



# Sailor

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INTEGRATED RADIOTELEX SYSTEM  
SYSTEM INTRODUCTION  
AND OVERVIEW MANUAL



A/S S. P. RADIO · AALBORG · DENMARK

SECTION 1

GENERAL INFORMATION

1.1.	INTRODUCTION .....	1-1
1.2.	CONFIGURATION AND OPTION EXAMPLES .....	1-2
1.3.	THE FRONT PANEL OF THE RADIOTELEX MODEM H1240 .....	1-4
1.5.	TECHNICAL FEATURES .....	1-7
1.5.1.	SPECIFICATIONS .....	1-9



## SECTION 1

## GENERAL INFORMATION

## 1.1. INTRODUCTION

Welcome to the world of Radiotelex communication. Your new system offers a wide variety of facilities to give you reliable and efficient communication with telex subscribers all over the world.

The heart or brains of your Radiotelex equipment is the Modem. The Modem unit will support a variety of teleprinters and video display terminals at your own choice.

Regardless of your background or previous radiotelex experience, you should read this manual. It provides information on how to issue commands to create, edit and transmit messages to another telex subscribers.

We will discuss many topics in relatively few pages so that you can:

- Get an understanding of Radiotelex systems
- Start manual telex operation in just a few minutes
- Use the text memory for creating and storing messages
- Begin using the editing capabilities of the Radiotelex Modem.

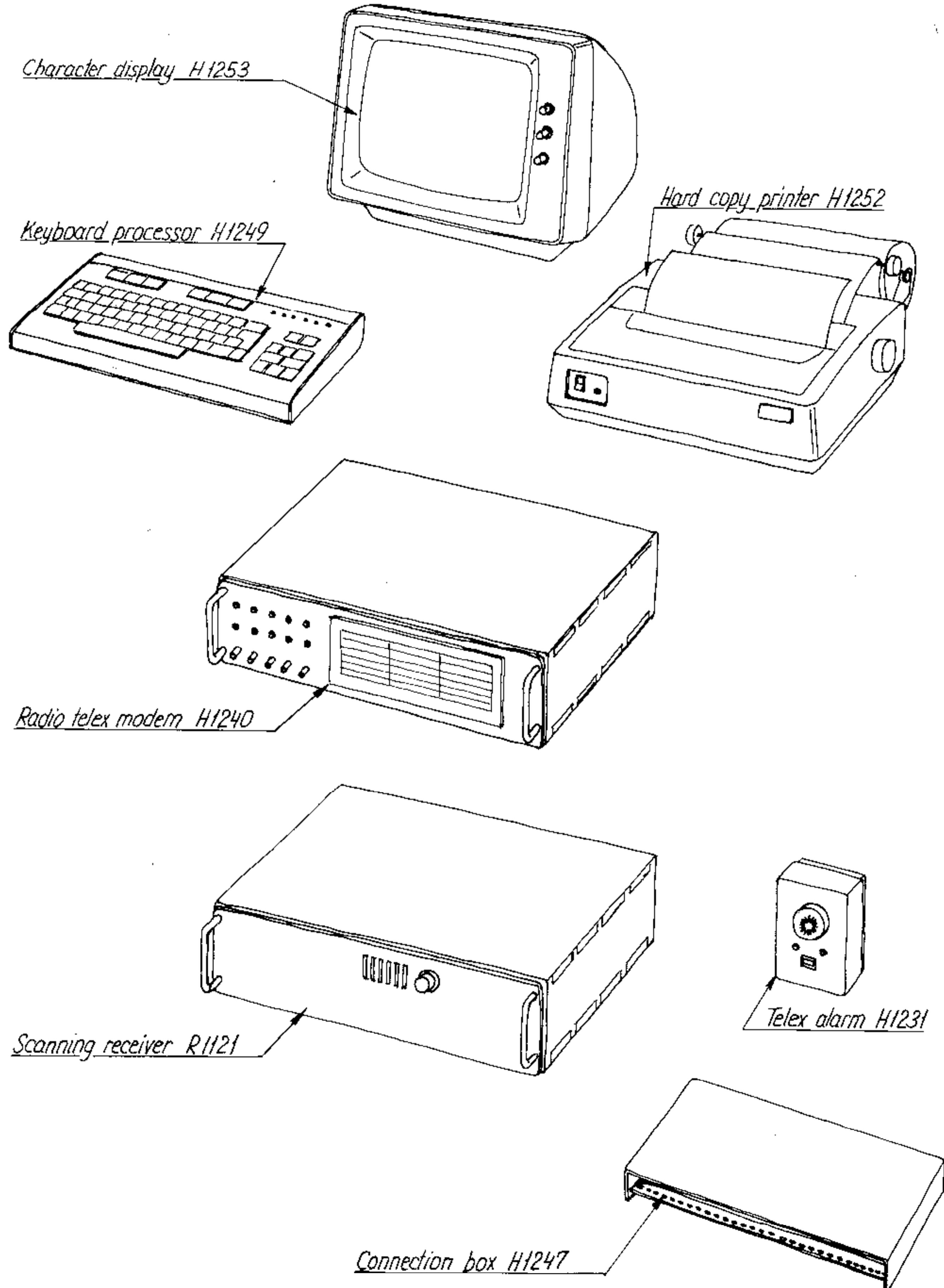
Section 2 describes the terms and concepts of Radiotelex communication.

Section 3 contains a special set of instruction material so you do not have to be a telex expert to be able to operate this powerful but compact system.

The best way to feel at ease with the system is to sit down with this manual and the H1240 and actually key in the examples provided in each of the sections. It will not take long to become familiar with the system, and it is well worth the time you invest to obtain a complete understanding of the equipment.

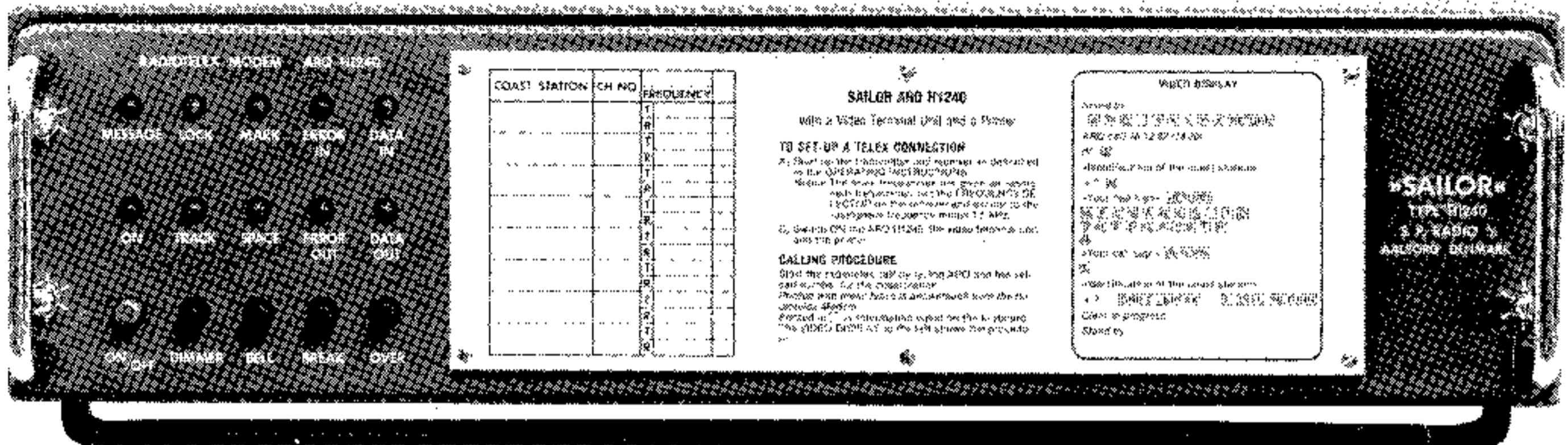
### 1.2. CONFIGURATION AND OPTION EXAMPLES

You will find a few examples on the following pages that show some of the basic configurations and options that your new system can have.



TELEX SYSTEM INTRO.-OVERVIEW

## 1.3. FRONT PANEL OF THE RADIOTELEX MODEM ARQ H1240



## INDICATORS

## LOCK

The modem is locked to another station. This reflects one of the following conditions:

- The modem has established connection on ARQ.
- The modem receives FEC.
- The modem receives a "Free" signal.

