ICC-201
ICC-251

shaping the future
...in VEHICULAR COMMUNICATIONS

ICC-201 & ICC-251 INTERCOM SYSTEMS

Military land vehicles

Patrol and rescue crafts

Command posts and shelters

Photo: X10 Patrol RIB
North Sea Boats Indonesia

EID

ICC-201 & ICC-251 Intercom Systems

ICC-201 and **ICC-251** are software defined Digital Intercoms for vehicular and shelter-based communications. Its architecture allows local communication among crew members of armoured vehicles, small vessels or shelters and their access to radio equipment; voice and data communications are supported, either over the air or via copper and optical fibre cable.

Both Intercom systems are compatible with existing combat net radios, supporting voice, data and radio remote control and featuring internal active noise cancellation for high quality voice intercom in very noisy environments. Customization and versatility are key benefits of these intercom systems; several central units and terminals are available to best adapt to specific types of vehicles; a powerful computer based configuration tool enables the system configuration according to the specific mission requirements.

ICC-201 performs as a comprehensive Integrated Communications Centre. As such the ICC-201 IP Intercom system allows concurrent software applications: **Intercom** for intercommunication between crew members and external parties via radio communication and **Radio Gateway** for radio integration on military VoIP (Voice over IP) networks. Ethernet switching, embedded optional IP routing, WIFI access point and embedded computer to run user applications (VoIP call control, BMS, etc.) are available features.

IC-201

ICC-251 Compact Digital Intercom System includes a built in commander terminal (see CC-202 features) in a ruggedized and very compact design. This unit was specially designed for usage in vehicles where space is at a premium, but advanced features such as noise cancelation, voice priority over data and radio remote control are required.

IC-251

Technical Characteristics

Mechanical		Electrical	IC-201	IC-251
Dimensions (W x D x H)		Power Supply (MIL-STD-1275)	9 to 33 VDC	9 to 33 VDC
IC-201 Central Unit	280 x 300 x 88 mm	**Power Consumption (24V DC)** with 4 users/2 radio & standard helmet	<17 W	<7 W
IC-251 Compact Central Unit	174 x 142 x 80 mm			
Terminal Unit CC-20X	174 x 120 x 54 mm	Crew Members	up to 15	up to 7
Weight		Analogue Radio Interfaces	6 x (0 dBm @ 600 Ω, PTT, Squelch)	3 x (0 dBm @ 600 Ω, PTT, Squelch)
IC-201 Central Unit	5.7 kg			
IC-251 Compact Central Unit	1.1 Kg	Digital Radio Interfaces	4 x (3 x RS232 + Ethernet)	3 x (3 x RS232)
Terminal Unit	0.85 Kg	PC/Data Equipment Interfaces	4 x Ethernet + 2 x RS232	2 x RS232
Environmental	**MIL-STD-810G**	Optical Fibre Interfaces	2 x Ethernet (optional)	_
Operation Temperature	- 40 ºC to + 70 ºC *	Embedded IP Router	Yes (optional)	_
Shock	method 516.6	Wireless LAN	1 x 802.11 b/g/n (optional)	_
Vibration	method 514.6			
Humidity	method 507.5			
Leakage	EN 60529 IP56 *¹			
EMI/EMC	MIL-STD-461E			
	EN 61000-4-2 Level 4			

* +60 ºC for IC-201
*¹ optional waterproof (method 512.5, 1m@2h)

Noise cancellation is copyright (c) 1995-2006 SPIRIT.

Standard Terminals

CC-201 Crew Terminal

The CC-201 Crew Terminal enables the connection of the crew Active Noise Reduction (ANR) or passive headsets or helmets. This compact device features two knobs, one setting the received audio volume and the other selecting the Intercom Group, which defines the terminals and radios the user is connected to, in accordance with the downloaded mission plan and the operating mode selected by the Commander.

CC-202 Commander Terminal

The CC-202 Commander Terminal includes the CC-201 features plus the selection of the system operating Mode, which defines in a very flexible way the system behaviour; among many other features, the internal access between crew members, the access to radio equipment, the radio frequency, the radio's RF output power, the crypto or plain mode and the voice or data mode can be all controlled in accordance with the mission plan simply by the Mode rotating switch.

