

**Coral Telecom Limited**

E2, Sector 63

Noida-201301, INDIA

T: +91-120-4035801/802/822

F: +91-120-4035888

E: [pradnyil@coraltele.com](mailto:pradnyil@coraltele.com)

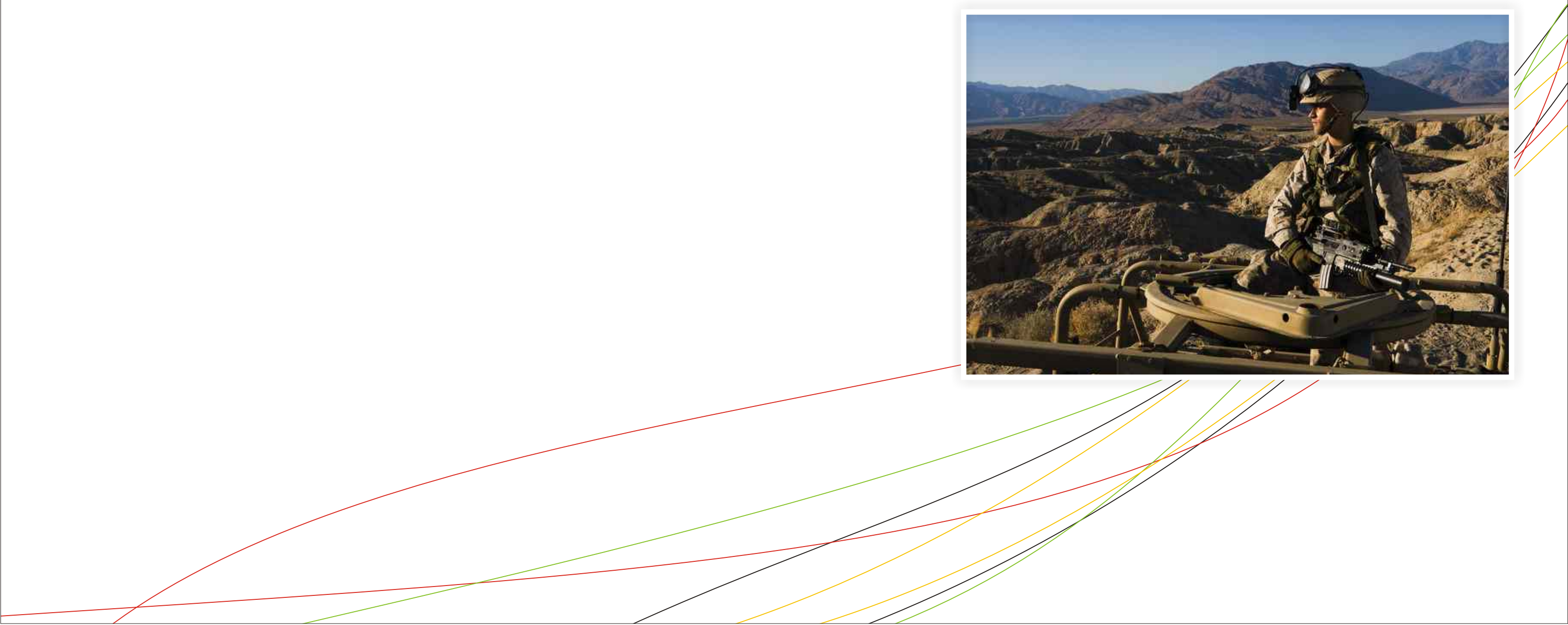
[sumeet@coraltele.com](mailto:sumeet@coraltele.com)

[harishsharma@coraltele.com](mailto:harishsharma@coraltele.com)

[www.coraltele.com](http://www.coraltele.com)



TACTICAL COMMUNICATION SOLUTIONS 



Recent years have witnessed that during emergencies such as natural disasters, terrorist attacks and wars, the single largest factor which determines the success of the operation is efficient communication. Unfortunately in the era of modern technological development, what exist today are multiple systems used by various rescue & recovery agencies which are disconnected from each other. These systems use different technologies e.g. Radio's with different frequency bands such as UHF/VHF/HF which cannot communicate with each other, GSM/CDMA networks, Wi-fi networks operating on Ethernet and conventional landline networks. The need of the hour is an inter-op device which will offer a common platform to connect all these contemporary but disjointed communication systems

Coral iConnect is a radio interoperable system, which has the ability to work with other systems or products without special effort on the part of the customer. The device provides the facility to any public-safety official to talk to whomever they need to, whenever they need to, independent of the system used but with proper authentication.. Coral i-connect enables different types of communication systems, currently in use, to work with each other and making it very easy for the users of these different systems to converse.

