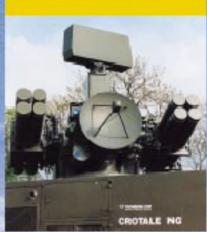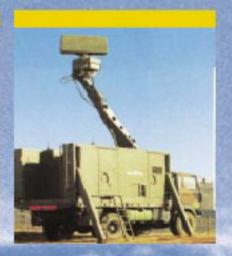# SB 16

Shorads IFF Interrogator

- MK XII / Secure
- Modes 1,2 3/A & 4 / Secure
- 4 days stored codes
- Automatic operation
- Multitarget processing
- Flexible interface
- No COMSEC Computer required
- ISLS / RSLS Beam sharpening
- Qualified on :
  Crotale, Blazer
  Samantha, Clara
  Santal, AN/UPS 3 ...

CROTALE NG

THALES

SB 16 Interrogator

DESCRIPTION

The SB16 MK XII / Secure IFF interrogator system has been designed and developed for radar controlled SHOrt Range Air Defense Systems (SHORADS) (up to 100 km).

The SB16 is compact and of modular construction, it consists of two units :

- the interrogator (transmitter + receiver + video processor + rotary joint interface). Its small size and weight render possible its installations on the rotating part of the radar aerial section, saving up and down links losses.

- the processor (coder + memory module + decoder + reply evaluator + interface + power supply).It is mounted close to the radar display.

In both units, plug-in modules replacement requires no re-tuning at equipment level.

Modes 1,2,3/A and Secure interrogations are stored in a removable memory module, mounted on the processor's front panel, which eliminates the need for a COMSEC Computer.

Modes 1,2,3/A and Secure Mode replies are processed by means of dedicated built-in decoder and evaluator.

The SB16 can be associated either with radar integrated or separate (Yagi or Planar are available) Sum / Delta IFF antenna systems. A rotary joint with two video tracks is enough to interface the interrogator and processor units (1).

The SB16 flexible platform interface requires only 3 video cables or no more than 11 twisted pairs (2) and a 28 Volts / 1.27 Amp line.

An SP12 Memory Loading System is required to program the Memory Module with the appropriate interrogation sequence and processing parameters .

The SP12 is also used with the Mistral, Starburst, Aspic, Eurostinger, IGLA.

(1) : interrogator co-located with antenna
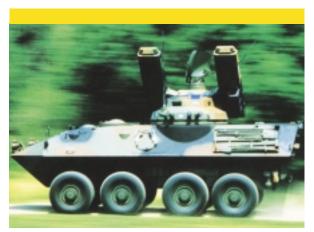(2) : upon platform requirements

OPERATION

Usually the SB16 is synchronized with the radar of the weapon system and IFF results are displayed on the radar display.

When fitted with a manual control box (optional), the SB16 passive decoder is provided with local controls and display facilities.

Interrogator spatial coverage is properly controlled and matched to the weapon system using ISLS, RSLS and reply gating techniques as well as appropriate antennas.

Blazer LLADS

Santal SHORADS

The SB16 is capable of SIF 1, 2, 3/ A and Secure Modes. Its removable Memory Module can be programmed with various interrogation sequences such as :

- Secure Mode + one SIF (1st turn/1st mode ; 2nd turn/2nd mode)

- two SIF Modes (1st turn/1st mode ; 2nd turn/2nd mode)

- Other patterns are possible.

The memory capacity provides for up to 4 days of SIF and crypto secure operation, and takes account of code transition period conflicts.

Upon radar request, prior to firing, interrogations are transmitted in the appropriate sector of azimuth, according to the programmed IFF sequences.Replies are processed within radar range gating.

An IFF sequence consists of a short burst of interrogations . Exposure to ELINT is kept to the minimum since transmission is stopped automatically once the target is confirmed as a Friend.

When selected, Secure Mode challenges are transmitted first. If the target is not confirmed as a Friend or no replies have been received from it, the target is challenged in SIF.This feature minimizes the probability of fratricide.

In case of two targets, close in range within the antenna beam, two different interrogation patterns are used improving the discrimination process.

The operator full confidence in the IFF system is guaranteed by the BITE which performs a complete test during each interrogation.

SB16 status is checked by injecting RF replies at the receivers front end.

BITE and Friend status indications are displayed on the radar display using appropriate video symbols.

MEMORY LOADING SYSTEM

The SP12DM is the Memory Loading System for SB14 or SB16 IFF interrogators. The SP12DM permits to load the codes into a first memory module in less than 2 minutes and repeat the operation every 15 seconds with the following ones . It is controlled by a microprocessor and provides touch screen interface .

This ruggedized equipment , designed for use on the battlefield can be powered within the 115 to 240 V AC range and by 24 V DC.

It includes room and connection for a KIR or miniaturized cryptocomputer .

SP 12 DM Memory loading System

SB 16

Shorads IFF Interrogator

General characteristics

INTERROGATOR

Transmitter	All Solid State
Frequency	1 030 ± 0.2 MHz
Output Power Sum or Delta	≥ 80 Watts @ 1 % DC
Receiver	Dual channel superheterodyne
3 dB Bandwidth	> 8 MHz @ 1090 ± 0.3 MHz
Minimum Decoding Level (MDL)	≥ - 65 dBm
RSLS, STC	according to application
BITE	Automatic Operation

PROCESSOR

Decoder / Evaluator	ASIC
Range	up to 100 km
Time to identify	0.1 Sec. (typical)
Modes	SIF 1, 2, 3/A and Secure (memory)
Operation	Automatic (ACC) or Manual
BITE	Automatic operation

Physical

INTERROGATOR

Dimensions	(W x H x D)	254 x 180 x 110.5 mm
Weight		2.5 kg
Power requirement		28 V DC

PROCESSOR

Dimensions	(W x H x D)	125 x 376.5 x 217 mm
Weight		7 kg
Power requirement		28 V DC / 1.27 A max.

Environment

Temperature	Operating	- 40 ℃ to + 71 ℃
	Storage	- 46 ℃ to + 71 ℃
Rainfall, Immersion		Weatherproof
Shocks, Vibrations & Drop Testing		Shockproof
EMC		MIL STD 461 C / 462 C

THALES

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