CC-203 Double Terminal

The CC-203 Double Terminal enables two users to share the same physical terminal. Each user has independent access to basically the same features as the CC-201, enabling a very compact and low cost implementation.

CC-210 Advanced Terminal

The CC-210 Advanced Terminal complements the standard CC-202 Commander Terminal functionalities by adding a 5 inch color LCD display with touch screen and hard keys. The CC-210 provides an intuitive graphical user interface that provides additional information such as system status report, on line features activation, radio equipment remote control and VoIP operation with dial pad and phone address book.

CC-230 Active Loudspeaker

The CC-230 is an active loudspeaker designed to monitor received signals from a radio equipment or Intercom in a compact and rugged design, adaptable to a wide range of installation needs.

Vehicle communications suite

Combat Net Radios
- Double HF/VHF/UHF Combat Net Radio
- Double 50W VHF linear power amplifier
- Transec and Comsec

CC-201
- Intercom/radio group selection
- Plain/cipher indication

ICC-201
- Internal and radio communications
- Radio remote control
- LAN and WLAN switching and routing
- Embedded applications computer

HF ATU
- 20W HF Antenna Tuning Unit
- Hopping capable
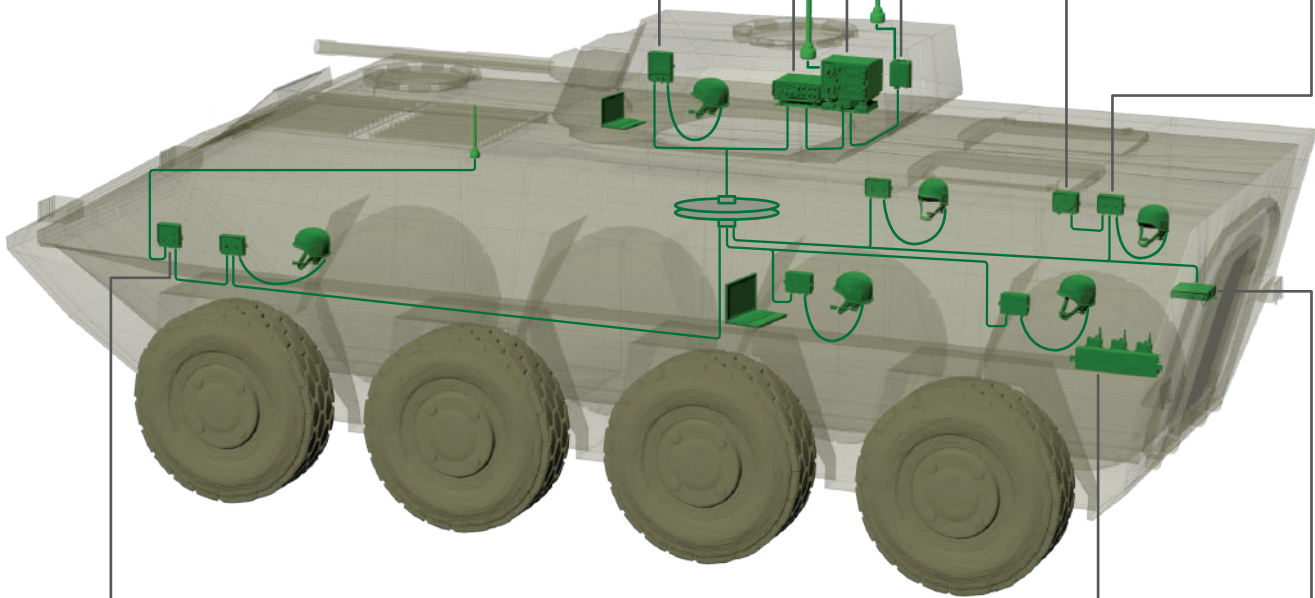- Optical remote control

CC-210
- Graphical user interface
- Communication system remote control
- Intercom/radio group selection
- Plain/cipher indication

