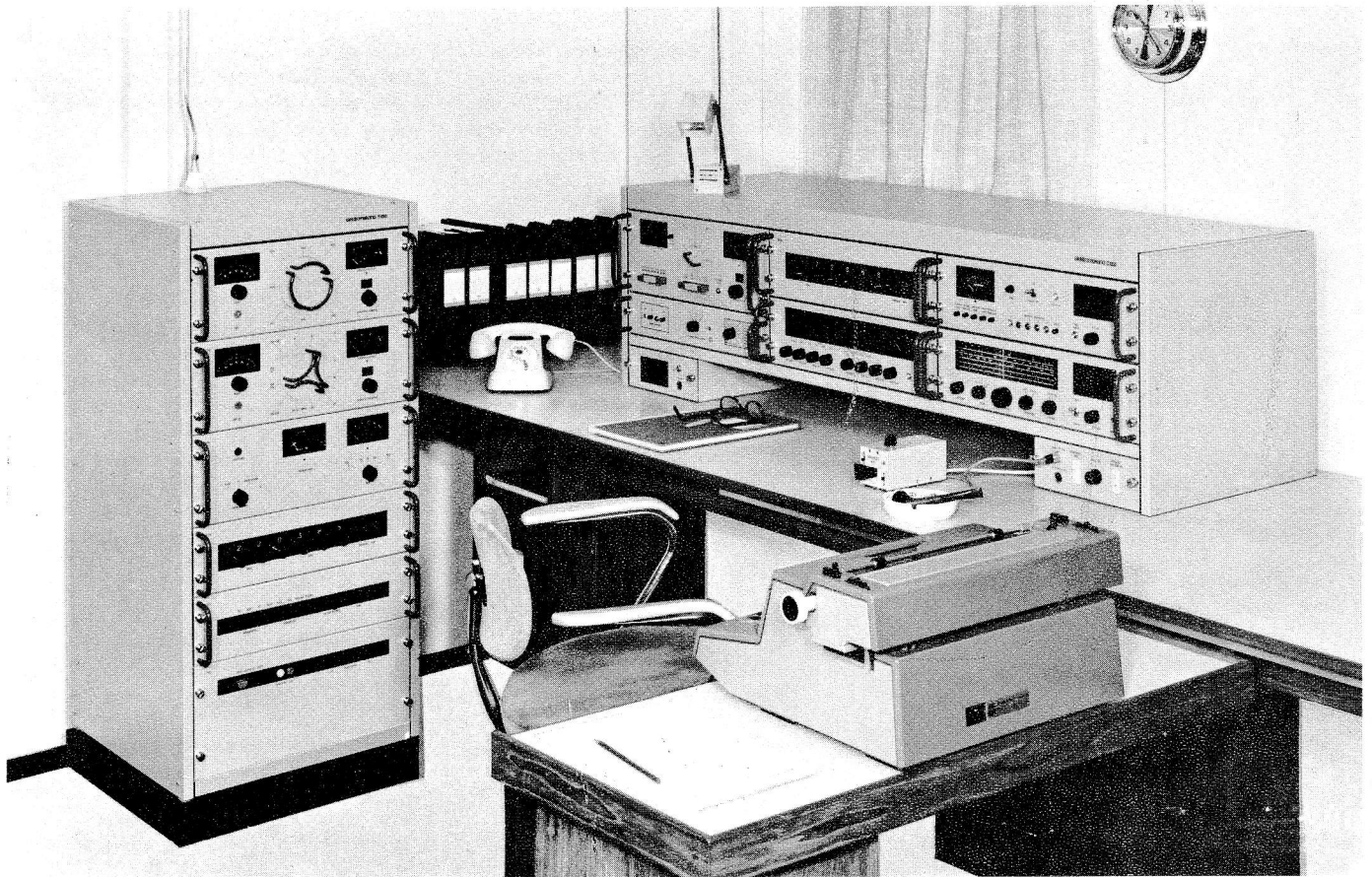


REF-18-1544

dansk radio aktieselskab



the 1250-series

elektromekano

marine radio station

most advanced technology
high reliability
modern and compact design
simple operation
simple installation

comprising:

1500 watt PEP synthesizer-controlled SSB transmitter type S 1250
transmitter antenna switch type O 1250
radio-console type C 1250 containing:
synthesizer-controlled SSB main receiver type M 1250
reserve transmitter type S 125
reserve receiver type M 125
auto alarm type A 125
control panel type K 125

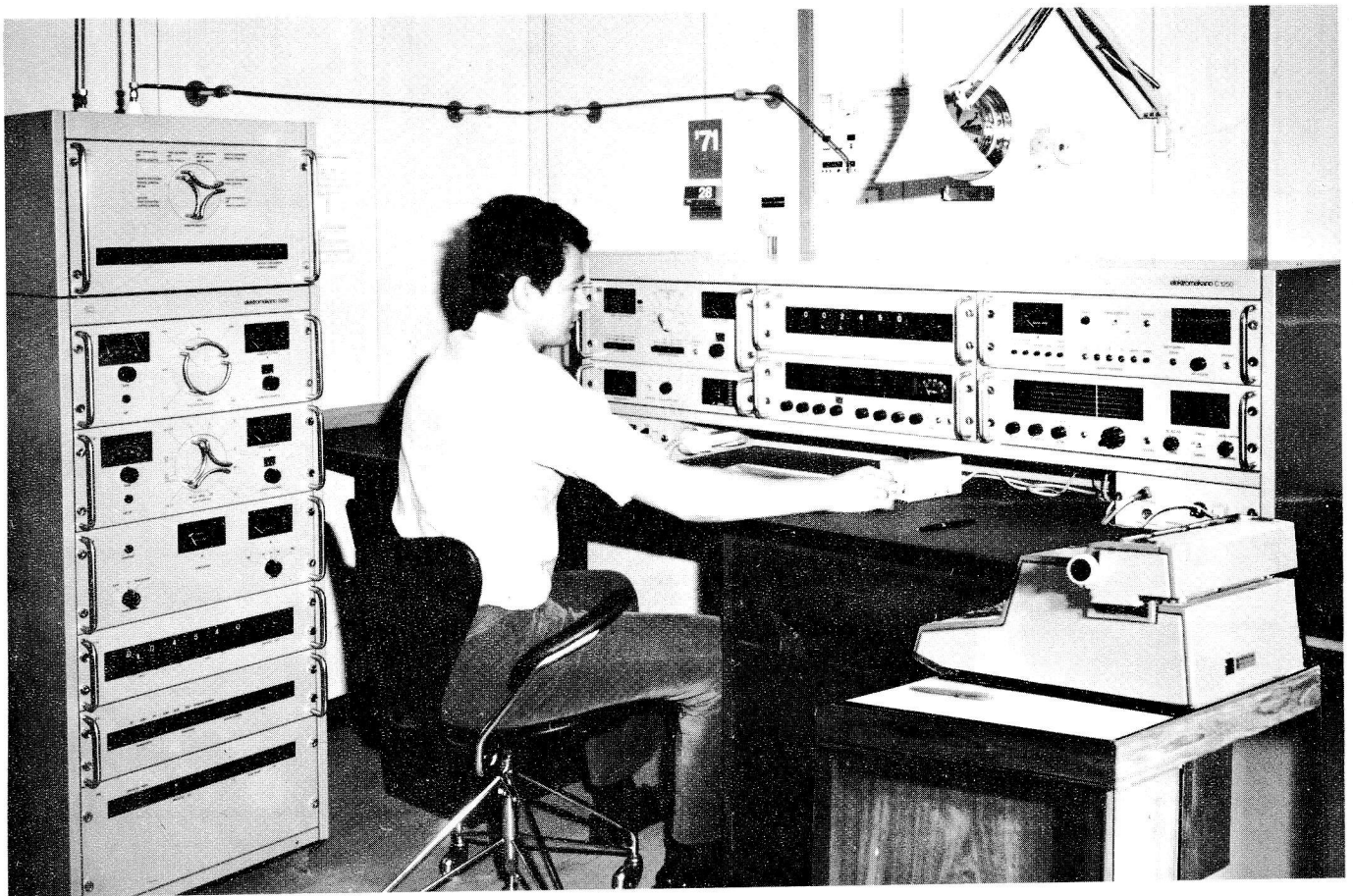
Complying with the applicable rules
in the Radio Regulations, Geneva 1967,
and SOLAS, London 1960

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
telegrams.: Dariose
telex 27058

Introduction to Elektromekano series 1250 marine radio station

- General:** Elektromekano series 1250 radio station consists of two units: the ssb main transmitter S 1250 with the transmitter antenna switch O 1250 placed on top, and the desk console C 1250 housing from top left to bottom right, reserve transmitter S 125, control panel K 125, ssb main receiver M 1250, auto alarm A 125, and reserve receiver M 125.
- SSB main transmitter type S 1250:** The function of the six panel drawers is from bottom to top: power supply unit, exciter, synthesizer, power amplifier, HF and IF tuning circuitry and MF tuning circuitry.
- Special features:** Apart from a ceramic output power valve only solid state devices have been utilized. Automatic fault localization devices are supplied as special test sets for checking the operation of the exciter and the synthesizer. During test a fault is indicated by a red pilot lamp placed on the front panel. Inside the panel drawer another pilot lamp indicates the faulty module. The operation of the transmitter is very simple; after starting-up just dial the wanted frequency, choose the proper frequency range and adjust the antenna tuning.
- Antenna switch type O 1250:** This switch is for selection of the proper antenna for the transmitter in operation. It is provided with a built-in dummy antenna for testing purposes and with a microswitch for the D.F.-blocking circuit.
- Reserve transmitter type S 125:** As the battery-operated reserve transmitter onboard a ship also has to work as an emergency transmitter it is most important that the operation is simple.
- In order to start transmission of the alarm signal just push the buttons marked with red text, turn the frequency selector to 500 kHz (red figures) and adjust the antenna tuning. This operation can be done by anybody onboard.
- Control panel type K 125:** On this panel the control knobs for selection of the proper receiving antenna, for operation of the built-in rejector for telephony, etc., are mounted. Optionally a built-in radio-to-telephone link unit can be provided too.
- SSB main receiver type M 1250:** This receiver is based on the same principles as the main transmitter S 1250. The operation is equally simple. All frequencies in the range 10 kHz to 30 MHz can be dialed with 100 Hz increments by means of the knobs on the synthesizer panel. The 100 Hz gaps are covered by means of the clarifier mounted on the lower panel drawer. An important feature is that most of the modules in the receiver and the transmitter synthesizer are of the same type. This means that the number of spare modules may be reduced. Optionally the receiver synthesizer can be tested with the above mentioned fault localization device.
- Auto alarm type A 125:** All relevant information on this piece of equipment is stated in the enclosed leaflet.
- Reserve receiver type M 125:** The leaflet contains all relevant information.
- Installation:** The installation of the series 1250 equipment is very simple, as the equipment is supplied pre-wired from the factory.
- Service:** A result of the extensive use of solid state devices is a very high reliability, but service agents are available in most major ports.
-