The iConnect is an excellent interoperable solution for the Defence segment, as it provides seamless integration with multiple types of radios, operating over different frequency ranges. By deploying an iConnect system, users will be able to call a radio set from their desktop phone or vice-versa.

## SYSTEM DESIGN

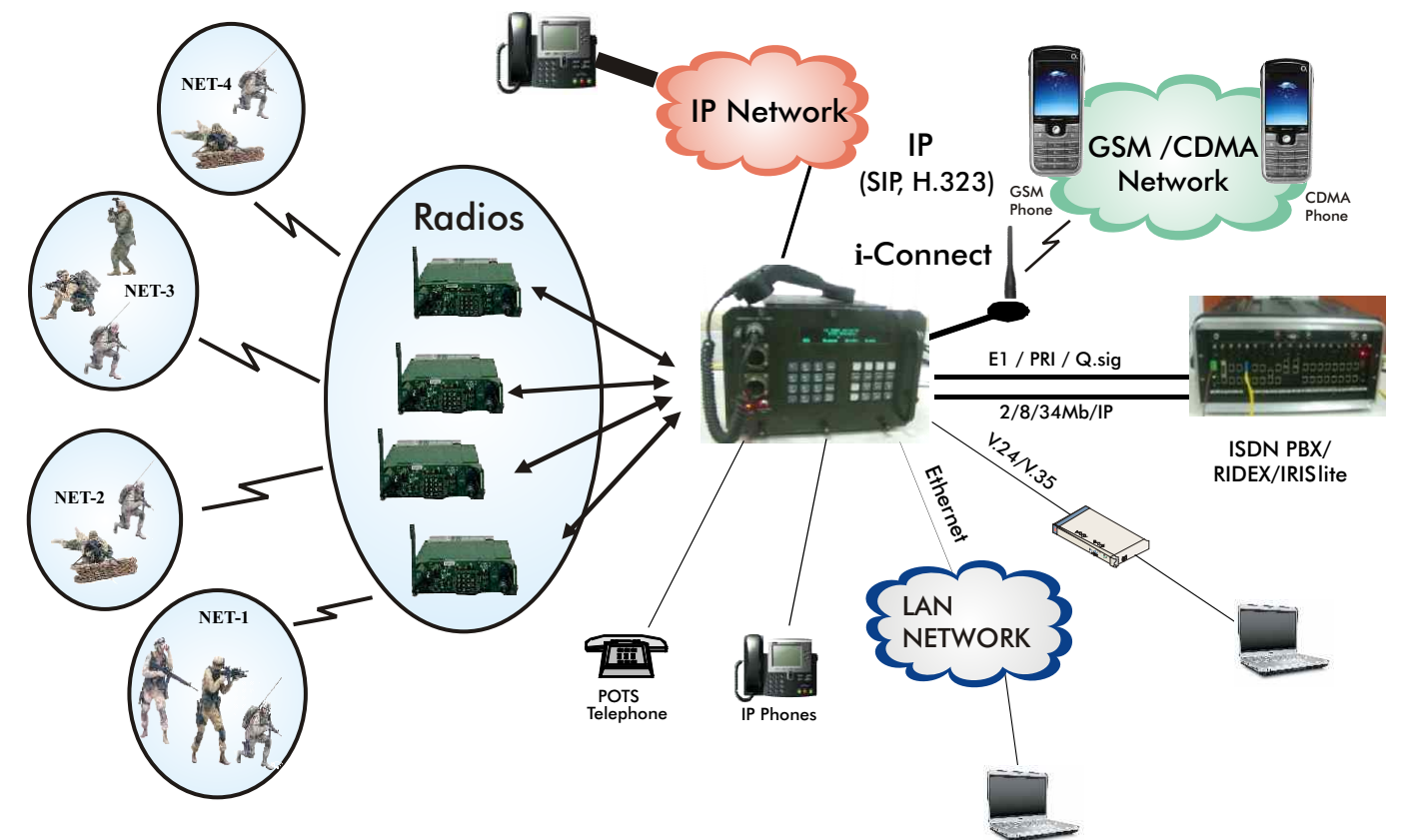
The iConnect is a modular system, which has multiple slots, for installing different types of interface cards. An optional redundancy feature is available, for providing 1 + 1 redundancy for the main CPU card and the Power Supply cards. The iConnect system is capable of interconnecting six radio nets. Apart from the radio nets, the system is capable of interfacing with other networks including POTS, ISDN, GSM, CDMA, VoIP. The interface to all these networks are available as plug-in cards, which enables the user to design the configuration of the system as per the requirement.