CC-230
- Active Loudspeaker
- Volume Control

TWH-104G2 Vehicular Gateway
- Gateway between the dismounted crew, vehicle crew and Combat Net Radios
- Configurable access rights
- Data capable (USB and RS232 data interfaces)

TMC
- Rugged electro-optic converter
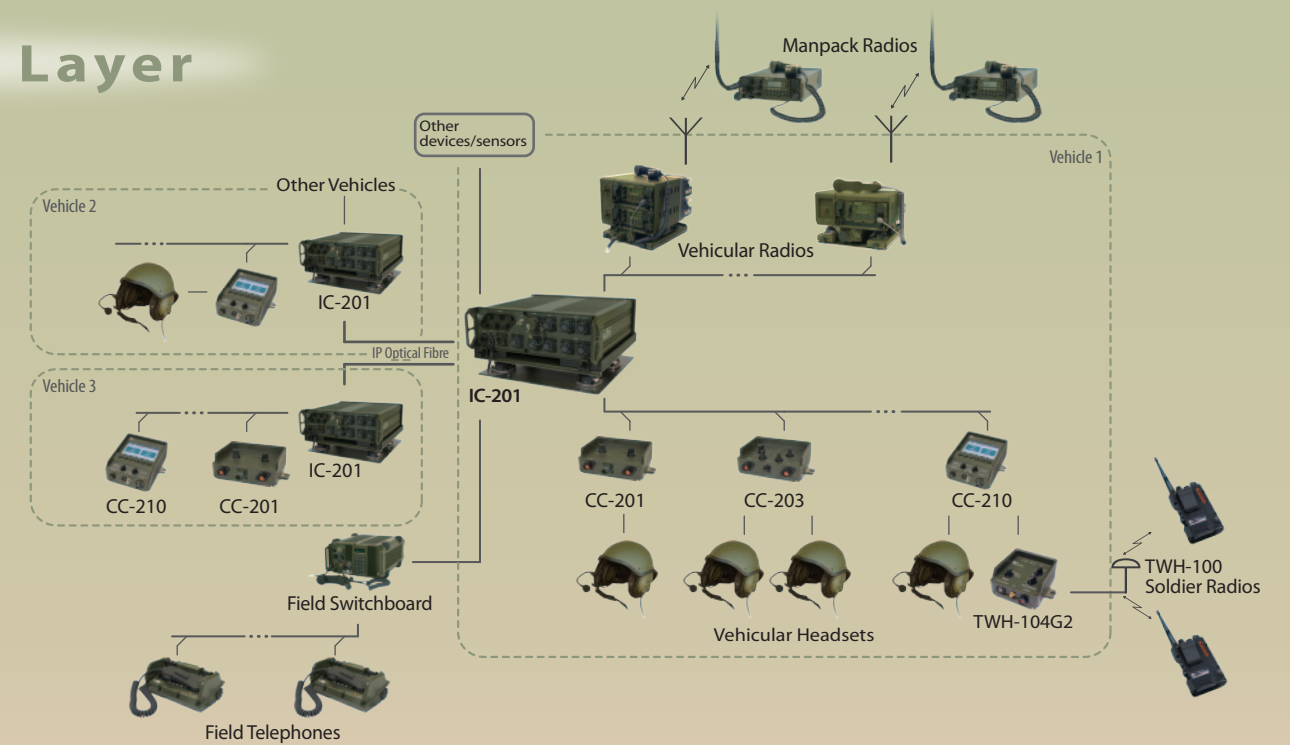- Cost saving on vehicle slip-ring

