



ARGOS

Thuraya Interception L-Band System

Introduction

In a world of crisis and conflict, and as part of measures to fight crime and terrorism, the interception and analysis of satellite communication has a significant role to play. Thanks to the analysis of communication content and networks and the identification of relevant interrelations, military forces and intelligence services are able to recognise dangers early and take appropriate action to combat such dangers and fight criminal activity.



The introduction of satellite communication—which enables telephone calls to be made and data to be exchanged from anywhere in the world—has led to a worldwide communication revolution. The resulting communication channels are used intensively by persons and organisations that are of interest to intelligence services, armed forces and police authorities. Consequently, such channels must be subject to analysis using modern detection systems.

The possible applications and the rapid increase in users of the Thuraya satellite communication system have made the procurement of suitable reconnaissance equipment essential. The increase in the coverage area as a result of additional Thuraya satellites has made this need even greater.



About Rheinmetall Defence

Rheinmetall Defence is the international leader in the field of Thuraya and Inmarsat satellite intelligence and a long-standing partner of military organisation and intelligence services.

Rheinmetall Defence has been developing and delivering systems for the reconnaissance of satellite communication connections since the beginning of 1990. At present, over 40 tactical and more than 10 strategic intelligence systems are in use by our customers around the world.

Rheinmetall Defence is part of the Rheinmetall Group and, with approx. 6,800 employees, has a worldwide turnover of €1.4 billion.

System Architecture

The Thuraya Interception L-Band System ARGOS consists of the following subsystems:

- Antenna Subsystem:
 - RF signal acquisition and down conversion
- Sensor Subsystem:
 - IF signal digitisation, data demodulation and decoding
- Data Processing and Storage Subsystem



Technical Data (Basic Configuration)

Antenna Subsystem

- L-Band antenna
 - Flat Panel 90 cm x 90 cm
 - Lightning protection
- Digital down converter (L-Band)
 - 34 MHz Bandwidth (max. 1088 Thuraya frequency channels)
 - Automatic Level Control
- Time reference
 - GPS antenna (with lightning protection)
 - NTP Server

Sensor Subsystem

- Programmable Multi-Channel Receiver
 - Digitisation of all L-Band frequency channels
- Signal Processing Unit
 - Demodulation and decoding of 102 L-Band frequency channels

Data processing and Storage Subsystem

- Server for data processing and intermediate storage

Interfaces

- Link to the strategic Thuraya Interception System ARES

Power Supply

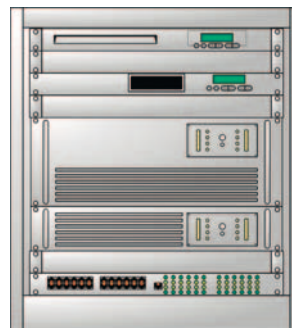
- 115 – 230 V AC
- 50 – 60 Hz
- Approx. 1.5 kW

Dimensions

- 19" rack
- Height 0.8 m

Options

- Ruggedised version
 - Shock and vibration proof
 - Air-conditioned
- Multi-level filter to reduce the amount of data acquired by the system
 - For use of network connections with limited bandwidth
 - To reduce the number of sessions to analyse
- Increase of the L-Band channel in steps of 136 frequency channels per upgrade
 - To monitor additional Thuraya frequency channels