## TRACK

The receive filters are tracking the incoming signals. The modem tracks +/-65 Hz and the receiver should not be readjusted during a connection.

## MARK

Receiving mark tone.

## SPACE

Receiving space tone.

## DATA IN

Receiving data.

## DATA OUT

Transmitting data. The indicator will flash when the output buffer is empty, i.e. the message has been transmitted.

## ERROR IN

Error in received data.

## ERROR OUT

Error in transmitted data (only used during ARQ).

## MESSAGE

A message has been received.

## CONTROLS

## ON/OFF

Mains power switch.

## DIMMER

Varies the light intensity of the front panel LED's in four steps.

## BELL

Resets the "Message" indicator and the external alarm.

## BREAK

Terminates the connection. If pressed during ARQ information-receiving, the station will first change into information-sending, and then terminate the connection.

## OVER

If the station is information-sending, a short push will change the direction of information, when the buffer is empty, i.e. the message has been transmitted. If the station is information-receiving a short push acts as a poll request, i.e. change the direction of information, when the other station sends an End-Of-Communication sequence. The MESSAGE indicator will lit when OVER is pressed. A long push (2.5 sec.) changes the direction of information immediately. When the 2.5 sec. has passed the MESSAGE indicator will extinguish.

## 1.5. TECHNICAL FEATURES

This section describes the technical features of the Radiotelex Modem. If you are not interested in technical details at this moment, skip this section and continue reading Section 2 and 3 which tell you more about the operation of the equipment.

The Radiotelex Modem H1240 provides automatic ARQ/FEC telex communication in Maritime and Point-to-Point applications. It fulfils or exceeds all relevant CCIR recommendations and the requirements of the Nordic MARITEX system for automatic Radiotelex.

The H1240 recognises individual- and group calls with automatic reception and transmission of messages. The system is very flexible with user control of all relevant functions. Parameters selected during installation are stored permanently in the computer. Any later modification can be carried out directly from the keyboard.

The data demodulator uses independent detection of the Mark- and Space tones which gives the best performance when the signals are derived from the HF-band. The Mark- and Space filters are implemented as 4-order Bessel filters using a special tuning technique, which allows for independent selection of the Mark- and Space frequencies. The modem can be programmed for any combination of Mark- and Space frequencies in the audio band from 1 kHz to 3 kHz.

Frequency tracking is accomplished through the use of an internal reciprocal frequency counter with an integration time proportional to the inverse of the input signal/noise ratio. This technique ensures correct tracking even under adverse conditions.

Signal detection is carried out by bit-slicing and bit timing restoration. The detection threshold is dynamically varied in order to ensure optimum detection during interference and selective fading.

Interface to the radio equipment is accomplished through the control of receiver muting, transmitter high-tension, transmit-time and transmitter key. The receiver muting and the transmitter key signals can be adjusted by the operator during installation for optimum timing with the associated HF-equipment. The Radiotelex Modem H1240 can be used for automatic power-up of radio stations by incoming calls. Other features include fully automatic frequency scanning, tuning and operation of the complete radio installation.

The Radiotelex Modem H1240 includes a large text memory of 64,000 characters, with optional battery back-up. The File Manager (a programme module in the Radiotelex Modem) is responsible for organisation and control of messages. It operates on user defined names and enables creation of multiple messages for simultaneous- or separate transmission.

The built-in Text Editor is a random access, line oriented Editor similar to those used on large computers. It supports a full line of editing capabilities and gives the Radiotelex Modem H1240 word processing facilities.

The Radiotelex Modem H1240 can be used in a number of automatic modes:

- The "Remote" mode permits the H1240 to transmit available messages to a calling station. The remote mode can be either public or protected. In the latter case it requires a password before the message is transmitted.
- Frequency scanning and control gives the modem the power to control the associated radio equipment. This enables unattended operation with coast radio stations all over the world. It means that the equipment can receive and transmit telex messages fully automatic, you do not need to be there all the time. The modem can select frequencies and transmit any message via the coast radio station that you have selected. At the same time the modem can keep watch on other coast radio stations.

Programmability provides the operator with a tool for fully automatic operation of the H1240. It is sometimes useful or necessary to execute a sequence of commands. If such a sequence is frequently used by an operator, he can group these commands, give a common name and execute the complete sequence with a single command. Any such group of commands can be executed once or many times; they can be executed by the operator, or they can be executed automatically by the Radiotelex Modem.

## 1.5.1. SPECIFICATIONS

Modem specifications are listed in Table 1.1. These specifications are the performance standards against which the modem is tested.

Table 1.1. Modem Specifications.

## SYSTEM SPECIFICATIONS

Communication protocol: CCIR Rec. 476-3

Local signal: 5-level, serial start-stop data  
ITA-2 code, 50 to 2400 Baud (BAUDOT)

or

7-level, serial start-stop data  
ITA-5 code, 75 to 9600 Baud (ASCII)

Line signal: Two tone keyed with 7-unit code,  
constant 4B/3Y ratio in accordance  
with CCIR Rec. 476-3, 100 Baud  
synchronous.

Optional: Four tone keyed 200 Baud  
synchronous Twinplex in accordance  
with CCIR Rec. 346-1

## LOCAL INTERFACE

Console/Printer: CCITT Rec. V.24/V.28 (RS-232C)

Optional: Neutral 40 mA  
Polar +/- 20 mA

Tape reader: CCITT Rec. V.24/V.28 (RS-232C)

Optional: Neutral 40 mA

Remote control: CCITT Rec. V.10 SPECIAL



Table 1.1. Modem Specifications (continued)

## LINE INTERFACE

Tone frequencies:	Mark- and Space frequencies adjustable from 1 kHz to 3 kHz
Modulation:	Phase-continuous AFSK keying
Frequency stability:	0.1 Hz
Filter tracking:	Adaptive tracking within +/-65 Hz
RX-tone input:	+10 dBm to -40 dBm / 600 ohm balanced, strap selectable
TX-tone output:	+10 dBm to -30 dBm / 600 ohm balanced, continuous adjustable
Radio control output:	RS-410 type N (Open collector Darlington drive)
Radio control input:	RS-410 type N

## GENERAL:

Power source:	24V DC (-10/+30%) 115/127/220/240V AC (-15/+10%) 50/60 Hz
Ambient temperature:	0 to +55 degr. C operation -20 to +70 degr. C storage
Relative humidity:	95 % non-condensing
Vibration:	IEC, CEPT and MPT 1204

Our products are under continuous research and development. Any information may therefore be changed without prior notice.

## SECTION 2

### INTRODUCTION TO RADIOTELEX COMMUNICATION

2.1,	INTRODUCTION .....	2-1
2.2,	BASIC SYSTEM DESCRIPTION .....	2-1
2.2.1,	DATA CODING .....	2-1
2.2.2,	ERROR DETECTION .....	2-2
2.2.3,	ERROR CORRECTION .....	2-2
2.3,	ARG OPERATION .....	2-2
2.4,	FEC OPERATION .....	2-3

## SECTION 2

## INTRODUCTION TO RADIOTELEX COMMUNICATION

## 2.1. INTRODUCTION

This section describes the basic properties of radiotelex systems employing error correction in the form of ARQ (Automatic Retransmission Request) and FEC (Forward Error Correction). The technical details of the error correction is defined by the CCIR (The International Consultative Committee) in the recommendation rec. 476-3. These specifications are generally accepted and permits equipment from different manufacturers to communicate via common radio circuits.

## 2.2. BASIC SYSTEM DESCRIPTION

The advantage of telex communications as compared to voice communications are obvious to anyone used to communicate by an ordinary telex machine. For mobile communications, especially where HF-radio circuits are the primary transmission media, the quality of the connections is subject to interference effects from a variety of sources. The result of this noise and interference is an annoyance and inconvenience but it is not particularly damaging for voice connections since the meaning of the message can be understood without recognizing every word. Telex communication, however, should not be subjected to character mutilation because it might be impossible to distinguish the intended information from the characters actually received. As an example, this could be position information, tonnage reports and payroll information. Therefore a means must be used to overcome the adverse results of noise and interference which is inherent on HF-radio circuits.

