

**OPERATOR HANDBOOK
FOR
ELECTRONIC MESSAGE UNIT (EMU)
BA 1304**

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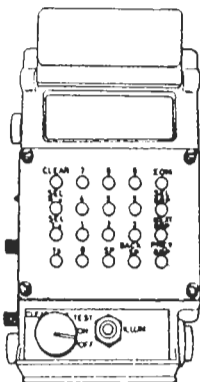
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INTRODUCTION

- 1 The EMU is the digital message device designed for use with the RT 319.



CHARACTERISTICS.

- 2 The following sub-paragraphs detail the characteristics of the EMU.

Physical

Weight 0.7 Kg.
Size - 48 x 95 x 165mm.

Battery Life (Internal)

Operational Mode - 80 hours - Provided illumination not used.
Standby Mode - 500 hours.

Memory (R Store)

Transmit - The memory consists of 2 stores with a combined memory capacity of 133 x 6 character groups (800 characters).

Receive - The receive memory consists of 9 accessible stores with a combined capacity of 250 x 6 character groups. (1500 characters). The number of stores available is dependent upon the number of groups received by each store.

Memory (B Store)

The 'B' (Broadcast Message) store has a capacity for 25 x 6 characters group in one store. The 'B' store is for broadcast messages only.

Callsign Store

The Callsign store holds up to 3 x 6 figure callsigns.

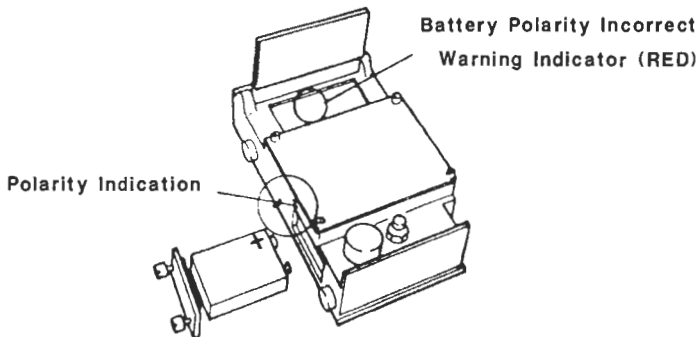
POWER REQUIREMENTS

3 When the EMU is connected to the RT 319 and the RT 319 and EMU are switched on, power for the EMU is supplied by the radio battery.

4 When operated independently, power for the EMU is supplied by an internal battery, either Lithium or Alkaline. (PP3 size).

When changing the internal battery, stored information is maintained for a minimum of one minute, provided the power switch is not set to CLEAR.

When changing the internal battery, check internal contacts for corrosion. A red warning light is displayed in the centre of LCD if correct polarity is not observed. Correct polarity markings are engraved on the EMU case next to the battery panel.

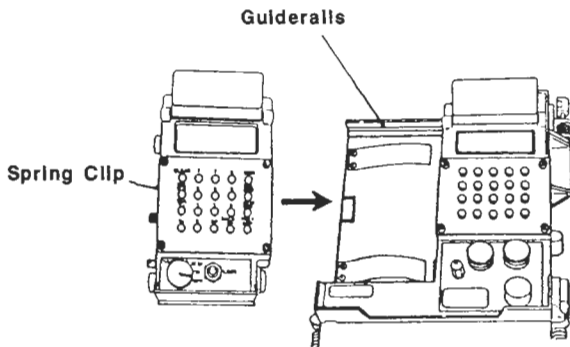


CONNECTION TO RT 319.

5 Direct - slide the EMU along the RT 319 guide rails , ensuring that the locating latch on the left hand side of the EMU fits into the receptor on the RT 319. To remove the EMU, release the springclip and slide the EMU out.

6 Indirect - Fit the right angle connector of the EMU cable to the data connection socket on the RT 319 and fit the straight connector to the data socket on the EMU.