dansk radio aktieselskab



radio-console

elektromekano C1250

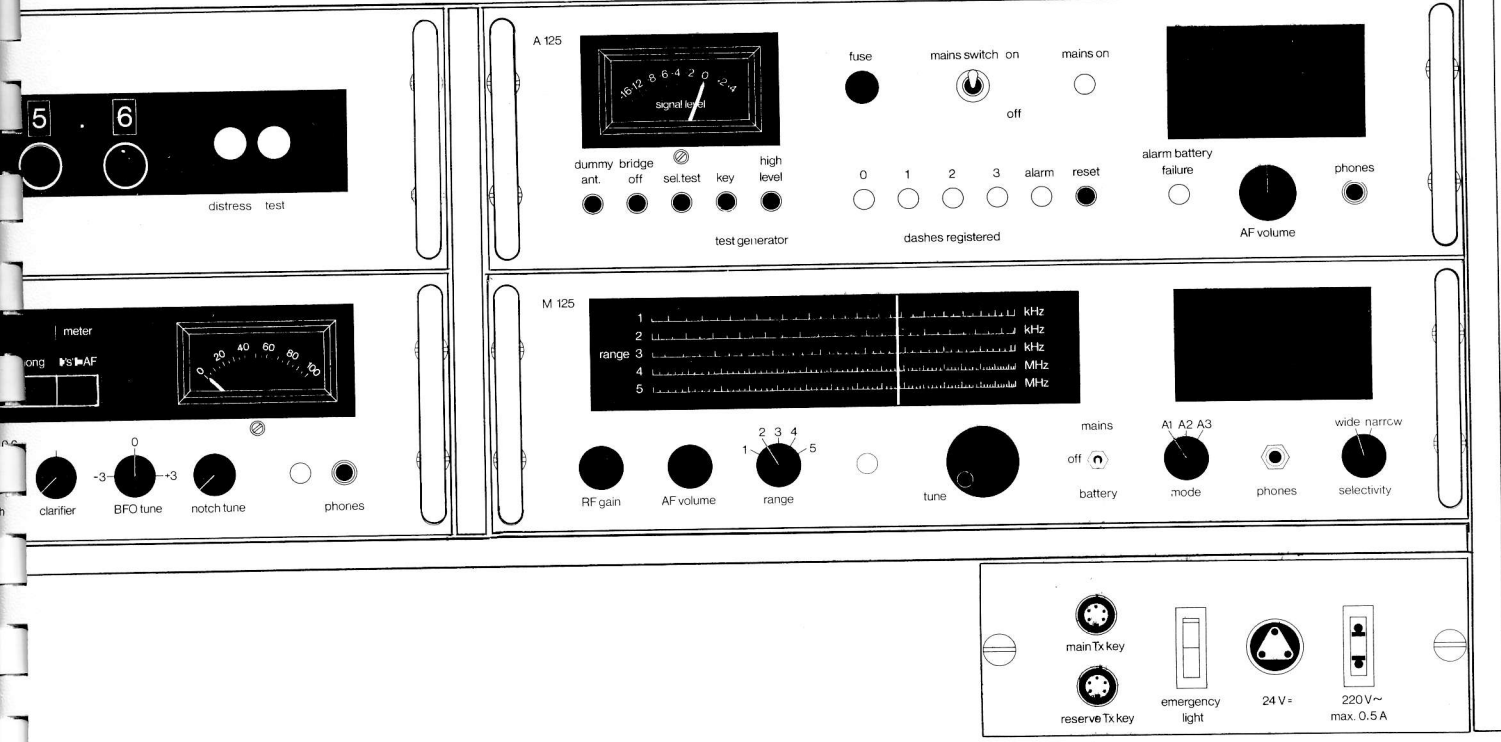
containing:

- synthesizer-controlled SSB main receiver type M 1250
- reserve transmitter type S 125
- reserve receiver type M 125
- auto alarm type A 125
- control panel type K 125

Complying with the applicable rules
in the Radio Regulations, Geneva 1967,
and SOLAS, London 1960

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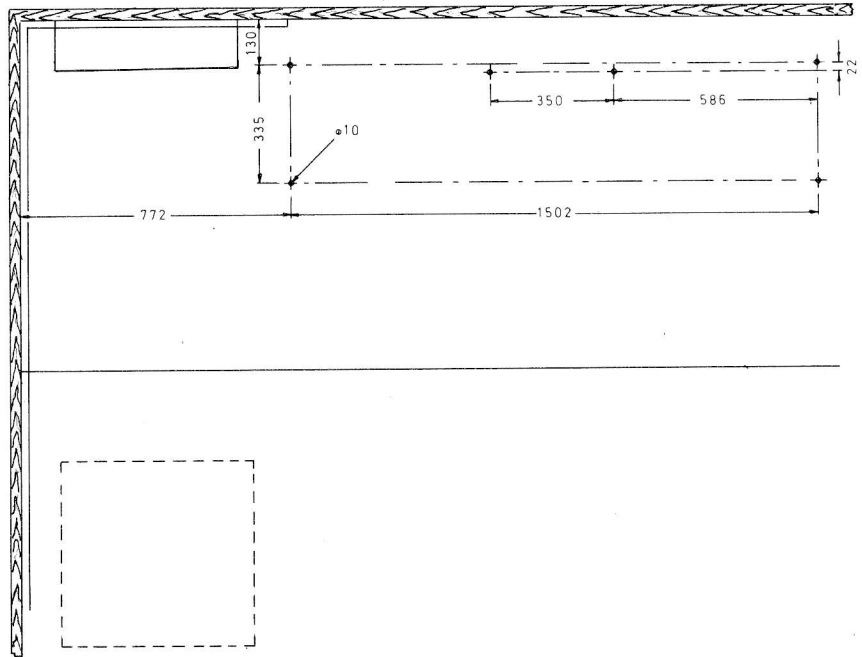
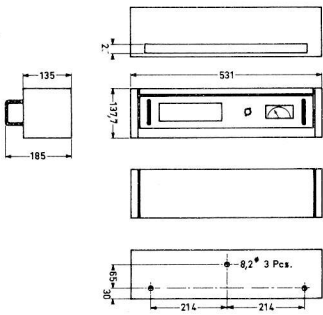
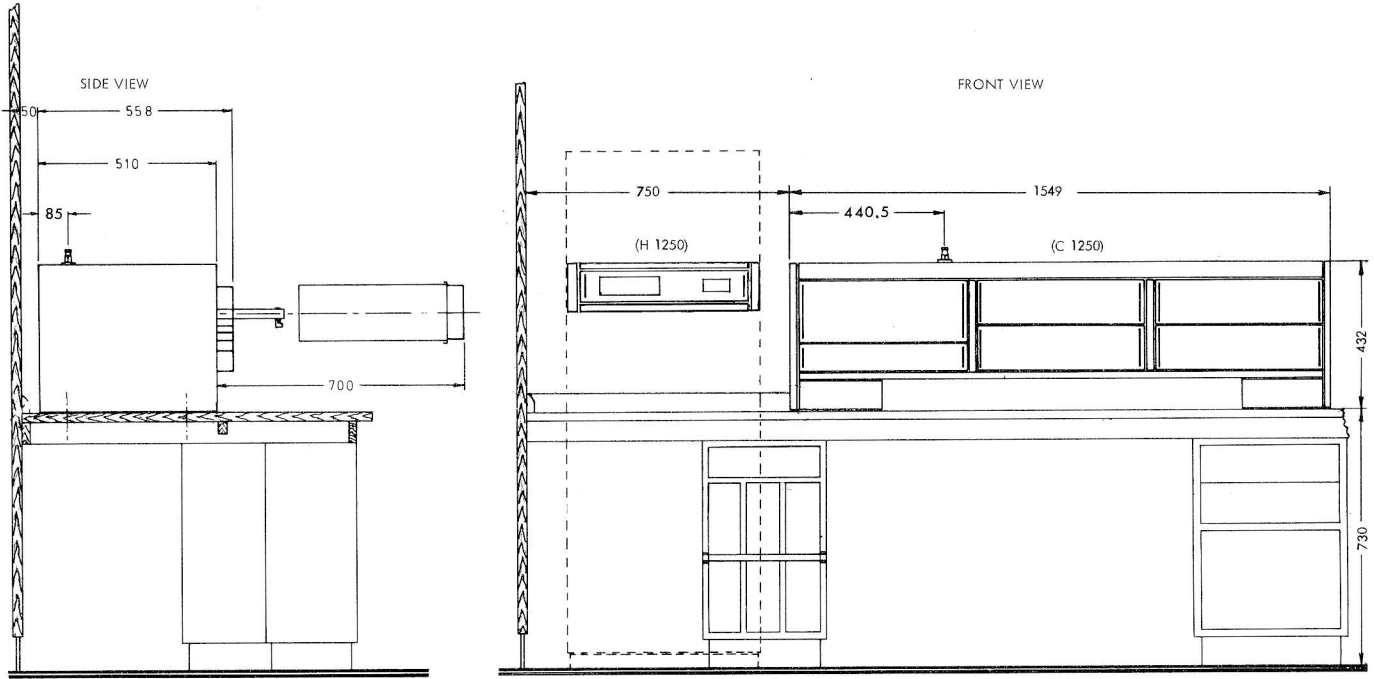
elektromekano C1250



DIMENSIONS AND WEIGHT:

Height: 430 mm
 Width: 1550 mm
 Depth: 510 mm
 Weight: approx. 100 kg

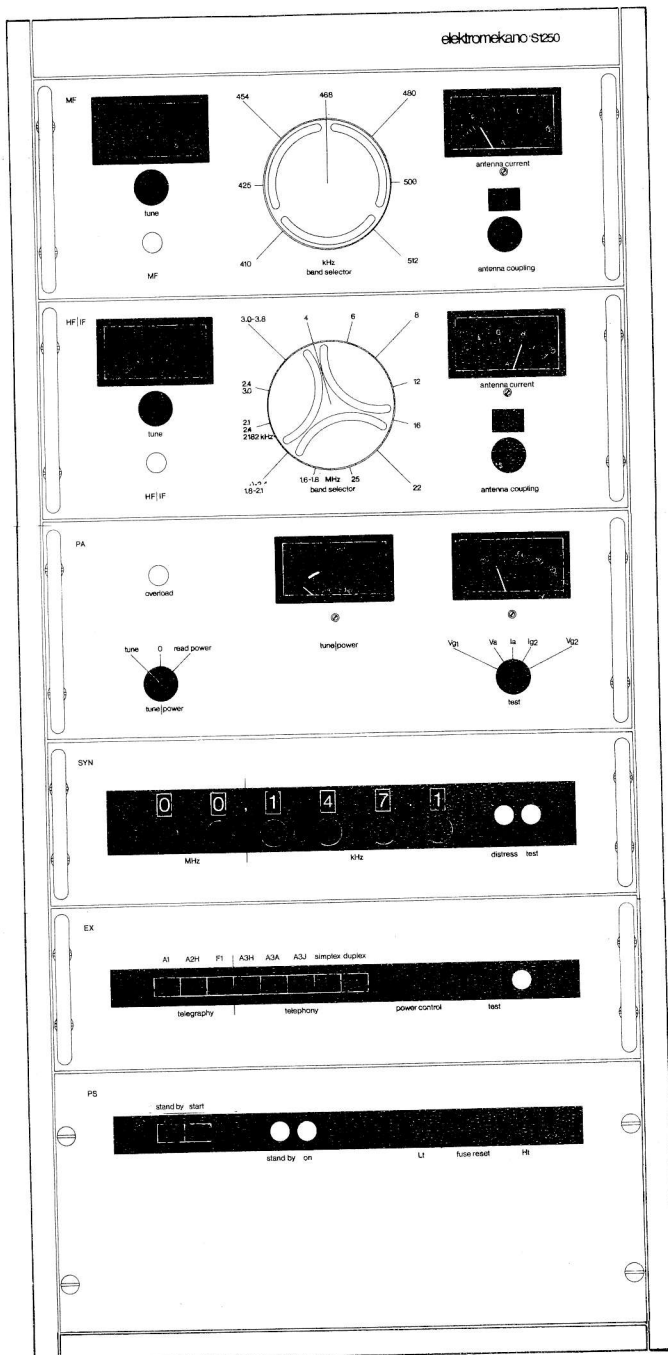
Outline and Mounting Dimensions C 1250 (H 1250)



All dimensions are in mm (NTS)

COMPLETE MARINE RADIO INSTALLATIONS ● RADIOTELEPHONE EQUIPMENT FOR SMALLER VESSELS ● MARINE RECEIVERS ● AUTO ALARMS
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dansk radio aktieselskab



SSB-Main Transmitter

elektromekano S1250

full frequency coverage in all maritime bands by means of digital frequency synthesizer employing integrated circuits

extensive use of solid state devices for greater reliability

modular sub-unit construction facilitates servicing

simple operation

modern design

smaller size and weight reduce vibration-problems

Complying with the applicable rules
in the Radio Regulations, Geneva 1967,
and SOLAS, London 1960

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
telegrams.: Dariose
telex 27058

The ELEKTROMEKANO Type S 1250 is intended for use as a ship's main transmitter providing complete coverage of all frequencies in the maritime mobile bands for telegraphy between 405 and 535 kHz and of all frequencies in the maritime mobile bands for telegraphy and telephony between 1.6 and 27.5 MHz.

The transmitter complies with the relevant rules of the International Conference on Safety of Life at Sea (London 1960) and the Radio Regulations (Geneva 1957 and 1967), besides a number of national regulations. It also complies with the C.C.I.R. recommendation No.258-1 (Oslo 1966) in respect of S.S.B. equipment for maritime mobile use.