The answer to reliable and efficient telex communication via radio is error detection and correction. In 1970 the CCIR drafted the recommendation for error detection/correction, defining a constant-ratio code for automatic error detection and giving detailed requirements for the error correction.

## 2.2.1. DATA CODING

The recommended code is a 7-level synchronous code which uses only those bit combinations having a ratio of 3 Mark bits to 4 Space bits to represent valid characters. There are 35 of the 3/4 ratio combinations, allowing all 32 CCITT-2 characters to be represented.

The CCIR recommended code needs no start or stop bits because it is synchronous. No error-detecting parity bits are required because the Mark/Space ratio is constant. This allows efficient transmission of messages, since all character bits are used to determine the character.

## 2.2.2. ERROR DETECTION

In addition to allowing more efficient use of message transmission time, the CCIR code is more effective in detecting errors than the parity-equipped CCITT-2 code. The CCIR code detects all combinations of bit inversions odd or even, except the rare inversion of an equal number of Space and Mark bits in one character, preserving the 3/4 ratio. Thus the undetectable combinations of the CCIR code will occur much less often than those of the CCITT code.

## 2.2.3. ERROR CORRECTION

The elementary error detection system does what it is designed to do - detect errors. The usefulness of the system lies in its ability to correct errors. Depending on the application several methods exist for error correction. Two basic methods are recommended, ARQ and FEC.

## 2.3. ARQ OPERATION

The first method is named ARQ (Automatic Retransmission Request). ARQ is workable between two stations only, and involves sending data in small blocks, then listening between blocks for the receiving station to request either the next block, or retransmission of the last block because of an error.

In ARQ mode, two stations communicate directly with one another. The station which initiates the connection is designated the Master and the other is the Slave. Initially the Master is the sending station, but at any later instance the Slave may take the role of the sending station and send information to the Master. This is like a telephone conversation; the Master is the one who makes the initial call, at any later time the Slave or the Master may be talking. Data is transmitted in blocks of three characters. Between the block of characters, the sending station waits for a reply of a single character from the receiving station, indicating the validity of the received data. If an error occurs in a data block, the receiving station sends a request for repetition. The sending station, upon receiving a request for repetition, retransmits the block. The request may be repeated up to 32 times, until the complete block have been received error-free. After 32 repetitions the Master station automatically initiates a new call. If this new call is unsuccessful and two-way communication cannot be re-established, both Master and Slave reverts to the Standby condition. If the new call is successful the two units automatically continue the interrupted communication.

The characteristics of ARQ communication can be summarised:

- It practically guarantees error-free data, assuming reception is possible at all.
- Communication is possible between only two stations at a time. This gives some limited protection against unauthorized eavesdropping.
- The receiving station must have an operating transmitter.



## 2.4. FEC OPERATION

The second method is designated FEC (Forward Error Correction). This method of error correction is used where there is more than one receiving station, and no replies are required by the transmitting station. It consists of sending the message in time diversity, that is, each message is sent twice, the characters of the first message being interleaved with those of the second. The receiving thus has two chances to receive each character correctly. If both characters are in error, a special character (\*) is printed.

The primary characteristics of a FEC are:

- A message may be sent to several receiving stations simultaneously.
- It does not require transmitters at the receiving stations.
- There is no acknowledgment of transmissions.
- There is no active error correction.
- There is no protection against eavesdropping.

A sub-class of FEC, designated SEL/FEC (Selective Forward Error Correction) allows selective calling of one or more stations by means of call codes. The message is transmitted in inverted format with the Mark/Space signals interchanged. Only the receiving stations with the correct call codes will receive the data correctly.

## SECTION 3

### USING THE RADIOTELEX MODEM

3.1.	INTRODUCTION .....	3-1
3.2.	PRINTER OPERATIONS .....	3-1
3.3.	STARTING THE MODES .....	3-5
3.3.1.	POWER-ON SELF-TEST .....	3-5
3.3.2.	TELLING THE DATE AND TIME .....	3-5
3.3.3.	THE PROMPT .....	3-6
3.4.	SOME KEYS YOU WILL USE .....	3-6
3.4.1.	CHARACTERS THAT LOOK ALIKE .....	3-7
3.4.2.	THE SPACEBAR .....	3-7
3.4.3.	THE SHIFT AND ALFA-LOCK KEYS .....	3-7
3.4.4.	TO ENTER A COMMAND .....	3-8
3.4.5.	TO CORRECT A TYPING MISTAKE .....	3-8
3.4.6.	RINGING THE BELL .....	3-8
3.4.7.	WHO-ARE-YOU AND THIS-IS .....	3-8
3.5.	CREATING MESSAGES .....	3-9
3.5.1.	A FEW WORDS ABOUT FILES .....	3-9
3.5.2.	EDIT - ENTERING A MESSAGE INTO THE MEMORY .....	3-10
	TO START THE SCREEN EDITOR .....	3-10
	EXAMPLES .....	3-11
	TO STOP THE SCREEN EDITOR .....	3-12
3.5.3.	DIR - FINDING OUT WHAT IS IN THE MEMORY .....	3-12
3.5.4.	LIST - DISPLAYING A MESSAGE ON THE SCREEN .....	3-12
3.5.5.	PRINT - PRINTING A MESSAGE ON THE PRINTER .....	3-13
3.5.6.	ERA - REMOVING A MESSAGE FROM THE MEMORY .....	3-13
3.6.	ESTABLISHING A RADIOTELEX CONNECTION .....	3-14
3.7.	TRANSMITTING MESSAGES .....	3-14
	EXAMPLES .....	3-16
3.8.	HELPS AND HINTS .....	3-18

