



Fibre-optic Communication Network



THALES

THALES NAVAL DEUTSCHLAND

INTEGRATED COMMUNICATION SYSTEM FOR SHIP OR SHORE

Secure, reliable and prompt communication and switching of voice, data and video are assuming ever increasing importance for effective command and control, at sea, on air and on shore. During missions, immediate and versatile access to on-board communication systems as well as to radio communication with other naval vessels and shore stations is crucially important. Therefore, fast and flexible software-supported systems are necessary for the integration of internal and external communication at all levels. All communication subsystems must be interconnected and centrally managed.

To meet these military requirements, THALES NAVAL DEUTSCHLAND, manufacturer and integrator of naval communication equipment for more than 25 years, has developed FOCON (Fibre-Optic Communication Network) an advanced and in-service-proven communication system.

Summarised FOCON is a digital, integrating, decentralised and redundant system, suitable for all classes of naval vessels as well as for shore facilities.

FOCON meets naval requirements concerning shock resistance, vibration, climatic conditions and electromagnetic compatibility. The system structure is connected by a high-capacity, two-core, fibre-optic cable through which all user information is distributed and exchanged.

The basic FOCON configuration is a ring structure, equipped with a number of network nodes to which all sub-systems are interfaced. Fibre optic intermeshing lines provides a high system survivability. The use of fibre-optic cables guarantees best protection against EMI and allows an easy system expansion to meet changing requirements.

Information is transferred in a synchronous transmit mode by means of Time Division Multiplexing (TDM). With a transfer capacity of 128 Mbit/s FOCON systems can serve several thousand users. The particular system organisation employed in the network ensures that contention or collision among users attempting to gain access is impossible.

Basic system functions and connection control are performed by means of firmware. In the event of failure or damage, the network will reconfigure automatically in milliseconds. As a benefit for the operator, FOCON has user-friendly network management facilities for system monitoring and programming, for configuration of displays, and for indication and analysis of faults. The comprehensive network and equipment management software package can be provided for various software environments, including WINDOWS NT and UNIX.



*Remote Multifunction Terminal
RFT10*



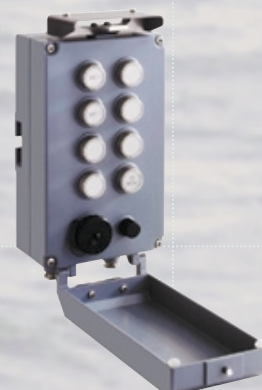
*Remote Voice Terminal
RVT32*



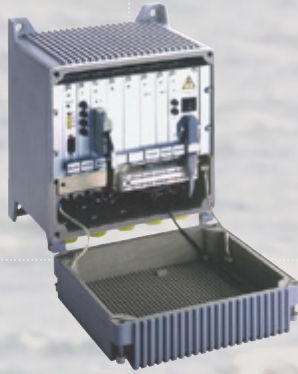
*Remote Voice Terminal
RVT16*



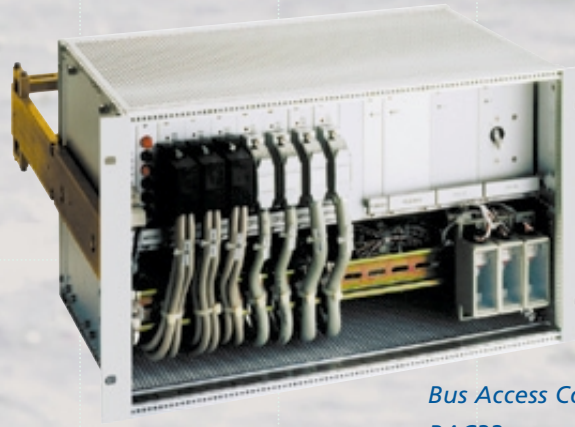
*Remote Small Terminal
RST16*



*Remote Watertight Terminal
(RWT08)*



*Bus Access Concentrator
BAC12*



*Bus Access Concentrator
BAC32*

Finally, the extensive modularity and standardisation of FOCON results in easy future adaptability, low cost and simplified logistics. The digital data structure of FOCON complies with worldwide ISDN standards. Any type of data can be passed on via the network. Voice circuits are handled in a PCM-coded format in accordance with the CCITT G.711/G.712 recommendation.

Terminals

The Terminals are equipped with a programmable key-pad providing all facilities usually required for parallel internal and external communication access.

Multifunction Terminal (MFT)

The MFT is a microprocessor-controlled terminal with dual homed connection to the fibre-optic loop. It provides a capability of up to 120 voice-connections of any type. Operation of the MFT is menu-supported.

Remote Multifunction Terminal (RFT)

The RFT is simply a remote MFT connected to a Bus Access Concentrator (BAC) by means of a Bus Terminal Interface (BTI) with S_0 interface functionality.

Bus Voice Terminal (BVT)

A modification of the MFT, the BVT has dedicated push buttons instead of the menu-supported keyboard of the MFT.

Remote Voice Terminal (RVT)

The RVT is a modification of the MFT, with dedicated push buttons instead of the menu-supported keyboard of the MFT.

Remote Small Terminal (RST)

The RST is a high shock proofed version of the RVT.

Remote Watertight Terminal (RWT)

The RWT is the watertight version of the RVT for outdoor use.

Bus Access for Subsystems

Bus Access Concentrator (BAC12)

The BAC12 is a network node with a connection to the fibre-optic loop interfacing up to 12 analog or digital users.

Bus Access Concentrator (BAC32)

The BAC32 is an extended BAC12, interfacing up to 32 analog or digital users.

Bus Interface Unit (BIU)

The BIU's are replaceable interface boards plugged to the BAC's, with up to 4 ports each, to interface a variety of sub-systems.

BIU's currently in service:

- Voice Interface (VIF)
- Bus Terminal Interface (BTI)
- Data Interface (DIF)
- Crypto Interface (CIF)
- Dial Telephone Interface (DTI)
- Broadband Interface (BIF)

System Features

- Integrated and simultaneous communication of voice, video and data
- Interoperability with subsystems by means of standard interfaces and multi-purpose nodes
- Large system capability
- High flexibility and survivability
- Non blocking communication
- Unlimited conference capability
- Protection against interception, EMI and EMP by means of fibre optics
- Comprehensive network management functions
- Easy installation and setting to work
- Low maintenance cost

Network Nodes

Network nodes provides a wide variety of connections and easy adaptable subsystem linkages. These nodes include:

- Voice Communication
 - Point-to-Point
 - Hot-line
 - General Call
 - Group Call
 - Manual/Automatic Conference
 - Radio Line Connection, plain or encrypted

- Tactical Data Link Connection
- Data Communication
- Video Signal Transfer
- Multiple Simultaneous Communication.

Subsystems Supported

THALES NAVAL DEUTSCHLAND has a track record of successful co-operation with shipyards and other suppliers concerning installation, integration and servicing of its systems. FOCON integrates and supports the following subsystems:

- Radio and Crypto Equipment
- Radio Remote Control
- Tactical Data Link Equipment
- Flight Deck Communication
- SATCOM
- Message Handling
- Public Address
- Alarm Units
- Sound Powered Telephone
- Navigation and Engine Control
- Wireless Communication
- Audio Recording
- Dial Telephone
- Computer Network

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