The transmitter consists of six panel units, the medium-frequency tuning unit, the high-frequency tuning unit, the power amplifier, the frequency synthesizer, the S.S.B. exciter and the power supply unit, which are housed in a single cabinet rack. The panel units are designed to conform to standard 19-inch rack dimensions.

SPECIFICATION

Frequency Ranges:

All desired frequencies are derived from a digital type synthesizer which covers the frequency range 0-30 MHz, the frequency increment being 0.1 kHz. The frequency synthesis method is based on phase-locking the output frequency to a fixed reference frequency. The transmitting frequencies are selected by six control knobs on the front panel of the synthesizer.

In the 405-535 kHz range the output circuit of the transmitter is pre-adjusted to seven different frequencies, 410, 425, 454, 468, 480, 500 and 512 kHz, which are selected by a single control knob. The antenna circuit is fine-adjusted by a separate control knob.

In the 1.6-27.5 MHz range the output circuit of the transmitter is pre-adjusted to twelve different bands within the range, i.e. the bands 1.6-2.0, 2.0-2.4, 2.4-2.8, 2.8-3.2 and 3.2-3.8 MHz in the intermediate-frequency range, and the 4-, 6-, 8-, 12-, 16-, 22- and 25-MHz bands in the high-frequency range. These bands are selected by a single control knob while fine tuning of the circuit to the frequency in question is made by a separate control knob.

Frequency Tolerance:

Short Term (15 minutes): ± 10 Hz
Long Term (3 months): ± 30 Hz

Frequency Checking:

The reference oscillator circuit is so arranged that the reference frequency can easily be checked against a frequency standard, e.g. one of the 5-, 10- or 20-MHz standard frequency transmissions. An ordinary receiver may be used for detecting the signals (beat-note method).

Types of Emission:

Telegraphy: A1, A2H and F1 (tone-shift, TELEX).
On A2H the modulation frequency is approximately 800 Hz and the carrier suppression 5 to 6 dB below p.e.p.

Telephony: A3H, A3A and A3J.
The upper sideband is transmitted.

Output Power:

405-535 kHz: 400 W p.e.p. to antenna

1605-3800 kHz: 400 W p.e.p. to antenna

4-27.5 MHz: 1500 W p.e.p. to antenna

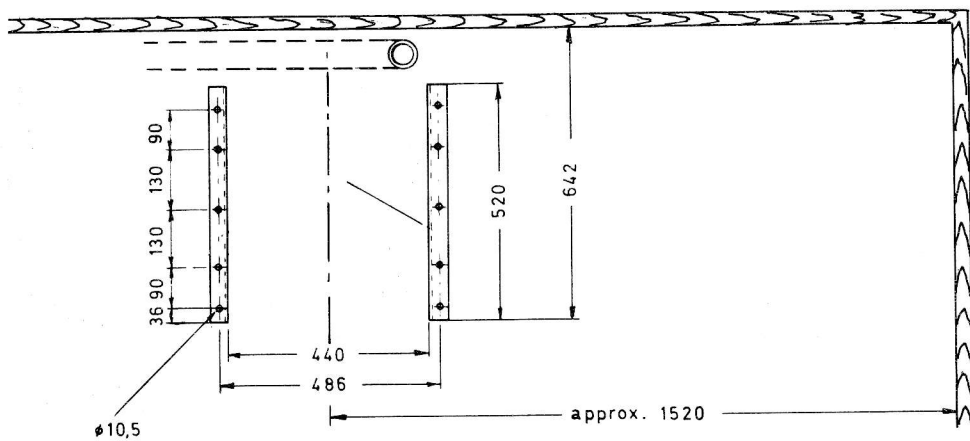
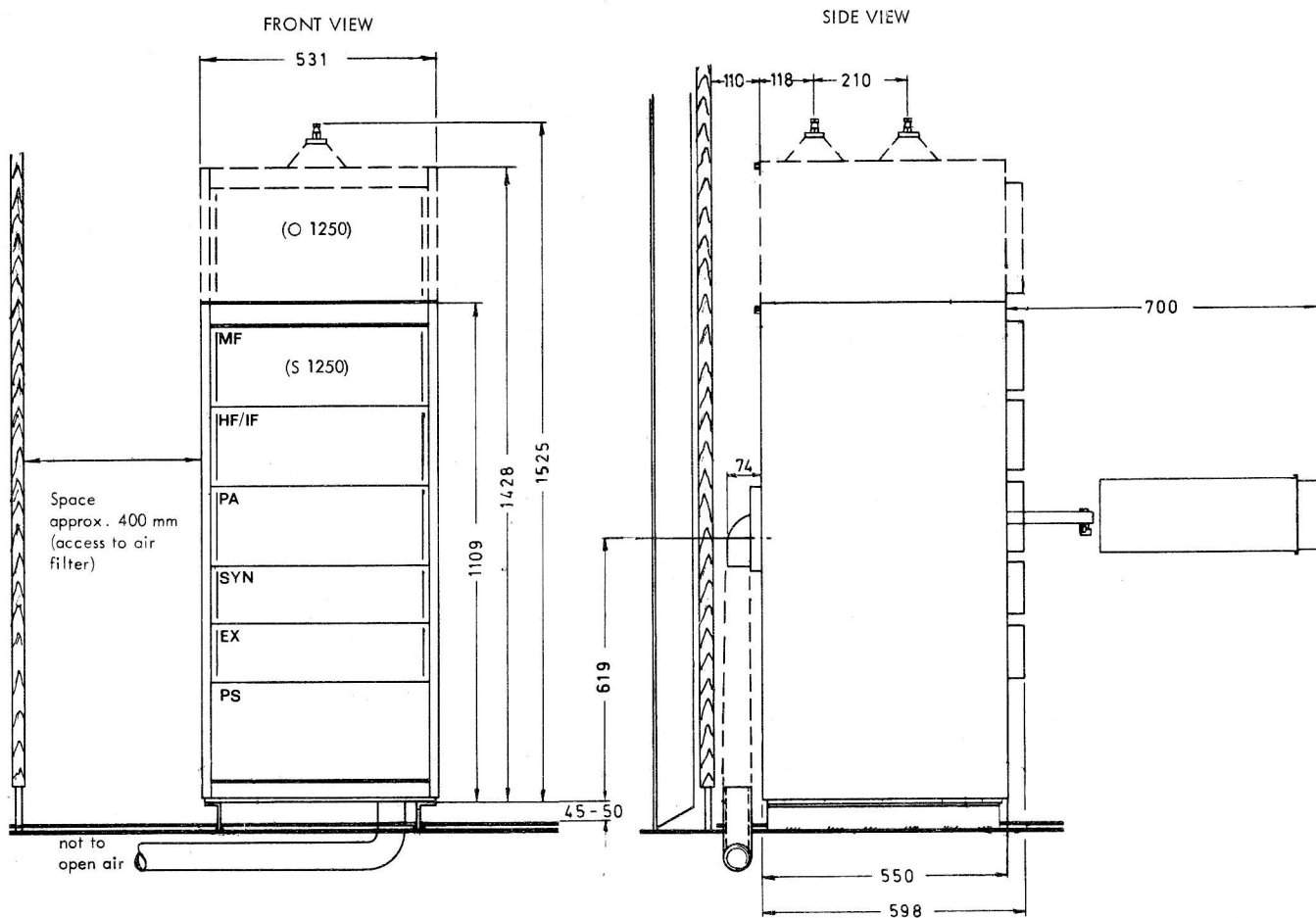
Power Reduction:

The output power can be reduced continuously from maximum output to zero.

Antenna Impedance:	The transmitter is intended for use on antennas with the following parameters: 405-535 kHz: From 1.9 Ω in series with 750pF to 3.6 Ω in series with 300pF. 1605-3800 kHz: From 6 Ω in series with 150pF to 40 Ω in series with 250pF and 8 μ H. 4-27.5 MHz: From 20 Ω to 2000 Ω (unbalanced).
Audio-Frequency Input:	Min. input voltage: 5 to 10 mV for full modulation. The input circuit is provided with attenuators for impedance matching and input level adjustment. Input for carbon microphone is standard. If required, a dynamic microphone may be used.
Audio-Frequency Band:	350-2700 Hz within 6 dB.
Speech Compression and Peak Clipping:	The A.F. amplifier includes a compressor which maintains the output power at an almost constant level, within 1.5 dB, for a microphone input level variation of 20 dB. In order to limit rapid signal peaks a clipper followed by a filter is inserted in the output circuit of the A.F. amplifier.
A.F. Distortion:	Less than 10 %.
Intermodulation Products:	In band: At least 31 dB below p.e.p. Out of band: 3rd order: At least 28 dB below p.e.p. 5th order: At least 38 dB below p.e.p. 7th order: At least 43 dB below p.e.p.
Spurious and R.F. Harmonic Suppression:	At least 45 dB below the mean power of the fundamental.
Carrier Suppression:	A3A: 16 \pm 2 dB below p.e.p. A3H: 5 to 6 dB below p.e.p. A3J: At least 40 dB below p.e.p.
Unwanted (Lower) Sideband Suppression:	At least 45 dB below p.e.p.
Hum and Noise:	At least 45 dB below p.e.p.
Unwanted Frequency Modulation:	Less than \pm 10 Hz
Keying Speed:	Up to 30 bauds (approximately 40 words/min.)
Climatic Standards:	The transmitter is designed and constructed to operate in ambient temperatures from -15 $^{\circ}$ C to +55 $^{\circ}$ C and in relative humidity up to 95 % at +40 $^{\circ}$ C.
Power Amplifier Valve:	Type 4CX1500B (8660)
Power Supply:	The transmitter is designed to operate from a 3-phase power source, 3x380 V or 3x440 V, 50 to 60 Hz. Mains voltage tolerance \pm 10 %.
Power Consumption:	Max. 3 kVA at a power factor of 0.95.
DIMENSIONS AND WEIGHT:	Height: 1300 mm (incl. antenna insulator) Width: 530 mm Depth: 600 mm Weight: approx. 220 kg

(All data are subject to possible alterations of design).

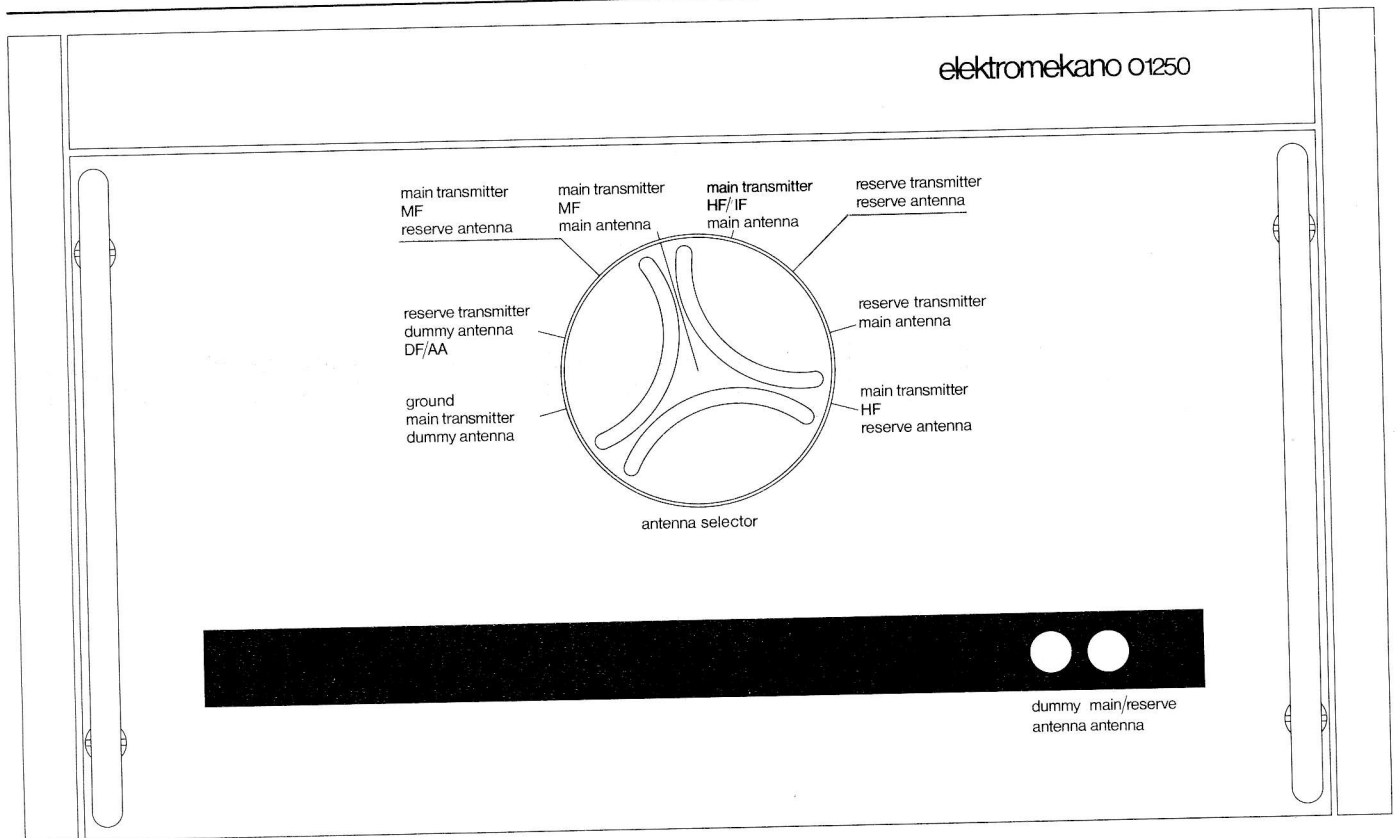
Outline and Mounting Dimensions S 1250 (O 1250)



