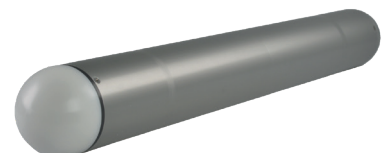




EXPENDABLE COMMUNICATION BUOYS

Ensuring operational capabilities.
Passing on information.



They who have better information remain ready to act.

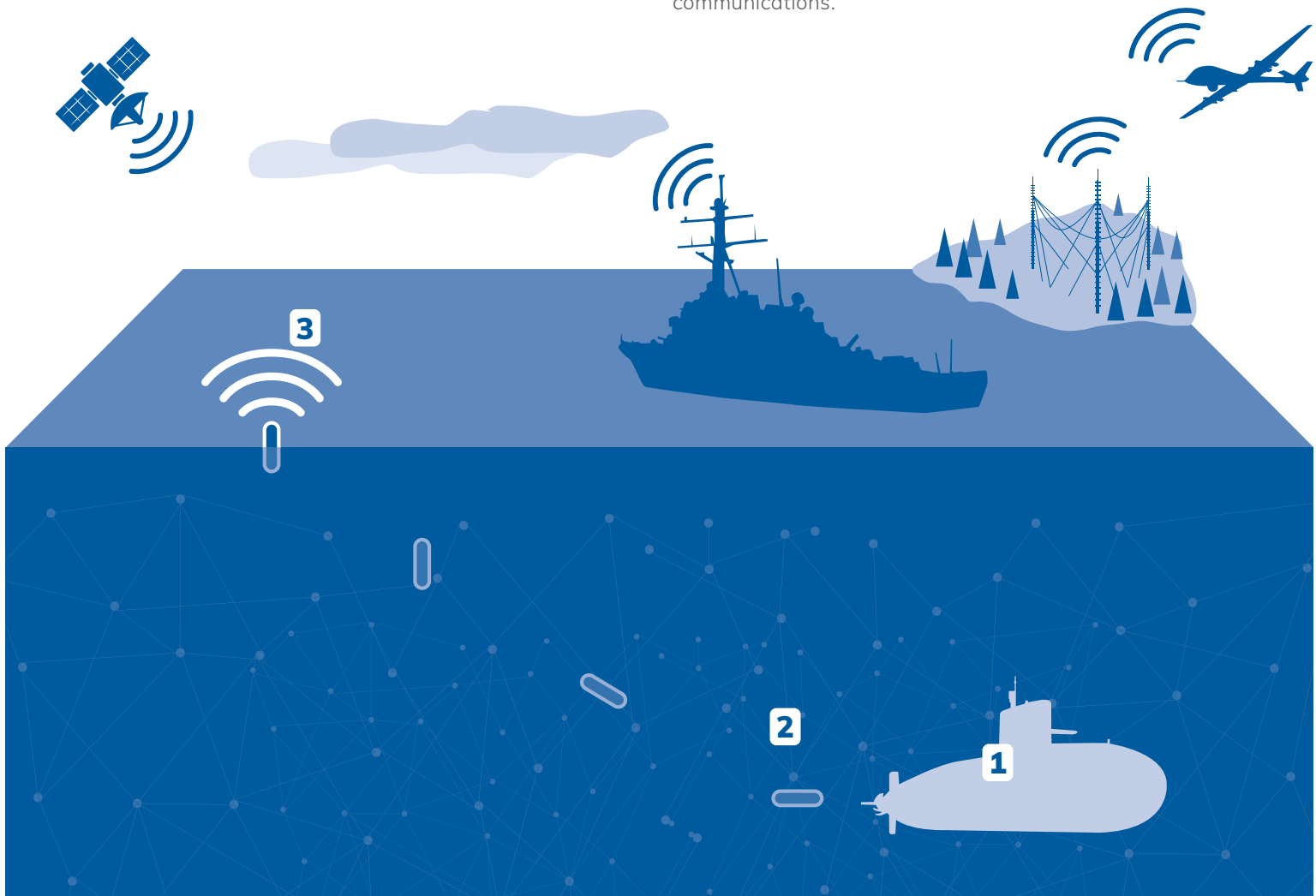
Information has at all time had its share in determining success or failure of military operations. In time, secure and concealed relaying of data essentially contributes to prevailing in challenging situations, minimizing exposure and operational risk.

We at GABLER Naval are able to provide a flexible submarine communication solution that allows reliable and covert communication under even the most demanding operational conditions.

Together with our partners we developed an entire family of expendable communication buoys (ECBs) that is compatible with most ejector locks down to a calibre size of only 100mm without the requirement of expensive retrofits.

The ECBs provide functionalities essential to data communication, navigation, safety and even surface intelligence.