The system is housed in a fully ruggedized cabinet. The compact and light weight design enables the iConnect to be easily carried on a manpack or to be vehicle mounted.

## CALL HANDLING FEATURES

The iConnect system can be deployed as an operator-less system. The call routing can be pre-programmed and the system will handle the call routing, automatically. The calls can be routed either statically or by use of a voice guidance. The iConnect system has an in-built voice guidance system, which can be programmed for providing various voice prompts for handling incoming calls, thereby acting as an Interactive Voice Response system.

In scenarios which require an operator to be made part of the system, the iConnect has an inbuilt operator console, which has a display, keypad and head set. The operator can view the status of all interfaces in the system and can do the configuration of the system. The operator can make and receive calls from any of the interfaces in the system.



## MANAGEABILITY

The iConnect system has several management interfaces, which can be used to configure the system and also to maintain it. All basic configurations can be done from the operator console itself. Apart from this, the iConnect can be configured through a serial terminal, locally and also remotely, using Telnet. A GUI based WEB interface is also available for easy configuration. The iConnect supports SNMP based MIBs, for integration with any standard Network Management System.

## INTERFACE CARDS

The iConnect system provides a variety of cards, which can be used for interfacing with multiple types of networks and also with different user terminals. All these cards can be installed in any of the available slots in the system. The iConnect system can be configured with any combination of the following interface cards.

**FXS Card** - The FXS card (Foreign Exchange Subscriber) is a subscriber line card, which is available in two configurations – 8 ports and 12 ports. Each port provides a 2-wire loop start PABX station circuit. The circuits are intending to be connected to industry standard single line telephone sets.

**FXO Card** - The FXO card (Foreign Exchange Office) is a CO/Trunk line card. The card has 8 ports, each of which supports loop-start signaling. The circuits can be connected to central office, loop-signaling trunks. The circuits appear to the central office roughly similar in nature to a single line telephone set.

**E&M Card** - The E&M card is an 8 port card, which provides E&M trunk circuits. Each circuit is individually configurable, with selectable 2-wire or 4-wire audio, and flexible E and M lead definition. E&M trunks are typically used for tying up two exchanges or for interfacing to any other communication equipment.

**ISDN-U Card** - This is a digital trunk card for connecting to 2 wires U interface of the Basic Rate ISDN. The card has a capacity of 8 ports. Each port supports two 64 kbps B channels and one 16 kbps D Channel. The B channels are used for carrying VOICE while the D channel is used for carrying the signaling information.

**ISDN-S card** - This is a digital trunk card for connecting to 4 wires S interface of the Basic Rate ISDN. The card has a capacity of 4 ports. Each port supports two 64 kbps B channels and one 16 kbps D Channel. The B channels are used for carrying VOICE & DATA while the D channel is used for carrying the signaling information.

**IPLC Card** - The IPLC is IP Line card. The card supports both SIP and H.323 signaling. The IPLC card has an in-built SIP Proxy server and H.323 gatekeeper, which can be used for connecting any standard IP Phones. Various standard VoIP CODECs are supported by the card.