## SECTION 3

### OPERATIONS

#### 3.1. INTRODUCTION

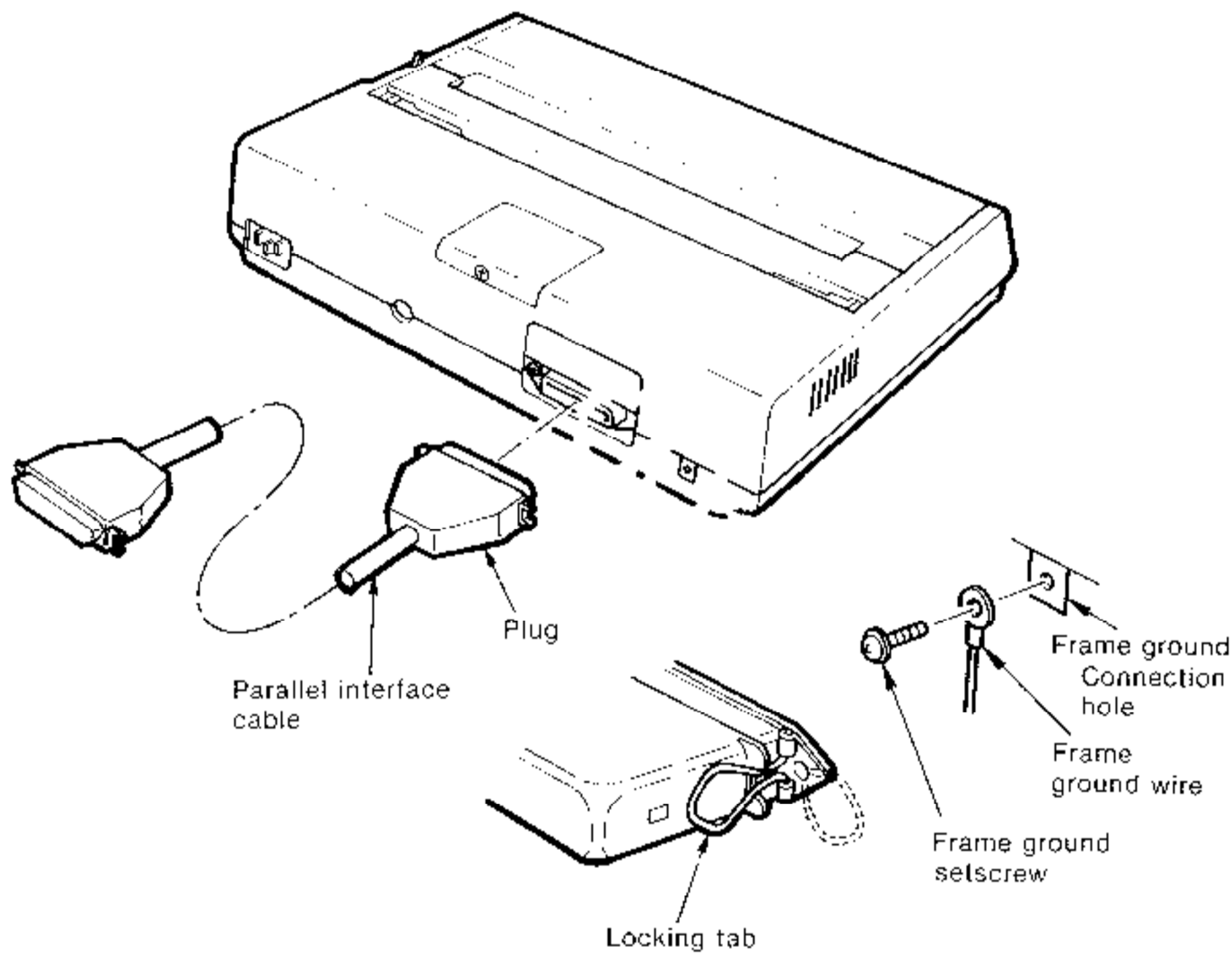
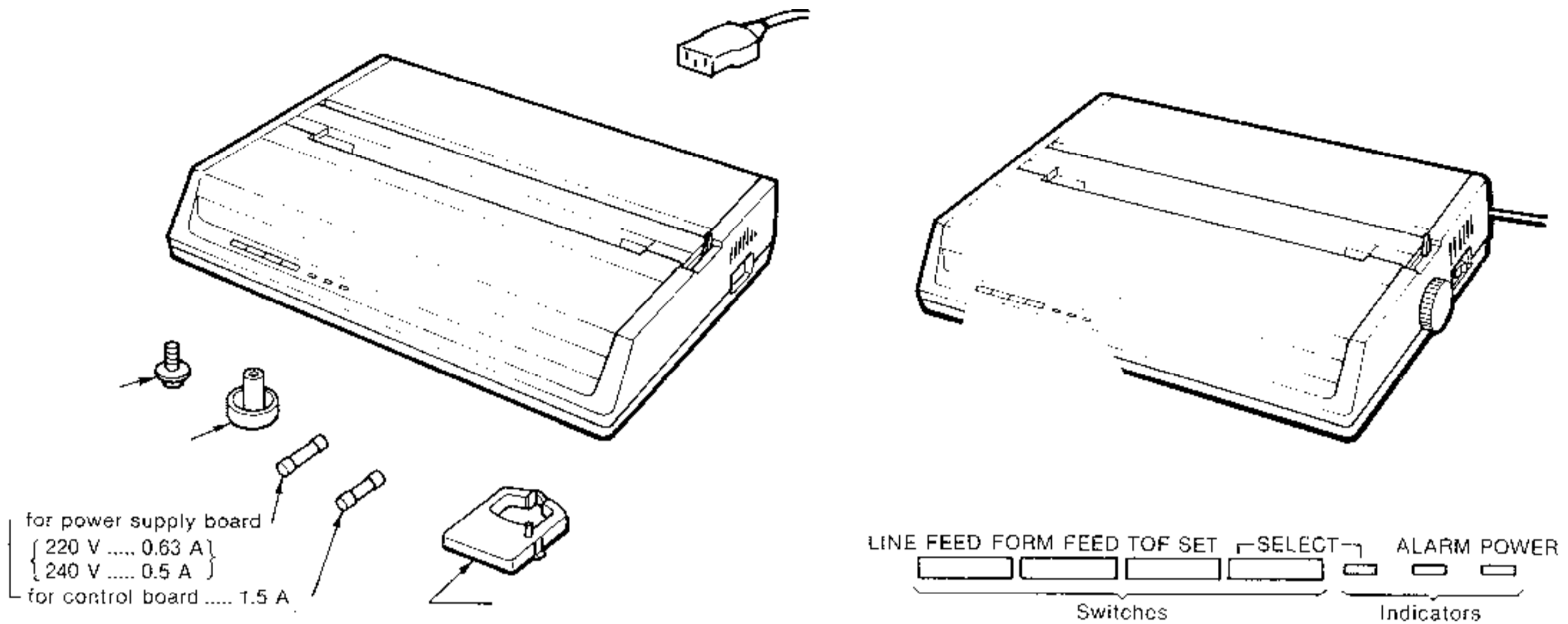
Within this section are instructions enabling you to start using your Radiotelex Modem H1240. This section contains an explanation of the Power-on Self-test that identifies your H1240 Radiotelex Modem is ready for use. This section also teaches you how to create and transmit telex messages with your modem.

If your Radiotelex Modem H1240 has a OKI Printer H1252, the next section will be a handy reference when getting started, and a quick reminder in the future. Otherwise you may skip to Section 3.2., Starting the modem.

#### 3.2. PRINTER OPERATIONS

The OKI Printer H1252 is a desk-top type, receive only, dot matrix printer. It is small in size and light in weight because it employs an extra small printing head and a built-in microprocessor that controls all the functions.

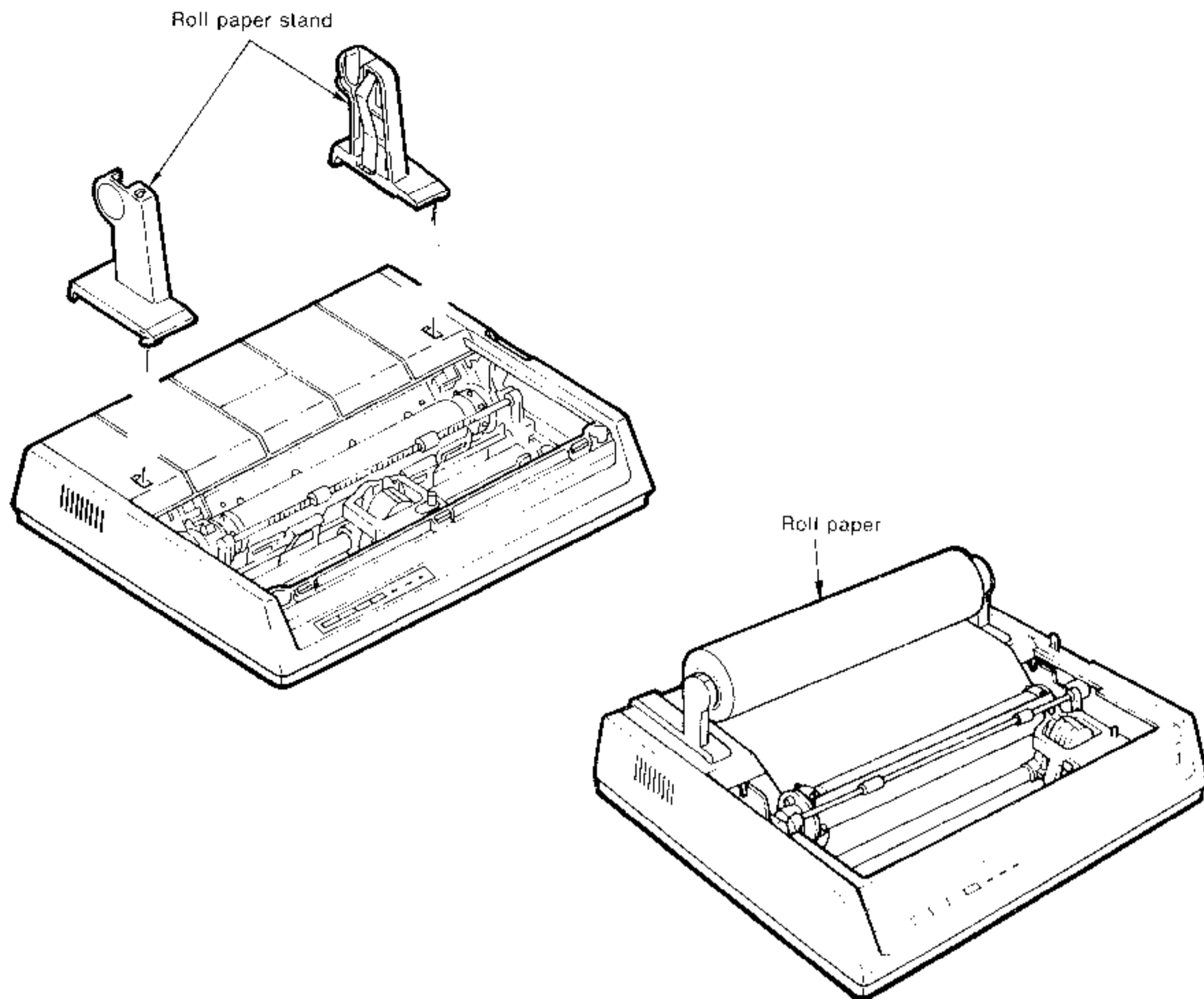
The basic unit consists of the printer and paper roll holder. Ordinary roll paper or sprocket paper may be used, and multi-part copies can be made. If an optional variable tractor is mounted, sprocket paper of various widths can be used.