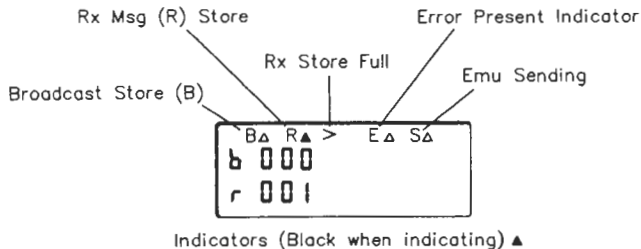
- Notes: 1. KEEP CABLE CONNECTORS AND DATA SOCKETS CLEAN (the contacts are self cleaning).
2. DO NOT OVER TURN CONNECTORS, USE MINIMUM FORCE.
3. DO NOT LOSE EMU CABLE - KEEP IT SECURE.



DISPLAYS AND CONTROLS

Liquid Crystal Display (LCD)

7 Description.



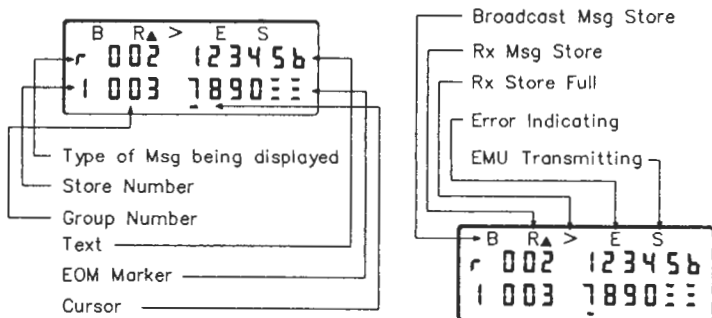
Alphanumeric data is represented in 2 rows, each of four plus six characters.

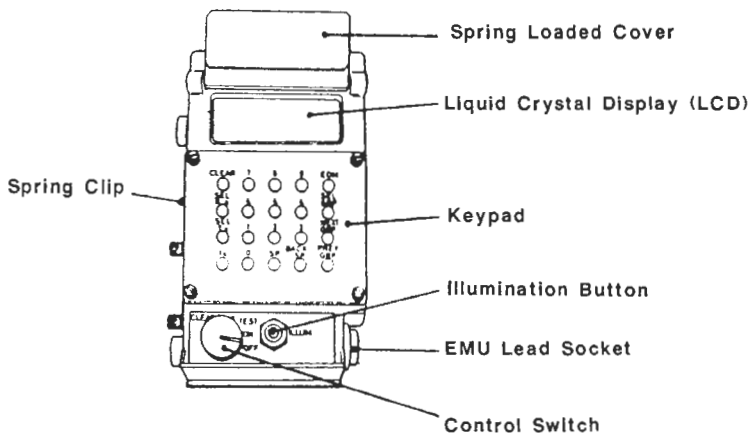
Characters represented are 0-9, A, b, d, C, E, F, I, L, n, P, r, t, and U.

"E E" end of message (EOM).

"d" detected error in message text.

A cursor appears in the lower set of characters.





Control Switch

8 The following sub-paragraphs detail the various functions available on the control switch.

CLEAR - Power is disconnected. All functions inoperative. All stores erased. To prevent inadvertent erasure the switch must be pulled up and turned to the left and released in the CLEAR position.

TEST - Enables BITE (Built In Test) routine to be performed.

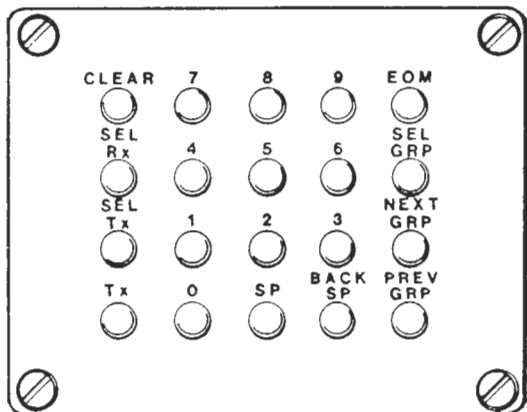
ON - All functions operational.

OFF - All memory stores are held on minimum power consumption. Information cannot be input or extracted.