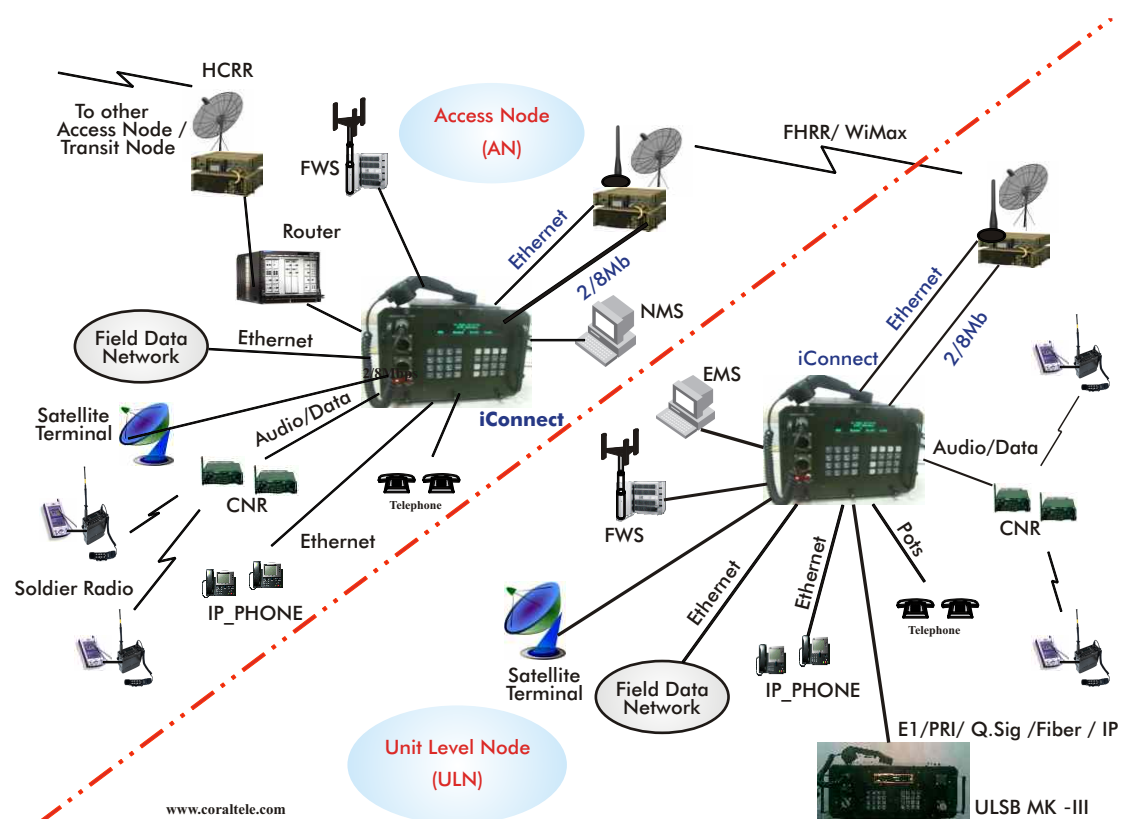
**IPTC Card** - The IPTC is the IP Trunk card. The card supports both SIP and H.323 signaling. The card provides a direct connectivity to the WAN IP network. It has DSP resources for upto 32 ports. The card can be used for making calls from any of the internal subscriber interfaces of the iConnect to the IP cloud. It can be operated in a point-to-Point or point-to-Multipoint network.

**UDG Card** - The UDG card is a universal digital trunk card which supports E1 or PRI interfaces. It provides 30B + 2 D channels. The card can be configured to support either CAS signaling or CCS signaling. It meets the requirements of ITU-T Recommendations G.703, G.704 and G.732. The card supports ISDN signaling, including the standard Q.sig protocol, which will be used for integrating seamlessly with PBX from multiple vendors.