#### Locations of Operating Buttons, Lamps and Knobs.

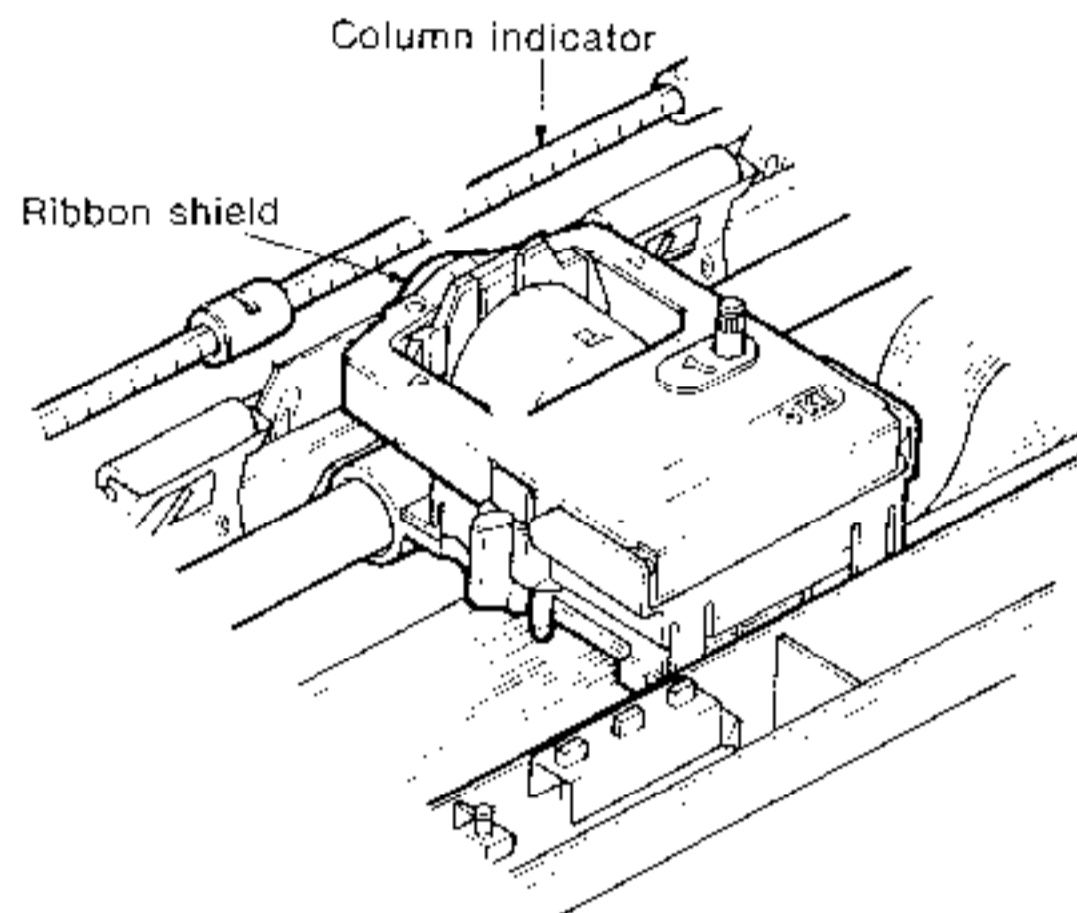
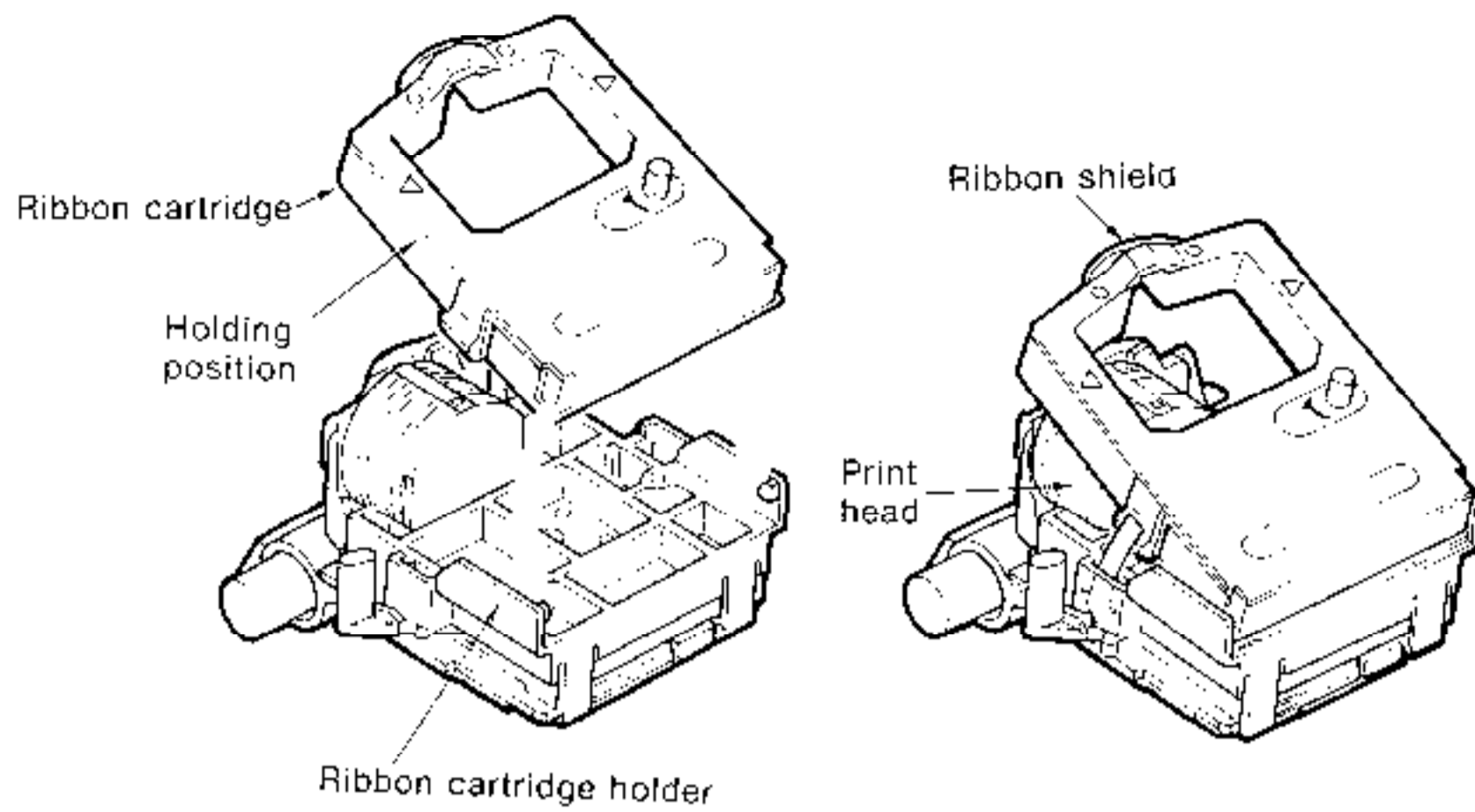
1. Power light is on when the printer POWER switch is on.
2. The printer is ready for receiving information for printing when the SELECT switch is on. (SELECT indicator is ON).
3. The printer stops printing when the printer unit detects the absence of paper about 50 mm (2") from the print line.