All dimensions are in mm (NTS)

COMPLETE MARINE RADIO INSTALLATIONS ● RADIOTELEPHONE EQUIPMENT FOR SMALLER VESSELS ● MARINE RECEIVERS ● AUTO ALARMS
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dansk radio aktieselskab



Antenna Selector Switch

elektromekano 01250

for use with high power transmitters

rapid switching of 2 antennas and 2 transmitters

built-in dummy load for transmitter testing

interlock switch for directional finder

built-in loading inductors

easy to operate

modern design

Complying with the applicable rules
in the Radio Regulations, Geneva 1967,
and SOLAS, London 1960

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
telegrams.: Dariose
telex 27058

The antenna selector switch ELEKTROMEKANO O 1250 provides easy and convenient means for switching the main transmitter or the reserve transmitter to the main antenna, the reserve antenna or the artificial antenna, the last-mentioned being used as a substitute for the real antennas when testing the reserve transmitter as required by the International Convention for the Safety of Life at Sea, London, 1960. A "D.F. Interlock" position (antennas free) and an "Antenna Grounded" position are also incorporated.

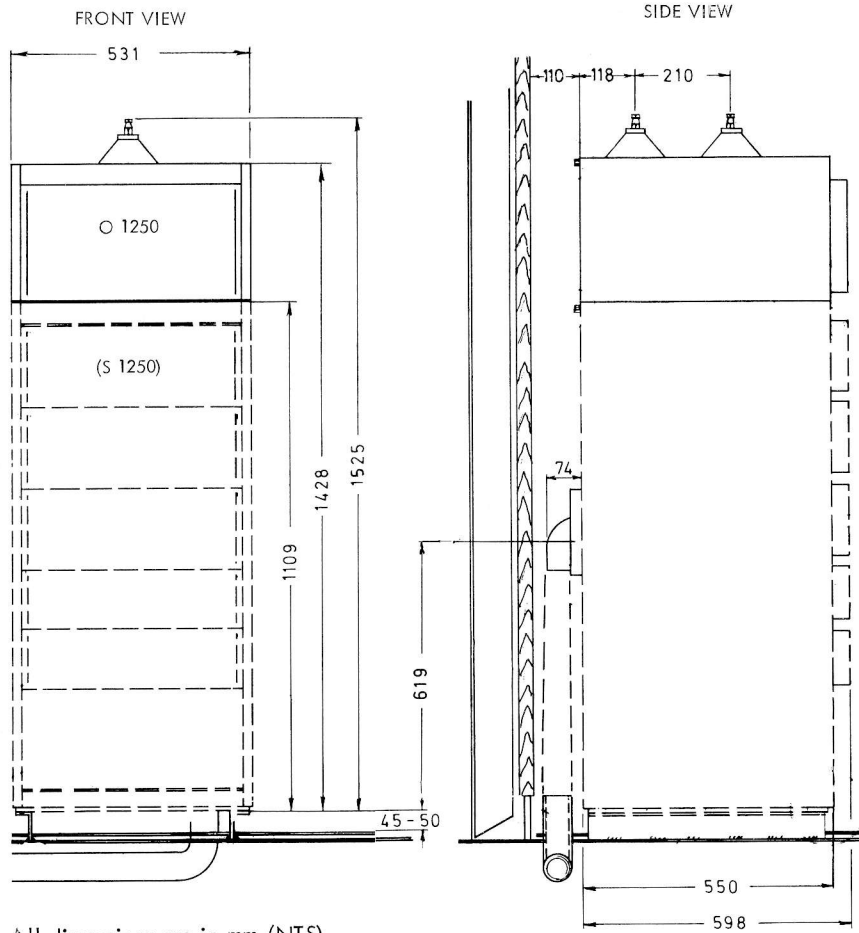
The antenna selector switch is built up in a sturdy, welded steel framework, and the front panel has standard 19" rack dimensions. Five large switch sections are provided for antenna selection and for ground connection of the antennas in the "Ground" position. The D.F. interlocking function, the switching of the receiver break-in relay circuit and the transmitter interlocking functions are performed by two smaller switch sections.

All switch sections are ganged and controlled by a single knob on the front panel where the different positions are duly marked.

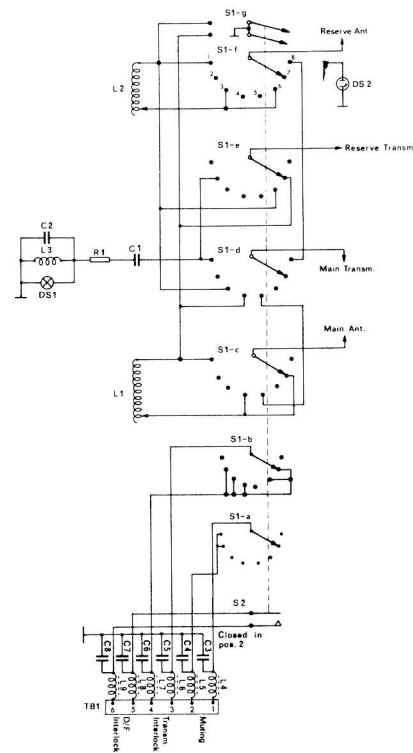
The artificial antenna and the loading inductors for the main and reserve antennas are also placed in the selector switch. The loading inductors are adjusted to equalize the load characteristics of the real antennas to the impedance of the artificial antenna, so that the adjustments of the antenna tuning knobs on the transmitters are approximately the same, irrespective of which antenna is used.

Strong ceramic insulators with terminals for antenna lead-in are located on top of the antenna selector switch.

Outline and Mounting Dimensions O 1250 (S 1250)



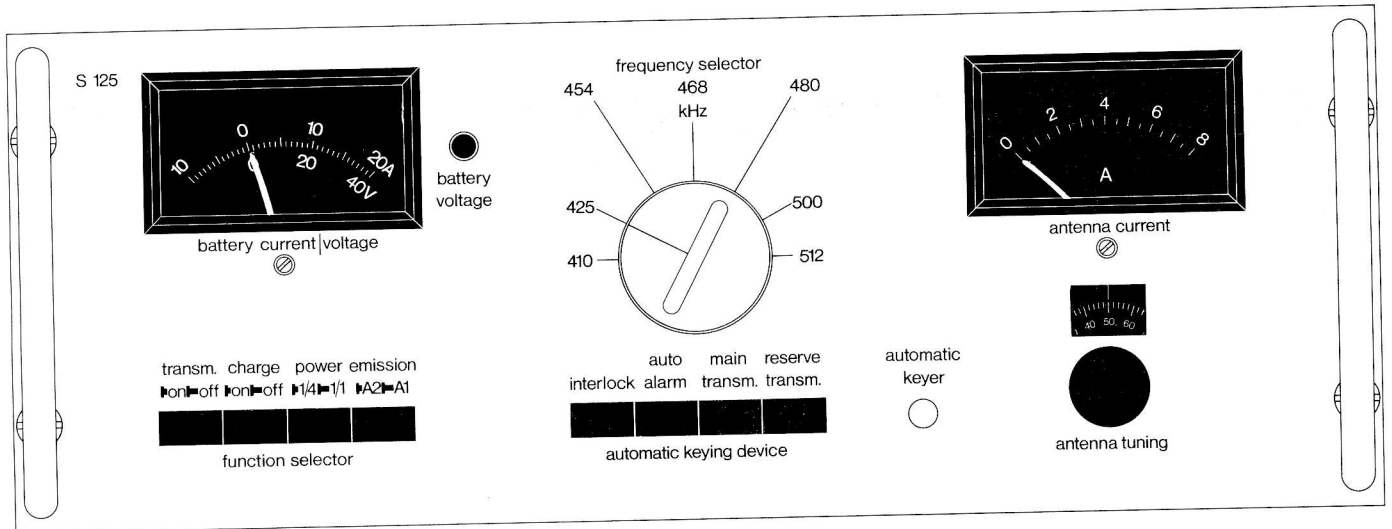
All dimensions are in mm (NTS)



1. ground - main transmitter - dummy antenna
2. reserve transmitter - dummy antenna - DF/AA
3. main transmitter - MF - reserve antenna
4. main transmitter - MF - main antenna
5. main transmitter - HF/CT - main antenna
6. reserve transmitter - reserve antenna
7. reserve transmitter - main antenna
8. main transmitter - HF - reserve antenna

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dansk radio aktieselskab



Reserve Radiotelegraph Transmitter

elektromekano S125

all solid state

no warm-up time

compact modular construction

built-in automatic alarm signal keyer

built-in automatic charging facilities for emergency battery

extremely simple operation - also by unskilled persons

Complying with the applicable rules
in the Radio Regulations, Geneva 1967,
and SOLAS, London 1960

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
telegrams.: Dariose
telex 27058

Reserve Radiotelegraph Transmitter ELEKTROMEKANO Type S 125 is a crystal-controlled, 7 frequency unit, featuring full solid-state circuit design.

It will deliver as much as 70 watts of either unmodulated (A1) or modulated (A2) radio frequency (r.f.) power to suitable wire-fed antenna. This power level may be reduced to 1/4 of full value for transmitter testing, tune-up or reduced power operation.

An automatic keying device is incorporated into the design of the S 125, it provides a means for testing the ship's Auto Alarm Equipment as well as enabling transmission of the International Radiotelegraph Alarm Signal by either the ship's Main Transmitter or the S 125 Reserve Transmitter, itself.

Special protection is provided for the S 125's internal circuitry in the event of unusual load conditions at the transmitter's antenna terminals, - this ensures full internal circuit protection even under very extended and severe antenna mismatch conditions.

Mechanical design of the S 125 is of the highest quality. Extensive use of the latest modular construction techniques makes the S 125 transmitter exceptionally compact and rugged -- it will stand up to the most demanding environmental conditions. (Special treatment of component parts, including special insulation and impregnation makes the S 125 ideally suited for tropical and arctic service).

Ultra-modern design is apparent in the lay-out of the S 125's controls and metering devices. The clean-lined styling and simple, straight-forward panel arrangement makes the S 125 Reserve Radiotelegraph Transmitter both attractive in appearance and easy to operate.

