

## SAILOR SHORT WAVE PROGRAMME 1000

The SAILOR radiotelex system can easily be integrated with the SAILOR Programme 1000 stations, thus providing radiotelex communication facilities. The radiotelex modem ARQ H1240 can be built into the SAILOR 19" rack system or be supplied in its own cabinet.

Unattended reception and transmission of radiotelex on one radio channel can be performed with the manually operated receivers and transmitters in the SAILOR Programme 1000. When frequency set-up and tuning have taken place the SAILOR autostart unit will power-up the pre-tuned station on command from the radiotelex system.

### Optional

The SAILOR autostart unit H1228 in a self-contained cabinet to be operated with a single Programme 1000 station on AC mains.

The SAILOR autostart unit H1228S in a self-contained cabinet to operate on 24V battery supply.

The SAILOR autostart unit H1227 to be built into the center panel of the SAILOR tandem station on AC mains.

## NORDIC MARITEX SYSTEM WITH SAILOR SHORT WAVE PROGRAMME 1000/B

MARITEX is an automated radiotelex system for the exchange of telex messages between ships and land and vice versa.

The MARITEX system is based on the "store and forward" principle with the central computer located at Gothenburg Radio, Sweden. Automatic reception and transmission of radiotelex messages is possible 24 hours a day. The MARITEX computer holds current information on ships' positions and this, together with the stored radio propagation forecast, ensures that the correct frequency and transmitting direction will be used. 80% of all messages are delivered within two hours.

The SAILOR automatic radiotelex station is type approved for the Nordic MARITEX system and can be delivered in a set-up as illustrated, in which case radiotelephone communication is not possible. The station can of course also be used to work with other coast radiostations both in manual and automatic modes.



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# "SAILOR" AUTOMATIC RADIOTELEX STATION

1250 Watt PEP or 400 Watt PEP



"SAILOR" AUTOMATIC RADIOTELEX SYSTEM

S. P. RADIO A/S · AALBORG · DENMARK



## INTRODUCTION

Today all ships have a growing need for communication. Error-free telex via the SSB HF radio-telephone can close the communication gap where a printed message is required.

Telex connection with other ships as well as with any telex subscriber in the world through the international telex network is possible today with the SAILOR radiotelex system and the SAILOR short wave programme.

The new technology has made it possible to produce an advanced microprocessor controlled radiotelex modem which is the most economical telex communication system of today.

All over the world, coast radio stations are being improved and automatized so that they will continue to be able to meet the growing demand for radiotelex communication.

## GENERAL

The SAILOR radiotelex system has automatic error correction on telex transmission with 50 or 100 Baud speed in the maritime and point-to-point applications.

The SAILOR radiotelex system provides unattended transmission and reception of telex messages between the ship and the public telex network via a coast station - 24 hours a day.

The SAILOR radiotelex system has a screen-oriented text editor with a 256 kbyte text memory. For easy operation, full soft-key commands of all editing and system commands are included.

## System Operation

The SAILOR radiotelex system is capable of telex communication in several error-correcting modes. When sending a telex, the operator selects the mode. When receiving a telex, the system automatically detects the mode of the incoming telex.

## ARQ Operation

The ARQ-mode (Automatic Retransmission Request) is only workable between two stations at a time, and provides private communication with some limited protection.

In ARQ-mode the two stations communicate direct with one another. The information-sending station transmits the data in blocks of three characters. Between the blocks of characters, the sending station waits for a reply of a single character from the information-receiving station,

indicating that the block has been well received, and the next block can be sent. If an error occurs, the receiving station requests a repetition. In ARQ-mode the direction of information can be changed.

## FEC Operation

FEC-mode (Forward Error Correction) is used where a message from one information-sending station is to be received by more than one receiving station. In FEC-mode the message is sent in time diversity, which means that it is sent twice at intervals of a fraction of a second.

The receiving station thus has two chances to receive each character correctly. If both characters are mutilated a star is printed.

