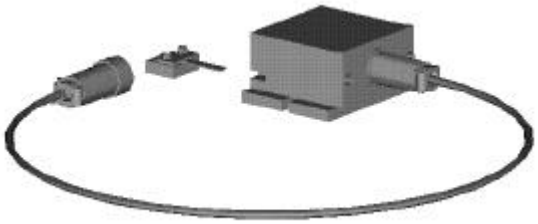
- AQuadB Square Waves (line driver RS422)
- Up / Down Pulses
- Sinusoidal output 1Vpp (IPPS)
- 32 bit Parallel Output

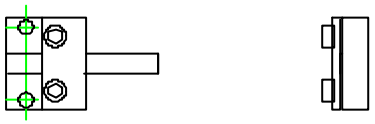


12mm RETROREFLECTOR
(R-102A)



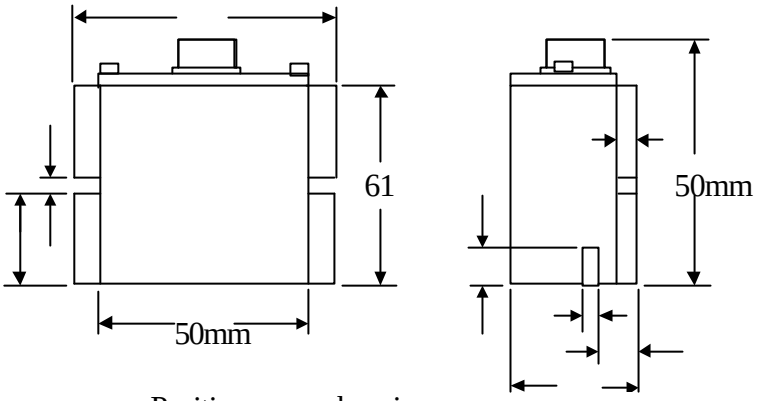
Home position Sensor





Position Sensor Blade

LASER HEAD (L-109)



Position sensor housing

P-108AC

Electronic

Box