ILLUM Button - Press to illuminate display area. Illumination is extinguished after approximately 15 seconds unless any key is pressed.

Keyboard

9



Numeral keys 0-9 are used for entering data.

CLEAR - To clear data press

- Select the appropriate store
- [CLEAR] key twice within 2 seconds.

SEL RX - Displays the number of messages received:

In conjunction with numeral key, accesses the corresponding receive store.

In conjunction with the SP key, accesses the callsign Store.

SEL TX - Used with 1 or 2 to access a Transmit Store.

TX - Transmit the displayed Tx message.

EOM - Used to indicate the End of Message.

SEL GRP - In conjunction with a 3 digit number, allows access to a particular group within a message.

NEXT GRP - Displays successive groups in the selected message. If the key is held down the message is scrolled.

PREV GRP - Displays previous groups as for NEXT.

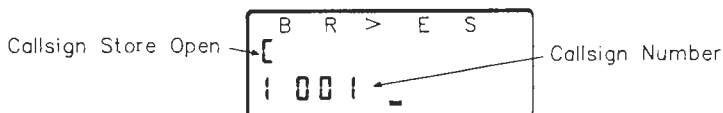
BACK SP - Erases characters in reverse order.

SP - Enters a space in the displayed group. In conjunction with SEL RX, accesses the callsign store.

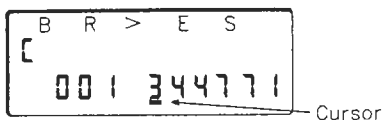
OPERATING PROCEDURES

Callsign Storage

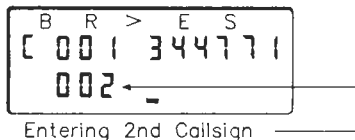
- 10 (a) Switch EMU on.
- (b) Press [SEL RX] key.
- (c) Press [SP] key.



- (d) Enter 6 figure callsign (As key is pressed the number is displayed and cursor moves to the next digit).



- (e) To correct errors use [BACK SP] key, or complete group and overtype with new characters.
- (f) Press [NEXT GRP] - Enter Next Callsign (until all callsigns are entered).



- (g) **PREV GRP** - Allows the upper callsign to be moved to the lower position for editing.
- (h) **SEL GRP** - Allows a known group to be displayed in the lower row for editing.
- (i) **SEL RX** or **SEL TX** updates and closes the callsign store. New callsigns are not effective until the store is closed.

The EMU will only receive and store messages beginning with any of these callsigns.

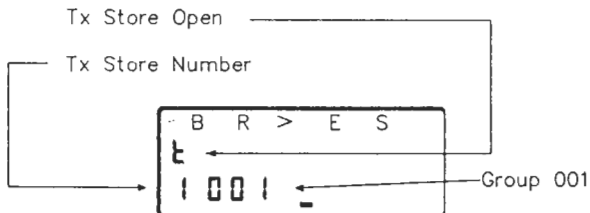
Note: Failure to enter a callsign will result in the EMU receiving all messages.

Entire Callsign Store Erasure.

- 11 (a) Press [SEL RX].
- (b) Press [SP].
- (c) Press [CLEAR] key twice within 2 seconds.
- (d) Press [SEL RX] or [SEL TX] to exit callsign store. Individual callsigns can be deleted by overtyping with spaces.

Entry of Transmit Message Into an Empty Store.

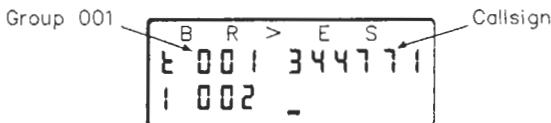
- 12 (a) Control Switch to ON.
- (b) Press [SEL TX].
- (c) Press [1] or [2] to select store.



- (d) Use the numerical keys to enter groups:

Note: The first group must be a callsign. In order to send a message to all stations regardless of their callsigns, the broadcast (B) callsign should be used as the first group of the message. This callsign is 6 zeros.

- (e) Press [NEXT GRP] and continue entering a group at a time to end of message.