SPECIFICATION

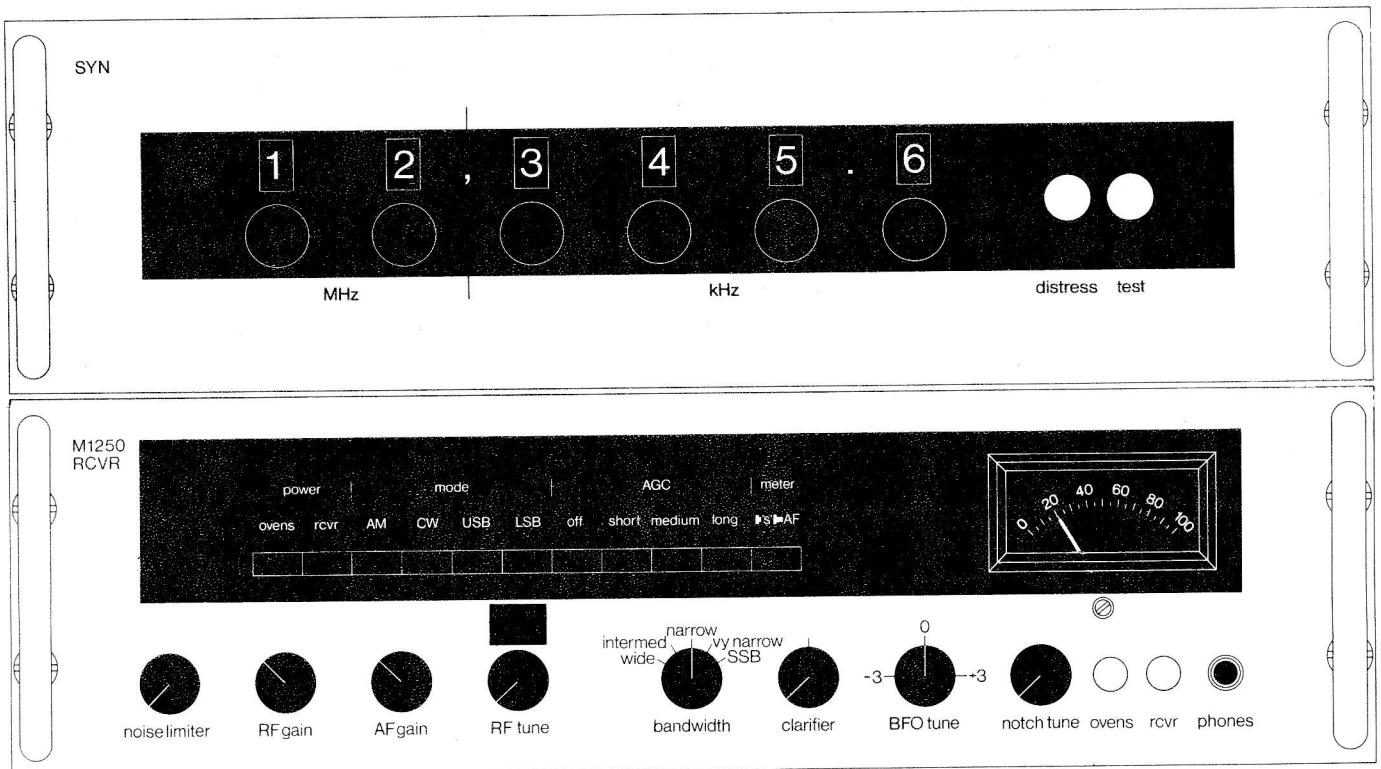
Circuit:	6-stage crystal-controlled transmitter
Type of Emission:	Unmodulated telegraphy A1 Modulated telegraphy A2
Power Output:	R.F. Power of Output Stage max. 75 watts. Reducable to 1/4 level.
Antenna:	Antenna Impedance: 250 to 750 pF and 1.9 to 4 Ω .
Frequency Adjustment:	The 7 different pre-set frequencies are selected by a single control knob. A separate control knob is provided for fine-adjusting the antenna tuning circuit.
Frequency Stability:	The frequency stability is greater than that required by the International Radio Regulations, i.e. better than $\pm 200 \times 10^{-6}$ Hz.
Attenuation of R.F. Harmonics:	Better than the attenuation of radio-frequency harmonics recommended by the International Radio Regulations, i.e. better than 40 dB.
Modulation Frequency:	Approx. 1000 Hz. Depth of modulation is normally adjusted to approximately 80 %.
Power Supply:	The transmitter is designed to operate from battery. (Contains battery charging circuit).
Power Consumption:	Stand-by load approx. 8 W Operation load approx. 270 W

DIMENSIONS AND WEIGHT.

Height: 178 mm (7")
Width: 483 mm (19")
Depth: 378 mm (14 7/8")
Weight: approx. 20 kg

(All data are subject to possible alterations of design).

dansk radio aktieselskab



SSB-Communication Receiver

elektromekano M1250

employing digital synthesizer frequency control giving an exceptionally high frequency stability and setting accuracy

full frequency range 10 kHz - 30 MHz without band selection

all solid state

modular construction

simple operation

Complying with the applicable rules
in the Radio Regulations, Geneva 1967,
and SOLAS, London 1960

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
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telex 27058

The ELEKTROMEKANO Type M 1250 Receiver is a high performance communications receiver primarily intended for use as a ship's main receiver.

The M 1250 Receiver employs Synthesizer Frequency Control giving an exceptionally high frequency stability and frequency setting accuracy. The frequency synthesizer is a digital type synthesizer in which a high frequency oscillator is phase-locked to the reference frequency of a high precision standard oscillator. Frequency setting and read-out are digital, minimum frequency increment being 100 Hz.

The M 1250 Receiver's completely solid-state circuitry with a large number of integrated circuits gives the advantages of high reliability, long life and low power consumption.

The M 1250 Receiver consists of two units, a frequency synthesizer unit and a receiver circuitry unit. The units are designed to conform to standard 19" rack dimensions.

SPECIFICATION

Frequency Range:	10 kHz - 30 MHz
Modes of Reception:	A1, A2, A2h, A3, A3a, A3h, A3j (USB) F1
Frequency Stability:	Short Term (15 min.) better than 10 Hz Long Term (3 months) better than 30 Hz
Sensitivity:	Min. performance: A1, A3j <1.4 μ V for 10 dB signal/noise ratio at 2.15 kHz bandwidth and signal frequencies >1 MHz. Min. performance: A3 <4 μ V for 10 dB signal/noise ratio at 6 kHz bandwidth and signal frequencies >1 MHz.
Selectivity:	6 kHz at 6 dB, 12 kHz at 66 dB 3.15 kHz at 6 dB, 6 kHz at 66 dB 2.15 kHz at 6 dB, 4.25 kHz at 66 dB 0.5 kHz at 6 dB, 1.5 kHz at 66 dB
Cross Modulation:	For a wanted signal of 100 μ V an interfering signal of 10 mV removed 20 kHz from the wanted signal produces a cross modulation signal 20 dB below the wanted signal.
Intermodulation:	For a wanted signal of 30 μ V the third order intermodulation products from two interfering signals of 10 mV will be 20 dB below the wanted signal.
Blocking:	For a wanted signal of 1 mV an interfering signal of 100 mV removed 20 kHz from the wanted signal causes a change in the wanted signal of less than 3 dB.
Image Suppression:	60 - 80 dB
I.F. Suppression:	70 - 80 dB
Spurious Response to other external signals:	- 80 dB
Automatic Gain Control:	A 100 dB change in input signal produces a change of less than 3 dB in the receiver output.
	Time constants:
	Attack Hang Decay
	1. 10 ms 150 ms 50 ms
	2. 20 ms 200 ms 200 ms
	3. 20 ms 2 s 200 ms
Beat Frequency Oscillator:	Variable \pm 3 kHz for CW reception Crystal-controlled for SSB reception

A.F. Notch Filter:

Notch of > 40 dB variable from 300 Hz to 3 kHz.

A.F. Output:

2 watts for loudspeaker
10 milliwatts for 100 Ω headphones
10 milliwatts for 600 Ω line

Metering:

Meter indicating "S"-units or A.F. level.

Power Supply:

110 or 220 V A.C.
24 V D.C.

Climatic Standards:

Temperature range - 20 to + 60°C
Relative humidity up to 95 % at 40°C

DIMENSIONS AND WEIGHT:

For rack mounting:

2 panels, each	Height:	133 mm (5 1/4")
	Width:	483 mm (19")
	Depth:	420 mm (16 1/2")

In cabinet:	Height:	approx. 350 mm
	Width:	approx. 530 mm
	Depth:	approx. 480 mm
	Weight:	approx. 25 kg

Controls etc.:

Synthesizer Unit:

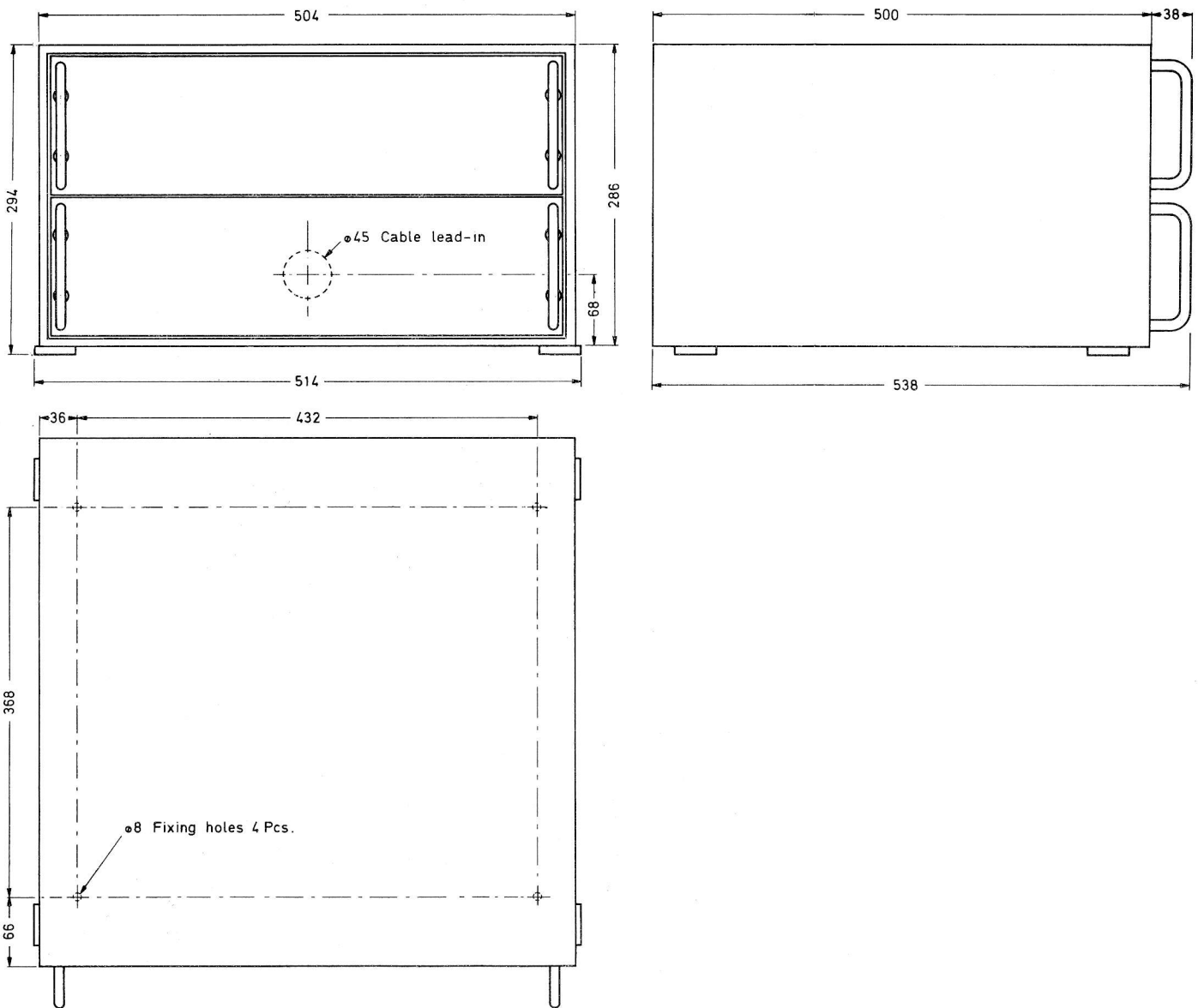
Digital frequency selection and display by means of six control knobs. Minimum frequency increment 100 Hz.

Receiver Unit:

Power Switch
Loudspeaker Switch
Reception Mode Selection: CW-AM-USB
A.G.C. Selection: OFF-SHORT-MEDIUM-LONG
Meter Switch: "S"-A.F.
R.F. Gain Control
A.F. Gain Control
R.F. TUNE Control (Front-end tuned circuits)
Bandwidth Selector
CLARIFIER, very fine tuning control
Beat Frequency Oscillator Tuning
Notch Filter Tuning
Noise Limiter Control
Headphone Jack

(All data are subject to possible alterations of design).