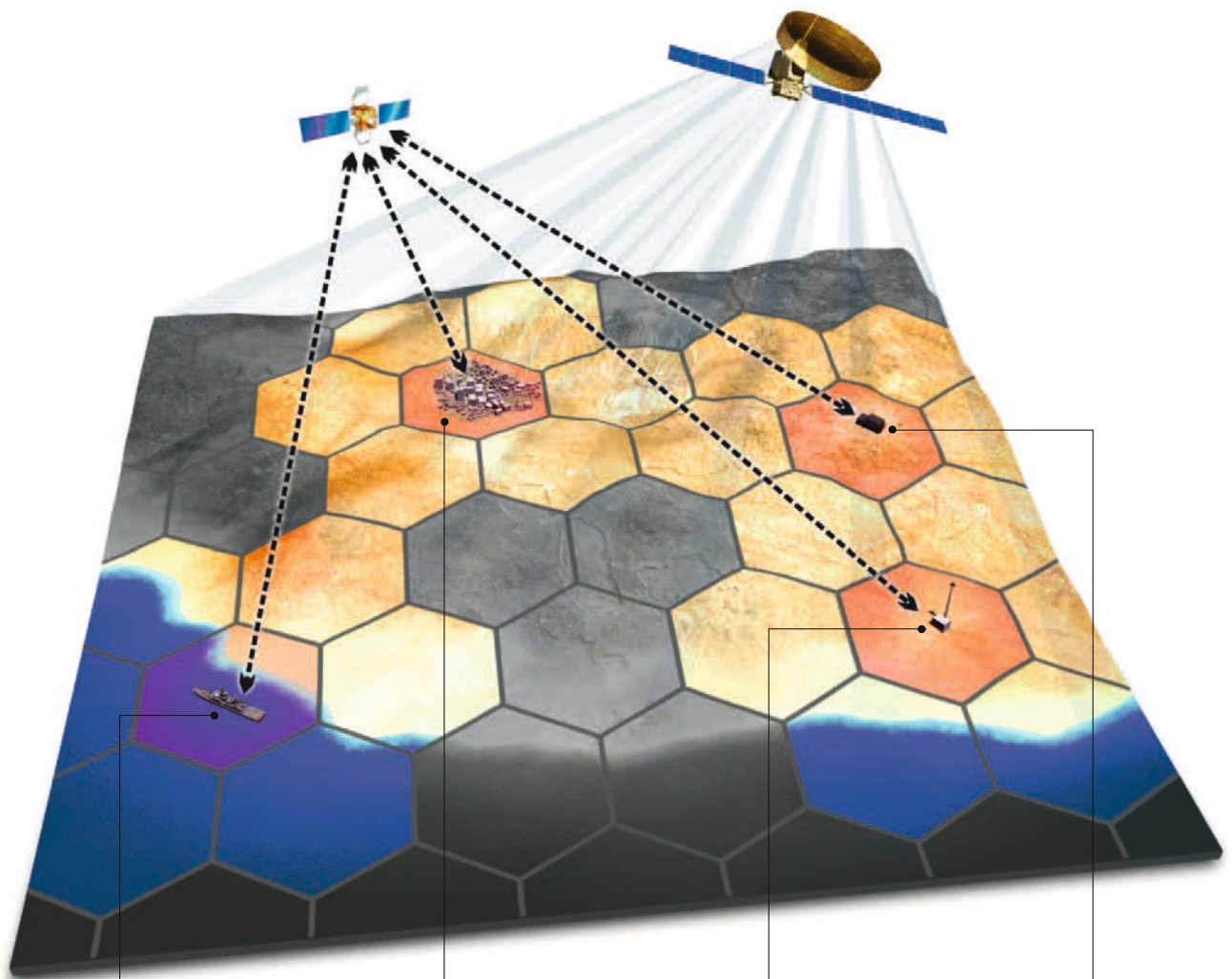
Time reference

Downconverter L-Band

Broadband Frontend
102 L-Band traffic channels

Data/Storage Server

Uninterruptable Power Supply



ARGOS – Maritime



ARES – Strategic System



ARGOS – Shelter



ARGOS – Vehicle Based

Key Features

The modern interception system, ARGOS intercepts calls from Thuraya L-Band downlink channels in selected, usually remote spots, thus increasing the coverage area of the stationary ARES interception system. Depending on the position of the L-Band antenna, up to six adjacent spots in addition to the centre spot, as well as any further spots, can be intercepted.

ARGOS can be used both in combination with the strategic ARES system or in a standalone mode. On connection to ARES, information is compressed and forwarded to the stationary system via a WAN link (e.g. VSAT) and compiled into a complete session with the C-Band data in order, for instance, to acquire and evaluate an entire duplex telephone conversation. Should the data link be disconnected, the acquired data is temporarily stored in the integrated storage system and then automatically forwarded to the strategic system once the link has been re-established. Multi-level filters can be used to reduce the amount of data forwarded to the strategic system. ARGOS can operate in standalone mode without supervision. The system does not require its own decryption unit.

To extend ARGOS into an independent interception system, a decryption unit and PC workstation can be easily added to the system, thus allowing the reproduction and evaluation of the acquired information on site. The software configuration is modular and ranges from the reproduction of speech, fax and data calls, to link analysis, OCR and speech recognition.

Thanks to the system's modular design, several ARGOS spot beam sensors can be connected to the strategic system ARES.

ARGOS can be sized to the amount of Thuraya traffic expected in the targeted areas. The basic configuration allows 102 frequency channels to be monitored with potentially more than 600 simultaneous telephone conversations. The channel capacity can be increased in steps of 136 frequency channels in each case. The use of state-of-the-art DSP and FPGA technology allows ARGOS to be housed in a spacesaving portable 19" rack. The compact and modular design offers major advantages in terms of life-cycle-cost, weight, required space and electricity and climatization, etc..

Depending on the scenario, ARGOS may be installed as either a stationary or mobile system (vehicle, container or vessel). Optionally, the system can be equipped with an additional L-Band receiving unit to monitor the satellite uplink (mobile to satellite). Then, the equipment can be used as a mobile tactical L/L-Band system for the interception and localisation of Thuraya terminals in the area of operations (ARTEMIS system).

RDE has a proven competence of providing complete turn-key systems including all the corresponding infrastructure, installation, commissioning and training. Existing components, such as customer-specific analysis software, can be easily integrated into the system. RDE offers maintenance and support contracts, tailored to customer requirements, during the utilisation phase.



Rheinmetall Defence Electronics GmbH · Brüggeweg 54 · D-28309 Bremen
Tel. +49 421 457-01 · Fax +49 421 457-2900 · www.rheinmetall-defence.com