



These are the standard laser sensors designed for vessel approach systems. They comprise a laser electronic unit which computes the distance from the time a transmitted laser pulse takes to be reflected back to the unit, and an optical head which incorporates lenses to control the transmission and reception of the laser beam.

- **Measures distance in excess of 300 metres**
- **Measures approach and drift-off**
- **Eye Safe Class 1 certified lasers**
- **Protected from exposed installations**
- **Rugged and reliable**
- **Easy to install, test and calibrate**
- **Certified for hazardous area use (optional)**
- **RS232.3422/485/4-20mA output options**
- **Standard and Extended Temperature Ranges**

In the standard range unit the electronics and optics are combined in a single enclosure. This limits the maximum operating temperature to 50°C. Optionally, this unit can also be supplied in an EEx de enclosure for hazardous area use.

In the extended range unit, the electronics and optical components are in separate enclosures, linked together by a fibre optic cable. This enables the optical unit to be located where temperatures reach up to 80°C. The electronics can be located remotely (up to 100 metres away) and located in a sheltered area. For hazardous area use, the optical unit is classed as Intrinsically Safe, and the electronics can be housed within an EExd enclosure if required.



Standard Range EExd Unit



Extended Temperature Range Optical Unit



EExd Electronics Enclosure

## Typical Specification

Parameter	Standard Unit	Extended Temperature Range
Type	Class 1 Laser	Class 1 Laser
Class Standard	IEC 60825-1:1998 +A2:2001	IEC 60825-1:1998 +A2:2001
Wavelength	905nm	905nm
Range	300 Metres	300 Metres
Arrangement	Integrated electronics & optics	Separate electronics and optics linked by fibre optic cable (maximum length 100 metres)
Enclosures	IP66 Stainless Steel	Optics: IP66 Aluminium Alloy Electronics: to site requirements
Ex Certification Option	II2G EEx de IIC-T7	Optical Unit: Intrinsically Safe * Electronics Unit: II2G EExd IIC-T6
Accuracy	+/- 25mm	+/- 25mm
Operating Temperature	-10 to +50°C	-20 to +80°C
Sealing	IP65/NEMA4X	Optical Unit: IP66 Electronics: Non-Ex IP55-IP67 depending on site requirement Ex: IP66
Supply Voltage	11-24vdc or 20-28vdc	11-24vdc or 20-28vdc
Output - Standard	RS232 (15 metres) RS422 (1200 metres)	RS232 (15 metres) RS422 (1200 metres)
Output - Options	4-20mA (1200 metres)	4-20mA (1200 metres) RS485 (1200 metres) TCP/IP Ethernet (100 metres)
Update rate	Typical 1/sec for vessel docking (3/sec max.)	Typical 1/sec for vessel docking (3/sec max.)

\* optics only

## Operating Principle

The laser transmits an infrared pulse which is reflected off the ship's hull. The reflected light is detected by a receiving sensor in the optical head unit, and internal electronics determine the time taken between transmit and receive signals and the phase relationship, from which the distance speed of the vessel is calculated.

## Installation Considerations

- For side berthing applications lasers should be approximately 50 metres apart (40 metres minimum)
- Laser reflection surface should be flat or vertical
- Path between sensor and target ship must be unobstructed (including mooring ropes, personnel etc)
- Height must be selected to reflect from ship's side under all states of tide and ballast. Automatic height adjusting platforms can be supplied for berths with large tidal variations
- If installed on the breasting dolphin, a protective rail around the sensor is recommended.

Due to continuous development, Strainstall UK reserve the right to change specification without notice.

Strainstall UK Ltd  
9-10 Mariners Way  
Cowes  
Isle of Wight  
PO31 8PD

Tel: +44 (0)1983 203600  
Fax: +44 (0)1983 291335  
Email: sales@strainstall.co.uk  
Website: www.strainstall.com