#### Paper Installation.

1. Switch the power off and remove the top cover by lifting it.
2. Push a roll of paper 128 mm (5.04") in maximum diameter, 216 mm (8.50") in maximum width, onto the paper mounting shaft until it hits the flange as shown, exercising care about its unwinding direction.
3. Set the roll paper on top of the roll paper holder.
4. Pull the paper lock release lever towards yourself ( to the release position).
5. Set the paper guide wire at the open position.
6. Run the paper between the paper chute and paper separator to the top of the platen.
7. Make sure that the paper is straight, set it in the center of the platen and push the paper lock release lever backwards to the lock position.
8. Set the right and left paper holder guides 0.5 to 1.0 mm (0.02" to 0.04") away from both edges of the roll paper.
9. Put the paper guide wire and top cover back into place.
10. Move the platen knob approx. 10-20 mm forwards and bend the paper as shown on the top cover.



### Ribbon Installation

1. Switch the power off and remove the top cover by lifting it.
2. Remove the used ribbon. See above.
3. Place the black ribbon cartridge on the ribbon cartridge holder. The easiest method is to tilt the back of the cartridge so that it slides into the area of the plate that is nearest the front of the printer, then lower the top of the cartridge (when the plastic ribbon shield is located) over the print head. The tabs on both side of the cartridge should align perfectly with the inserts on the print head plate.
4. Press on the cartridge until you feel it snap into place. To remove the ribbon cartridge, make sure the print head is away from the rollers, then grasp the cartridge on both sides of the print head and lift up.
5. The blue lever located to the left of the ribbon cartridge is used to adjust the print head gap for single- or multi-part paper. When single-part paper or two-part paper is in the printer, slide the blue lever toward the print head. To print on three- or four-part paper, slide the lever away from the print head.

### 3.3. STARTING THE MODEM

#### 3.3.1. POWER-ON SELF-TEST

When you first position the H1240 power switch to on, it performs a Power-on Self-test. The Self-test only takes a few seconds.

Position the H1240 Power switch to ON. There will normally be two responses:

1. The cursor will appear on the screen in approximately 3 seconds.
2. The message

```
Current date is dd.mm.yy (hh:mm)
Enter new date:-
```

will appear on the screen.

These responses tell you that your Self-test has completed successfully.

#### NOTE

The system automatically runs through a number of Self-test routines when the Power is switched on. During these tests a blinking pattern will be visible on the front panel of the H1240 Radiotelex Modem. After these tests the Mark and/or the Space indicator should light. If a problem is found during this short test, neither of these indicators will be on. This means that your system is not operating properly. Refer to the Installation and Configuration Manual for a detailed performance verification.

#### 3.3.2. TELLING THE DATE AND TIME

When the modem has been switched on, you will see something similar to this on the screen:

```
Current date is dd.mm.yy (hh:mm)
Enter new date:-
```

It is an excellent idea to fill in the current date whenever you start your modem because all your telex traffic will be stamped with the correct date. Also, any message that you create or change will have the correct date stored in the message directory.

1. Type one or two numbers for the day.
2. Type a period " . "
3. Type one or two numbers between 1 and 12 for the month.
4. Type another period.
5. Type the two last numbers of the year between 00 and 99.
6. Type a left bracket " ( "
7. Type one or two numbers between 0 and 23 for the hours.
8. Type a colon " : "
9. Type one or two numbers between 0 and 59 for the minutes.
10. Type a right bracket " ) "
11. Press the carriage return key.

The modem checks the date and time that is types. If the date and time does not check out, the modem displays the message:

*Invalid date*

### 3.3.3. THE PROMPT

On modems equipped with standard teleprinters, the modem displays:

*Standby*

:

The colon " : " is the modem PROMPT. A Prompt tells you that it is your time to type information, that is, to tell the modem what to do by entering a command.

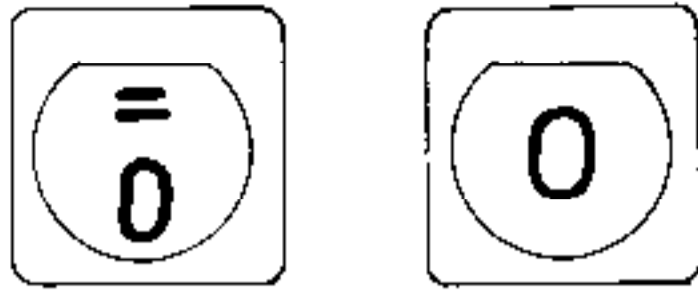
### 3.4. SOME KEYS YOU WILL USE

In addition to the keys you would find on a typewriter, your keyboard has some special keys you will use for telex handling.

Before we get to the special keys, here are a few differences between your keyboard and a typewriter, that you need to know.

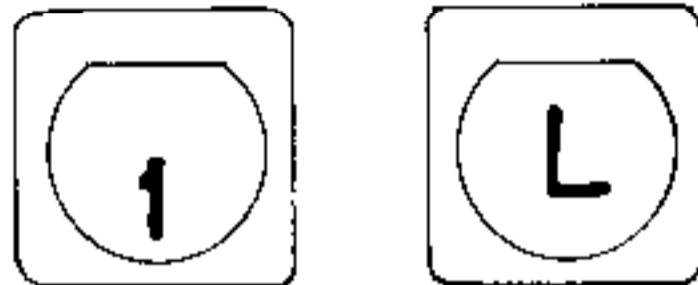


3.4.1. CHARACTERS THAT LOOK ALIKE - OH'S AND ZERO'S ONE'S AND EL'S



Computers are fuzzy about the number zero and the letter O - they want what they want, and you cannot fool them into taking the wrong one. Make sure you type the right key in commands and message names.

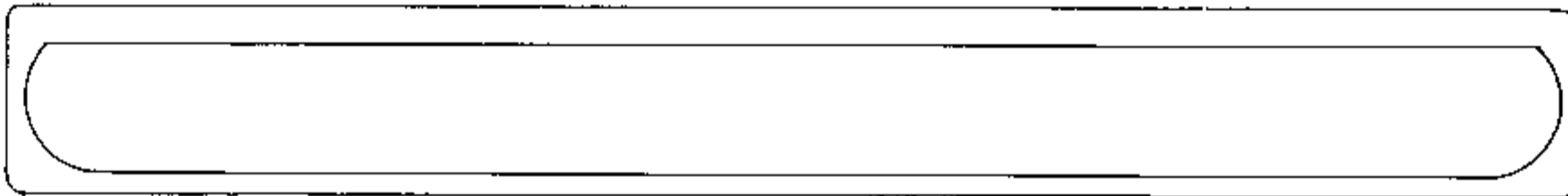
The letter O looks a little squarer than the number zero.



If you are used to type a lowercase L for the number 1 (if you have used a portable typewriter a lot, for example), you will have to break that habit.

Again, the modem knows the difference. Use the number key when the number 1 is required.

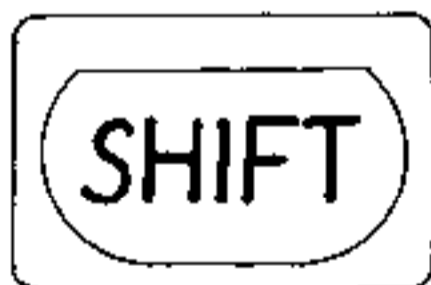
3.4.2. THE SPACEBAR



This is the spacebar. Use it to put a blank (a space) in a line you are typing.

To the modem, blanks are important; a blank is as much a character as A or B. Many times blanks are used to separate what you type for the modem just as we use them to separate words in everyday writing. You have to make sure when you are typing that the modem allows a blank. Otherwise, it may not understand what you have typed.

3.4.3. THE SHIFT AND ALFA-LOCK KEYS



There are two Shift keys on the keyboard, located about where you find them on a typewriter keyboard.

Use them to type uppercase (capital) letters or to type the symbol shown in the upper position on the keytop. That is just as you would expect.

