

MEROD
Message Entry and Read Out Device



Racal-Comsec

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Introduction

Traditionally, military communications in a tactical environment have been achieved by using conventional voice transmissions.

The usual configuration of a radio net in modern warfare uses several low-power manpack radios to convey an ever-increasing volume of often vital information to a centralised zone for collation and processing.

The effectiveness of such a communication system under battle conditions is severely limited by intense man-made interference from jamming, other channels of information and close proximity high power radio transmissions.

This results in messages not being received clearly and requiring several repetitions by the operator as well as a read-back of the message to confirm accuracy.

With the resulting increase in on-air time the danger of message interception by hostile forces and detection by direction-finding techniques is extreme.

MEROD, Message Entry and Read Out Device, is a portable burst data transmission unit which helps solve the problems outlined above.

Operations

Merod is suitable for operation over any conventional radio circuit, satellite radio communications or 16kb/s data systems.



The device is easy to use and features a full size QWERTY keyboard which is used to enter the message into the 1000 character non volatile memory.



Before transmission the message can be checked on the rolling 32 character LCD display and corrected, if necessary using the editing facilities.

Message entry can be either fixed format or free format. When using fixed format the messages are entered against 'prompts' and as only the message and not the prompt is transmitted, a dramatic saving in on-air time is achieved. This allows operators to become familiar with the equipment quickly and also reduces the risk of human error during message entry.



Merod features

Addressing

An important feature of Merod is its inbuilt error detection and correction facility which identifies errors in received data and automatically corrects them.



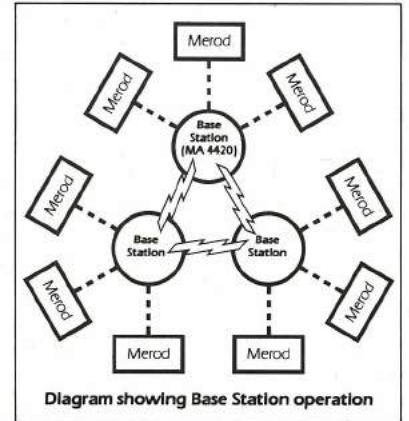
If the error rate is so high that all errors cannot be corrected, the letter 'E' will preface the displayed message, allowing the operator the opportunity to either ask for a repeat transmission or to use the data received.



Also, Merod can be programmed so that when a message is received with no uncorrected errors an acknowledge signal is transmitted automatically to the sender's Merod, illuminating an LED which tells the operator that his message has been received error free. This feature gives maximum operator confidence in the system.

Merod can be supplied with built-in encryption which enables a system to be configured giving maximum protection against interception by enemy intelligence forces.

Merod sends messages to a single station or a group of stations or can make 'all station' broadcast as part of its normal operating function. Although normally operating in small nets of about six stations Merod systems can be expanded to include Base Stations (MA 4420) which provide control and rebroadcast facilities.



These Base Stations store and forward messages within their own nets and to other base stations controlling different nets. With full facilities for automatic encryption, message storage, printing and display, the base station can be used with standard keyboards, VDU's and teleprinters and is housed in a compact, fully sealed 19 inch ruggedised enclosure. These features together with Merod's effectiveness make the MA 4420 an extremely valuable equipment in both mobile and static headquarter communication centres.

Technical specification in brief

Message entry

Conventional QWERTY keyboard.

Display

In-line 32 character liquid crystal display.

Mode of operation

Rapid Off-line

Message storage

Send; a single message of up to 1000 characters may be stored for transmission.
Receive; up to 16 separate messages provided their total length does not exceed 2000 characters.

Mode of transmission

Synchronous, error protected and interleaved.

Transmission format

- Random start up sequence
- Message preamble 64 bits
- Message length block (error protected)
- Variable length message.

Message preamble

Used for detection and synchronization. Two sequences can be recognised on receive, one for secure messages and the other for clear messages. Sufficient redundancy is incorporated to achieve 98% probability of recognition of either sequence in a 1 in 12 error rate.

Message format

Up to 1000 six bit characters interleaved to randomise the effect of burst errors and protected by a cyclic code. The latter allows a 99.64% probability of correct reception of a 1000 character message over a circuit exhibiting a 1 in 100 error rate. In addition irrespective of error conditions there is a 99.98% probability that all residual errors will be detected.

Addressing

Allows assignment of 2, 3, or 4 character alphanumeric address to units. Messages may be addressed to 4 different addresses with group addressing performed using 'wild card' character in addresses.



Other versions of MEROD are available with different parameters to meet specific requirements.

Fixed format messages

Up to 7 different formats with approximately 30 different prompts in total may be provided.

Modem

Transmission rate: 150 Baud (optionally 266 or 1200 Baud)
Information rate: 90 Baud
Modulation: wide shift FSK
Demodulation: each tone detected independently to achieve in-band diversity.

Remote Port Interface

Code ITA2, V28 level at most standard baud rates. Allows operation of unit from a VDU.

Printer Interface

Code: ITA2 or ITA5 at most standard baud rates.

Connectors

Radio: 7 pin to radio
Handset: 7 pin for radio handset
Remote Port: 7 pin to VDU or computer
Printer: 7 pin to printer.

Power requirements

11-32V DC approximately 200mA (1A when charging battery, if fitted) Battery: an optional 1Ah battery may be fitted internally.

Temperature range

Operating -31°C to $+55^{\circ}\text{C}$.
Storage -40°C to $+55^{\circ}\text{C}$.

Mechanical enclosure

To MIL-STD environmental specifications. Fully immersible, lightweight cast alloy case.

Dimensions

Height: 64mm
Width: 230mm
Depth: 230mm
Weight: 2.8kg

MA4286 MEROD Cyphered, 150 or 267 Baud.

MA4287 MEROD Non-Cyphered, 150 or 267 Baud.

MA4288 MEROD Cyphered, 1200 bps.

MA4289 MEROD Non-Cyphered, 1200 bps.

Racal reserve the right to vary in detail from the description and specification in this publication.

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RACAL

Racal-Comsec Limited

Milford Industrial Estate, Tollgate Road, Salisbury, Wiltshire SP1 2JG
Telephone: Salisbury (0722) 23911 Telex: 477276