TWH-100 Series Personal Radio
- Wireless communication
- Secured links
- Full duplex multiuser conference
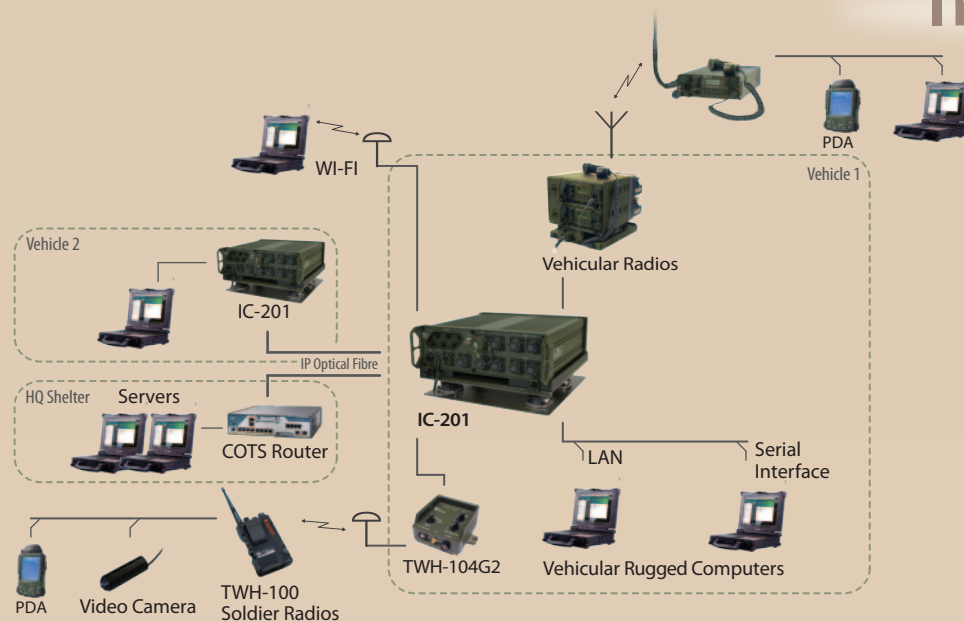- Simultaneous voice and data
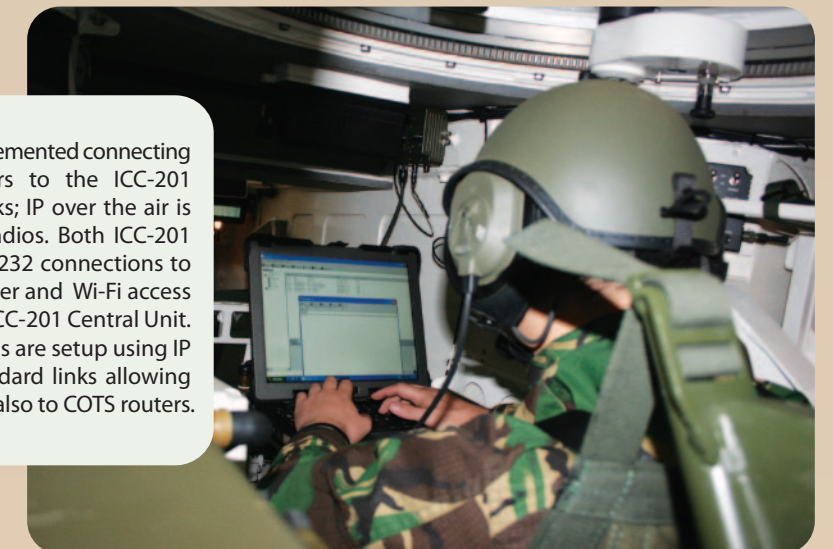- Built-in GPS

Intercom Voice Layer

Digital connection to the voice terminals avoids interference; the Central Units embed Active Noise Cancellation, complementing the headset's optional Active Noise Reduction. The radio settings are remotely selected from the Commander Terminal. Inter vehicle voice connections are set up using VoIP over optical fibre.