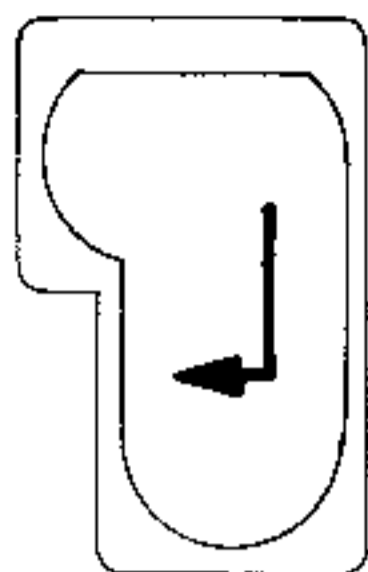


The Alfa-Lock key lets you type capital letters and numbers. You still have to press one of the Shift keys to type the symbols that are on the upper portion of the symbol keys (for example the left bracket " ( " on the number key 8).

Unlike an ordinary typewriter, pressing one of the Shift keys does not get you out of Alfa-Lock mode. You must press the Alfa-Lock key again to type lowercase letters.

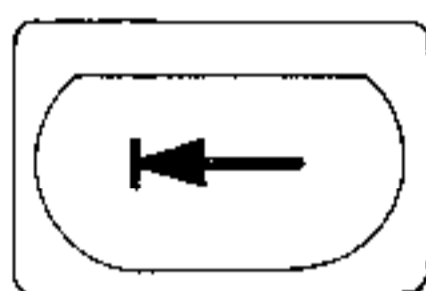
TELEX SYSTEM INTRO.-OVERVIEW

## 3.4.4. TO ENTER A COMMAND



Use the carriage return key when you have finished typing a whole command. After you press the carriage return key, the command starts.

## 3.4.5. TO CORRECT A TYPING MISTAKE

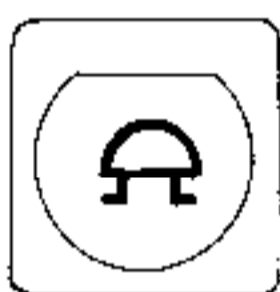


There are several ways to correct a mistake that you notice before you press the carriage return key.

One of the easiest ways is to use the Backspace key to move the cursor backwards, under the leftmost wrong character. The Backspace key may or may not delete the characters as it moves to the left, depending on the type of the display terminal you use (the Backspace key is located in the right side of the top row).

More ways to correct typing mistakes are discussed later.

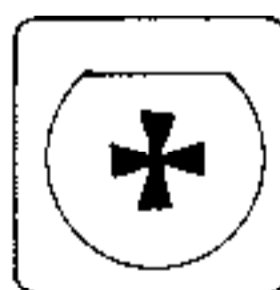
## 3.4.6. RINGING THE BELL



Most telex subscribers are operating unmanned. If you want to get the attention of an operator, use the Bell key to ring the Indicator Bell in the subscribers teleprinter. Each time you press the Bell key, the other party's Bell will ring once.

## 3.4.7. WHO-ARE-YOU AND THIS-IS

Each telex subscriber has a unique identification, known as the Answerback. This is a line of 20 characters stored in the subscribers teleprinter or associated equipment. The Answerback may include the telex number and abbreviated name of the subscriber.



When you are connected to a telex subscriber, you may want a confirmation of who you are talking to. This is automatically carried out by pressing the Who-are-you key.

When you press the Who-are-you key, the modem automatically sends a request to the subscriber's teleprinter which in turn changes the direction of data flow, sends the built-in Answerback to you and then automatically changes the direction of data flow back to you.

You can then continue transmitting your message



The Here-is key on your keyboard enables you to send your own Answerback to the other subscriber. Simply press the Here-is key, and your complete Answerback will be transmitted.

### 3.5. CREATING MESSAGES

When you establish a telex connection, you should already have prepared the message you want to send to the other telex subscriber. You may of course want to type your message directly to the subscriber after you have established connection, that is simple, just use the keyboard and send your message.

However, that is an expensive solution, unless you are a very skilled typist. Remember that you pay for all the time you have an error-free connection with the other subscriber, even if you do not send anything on this connection. You should rather use the built-in text memory to prepare your messages before you establish connection with the subscriber,

The following examples show how to create, display and remove a message from the text memory. You do not need to review the details of the Text Editor to complete these examples - just follow the steps provided.

#### NOTE

In the following examples, to ENTER something means that you should TYPE the information and then press the carriage return key.

#### 3.5.1. A FEW WORDS ABOUT FILES

##### WHAT IS A FILE?

A file is a collection of related information. A file in your text memory is like a folder in a file cabinet.

Nearly every business office has one or more filing cabinets containing folders of information. For example, one folder might contain your personal letters. You might name this file the Myletter File. A file in your text memory could also contain this information and could also be named the Myletter File.

All the messages in your text memory reside in files, each with a unique name. You create a file whenever you enter a message.

You keep track of your files by their names.

##### WHAT CAN I NAME MY FILES?

With a few exceptions, you can give your files any names you want. Your filenames can be 1 - 8 characters in length and can be followed by a filename extension. Filename extensions start with a period and can be 1 - 3 characters in length.

LETTER.1    MESSAGE    TELEX.005    LONDON    PAYROLL

are all valid file names.

## HOW MANY FILES CAN I HAVE?

Files in your text memory vary in size just like files in a file cabinet. Your text memory has a certain maximum size of approximately 64,000 characters (32 A4-size pages of text). You can have as many files as you want, as long as the total size of all your files does not exceed this limit.

## HOW DOES THE MODEM KEEP TRACK OF MY FILES?

The names of your files are kept in the text memory in an area known as the directory. The directory also contains pertinent information concerning the size of your files and the dates and times they were created, used or last updated.

## 3.5.2. EDIT - ENTERING A MESSAGE INTO MEMORY

To start the Screen Editor

1. Create a file named message. Enter:

```
EDIT message
```

The following message will be displayed on the screen (Status message):

```
Editing new file MESSAGE
```

The Editor tells us that the file is a new one (the Editor could not find the name in the directory).

To start entering text into the text memory, you now have to use the Append command.

Now enter the Append command (A):

```
*A
```

```
1:* _
```

Notice, that the prompt for the Editor is an asterisk (\*).

Now you can enter your message into the file just like on a typewriter.

2. Type This is a test letter. on line 1 and press Carriage return.
3. Type Editing is easy. on line 2 and press Carriage return.

You now have two lines of text in your MESSAGE file.

4. Leave the message as it is. Enter a period (.) as the first and only character on line 3. This tells the Editor that you want to leave the text entry mode and enter the command mode which allows you to modify some of the lines you have already entered. Remember to press the Carriage return key. The screen should look like this:

```
1:* This is a test letter
2:* Editing is easy.
3:* .
```

## Example 1

Let's change the word letter in the first line to the word message.

1. Enter the number (1). This tells the Editor that you want to display line 1 on the screen. The screen should now look like this:

```
*1
  1:*This is a test letter.
```

The first line is your request to edit line 1, followed by the display response.

2. Move the cursor (the blinking underline, or the block cursor) by pressing the `-->` key until the cursor is located on top of the letter (l).
3. Press the DEL key until the word letter has been deleted, and then type the word message. The screen now looks like this:

```
*1
  1:* This is a test message_
```

Press Carriage return to return to the Editor prompt.

If you want an overview of all the commands in the Editor, try to enter a question mark (?). The Editor then displays a complete Help screen so that you have a quick reference to the commands at any time.

## Example 2

Let's continue entering text into our file.

1. To enter text after line number 2, use the Append command. Enter the number (2) followed by letter (A) to indicate that we want to append text after line 2. The entry and the screen looks like this:

```
*2A
  3*_
```

2. Type Now is the time for all good med on line 3 and press Carriage return.
3. Leave the text entry mode again by entering a period (.) as the first and only character on line 4. Remember to press the Carriage return key. The screen should look like this:

```
*2A
  3:* Now is the time for all good men
  4:* .
*_
```

## Example 3

Now let's view what we have written until now.

1. To list the message, simply enter the letter (L). The screen looks like this:

```
*L
  1: This is a test message.
  2: Editing is easy.
  3:* Now is the time for all good men
*_
```

## Example 4

Now we will delete line number 2.

1. Enter the number (2) followed by (D) to delete line number 2.  
The screen looks like this:

```
*2D
```

```
*_
```

2. To view the corrected text, use the List command. Enter the letter (L).  
The screen now looks like this:

```
*L
```

```
1: This is a test message.
2:* Now is the time for all good men
```

```
*_
```

## To stop the Screen Editor

You have now completed the examples. To close the text memory and leave the Editor:

1. Enter the letter (E)

This tells the Editor to close the file and return to the Standby condition.