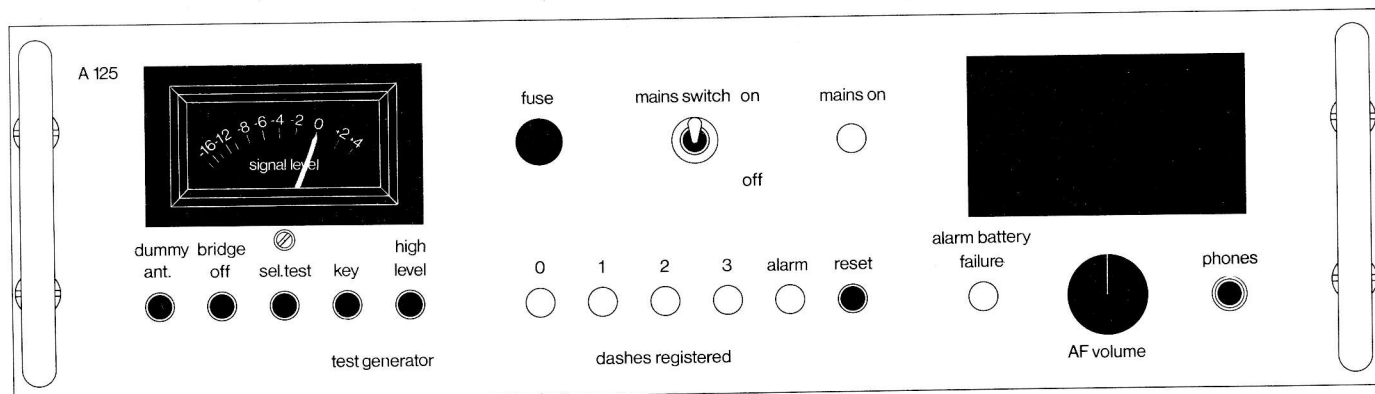
Outline and Mounting Dimensions M 1250



All dimensions are in mm (NTS)

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dansk radio aktieselskab



Auto Alarm

Radiotelegraph Automatic Alarm Equipment

elektromekano A125

all solid state selector for greater reliability - no rotating parts or relays

hybrid receiver for best signal-handling capability

reception of A1 as well as A2 signals

equipped with signal-strength indicating instrument

Complying with the applicable rules
in the Radio Regulations, Geneva 1967,
and SOLAS, London 1960

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
telegrams.: Dariose
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ELEKTROMEKANO's Type A 125 Radiotelegraph Automatic Alarm Equipment is designed for the reception of radiotelegraph alarm signals transmitted on 500 kHz in accordance with the requirements of the International Convention for the Safety of Life at Sea, London, 1960.

The equipment consists basically of a receiver with a selector-and-alarm unit.

The hybrid receiver is pre-tuned to the 500 kHz radiotelegraph distress frequency. The receiver provides reception of type A1 and A2 signals for registering of alarm signals and of type A2 signals with a built-in loudspeaker. The receiver is provided with a gain control circuit which ensures proper reception during conditions of heavy interference or atmospheric noise.

The selector-and-alarm unit, which is completely solid-state, is designed to select and count four consecutive dashes of the alarm signal and to actuate audible alarms in the radio room, in the radio officer's cabin and on the bridge. Alarms will also be actuated in case of failure within the equipment or in case of supply voltage failure.

The equipment is designed to fit into a standard 19" rack and is compact and lightweight. All parts of the equipment are, however, easily accessible.

SPECIFICATION

RECEIVER UNIT

Circuit:

3-valve straight receiver pre-tuned to 500 kHz, semiconductor detectors and a 3-stage transistor A.F. amplifier. Hybrid gain control circuit.

Types of Reception:

For registering of alarm signal A1 and A2. For loudspeaker reception A2.

Sensitivity:

The selector will operate for a receiver input signal of at least 63 μ V (36 dB/1 μ V) A1.

Selectivity:

\pm 6 kHz at 3 dB
 \pm 9 kHz at 40 dB

SELECTOR UNIT

Circuit:

The selector consists mainly of the following circuits:
A counter circuit which counts four consecutive dashes of the alarm signal and actuates the alarm circuit.
A circuit that allows only signals of the correct length and spacing to be passed on to the counter.
A circuit that resets the counter if the signals are not of the correct length and spacing.
An alarm circuit which is operated by the counter circuit or is activated in the event of circuit or voltage failure.

POWER SUPPLY:

The equipment is designed to operate from a 110 or 220-volt A.C. supply. Power consumption is approx. 27 VA. A 24-volt battery supply is required for the alarm circuit.

Valve and Semiconductor Complement:

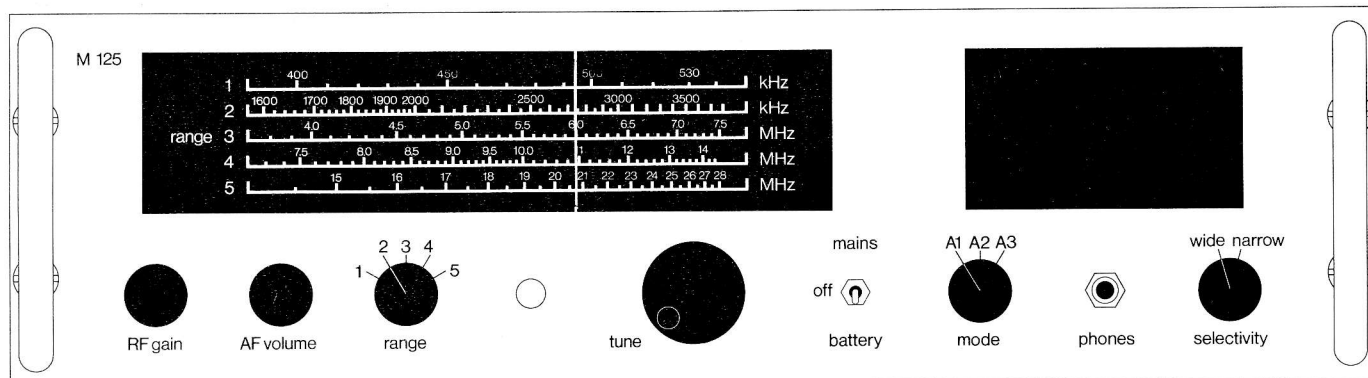
Four valves and 101 semiconductor devices.

DIMENSIONS AND WEIGHT:

Height: 133 mm (5 1/4")
Width: 483 mm (19")
Depth: 270 mm
Weight: 6.5 kg

(All data are subject to possible alterations of design).

dansk radio aktieselskab



Reserve Receiver

elektromekano M 125

all solid state

full-vision linear tuning dial

built-in loudspeaker

mains and battery operation

low power consumption

modern design

Complying with the applicable rules
in the Radio Regulations, Geneva 1967,
and SOLAS, London 1960

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
telegrams.: Dariose
telex 27058

The ELEKTROMEKANO Type M 125 Receiver is designed for use as a ship's Radiotelegraph Reserve Receiver. The M 125 Receiver is a single superheterodyne receiver providing reception in the medium frequency marine band and on short waves from 1.6 to 28 MHz.

The M 125 Receiver all solid-state circuitry uses metal-oxide field-effect transistors in the front end giving superior signal handling capabilities. Linear integrated circuits are used in the detector and A.F. circuits.

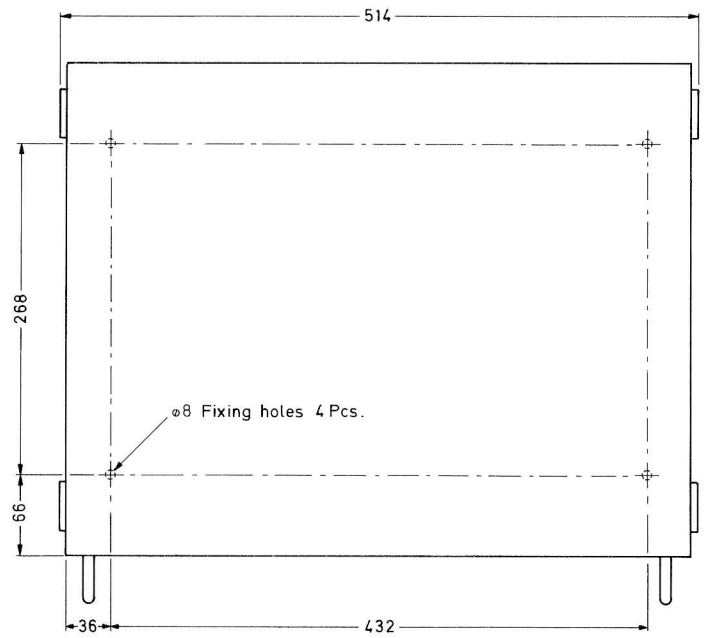
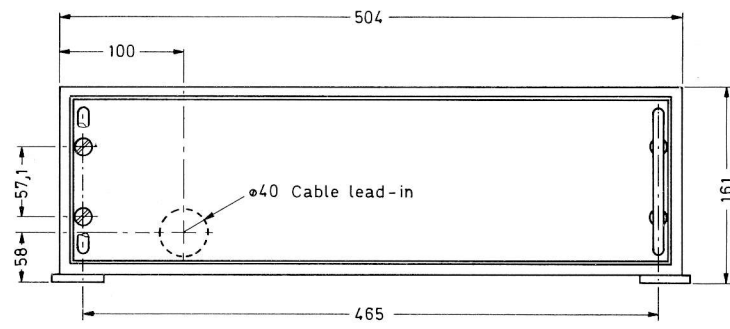
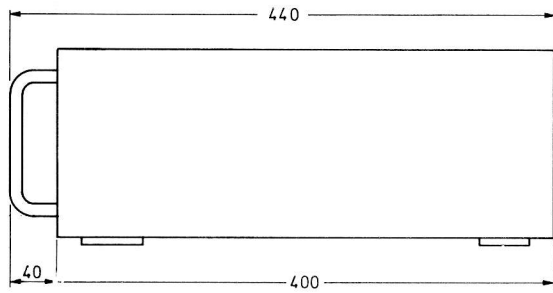
The receiver is designed to fit into a standard 19" rack and is compact and lightweight. All parts of the equipment are easily accessible for maintenance and repair.

SPECIFICATION

Circuit:	Single superheterodyne, intermediate frequency of 600 kHz, one R.F. stage, mixer, three I.F. stages with distributed selectivity, monolithic/AGC/BFO and monolithic A.F. amplifier.		
Frequency Ranges:	1.	390 - 545 kHz	
	2.	1580 - 3850 kHz	
	3.	3.7 - 7.5 MHz	
	4.	7.2 - 14.5 MHz	
	5.	14.0 - 28.0 MHz	
Types of Reception:	A1, A2 and A3		
Sensitivity:	Range 1	A1 10 μ V, 10 dB s/n ratio	
		A2 30 μ V, 10 dB s/n ratio	
	Ranges 2 & 3	A1 5 μ V, 20 dB s/n ratio	
		A2 5 μ V, 20 dB s/n ratio	
	Ranges 4 & 5	A1 10 μ V, 25 dB s/n ratio	
		A2 30 μ V, 25 dB s/n ratio	
Selectivity:		6-dB Bandw.	60-dB Bandw.
	"Wide"	9 kHz	36 kHz
	"Narrow"	3 kHz	20 kHz
Image Suppression:	Ranges 1 & 2	55 dB	
	Ranges 3 & 4	35 dB	
	Range 5	25 dB	
I.F. Suppression:	75 dB		
Automatic Gain Control:	A 10 dB increase in A.F. output for a 60 dB increase in the antenna signal. Attack time 50 msec. Decay time 0.2 sec.		
A.F. Output:	Approx. 1 W to a built-in loudspeaker		
	Approx. 1 mW to headphones		
Radiation:	Less than 4×10^{-10} W		
Supply Voltages:	110/220 V 50/60 Hz \pm 10 %		
	24 V DC \pm 10 %		
DIMENSIONS AND WEIGHT:	Height:	133 mm (5 1/4")	
	Width:	483 mm (19")	
	Depth:	270 mm	
	Weight:	approx. 13 kg	