Field Telephone Switchboards, Field Telephones interfaces and Wireless access to dismounted soldiers are also provided.
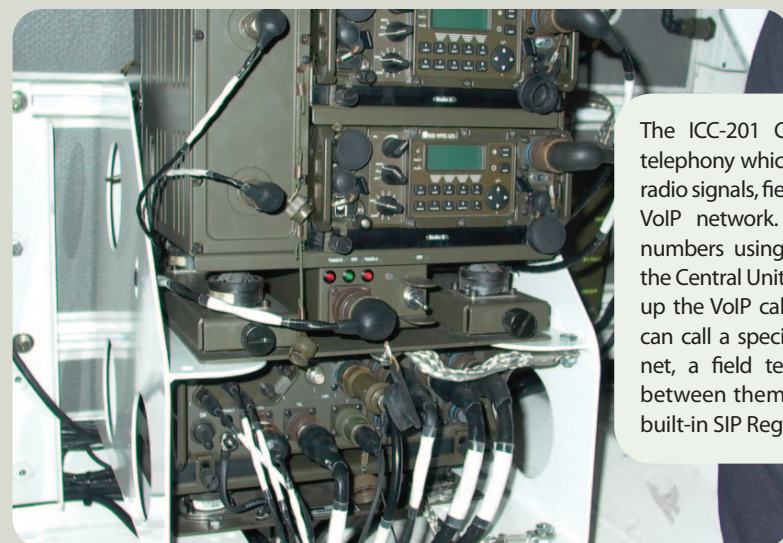

Manpack Radios

Other devices/sensors

Vehicle 1

Vehicle 2

Other Vehicles

IC-201

Vehicular Radios

IP Optical Fibre

Vehicle 3

IC-201

CC-210   CC-201

IC-201

CC-201   CC-203   CC-210

TWH-100 Soldier Radios

Field Switchboard

Vehicular Headsets   TWH-104G2

Field Telephones

Intercom Data Layer

PDA

WI-FI

Vehicle 1

Vehicle 2

Vehicular Radios

IC-201

IP Optical Fibre

HQ Shelter   Servers

COTS Router

IC-201

LAN   Serial Interface

PDA   Video Camera   TWH-100 Soldier Radios

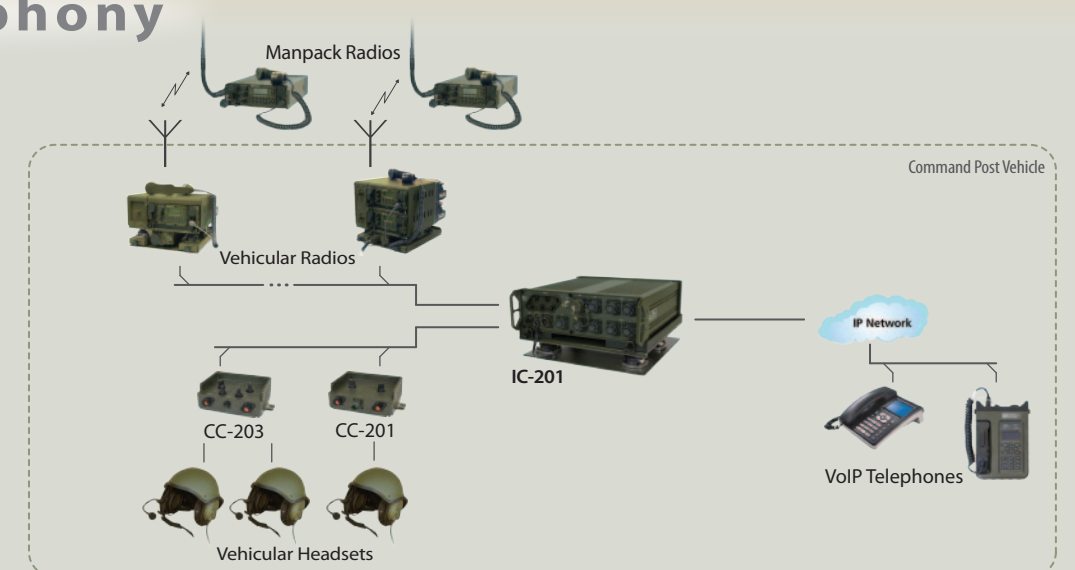TWH-104G2   Vehicular Rugged Computers

The intra-vehicular LAN is implemented connecting vehicular rugged computers to the ICC-201 Central Unit via Ethernet links; IP over the air is possible using IP enabled radios. Both ICC-201 and ICC-251 also support RS232 connections to computers and radios. A router and Wi-Fi access point is embedded into the ICC-201 Central Unit. Inter vehicle data connections are setup using IP over optical fibre using standard links allowing straightforward connections also to COTS routers.