SEL/FEC-mode (Selective Forward Error Correction) allows selective calling of one or more stations. The message is transmitted in inverted format. Only the receiving station with the correct call code will receive the information.

## SAILOR RADIOTELEX SYSTEM

The SAILOR radiotelex system consists of the following units.

### Radiotelex Modem ARQ H1240

The SAILOR ARQ H1240 is designed for reliable service in demanding applications, providing a broad range of operating features and for simple but efficient control.

All operational controls can be carried out from the keyboard by easy-to-use commands.

The intelligence provided by the H1240 radiotelex modem enables fully automatic control of the complete radio station: Start the transmitter, tune it, establish the connection and transmit and/or receive messages. It can even control the scanning receiver searching for incoming calls, set-up the transmitter frequency (Programme 1000/B only), and handle the traffic without any operator intervention.

All H1240 radiotelex modems have storage capacity for 105 user programmed frequency pairs and call codes.

The built-in 256 kbyte character comprehensive text editor adds powerful dimensions to telex handling and becomes familiar to any user with a minimum of training. A large number of different messages can be stored in



the text memory for later transmission (separately or in groups).

The H1240 radiotelex modem supports a number of automatic modes, including unprotected/protected mode, public/secret save mode, operator programmable group command mode, and scan mode with automatic calls controlled by the reception of "FREE" signals. Software controlled channel quality evaluation and frequency tracking ensures optimum selection of frequency channels.

The H1240 radiotelex modem operates with standard 50 Baud transmission speed (100 Baud on radio side). As option H1240 can operate with dual speed twinplex modulation resulting in 100 Baud transmission (also 100 Baud on radio side).

### Keyboard Processor H1249

The SAILOR H1249 keyboard processor includes full soft-key operation of system and editing commands for easy operation. Screen-oriented text editing facilities with 9600 Baud console transfer speed for fast file editing/display, file manipulation, and communication control.

### Printer H1252

SAILOR H1252 hard-copy printer for multi-copying of communication message and file listening. Up to four different printers may be connected to the T-BUS system for dedicated printing of information.

## Video Monitor H1253

SAILOR H1253 video monitor is for use with keyboard processor H1249.

## FEATURES

- Error-correcting modem meeting CCIR Rec. 476-3 and the new 625 with 9-digit call codes and identification exchange.
- Unattended transmission and reception of telex messages - 24 hours a day.
- Full communications privacy using built-in high security on-line/off-line telex cipher.
- Automatic control of communication equipment with "FREE" signal scanning and automatic power-up of transmitter.
- Automatic channel quality evaluation and frequency tracking for optimum channel selection.
- Print spooler for message printing while other tasks are performed on the modem.
- Simple operation by use of soft-keys.
- Full screen-oriented word processing with 256 kbyte solid-state memory and message management.
- Standard- and double speed (100 Baud) operation with frequency- and space diversity.
- Storage capacity for 105 user programmable frequency pairs and call codes.
- IBM-PC/XT communications software.

## TECHNICAL DATA H1240

Communication protocol:	..... CCIR Rec. 476-3, Rec. 491, Rec. 492, and the new Rec. 625.
Call codes:	..... 4-digits, 5-digits, and 9-digits with dual ship ID-codes for individual- and group calls.
Modes of operation:	..... ARQ, ARQ100 (double speed), FEC, SELFEC, DIRC (direct), DIRCA (direct with mark hold/insert), CW.
Line signal:	..... Two tone keyed with 7-unit code, constant 4B/3Y ratio. Optional: four tone keyed twinplex modulation for double speed operation (Rec. 346-1).
Modulation:	..... Phase-continuous AFSK keying.
Tone frequencies:	..... Individual Mark- and Space tone programming between 800 Hz and 3 kHz with 1 Hz resolution.
Frequency stability:	..... < 0.1 Hz.
Filter tracking:	..... Adaptive tracking within +/-80 Hz.
Decision filtering:	..... Bit-slicing with multipath correction.
Threshold control:	..... Software controlled dynamic threshold.
Demodulator sensitivity:	..... -1.2 dB signal/noise ratio at 10% block repetition rate (-0.4 dB with double speed Twinplex) in 1 kHz noise bandwidth.
RX-tone input:	..... +10 dBm to -20 dBm limit level in 2 dB steps, 600 ohm balanced.
RX dynamic range:	..... > 40 dB.
TX-tone output:	..... +10 dBm to -21 dBm in 1 dB steps, 600 ohm balanced.
Radio control input:	..... RS-410 type N.
Radio control output:	..... RS-410 type N (open drain 60 V, 100 mA with max. 5 ohm R-on).
Console interface:	..... CCITT Rec. V.28 (RS-232C), 50 to 2400 Baud ITA-2 code, and 75 to 9600 Baud ITA-5 code. Optional neutral and polar 2/4-wire high voltage current loop interface.