- (f) The end of message marker may be overtyped if it appears before the end of the required message. After entering each group press [NEXT GRP].



- (g) Editing of the message is possible using the [NEXT GRP] [PREV GRP] [SEL GRP] [BACK SP] keys.
- (h) When the final group has been entered.

Press [NEXT GRP].

Press [EOM].

Press [SEL RX] or [SEL TX] to close the transmit store.

A message will remain stored until erased using the [CLEAR] key or the EMU control switch is set to [CLEAR].

Note: If at any time, during message entry the transmit store becomes full, the end of message marker cannot be overtyped.

Overwriting of a Message in Store.

- 13 (a) Control switch to ON.
- (b) Press [SEL TX] select transmit store (Press [1] or [2]).
- (c) Overtyping previous message.
- (d) After the last group, press [EOM], all superfluous groups will be erased if new message is shorter than old. Press [SEL TX] or [SEL RX].

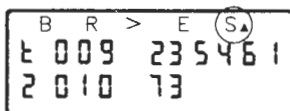
Erasement of a Transmit Message from the store.

- 14 (a) Control Switch to [ON].
- (b) Select Transmit Store (Press [SEL TX] and store number).
- (c) Press [CLEAR] key twice within 2 seconds.
- (d) Press [SEL RX] or [SEL TX] to close the store.

Transmission of a Message After Entry.

- 15 (a) Connect EMU to RT 319, directly or with lead.
- (b) Select correct data speed on RT 319.
- (c) Set EMU Control Switch to ON.
- (d) Press [SEL TX], select transmit store (press [1] or [2]).
- (e) Ensure that the message for transmission is displayed on the EMU.

- (f) Press [TX] key on EMU keyboard. The cursor disappears and a triangle appears next to the 'S' (SEND) indicator during transmission.



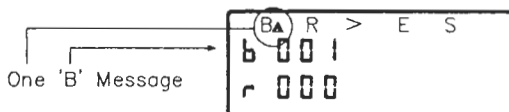
- (g) If there is a fault with the RT 319 or lead, or if any switches are incorrectly set, a 'FAIL' warning will be displayed when [TX] is pressed. Check all switches and connections to trace the fault if this occurs.

Note: It is not necessary to tune transmitter of RT 319 when using EMU. Tuning of turf on Tx frequency occurs prior to data transmission. (When the EMU [TX] button is pressed).

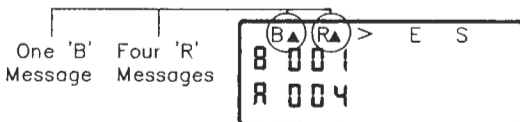
Receive Messages.

16 Displaying Received Messages in Store.

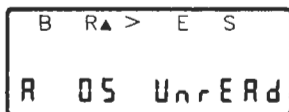
- (a) A triangle appears next to the 'R' and/or 'B' on the EMU display when an 'R' or 'B' message has been received. (Broadcast or normal Receive). The 'R' message indicator will flash until it is displayed.



- (b) If not in [SEL RX] mode - press [SEL RX] The display indicates the number of 'R' and 'B' messages received. Receive numbers are continuously updated.



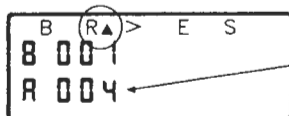
- (c) When a new 'R' message is received, the triangle next to the 'R' will flash for 60 seconds, or until the message is displayed. If the message is not displayed within 60 seconds the UnrEAd warning appears with the serial number of the message that has been held in store the longest. Pressing any key on the display returns to the interrupted display.



17 Displaying a Received 'R' Message.

- (a) Receipt of a 'R' message is indicated by a flashing triangle appearing next to the 'R' symbol on the LCD.

4 Messages in store



- (b) Press [SEL RX] key - Displays number of received messages.

- (b) Press [SEL RX] key - Displays number of received messages.
- (c) Press Number of store to be read eg. [RX] [2].

B	R	>	E	S	
8	001	321654			← Group 001
2	002	232425			← Group 002

- (d) Press [NEXT GRP] to display text.

