

## Compact Optics Module— For remote laser dazzler

### Introduction

Laser dazzler is a new type of non-lethal weapon, to temporarily disable its target with flash blindness. Targets can include sensors or human vision. In addition to military use, laser dazzler is now widely employed in civil applications, such as security.

### Operation Principle

The dazzler uses a green laser as the light source set to 8 times strobe per second. This value was chosen to resonate with the biological frequency in the human body, causing dizziness. Through optical modulation, the use of such a laser source results in the eyes suddenly appearing "laser flash blind", effectively deterring or subduing criminal suspects remotely without damaging the attacked subject.



Figure 1. A prototype of compact laser dazzler

The key specifications of the compact laser dazzler are listed below. Compared to similar products in the market, we offer smaller footprint, light weight and longer effective range. An extremely large beam can also be achieved. These features are essential for remote applications such as attachment to drones, or autonomous vehicles.

Wavelength	532 nm
Laser power	2W or 4W switchable
Laser density	<0.5mW/cm <sup>2</sup>
Output mode	Continuous or strobe mode
Operation time	2W continuous 8 hours
	2W strobe 3 hours
	4W continuous 5 hours
	4W strobe 1.5 hours
Output beam size	Continuous tunable
Laser range	500 m <sup>2</sup>
Remote distance	500 m maximum
Weight	<2kg
Working temperature	-20 ~ 40 ° C
Stability	>10000 hours

Table 1. Key specifications of compact laser dazzler

The portable laser dazzlers are tested with a precise eye safe power density for mere TEMPORARY vision impairment device. They provide the following advantages:

- **Diversification:** Using optical modulation, effective laser beam expansion can be realized to control the power density. An external focusing lens is used to control the beam size. The light intensity and spot can be varied to achieve an effective value in the range of 1m-1000m. **50m distance expansion beam diameter is 25m; 100m spot diameter is 40m; 1000m spot diameter can reach 100m.**
- **Intelligence:** It can also be remotely and flexibly maneuvered both horizontally and vertically.
- **Convenience:** By configuring the digital circuit and power supply, the device is portable. At the same time, it is equipped with a car charger to support full day use.
- **Robust:** The laser can be fired in any direction at any time. Moreover, it is free of radioactive hazards, hence resistant to electromagnetic interference.

### Applications

- Outdoor rescue, long-distance glare alarm
- Coastal guards, square alarm riots
- Guide helicopter search and rescue, guide warplane bombing, fishery law enforcement, etc.
- Long-distance lighting and instructions
- Laser communication, underwater communication
- Villa security, confidential regional warning,
- Airport, farmland, reservoirs to drive birds
- Wild hunting



Figure 2. Applications of laser dazzler

### Conclusion

As a global enterprise, leading photonics innovation since 2002, WOE has built up customization engineering capability for precision and compact optical modules. For more detailed precisions optics, including fixed focus, continuous tunable focus, broadband optics, high power laser optics etc, please refer to WOE catalogue or website.