## SAILOR SHORT WAVE PROGRAMME 1000/B COMBINED DUPLEX SSB TELEPHONY AND AUTOMATIC RADIO-TELEX STATION.

With the SAILOR Programme 1000/B it is possible to have a combined Duplex SSB short wave telephony- and automatic radiotelex station complying with SOLAS and other international and national requirements for automatic radiotelex systems in the maritime, land mobile, and diplomatic applications. Also type approved to the Nordic MARITEX system and the Danish DANTEX system.

## Automatic Operation

Unattended reception and transmission of radiotelex messages is possible with coast radiostations which have been automatized and are transmitting free-signals indicating that the station is free and ready to receive a radiotelex call.

## Operational Features:

- Full scanning facilities on the receiver R1121 with max. 21 channels in the scanning sequence.
- Storage capacity to contain call numbers and names of 15 radiotelex stations with 7 frequency pairs for each station.

Printer interface:	..... CCITT Rec. V.28 (RS-232C), 75 to 9600 Baud ITA-2 and ITA-5 code.
Tape reader/puncher interface:	..... CCITT Rec. V.28 (RS-232C), optional 40 mA current loop.
Remote control:	..... CCITT Rec. V.10 SPECIAL (RS-423, TBUS), multidrop addressing for receiver/transmitter control, and monitoring control/polling.
Free-signal detection:	..... Automatic detection and handling of free-signals.
Solid-state storage capacity:	..... 256 kbyte RAM memory, shared between buffer memory and text memory.
Soft-key commands:	..... All editing and operational commands.
System programming:	..... Full EEPROM programming from keyboard of installation set-up's, user programmable frequency scanmatrix, cipher keys, autostart files, etc.

## GENERAL

Power source:	..... 115/127/220/240V AC (+10/-15%) 50-400 Hz and 24V DC (-10/+30%).
Power consumption:	..... 25 VA
Ambient temperature:	..... 0°C to 55°C operation, -20°C to 70°C storage.
Relative humidity:	..... 95% non-condensing.
Vibration:	..... IEC, CEPT, and MPT 1204.

## OPTIONS

Free signal generation for H1240. (CCIR Rec. 492)

100 Baud up-grading kit for H1240. (CCIR Rec. 346-1)

Remote alarm unit H1231, which gives an audible and visual alarm when a telex is received.

All stated specifications are approximate and subject to change without notice or obligation.

- Unattended radiotelex reception. Upon receiving the selcall number of the ship, the station will power-up, set-up the transmitting frequency, and tune the transmitter. After having received the message, the transmitter shuts down and the receiver R1121 starts scanning again, waiting for a new radiotelex message.

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- Unattended radiotelex transmission. With the message stored in the memory and the call set-up for the wanted coast station, the station will wait for a free-signal. Upon receiving a free-signal, the station will power-up, set-up the transmitting frequency,
- When the station shown below has been installed with two receiver aerials it is possible to receive calls on telephony and at the same time continue telex correspondence.
- The station can be programmed to transmit a message when called. The message can be transmitted to all calling stations or be protected by a password to a dedicated caller.