## 3.5.3. DIR - FINDING OUT WHAT IS IN THE MEMORY

It is often handy to find out what files are in the text memory. The Directory command (DIR) displays a list of all the files in the text memory. Let us see how you might use it.

1. Type:

```
DIR
```

and press the carriage return key.

2. Watch the screen.

The screen displays the name(s) of all the files in the text memory. You might only have one file, the MESSAGE file you have just entered.

The last line displays the amount of memory left in the text memory for further messages.

## 3.5.4. LIST - DISPLAYING A MESSAGE ON THE SCREEN

The LIST command lets you "look into" a file; that is, it displays the contents of a file on the screen. You only need to know the name of the file.

1. Type:

```
LIST MESSAGE
```

and press the carriage return key.

2. The name and contents of MESSAGE will be displayed.

## 3.5.5. PRINT - PRINTING A MESSAGE ON THE PRINTER

The PRINT command lets you print the contents of a file on a hardcopy printer like OKI Printer H1252.



1. Make sure the printer is turned on, is on-line, and has paper in it.
2. Type:  
  
    PRINT MESSAGE  
  
and press the carriage return key.
3. The contents of MESSAGE will be printed.

### 3.5.6. ERA - REMOVING A MESSAGE FROM THE MEMORY

When a message has been transmitted, and you no longer need it, you may remove it from the text memory. The Erase command (ERA) does this for you.

Removing old files makes room for new messages in the text memory.

After a file is erased, the text in the file is gone. You should therefore check your typing when using the Erase command.

Let us erase the file containing the message we have already created.

1. Type:  
  
    ERA MESSAGE  
  
and check your typing. Now press the carriage return key.  
MESSAGE has now been removed from the text memory.
2. To assure that the file has been erased, try the DIR command again like this:  
  
    DIR MESSAGE  
  
and press the carriage return key.
3. The modem displays the following message:

*Not found*

You may notice that the number of remaining (free) lines now have increased, so that you have more room for new messages.

### 3.6. ESTABLISHING A RADIOTELEX CONNECTION

To initiate the transmission of a call or phasing signals, enter any of the following commands:

1. ARQ nnnn Start an ARQ call to a station with call code nnnn. Transmission of the call sequence continues until response is received from the called station, or until a maximum call time of 58 seconds has been reached.
2. CALL nnnn Start an ARQ call to station nnnn, but wait until the channel is free. This form of call can only be used with stations transmitting "Free" signals on idle channels.
3. FEC Start a collective FEC phasing sequence. Your transmitter sends a number of phasing tones to permit synchronisation at the receiving stations.
4. FEC nnnn Start a selective FEC phasing sequence. This is similar to the collective call, but after the phasing sequence has been transmitted, the modem inverts the Mark/Space tones and sends out a selective call code. Only those receiving stations that has the correct call code will retain synchronisation with your transmitted signals.

Before any message can be sent, you have to wait until the connection has been established, or in the case of FEC until the complete phasing sequence has been transmitted. When the system is ready for message transmission it will display a message "df" to indicate that you are connected with the other station.

### 3.7. TRANSMITTING MESSAGES

A message that has been stored in the text memory may be transmitted by a procedure very similar to the one used for manual transmission directly from your keyboard.

Let us review the steps involved in establishing an ARQ connection and let us then transmit a message stored in the text memory.

The first step is to establish the radio connection with the other station. This also means that your modem and the modem at the other end has to synchronize with each other.

The next step is to exchange Answerback codes, so that you and the other party know each others identity.

You may then transmit the message which you have already stored in the text memory.

After you have sent what you want, you should always exchange Answerbacks again.

As a last step you should send an End-Of-Transmission sequence to the other station and then terminate the radio connection.

Let us look at the complete sequence.

1. Initiate the call sequence by entering  
     ARQ 0832 (RETURN)
2. After a few seconds you will see the "df" message.
3. Press the Who-are-you key and receive the other stations Answerback.
4. Press the This-is key and send your own Answerback.
5. Your message can now be transmitted. Let us assume you have a file named MESSAGE that you want to transmit. Simply enter:

    JJJJC MESSAGE (RETURN)

The JJJJC tells the modem that it should take the next word entered and try to find a file with that name. If found, the modem should then transmit the contents of that file.

Watch the "Data out" indicator on the Front Panel of your modem H1240 or on your keyboard, if you use the Keyboard Processor H1249.

6. When the modem starts to transmit the message the "Data out" goes steadily on. This tells you that the modem transmits real traffic. When the message has been transmitted, the "Data out" indicator blinks to tell you that the modem has no more traffic to transmit, and therefore sends out what is known as idle characters. These are stripped off in the other end, and nothing appears on the other party's terminal.
7. Press the Who-are-you key and receive the other stations Answerback.
8. Press the This-is key and send your own Answerback.
9. Terminate the conversation by entering the command:

    JJJJC EOT (RETURN)

which tells the modem to send an End-Of-Transmission sequence to the other station. After a few seconds the modem reverts to the Standby condition.

### NOTE

Some modems intended for Crypto operation are programmed to recognize the command word:

    JJJJ:

instead of the JJJJC word. If your modem does not do what you want it to do, try to use JJJJ: in the examples above.

## Example 1

As an example let us assume we make an ARQ call to the Danish Coast Radio Station, Lyngby Radio. Let us also assume that the transmitter and receiver are tuned to the correct frequencies and ready.

Lyngby Radio has the call code 0832.

1. Type this:

ARQ 0832

and press the carriage return key.

2. The modem immediately starts the transmitter and sends out a calling sequence. The modem displays the following message:

ARQ call dd.mm.yy (hh:mm)

where the date and time stamp will be displayed and printed.

2. If connection is established with the coast radio station within one minute, the modem will display:

df

This short message is a common telex service message which indicates that you are connected to the other party.

3. Press the Who-are-you key to receive the Answerback of the coast radio station.
4. Press the This-is key to identify yourself to the coast radio station.
5. You can now transmit your message by typing directly on your keyboard, or you can send the contents of a file you have stored in the text memory.
6. To change the direction of traffic, type this:

+?

When this sequence is transmitted, the direction will automatically be changed and you can receive a message the other party may want to send to you.

7. To change the direction back to you (so you can transmit again), the other party must send you the (+?) sequence. You can, however, at any time force a change in direction by pressing the OVER softkey on your H1249 Keyboard Processor.

On ASCII terminals, the (\$) key is used as the Who-are-you key, and the ( ) key used as the Here-is key.

## EXAMPLE 2

A message can be transmitted directly from the keyboard. Let us transmit a common test message, known to contain all the letters in the English alphabet. Let us transmit the message in Forward-Error-Correction (FEC).

1. Type:

FEC

and press the carriage return key.

2. The modem starts transmitting the phasing sequence and displays the message:

*Collective FEC call dd.mm.yy (hh.mm)*

and after a few seconds:

*df*

3. Press the carriage return key, and enter the message:

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 0123456789 (RETURN)

## NOTE

You may notice, that you immediately see on the screen what you key in, but that printing on the OKI Printer H1252 is delayed. In fact, printing is carried out as the characters are actually sent out, so you always know what you have sent is transmitted.

When you want to terminate the transmission, press the (break) key on the front panel of H1240 or press the Soft-key labelled END if you have the Keyboard Processor H1249.

The modem will transmit an ending sequence and revert to the Standby condition.

Try to send a few messages in FEC mode to get the feel of the Radiotelex Modem. The transmitter should of course operate into a dummy load. If you have the chance to listen to the transmitted signals you hear the characteristic two-tone signals with a speed of 100 tones per second.

### 3.8. HELPS AND HINTS

We are ending this chapter with a few hints - maybe they will save you some trouble or help you as you use your Radiotelex Modem H1240.

Sometimes, commands do not work as you expected because a command or a filename was typed incorrectly.

- What mode are you in, Standby, Editor or are you communicating?
- Check your typing including any spaces between words.
- Has the filename been spelled correctly?
- Check the directory of the text memory if you cannot find the file you are looking for.
- If a command still does not work, refer to the System Operation Manual that fully describes the command.