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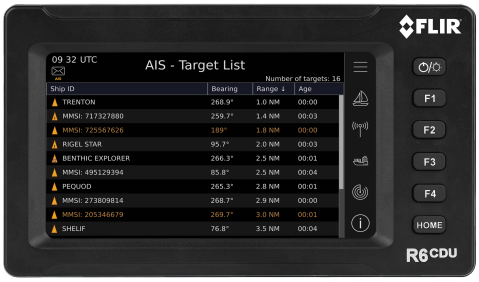
Photo: Swedish Coast Guard

SECURITY AT SEA

R6 Secure AIS

Networked secure transponders for operational security



The FLIR TransponderTech R6 SUPREME Secure Platforms are the successors to the pioneering R5 Secure AIS system. The R6 systems offer full interoperability with the R5 and R4 Secure AIS system and a significant functional growth potential due to the flexible design.

Seamless simultaneous reception of both encrypted and open AIS information

The AIS broadcasting standard is excellent for open information exchange between commercial ships at sea and between ships and shore stations. Open information sharing is however not always suitable for qualified users like Naval forces, Coast Guard, Police etc., who may have a need to exchange non-public information between their own units and still be able to receive the open AIS information.

FLIR has developed the TransponderTech Secure solution, which satisfies these requirements. Since 2005 TransponderTech has been the leading provider of encrypted AIS.

The Secure functionality can be offered as a complete seamless solution from vessels, aircraft, base stations and control centers.

Secure AIS Link

Public AIS operates on two global VHF channels, AIS1 and AIS2. The Secure AIS Link uses a third channel, selected by the user, ensuring minimum interference with public AIS communication. The Secure data link can be used in parallel with AIS1 and AIS2, giving the Secure AIS users the complete AIS picture at all times.

Several groups of Secure users may operate on the same dedicated channel without interference by separation into up to eight different sub-groups using different organisation identities.

Our tailored data access scheme together with operation on the dedicated channel means unrivalled performance when compared to other encrypted AIS solutions, which typically operates on channels AIS1 and AIS2.

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R6 SECURE OPERATION MODES

Normal AIS mode (Active)

This is the Standard SOLAS mode. The system performs all the functions of a normal Class A AIS. Encrypted AIS is not used.

Silent mode (Passive)

The system will not broadcast anything over VHF. It will receive standard AIS messages and encrypted AIS messages.

Tactical mode (Protected)

Transmit only encrypted data. Receive and process standard AIS messages on AIS channels as well as encrypted messages. The mobile units will automatically transmit encrypted position reports.

Hybrid mode

The encrypted data link is active and the unit receives both open and encrypted AIS messages. The unit may transmit both open and encrypted AIS data.

External mode

Used for external encryption solutions. No autonomous transmissions will be made, only transmission of externally input binary messages.

Secure keys

To ensure high quality encryption keys are used, TrandsponderTech offers an advanced key generating tool, suitable for centralized issuing of fleet encryption keys. Keys can be an input manually from printout, sent over an existing encrypted link or conveniently imported from file using the integrated R6 CDU SD-reader. The customer will be in full control of the issuing and handling of the crypto keys.

Up to 128 encryption keys can be stored and automatically activated. The keys will have a start time, and a configurable time of validity. When activated, each key may also set frequency of VHF channel for encryption, position report rate and organization ID. User defined keys may also be used as a static configuration for interoperability.

R6 Crypto solutions

The R6 Secure products are supplied with built-in crypto functions. No external encryption software is required, although supported if needed. In addition to Secure, the R6 Secure systems offers STANAG 4668 Ed.2 Annex C and Annex D type of encryption.

While limited in functionality, the STANAG modes may offer interoperability with other systems when needed as well as an encrypted AIS solution, where a third channel is not available for Secure communication.

Standards

- ITU-R M.1371-5
- IEC 61993-2
- IEC 60945
- IEC 61162-1/2/450
- IEC 62288
- IEC 62923-1/2
- Fully Class A type approved in Normal mode

Communication modes

- TransponderTech Secure Data link
- STANAG 4668 Ed.2
- STANAG 4669 Ed.2

Cipher support *(Export restrictions may apply)*

- DES, AES, (FIPS 140-2) *, Blowfish

Cipher keys

- Up to 128 time limited keys
- Manual input
- External application input
- SD card input
- Encrypted VDL message input

Additional interfaces

- Pre TX pulse output
- External 1PPS input
- Support for external operational mode switch
- Support for external TX control switch

Additional functions

- Colour coded decrypted targets
- Encrypted Text messaging
- User defined startup operational mode
- Web server for configuration and control in absence of R6 CDU

TransponderTech Secure mode only

- 30x faster data throughput compared to standard AIS
- Relay of received AIS targets on Secure Link
- Relay of NMEA radar tracks over Secure Link from Airborne unit
- Fleet separation with Organization IDs
- 1s to 6 min encrypted position report intervals
- User defined encrypted third 25 kHz VHF channel 155-163MHz

See separate R6 SUPREME AIS/VDES data sheet for physical data.

** Encryption module verified in R5 EAIS configuration*

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