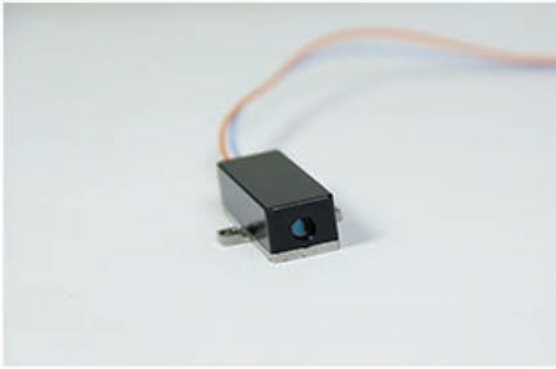


Eye-safe laser



Feature

- Beam quality near diffraction limit
- Small volume
- Low power consumption
- Good stability
- High reliability
- Wide temperature range

Description

Wavelength of 1.4-2.0 μm is less harmful to the human eye, so a laser with this wavelength range is called the human eye-safe laser. This wavelength range is located in the atmospheric transmission window, the absorption and scattering of the laser is only 1/50 of the 1.06 μm laser, which is of great significance for long distance action, especially for military applications.

Theory

The damage threshold for human eye is high when a laser with a wavelength greater than 1.4 μm , because when it is irradiated to the human eye, most of its light intensity is absorbed by the vitreous body, so it is not easy to damage the retina at a certain power. (Taking the 1.57 μm laser as an example, according to the US national security standards, its safe exposure to human eye is 400 thousand times that of the 1.06 μm Nd:YAG laser currently used.) So it is called the human eye safety wavelength. In this band, the safest band is located near 1.54 μm , so there are also people's eye safety limits to 1.5-1.7 μm , which has a large contrast to the background of many targets, such as vehicles, ships, cement buildings, etc., which is very attractive in laser radar, target recognition and so on.

Application area

- Laser ranging
- Laser irradiation
- Laser radar
- Target recognition
- Laser medical treatment
- Optical fiber communication

parameter

Parameter	Unit	Min	Typical	Max
Laser wavelength	nm	1533	1534	1535
working frequency	Hz	/	1-10	10
Pulse Width	ns	4.3	4.6	5
Peak power	Kw	20	≥20	28
Spot size	mm	Φ0.16	Φ0.17	Φ0.18
Divergence angle	mrad	9	10	12
Operating temperature	° C	-45°C - +65 °C	-45°C - +65 °C	-45°C - +75°C
Overall dimension	mm	26.3×9.9×7.9	26.4×10×8	26.5×10.1×8.1
weight	g	7	8	8.5
Energy Stability (RMS, 104shots)	%	0.6	0.8	1
M-Square	NA	1.1	1.2	1.3
LD Working Current	A	7.5	7.5	7.5
LD Working Current pulse width	ms	1.2	1.4	1.7
LD Working Voltage	V	1.7	1.8	1.9
Power Consumption	W	0.017	0.021	0.033
Beam Alignment Tolerance (Off-axis Angle)	mrad	1	8	16
Beam Alignment Tolerance (Position(Δr))	mm	0.1	0.2	0.3
Storage Temperature	°C	-40		80
Operating Humidity	R.H.	5%	40%	85%
Shock	NA		15g, 0.5ms, 6 shocks 3 axes, 2 shocks/axis	
Vibration	NA	/	20~2000Hz, 0.02g ² /Hz 3 axes, 1hr/axis	/
Expected Lifetime	Shots	/	2×10 ⁷	/