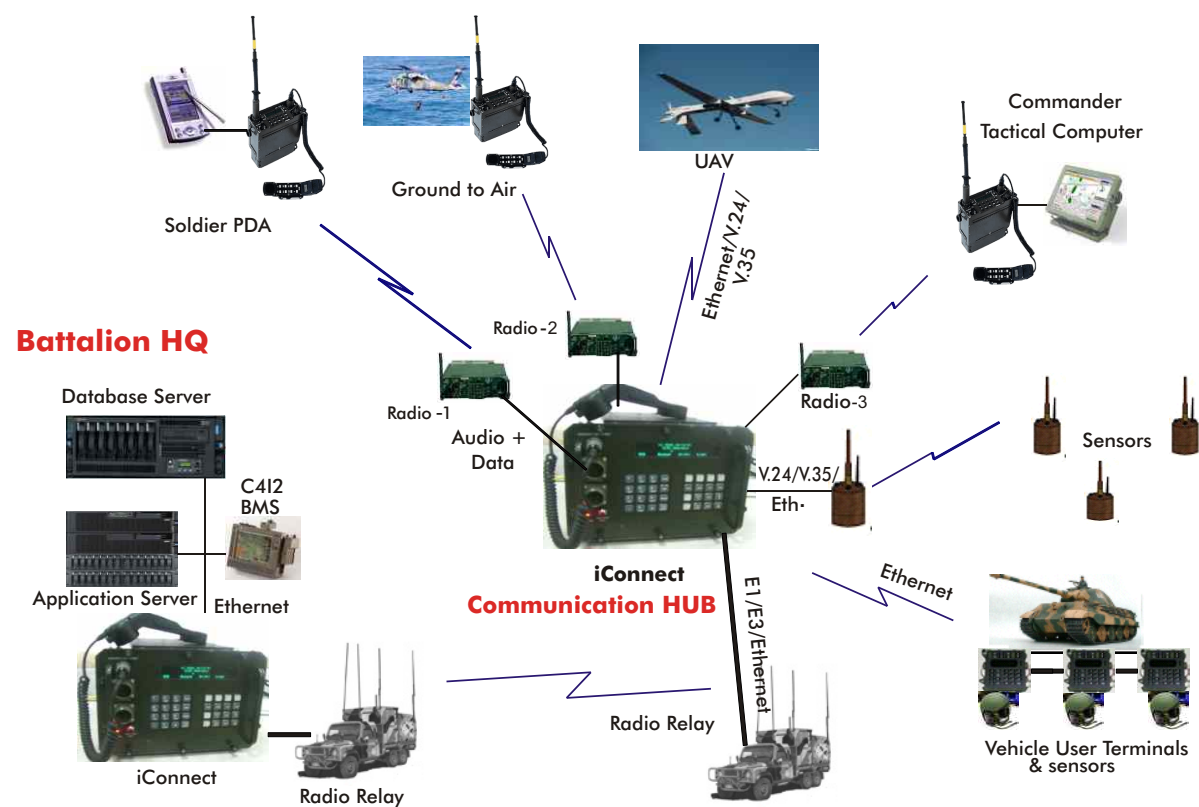
**GSM/CDMA Card** - This is a GSM/CDMA trunk card to provide the GSM/CDMA connectivity. The card has a capacity of 4 ports in which we can install GSM or CDMA modules. The card can be used for making any calls to the GSM/CDMA network. The card supports features like SIM locking, BTS locking, CLI capture etc.

**RIC Card** - This is the radio interface card, which provides connectivity to the radio equipments. The card has a capacity of 2 ports. Cables are provided to connect the interface to different types of radios. The CNR Card can be used for making any calls to the radio network. Each interface of the card has inbuilt DSP resources which supports VOX and VMR operations. COR signal detection circuitry is also provided for each circuit, which will be used for detecting any incoming calls in the radio nets. Apart from this, each interface also has PTT activation circuitry, which will be used for making outgoing calls.