Built-in VoIP Telephony

The ICC-201 Central Unit features built-in VoIP telephony which enables the integration of analog radio signals, field telephone and vehicle crew into a VoIP network. These users can dial telephone numbers using the available DTMF functionality; the Central Unit detects the DTMF signaling and set up the VoIP call. Inversely, the VoIP network users can call a specific group that may include a radio net, a field telephone, crew, or a combination between them. The Central Unit also supports a built-in SIP Registrar with integrated IPBX features.

Manpack Radios

Command Post Vehicle

Vehicular Radios

IC-201

IP Network

CC-203   CC-201

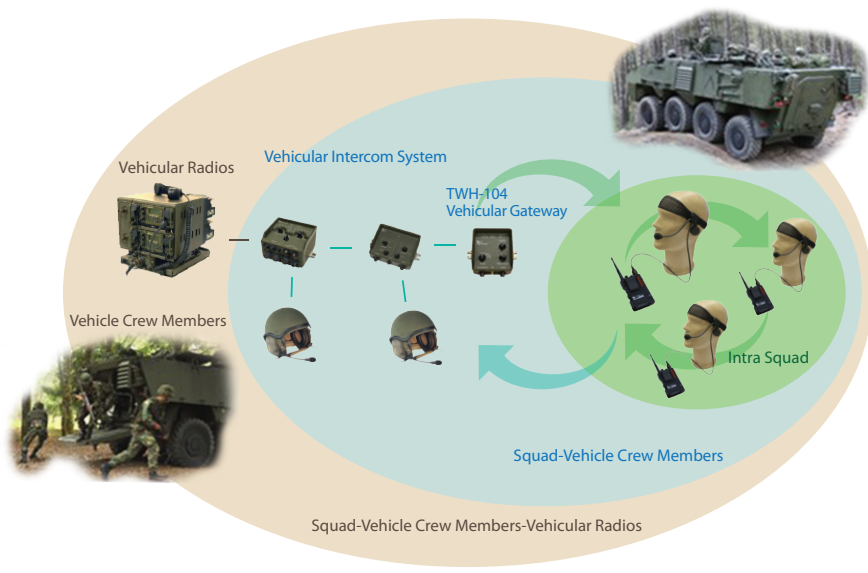Vehicular Headsets

VoIP Telephones

TWH-100 series dismounted soldier radio

The TWH-100 series Personal Radio is a very compact military wireless unit that provides wire free communication between outside deployed crew members and the vehicle wired crew connected to the intercommunication system.

It features encrypted voice and data, full duplex multiuser conference, separated control of communication (to crew members, to radios, etc.), VOX, Whisper mode and guided voice prompt menus for easy operation.

The main components of TWH-100 series Personal Radio are the TWH-101R/104R Personal Radios, a lightweight, compact and low power wireless stereo radio transceiver compatible with different kinds of headset and helmets; the TWH-104G, a gateway from a deployed TWH radio network to an intercom system such as ICC-201, ICC-251 or other, and the TWH-101C, a charger station for the mobile transceivers.

Typical Application Scenario

TWH-104G2 Vehicular Gateway

The TWH-104G2 Vehicular Gateway allows the extension of the vehicle intercom features to the dismounted crew members (Squad), providing differentiated access to dismounted Squad members only, to vehicle crew members or to vehicular radios, supporting voice and data services.

TWH-101C3 Charger (3 positions)

The TWH-101C3 fast battery charger enables full charge of the batteries inside the transceiver without needing to remove them. It acts also as transceiver holder during transportation.

ICC-201 & ICC-251
Intercom Systems

- Available functionality:
    - Intercommunication
    - VoIP Gateway and Call Manager
- Voice and Data Communication
- Serial and Ethernet Data Interfaces
- Wired, Wireless and Optical Fibre Interfaces
- Up to 6 Radios and 15 Crew Members
- Radio Equipment Remote Control
- Wired and Wireless Headsets
- Interface to Cipher Equipment, Modem, Alarms, etc.
- Active Noise Cancellation
- VOX (Voice Activity Detection)
- IP Routing
- Comprehensive Built-In Test
- Powerful Computer Based Configuration Tool

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