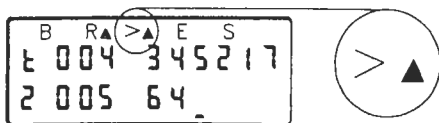
B	R	>	E	S
8	002	232425		
2	003	651124		

- (e) The end of the message marker appears immediately after the last digit of text.

B	R	>	E	S	
8	003	651124			
2	004	:::			← EOM Marker

- (f) Edit keys may be used to examine the message.

- (g) EMU will hold several messages up to store capacity. Only messages 1 to 9 can be displayed. To display further messages some of the first nine stores must be cleared. Messages are advanced and renumbered automatically.
- (h) If the 'R' store becomes full, a triangle appears next to the '>' symbol. All future messages will be lost unless more space is created by clearing previously read messages.



18 Displaying the 'B' message

- (a) Press [SEL RX].
- (b) Press [0].

B	R	>	E	S
8	001	4	211	05
0	002	2	246	11

- (c) Press [NEXT GRP] to display the message.

B	R	>	E	S
8	002	2	246	11
2	003	7	831	42

- (d) Use edit keys as required.
- (e) Press [CLEAR] twice within 2 seconds, to clear store.

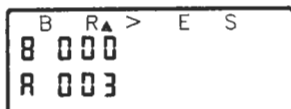
B	R	>	E	S
8	000			
A	000			

19 To Close the Store Without Erasing the Message

Press [SEL RX] or [SEL TX].

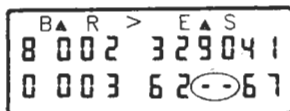
20 To Clear an Unwanted Message

Ensure message to be deleted is displayed then press [CLEAR] twice within 2 seconds. The message store number will decrease by one.

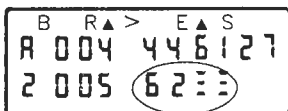


21 Errors in Received Messages

- (a) An error detected on an incoming signal is indicated by a warning triangle displayed next to the symbol 'E'.
- (b) The error is indicated in the text by one horizontal bar in the middle of the character position.



- (c) If a warning triangle appears next to the 'E' but no textual error symbol is displayed, the overall message may be in error.



Storage and Erasure of Messages.

- 22 (a) All stored messages are retained if the control switch is set to OFF.
- (b) To erase all stores immediately set the control switch to CLEAR. To prevent accidental erasure the control switch must be lifted, turned and dropped into place.

EMU OPERATOR CHECKS.

- 23 (a) The BITE test routine provides the Operator with a simulated transmit and receive message. The contents of test messages are random figures input by the operator.
- (b) Set Control Switch to TEST.
- (c) Input a callsign (identical to one already stored in the callsign store).
- (d) Input a transmit test message into Tx Store 1 or 2.
- (e) Press [TX] key.
- (f) The cursor disappears, the send triangle illuminates, the receive 'R' triangle flashes and the display indicates received message.
- (g) If the transmit test fails the FAIL indicator is displayed.
- (h) To prove the test was successful compare the transmit message with the receive message.
- (i) Set the control switch for next operation.

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- (i) Set the control switch for next operation.

FAULTS

No Display On Screen, EMU Detached From RT 319

- 24 (a) Check EMU internal battery.
- (b) Check polarity of battery.
- (c) Change battery.

No Display On Screen, Connected to RT 319

- 25 (a) Check the EMU is seated correctly on the RT 319.
- (b) Check power supplies.
- (c) Check EMU/RT 319 connections.

No Display On Screen, Connected By Lead

- 26 (a) Check lead connection.
- (b) Check power supplies.

EMU Receiving Messages For Other Stations

- 27 (a) Check that callsigns are in store.
- (b) Check that the callsigns are correct.
- (c) Switch EMU to OFF and back on again.

On Transmitting Message The Fail Warning Appears

- 28 (a) Check transmit frequency entered on RT 319.
- (b) Check that mod switch on the RT 319 is set to a data mode.
- (c) Check all connections and switch settings.