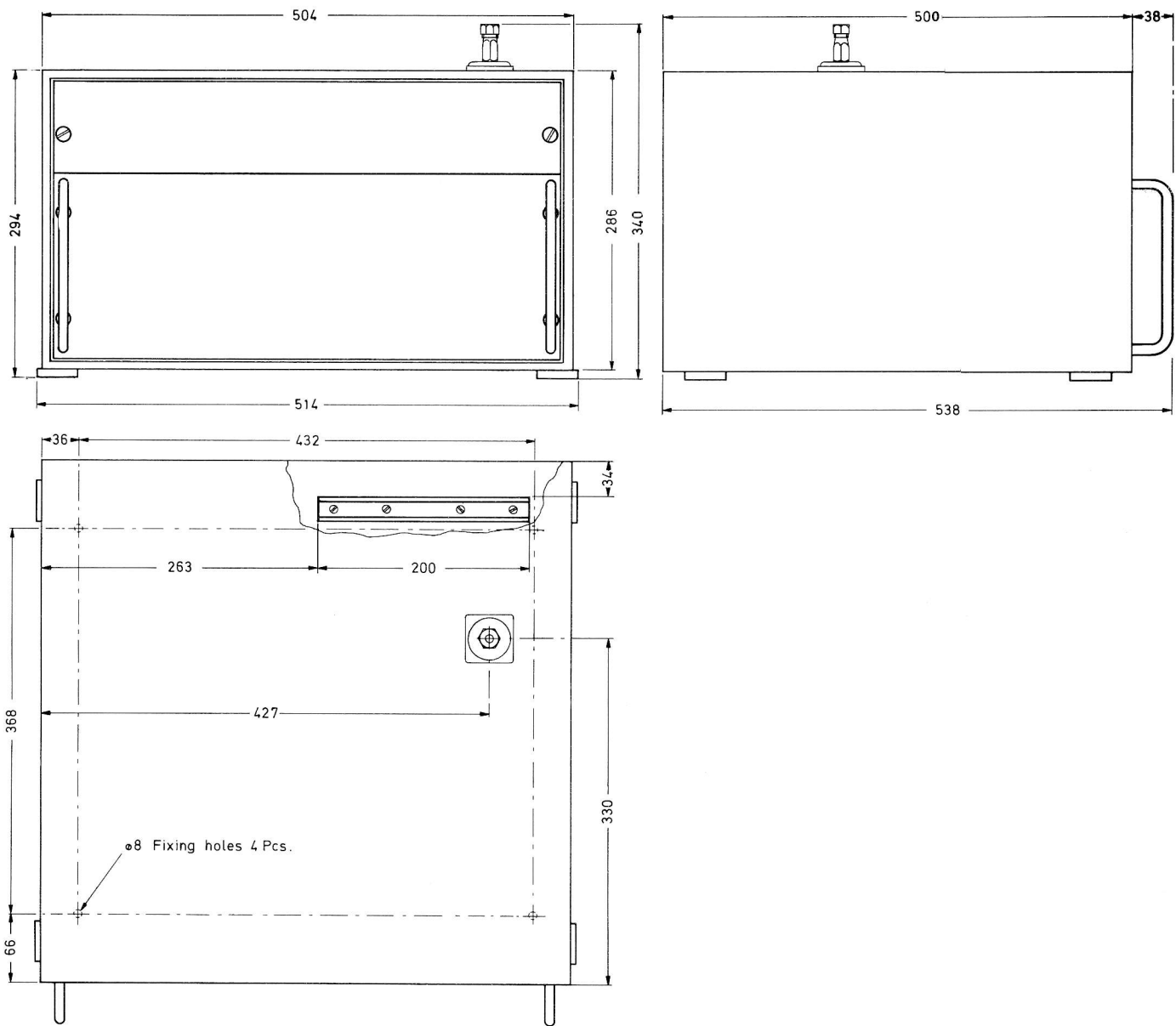
(All data are subject to possible alterations of design).

Outline and Mounting Dimensions A 125 and M 125



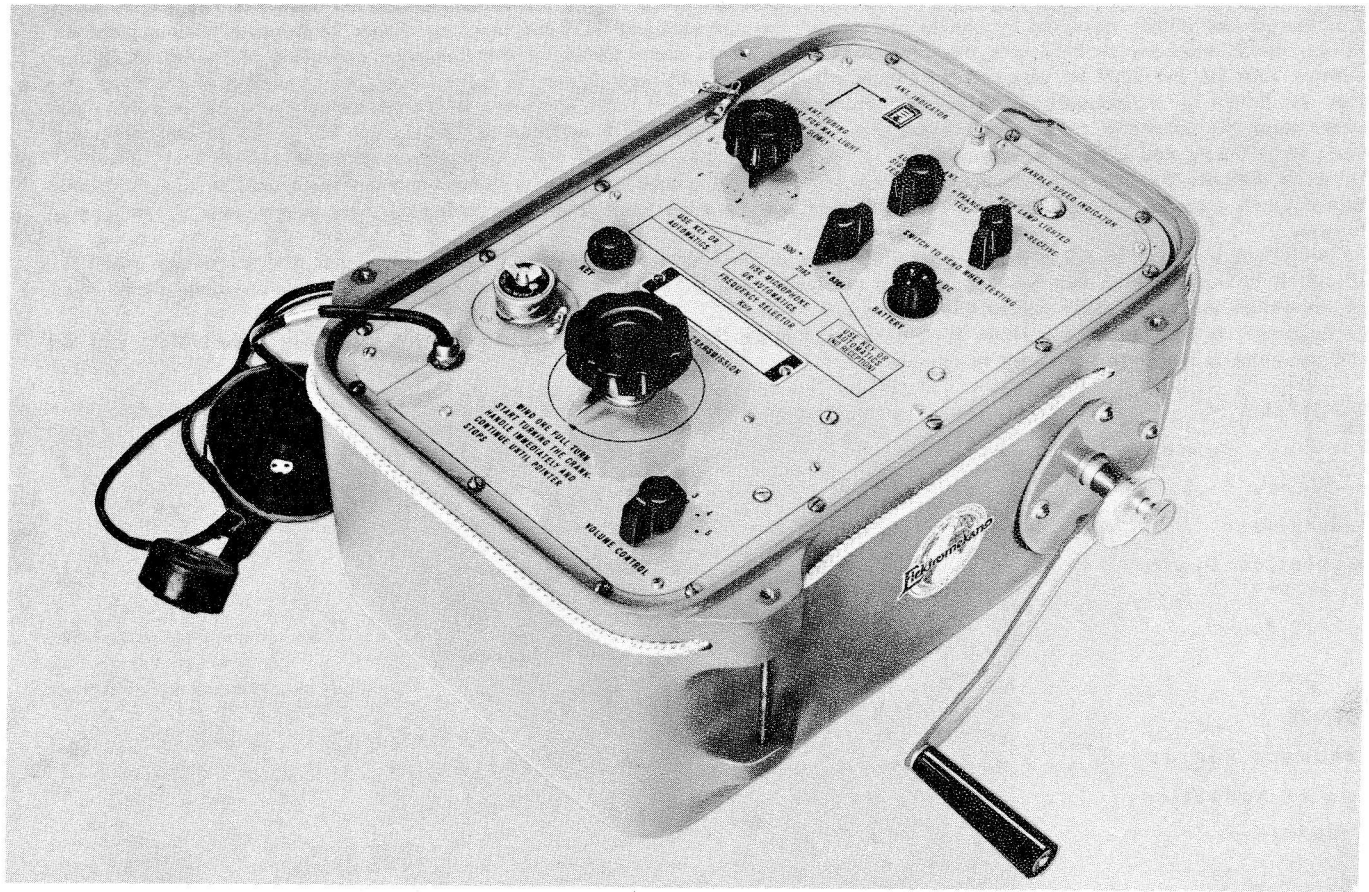
All dimensions are in mm (NTS)

Outline and Mounting Dimensions S 125



All dimensions are in mm (NTS)

dansk radio aktieselskab



Light-weight three-frequency
Portable Lifeboat Radio

elektromekano SM118

fully transistorized transmitter and receiver - instant operation

automatic and manual transmission by three independent transmitters on international distress frequencies 500, 2182 and 8364 kHz

pre-tuned reception on 500 and 2182 kHz
2182 kHz crystal-controlled

glass-fibre case in life-saving yellow, designed so that the equipment is fitted for use in lifeboats as well as liferafts

simple tuning procedure

powered by built-in hand-driven generator
(it is possible to connect an external source of energy)

the equipment may be used together with a rod, wire or kite antenna

may easily be operated by unskilled personnel

Meets the requirements of the Safety
of Life at Sea Convention, London, 1960

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
telegrams.: Dariose
telex 27058

ELEKTROMEKANO's portable lifeboat radio set type SM 118 is designed to fulfil the applicable requirements of the International Convention for the Safety of Life at Sea, London, 1960, as well as the requirements of most countries of the world.

It has transmitting facilities for all three frequencies, 500 kHz, 2182 kHz and 8364 kHz with telephony on 2182 kHz. For each of the three frequencies a separate transmitter is used to ensure maximum reliability. On 500 kHz and 8364 kHz modulated telegraphy can be transmitted manually or by means of an automatic keying device providing the international alarm signal consisting of 12 four-second dashes separated by one-second spaces, the distress signal SOS and two long dashes for direction finding purposes. Besides normal telephony on 2182 kHz, the prescribed international alarm signal for this frequency consisting of the two audio frequencies 1300 Hz and 2200 Hz alternating with durations of 250 milliseconds can be transmitted. The automatic alarm signal devices are driven by a clockwork wound up by turning a knob one full turn. The movement is indicated by a pointer. When the pointer stops the automatic transmission ceases and the set is automatically switched to the manual key or the microphone. Receiver for 500 kHz and 2182 kHz is provided.

The set is designed for connection to a rod antenna when used in a rubber liferaft or a mast antenna when used in a conventional lifeboat. Both antennas are supplied with the equipment and the same knob is used for antenna tuning independent of the type of antenna.

The equipment is housed in a lightweight glass-fibre case suitable for use on board conventional lifeboats as well as in rubber liferafts. It is so sturdy that it may be dropped into the water from a height of 30 feet without suffering any damage. It will float and the yellow colour is easily perceptible on the sea surface.

The equipment is powered by a built-in hand generator. Since the set is fully transistorized the efficiency is very high, and the hand generator is therefore very easy to operate.

TRANSMITTER

Frequency Range and Emissions:

Frequency Stability:

Modulation:

Modulation Depth:

Output Power:

SPECIFICATIONS

500 kHz A2, 2182 kHz A3, 8364 kHz A2

Better than $\pm 0.02\%$

Collector modulation

A2 100% (square wave)

A3 70% - 95%

500 kHz: 1.0W-3.5W depending on antenna characteristics

2182 kHz: 1.5W-3.5W depending on antenna characteristics

8364 kHz: 1.5W-3.0W depending on antenna characteristics

RECEIVER

Frequency Range:

Type of Reception:

Bandwidth:

Sensitivity:

Image and I.F. Suppression:

A.F. Output:

500 kHz, 2182 kHz

A2 and A3

500 kHz: ± 5.5 kHz at 6 dB attenuation

± 13.5 kHz at 46 dB attenuation

2182 kHz: ± 5.5 kHz at 6 dB attenuation

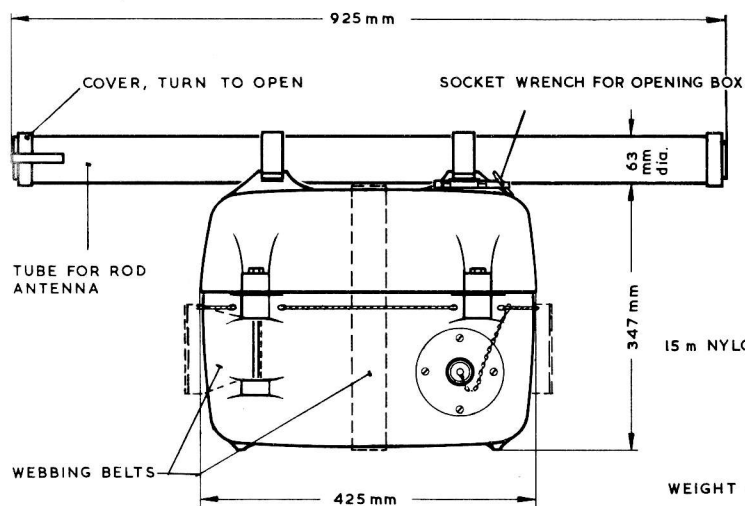
± 14.0 kHz at 46 dB attenuation

500 kHz: Better than 100 μ V for 15 dB signal/noise ratio

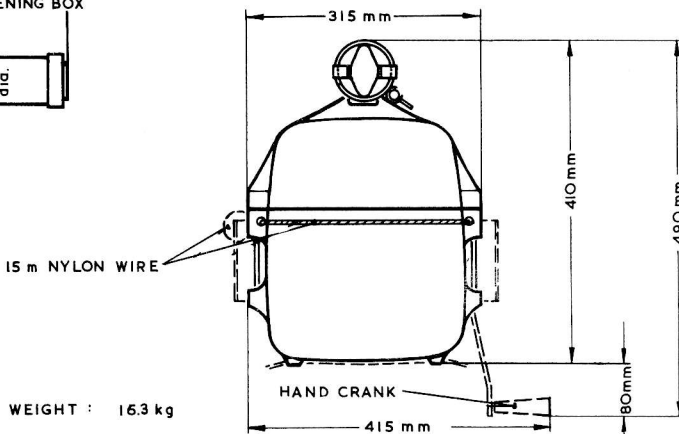
2182 kHz: Better than 32 μ V for 15 dB signal/noise ratio

