Maritime

In the accelerating process of globalization, the strategic position of the ocean as an important channel for international exchange and trade is becoming increasingly prominent. At the same time, the maritime security situation is becoming increasingly complex, with frequent incidents such as low-intensity conflicts, maritime rights disputes, and non-traditional security threats. In these scenarios, as the core carrier of maritime power, ships often need to quickly and effectively deter potential threats and disperse suspicious targets while avoiding the use of lethal force.

Traditional naval defense methods, such as shipborne weapon systems, although possessing strong lethality, their use in low-intensity

conflicts may lead to escalation of the situation and pose serious diplomatic and political risks. In addition, the use of lethal weapons not only violates humanitarian principles but also makes it difficult to achieve ideal defense effects for civilian ships that enter restricted areas without malicious intent, small unmanned aerial vehicles that approach ships, and other targets. Therefore, developing and applying non lethal defense measures has become an important direction for modern warships to enhance their safety and protection capabilities.

The non lethal defense system constructed with directional sound and light equipment as the core deeply meets the needs of modern maritime safety maintenance and low-intensity conflict resolution. The strong sound system relies on a sound wave array and can generate a peak sound pressure level of $\geqslant$ 171dB at a distance of 1 meter. With

directional sound wave technology, it can achieve strong dispersion within a range of 600 meters and maintain a sound pressure of ⩾ 90dB at a distance of 1400 meters for continuous warning. Through high-intensity sound pressure, it can create auditory impact and psychological deterrence on target personnel, forcing them to evacuate; The strong light subsystem uses RGB laser homogenization technology to output high brightness, long-range strong light, which interferes with the target's vision through dazzling effects, causing them to temporarily lose their ability to move or be forced to change course. The two complement each other in synergy, with an electric pan tilt with 360° horizontal rotation and ±45° pitch rotation, and are linked with video surveillance to achieve precise tracking. It also supports dual-mode remote control of ship borne systems and control terminals. The equipment has undergone 10 rigorous environmental tests, including salt spray and vibration. Even in special scenarios such as complex sea conditions, severe weather, nighttime navigation, or narrow waterways, it can stably and efficiently perform denial, dispersal, and warning tasks, fully meeting the non lethal defense needs of ships.

In addition, the establishment of this system can not only enhance the flexibility of ships in carrying out patrol, escort, law enforcement and other tasks, effectively respond to various emergencies, but also minimize unnecessary casualties and property damage while maintaining maritime order and protecting maritime rights and interests, reduce the risk of international disputes, and provide safer and more efficient protection for ships in diversified maritime missions.