



## C310

### Anti-Torpedo Countermeasure System for Surface Ships

#### DESCRIPTION

The C310 is an anti-torpedo countermeasure system for surface ships, designed to cope with current and future generation of active and/or passive torpedoes, wire or non wire-guided, launched alone or in salvo mode. The expendable effectors are based on low cost, lightweight, high performance devices. Surface vessels deploy such devices during the course of pre-determined evasive counter-manoevres, to maximise the ship survivability against modern torpedo attacks.

#### THE SYSTEM

The C310 system includes two types of effectors - stationary jammers and mobile target emulators - and a launching system. This latter is composed of a Control Computer, junction boxes and two trainable launchers carrying a number of compressed air barrels. The number of barrels per launcher is 12 or 8, according to the customer's operational requirement and the ship type. Each barrel is loaded with the relevant effector (Jammers or MTE) and consists of a launch tube, an air bottle and an electro-valve. The launcher is capable to launch the effectors at several hundreds metres from the ship.

The C310 effectors are basically the same as the ones of the C303/S system for submarine protection. Upon requirement, the effectors can be delivered as positive buoyant devices and be

equipped with an acoustic locator (pinger), allowing their recovery at the end of the run and the possibility to be reused for several times for training purposes.

#### CONTROL COMPUTER

The Control Computer system, mounted in the ship's Combat Centre, manages the deployment of countermeasures.

The Control Computer carries out automatically the selection of type, number, deployment angle and range of the countermeasures, and selects the underwater trajectory of the MTE. In addition, it suggests the best ship countermanoeuvre to perform, in order to optimise the survivability to the attack; it also displays the status of the launch tubes (loaded or not) and, through the link with the ship Torpedo Alert System, it automatically controls the launch sequence through launcher rotation, pre-setting of MTE and ejection signals to the air bottles. The Control Computer also displays the post-deployment scenario.

#### OPERATING MODALITIES

The jammer features a highly efficient transducer, covering the whole receiving bandwidth of any torpedo, with a switching power amplifier and high-energy density thermal battery. It generates a very high amount of energy spread over the entire reception band of the acoustic head of the torpedo. By emitting



a high intensity broadband noise for a long time, the jammer masks the target echo as well as the target radiated noise, preventing target acquisition by any torpedo. The jammers are maintained at the operative depth by an air bag, after the flight phase.

The MTE must draw any acoustic torpedo away from its real target. To achieve the deception effect the MTE uses a sophisticated transponder to simulate a real target, generating in real time acoustic responses to any multi-frequency coded pulse emitted by the torpedo. The echo structure is identical to the one of a real target (acoustic length, highlights).

During its underwater run the MTE also radiates noise, in order to simulate a moving target. The noise radiation is performed independently from the emulation function. MTEs feature, over a wide band, a constant target strength, and are compatible with the jammers presence, even at short distance. After the flight phase, the MTE perform their underwater trajectory at the operative depth.

## SPECIFICATIONS

### Jammer

Length: 1,150 mm  
 Diameter: 127 mm  
 Weight: 16 kg

### Mobile Target Emulator

Length: 1,150 mm  
 Diameter: 127 mm  
 Weight: 16 kg

### EXERCISE VERSION: ECS 101A [Exercise Countermeasure System]

The ECS 101A Exercise Countermeasure System is an anti-torpedo countermeasure system in exercise version, designed to perform operational evaluation of torpedoes in presence of countermeasures.

It foresees the deployment of stationary acoustic effectors, aimed at verifying the effectiveness of the defence system

against an acoustic head or a real attacking torpedo.

The system is normally composed by the following main units:

- Countermeasure Control Equipment (CCE);
- Target Vessel GPS System (TVGS);
- N. 5 countermeasure Test Buoys (CTB);
- N. 3 exercise stationary Jammers;
- N. 2 exercise stationary Decoys.

The control of the entire system is performed by the CCE. This equipment, installed on board a support vessel, commands the functionality of the countermeasures.