## Deployment of iConnect in Tactical Communication Networks



## Deployment of iConnect in BMS



## TECHNICAL SPECIFICATIONS

### UDGT Card

Interface	: Conforms to ITU G.703
Line Rate	: 2.048 Mbps ± 50 PPM
Physical Interface	: RJ-48C (Modular, 8-pin)
Framing	: As per ITU G.704
Line Code	: HDB3
Impedance	: 120 Ohms / 75 Ohms
Signaling with E1	: Decadic / DTMF / R2MFC
Protocol in PRI	: Q.921 / Q.921 / Q.sig

### E&M Voice Card

Encoding	: A-law
Impedance	: Balanced 600 ohms
Wire mode	: 2 wire and 4 wire
Signaling	: Type I to V

### Voice Card - FXS

Encoding	: A-law
Nominal Loop res.	: 1200 ohms
Polarity reversal	: Provided
Ringing Voltage	: 75V AC
Ringing Frequency	: 20Hz
Loop Voltage Feed	: -48V DC

### Voice Card - FXO

Encoding	: A-law
Open Loop res.	: > 10 K ohm
Ring voltage detection	: Minimum 15V RMS
Dial pulse speed	: 8 – 12 pps

### ISDN-U card

Line rate	: 192Kbps
Voice channels	: 2 nos. of 64kbps on every port
Output termination	: 100 ohms
Output pulse	: 750mV zero to peak over the 100 ohms termination
Input Termination	: 100 ohms

### IPLC Card

Signaling Protocol	: SIP, H.323
Number of users	: 256
Number of CODECs	: 32
CODECs supported	: G.711, G.723, G.729, G.726
Registration Server	: Inbuilt
DTMF Generation	: DTMF relay & SIP info

### IPTC Card

Signaling Protocol	: SIP, H.323
Number of CODECs	: 32
CODECs supported	: G.711, G.723, G.729, G.726
Registration Server	: Inbuilt

DTMF Generation : DTMF relay & SIP info

### RIC Card

Input impedance	: Balanced and unbalanced 600ohms
Input level	: -26dBm to +10dBm adjustable
Output impedance	: Balanced and unbalanced 600ohms
Output level	: -20dBm to +11dBm adjustable
COR input impedance	: 47k ohm pull up to +5V
COR input polarity	: Active low or high (selectable)
PTT output type	: Open drain
PTT output polarity	: Active low or high (selectable)

### TYPES OF INTERFACE Card

FXS card	: 8/12/24 port subscriber card
FXO card	: 8 port CO interface card
ISNU card	: 8 port ISDN U interface card
EnM card	: 8 port E&M 2/4 wire interface
Magneto card	: 8 port magneto interface
TWT card	: 4 port TWT/BWT/LD interface
E1/PRI card	: One/two/four digital CEPT/E1/PRI
DCC card	: 8 port KTS/operator interface
Nx64 card	: 2 port data interface for V.35/V.24
CLC card	: 64k co-directional data interface
ETH card	: 10/100 ethernet data interface
VoIP card	: 32 channel VoIP interface
Router card	: 4 port 10/100 with router capability
RIC card	: Two port CNR interface card
SHDSL card	: 4 port SHDSL interface for voice and data

### Management Interface

The management interface is a 10/100BaseT Ethernet port. Telnet, WEB GUI, inbuilt SNMP agent for interfacing with Network Management System (NMS).

### Power Supply

Built in FCBC	
AC operation	: AC Mains supply; 230V +/-20V
Battery operation	: from 12V to 48V
Battery Backup time	: upto 72 hours on 48V operation on 80AH battery bank

### PHYSICAL

Dimensions:	
Height:	: 230 mm
Width:	: 308 mm
Depth:	: 410 mm

### ENVIRONMENTAL

Equipment meets climatic and durability conditions as per JSS 55555 specifications	
Operating Temperature	: -10°C to +55°C
Humidity	: upto 95% RH