Standard and EPIRB ECB versions support unidirectional transmission of uploaded data. Acoustic and fibre optical gateway buoys even support bidirectional real time communications.



1. Uploading the data

Voice, image or other digital data is transferred via the ECB onboard unit into the buoy. Various onboard unit options including interfaces to combat management systems are available.

2. Buoy ejection

The ECBs are loaded into the signal or garbage ejector lock and launched via compressed air or water pressure. GABLER is able to accommodate all common signal ejector calibres down to 100mm.

3. Data transmission

Once launched, the ECB ascends to the surface and starts transmission of the preloaded data via L-band satellite link. Scuttling of the ECB is activated after successful transmission or battery depletion.

4. Buoy variants

Options for standard ECBs include delayed ascent – allowing the submarine to escape before breaking the surface or EPIRB transponder enabling transmission of distress signals.

Our ECBs are currently available in the following variants:

Standard version ECB.S100 (S for SatCom, diameter 100)



The standard ECB version supports unidirectional data transfer. Data uploaded to the ECB before launching is transmitted to a remote recipient after surfacing of the ECB. Data transmission is conducted via L-band satellite link. Optionally available is an integrated EPIRB transponder for transmission of distress signals. A self-scuttling/-destruction option is available.

Standard version with delayed ascent ECB.SD100 (D for Delayed)



Additional feature of this ECB variant is a programmable ascent delay. After ejection, the ECB first rises to a parking depth of ~20m, stays there for up to 1h and only then breaks the surface for data transmission. This allows the ejecting submarine to reach a safe distance to the potentially detectable ECBs. Otherwise this variant is identical to the standard version.

Acoustic Gateway version ECB.AS100 (A. Acoustics, S: Satcom), ECB.ES100 (Epirb + Satcom)



The acoustic gateway ECB enables bidirectional digital communication between the submarine and remote parties. Data acoustically transmitted from the submarine is relayed via satellite and vice versa. The acoustic gateway ECB is compatible with develogic HAM.UAP acoustic communication platforms and supports JANUS, FRSS and other acoustic modulation and coding protocols. Acoustic communication range of the ECB is up to 8000m. Self-scuttling is supported by default.

Fibre Optical Gateway version ECB.FS100



Besides enabling bidirectional communication, the fibre optical ECB also support subsea navigation via the integrated GNSS receiver, the optional panoramic video option in addition can provide high resolution surface live video. After ejection, this ECB splits into a towed and surfacing section – both sections can pay out a total of 20000m optical fibre proving a high speed link between the submarine and the surface. Also self-scuttling is a default feature.

ECB variant	ECB.S100	ECB.ES100	ECB.AS100	ECB.FS100	
Usage features	Dimensions ¹⁾				
	Ø 99.5 x 1015 mm (or larger)				
	Secure usage depth	1,000 m		600 m	
	Max. ejection pressure	160 bar		100 bar	
	Max. speed at launch	20 kn	20 kn	12 kn	8 kn
	Scuttling	Per SatCom, timer, battery depletion	–	Per SatCom, timer, battery depletion	Per SatCom, timer, battery depletion
	Endurance	up to 21 days	2 days	2 days	6 hours
	Shelf life	10 years		12 years, Service every 4 years	
Integration requirements	On board programming unit	On board programming unit optional	Onboard Integration of HAM.UAP communication system required.	Signal ejector lock modification required	
Communication/tracking	GNSSs				
	GPS, GLONASS, Galileo, Beidou				
	Surface Transponder	IRIDIUM	IRIDIUM & COSPAS/SARSAT	IRIDIUM	IRIDIUM NEXT
	Gateway ECB <-> Sub	–	–	Acoustic communication	Fiber-optic connection
	Range ECB <-> Sub	–	–	8,000 m	20,000 m
System health diagnosis via onboard unit	X	X	X	X	
Options	Delayed ascent	up to 60 min	–	–	–
	Panoramic surface camera	–	–	–	X
	Sound speed profile	–	–	X	X

1) adaptable

ECBs by Gabler Naval – Unique Features



Compatible with all common signal and garbage ejector locks down to 100mm calibre without retrofit ¹⁾



Complete family of ECB variants covering a wide range of usage scenarios



Low maintenance and long shelf live



Custom variants available



Quality “Made in Germany” – meets standard requirements world-wide

1) Applies to standard versions, gateway versions may require additional adaptation

FROM THE OVERALL SYSTEM TO INDIVIDUAL COMPONENTS

Our mast systems and submarine components represent highest reliability and innovation – to the delight of shipyards and navies all over the world, for almost 60 years. Our products can be integrated into every conventional and nuclear submarine base and meet all common military standards.

165

submarines
equipped

130

GABLER
submarine
experts

60

years
of experience

900

masts
delivered