# RIDEX SWITCH (ULSB MK III)

RUGGEDISED SOLUTIONS FOR DEFENCE APPLICATIONS

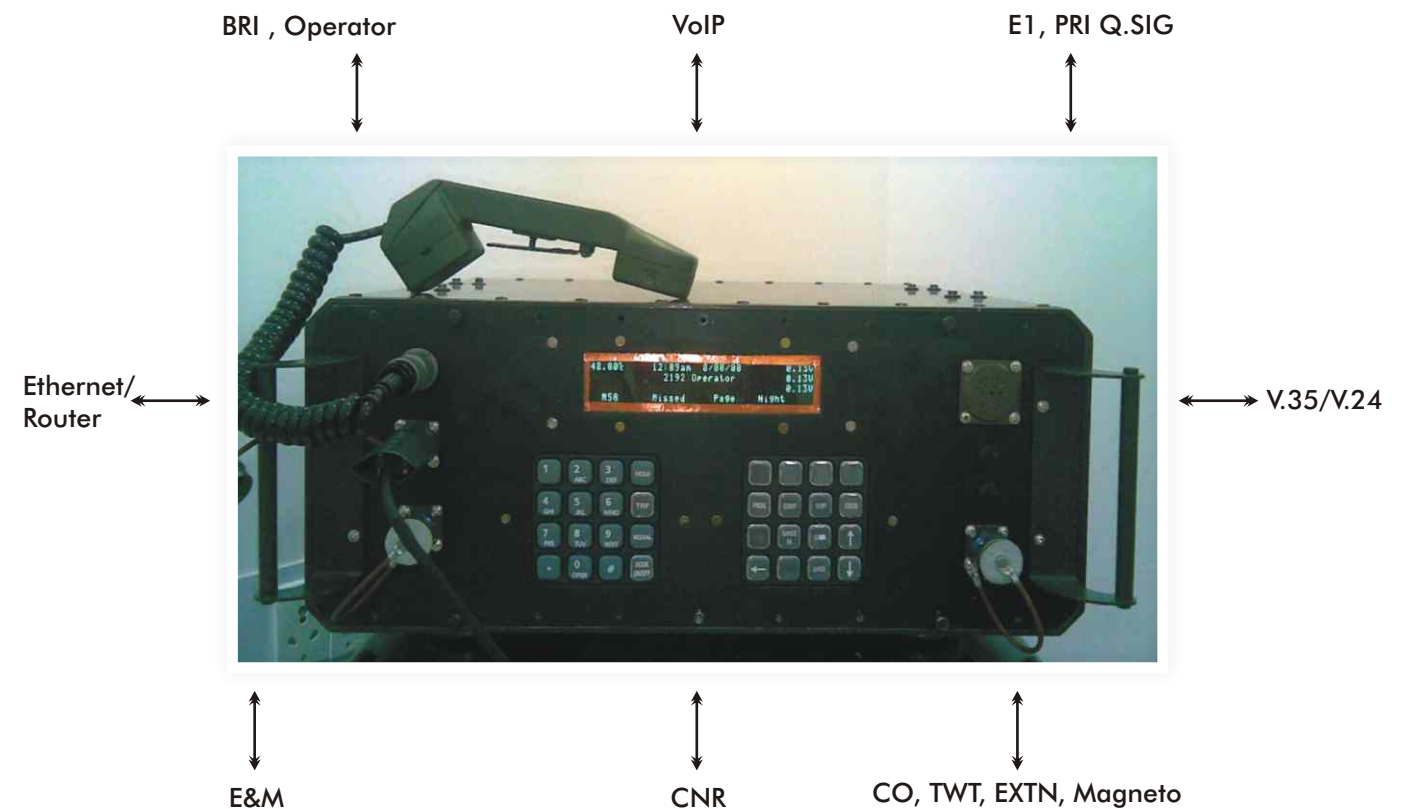


One of the key factors in winning a war is communications. To enable quick and efficient communication between the forward units of the Indian Army and their headquarters, the units need a compact, state of the art telephone exchange which can function under the tough conditions without failure. This field telephone exchange supports voice, data and video over backbone networks such as ATM & IP and offers transparent networking with the existing telephone exchanges on all standard signaling protocols including Q-SIG.

Coral Telecom Ltd. with its years of R&D experience offers USLB MK-III to meet the tough communication requirements of the Indian Defence Forces. Unit Level Switch Board MK III (ULSB MK-III) Equipment is a ruggedized Automatic Telephone Exchange designed to meet the communication requirement of any Army Unit formation. The Equipment supports up to 256 Ports consisting of POTS, ISDN, CO, LD, RD and Trunks in its basic unit. This equipment can be used as a switch to provide switching capabilities for local as well as trunk ports which can be in both analog and digital format. With this equipment, it is possible to interface with field tactical communication network through the ATM Access-switch.

ULSB MK-III Equipment is state of art equipment based on Digital Stored Program Control (SPC) technology. It employs non-blocking circuit switching concept for legacy network and switching over IP networks. For Man-machine interface (MMI), a Laptop PC with Windows Operating System (OS) is used.

## RIDEX- Ruggedised Integrated Digital eXchange



#### SYSTEM FEATURES

- Auto Call Back (ACB)
- Call Forward
  1. Busy
  2. No Reply
  3. Unconditional
- Call Diversion / Deflection (forward and follow me)
- Call Pick-up
- Call Transfer
- Call Waiting
- Call Hold and Answer
- Abbreviated Dialing
- Calling Line Identity Presentation (CLIP)
- Calling Line Identity Restriction (CLIR)
- Connected Line Identity Presentation (COLP)
- Connected Line Identity Restriction (COLR)
- Do-Not-Disturb
- Distinguishable Tones/Cadences
- Timeout on Tone and Ringing
- Timeout during dialing
- Open and Closed User Group
- Trunk Barring
- Data call for selected ISDN subscribers
- Malicious Call Tracing / Administration
- Non-Dialed-Connection (HOTLINE)

#### OPERATOR FEATURES

- Built-in operator with 4 X 40 Vacuum Fluorescent Display
- Alarm indication
- Intrusion
  1. Intrusion on busy Extension and External Line
  2. Forced Release
- Queue indication
- Recall to PBX operator
- Busy Verification
- Call Splitting
- Trunk to Trunk Access /Transfer

#### KEY FEATURES

- Modular Design with 16 universal slots, 8/12 ports per card
- Built around a 32-bit processor
- Fully non-blocking
- In-built FCBC for 12V/24V/48V operation
- Ruggedized as per JSS55555 standards
- System Alarm Indication

- STD Barring
- Direct inward Dialing & Direct outward Dialing
- Group Hunting
- Priority / Pre-emption
- automatically adjusts voltage feeds for short loops and long loops
- Ruggedized MDF with 5 stage protection

#### SYSTEM CONFIGURATION

##### Subscriber Cards

- Analog extension card...8 ports/card
- BRI U card... 8 ports/card
- Magneto ... 8 ports/card

##### Redundant Control Cards

- CPU
- MIC
- PSU

##### Interface Cards

- E&M (2/4 wire)...8 port/card
- CO .... 8 ports/card
- LD/TWT.... 8 ports/card
- E1/PRI....1 port/card
- nx64/V.35/V.24 data interface...2 ports/card
- 64k CO-dir data interface.....8 ports/card
- 10/100 mbps data interface.....1 port/card
- VoIP trunk interface .....32 port /card
- CNR (combat net radio)

##### Accessories

- Ruggedized LTB/MDF
- Man-pack Harness
- Rugged Transit Case
- Laptop for MMI
- Earthing spikes
- Rugged Laptop case

##### Operator Handset/Headset

- Small form factor, card size only 3U
- On board conferencing capability of 64 parties
- In-built protection available on all cards
- Analog line cards with Thermal Management

#### TECHNICAL SPECIFICATIONS

Capacity	Up to 184 Ports, Completely non-blocking
Power Supply	Built-in FCBC, Battery operation 10 V to 65 V
Voltage	DC (AC operation 140 V to 265 V)
Battery backup time	Minimal power consumption, up to 32 hours on 48V operation on 80 AH battery bank
Dimension	480 mm (L) x 410 mm (W) x 230 mm (H)
Weight	Less than 20 kg

#### ENVIRONMENT SPECIFICATIONS

Equipment shall meet climatic and durability tests as per JSS 55555 specifications.

##### Temperature Range

Operating -10 °C ± 2 °C to + 55 °C ± 2 °C

Storage -20 °C ± 2 °C to +70 °C ± 2 °C

##### EMI / EMC specifications

Equipment will meet EMI/EMC requirements as per MIL-STD-461D / E