2182 kHz: Better than 40 dB

Min. 1 mW



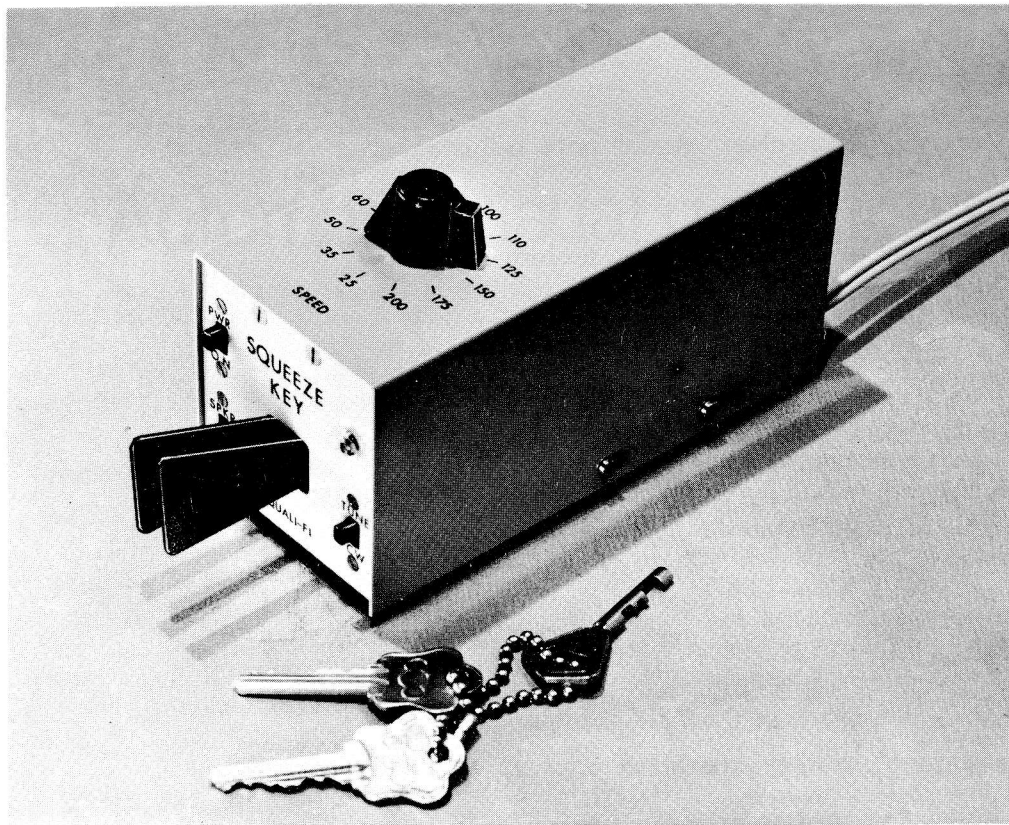
(All data are subject to possible alterations of design)



COMPLETE MARINE RADIO INSTALLATIONS ● RADIOTELEPHONE EQUIPMENT FOR SMALLER VESSELS ● MARINE RECEIVERS ● AUTO ALARMS
 DIRECTION FINDERS ● AUTOMATIC ALARM SIGNAL KEYS ● PORTABLE LIFEBOAT EQUIPMENT ● MOTOR LIFEBOAT EQUIPMENT
 SALINOMETER FOR FRESHWATER GENERATORS ● MEASURING INSTRUMENTS ● ECHO SOUNDERS FOR VERTICAL AND HORIZONTAL USE
 RADAR EQUIPMENT ● LORAN EQUIPMENT ● ANTI INTERFERENCE AERIAL EQUIPMENT FOR RADIO AND TV ● LOUDHAILER EQUIPMENT
 VHF MARINE TELEPHONE EQUIPMENT ● MAST AND ROD AERIALS ● FACSIMILE RECORDERS FOR WEATHER CHARTS. Please write for further details

dansk radio aktieselskab

SQUEEZE KEY Type MSK-4



SQUEEZE KEY represents the latest design in electronic morse-keys. By means of a unique dot memory and injection system, integrated circuit technique and a special manipulator, revolutionary features have been achieved: Perfect forming of characters regardless of speed, and easy effortless operation. If you are familiar with the ordinary electronic key you will be surprised by its smooth performance. SQUEEZE KEY will enable you to send faster with less effort.

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
telegrams.: Dariose
telex 27058

SPECIFICATIONS

Electronic morse key using integrated circuits and silicon transistors throughout.

Self completing dots and dashes.

Single dot memory and injection system.

Double lever key with solid silver contacts.

Directly calibrated 12 position speed control

25 - 200 letters per minute.

Perfect character formation regardless of speed.

No adjustments.

Built-in monitor and loudspeaker. Audio note adjustable.

Connection for headphones.

High speed reed relay with hermetically sealed contacts.

Contact load - limiting values.

Make contact	250 V DC	500 mA	10 Watt
Change-over contact	200 V DC	100 mA	4 Watt

Supply Voltage: 100-130 V AC or 200-240 V AC (adjustable).
6 V AC or DC

Current consumption at battery operation approx. 0.5 Watt

Electronically regulated power supply.

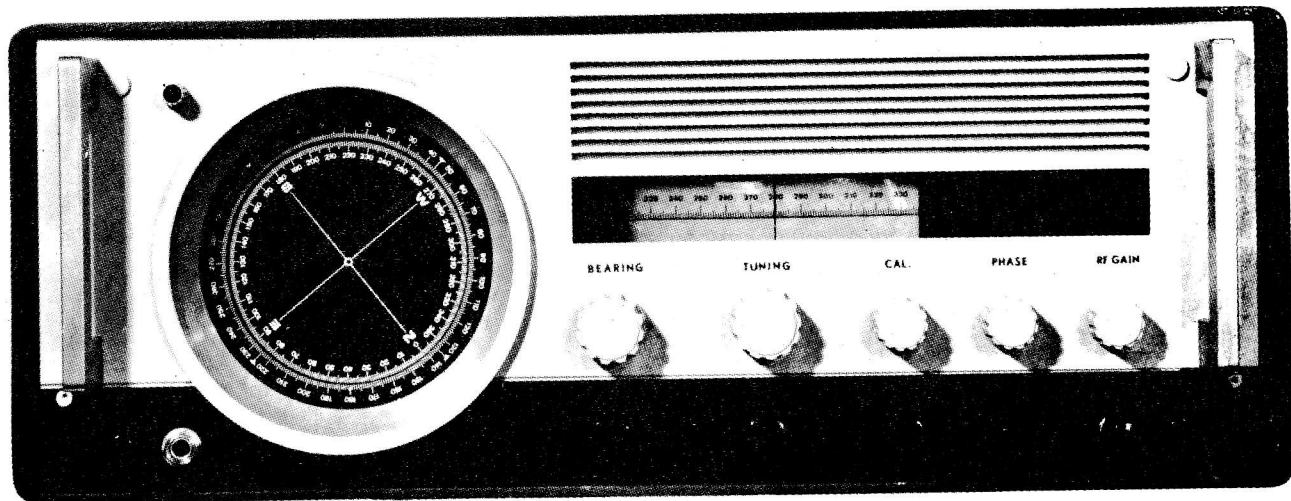
Dimensions: 65 x 65 x 152 mm

Weight: approx. 850 g.

Models: MSK-4/1 with one make contact.

MSK-4/2 with one change-over contact.

dansk radio aktieselskab



Automatic visual direction finder P1250

An automatic visual direction finder of completely new conception. No more mechanical rotating parts, hundred percent electronic gem, completely transistorized.

TUNE IN AND READ

Instant bearing obtained as soon as frequency set. No delay waiting for goniometer rotation.

10 SPOT FREQUENCIES

for instant tuning on radio beacons and watch frequencies, in addition to normal continuous tuning.

FULLY COMPLYING

with SOLAS-60 requirements.

GYRO REPEATERS

of all leading makes can be used.

Fully complying with the SOLAS-60 regulations, this equipment covers medium frequencies from 180 KHz to 550 KHz and intermediate frequencies from 1.6 to 3.8 MHz.

Although tuning is continuous in each band, crystals can be provided for up to 10 spot frequencies. These « instant listening » channels are extremely useful for accurate tuning of distress frequencies and for quick bearings in the normally used direction finding channels.

The receiver being tuned in, a narrow light strip is shown on the cathode ray tube, indicating the bearing of the station.

The pelorus can be rotated manually or connected to a gyro-repeater, giving instant true bearings.

For easy identification, the signal from the station involved is continuously audible either through the loudspeaker, or through headphones.

The P 1250 can be supplied for rack mounting or fitted in a tiltable mount.

Dansk Radio Aktieselskab

33, Amaliegade, DK-1256 Copenhagen K, Denmark

telephone (01) 13 13 33

telegrams.: Dariose

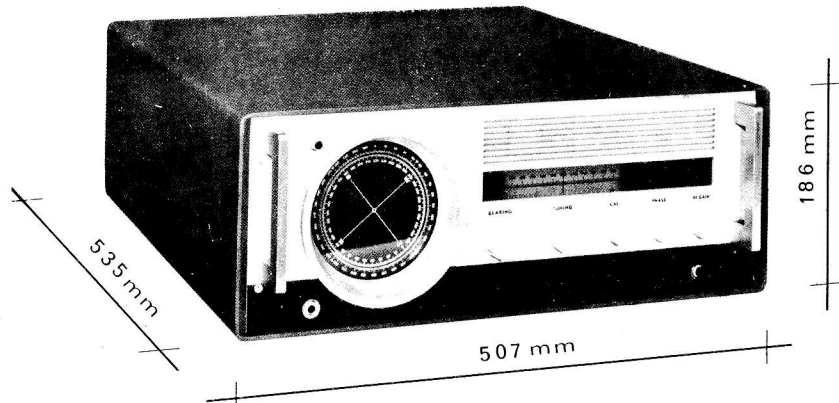
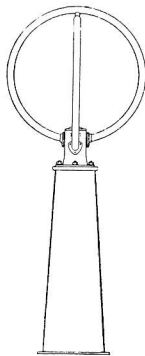
telex 27058

SPECIFICATIONS

Frequency Range	MF Band 180 KHz - 550 KHz IF Band 1.6 MHz - 3.8 MHz											
Reception modes	A1 A2 - A3 SSB : A3A - A3H - A3J											
Tuning	10 spot frequencies in addition to normal continuous tuning.											
Bearing Indication	fully automatic indication brightly visualized on 12 cm cathode ray tube.											
Bearing Accuracy	1° bearing accuracy in field strength superior to 50 $\mu\text{V}/\text{m}$											
Bearing Reading	accurate up to $1/2^\circ$											
Sensitivity	15 dB in 50 $\mu\text{V}/\text{m}$ field strength.											
Selectivity	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2">ATTENUATION</th> <th colspan="2">BANDWIDTH</th> </tr> <tr> <th>A1</th> <th>A2</th> </tr> </thead> <tbody> <tr> <td>6 dB</td> <td>0,8 KHz</td> <td>2 KHz</td> </tr> <tr> <td>60 dB</td> <td>16 KHz</td> <td>16 KHz</td> </tr> </tbody> </table>	ATTENUATION	BANDWIDTH		A1	A2	6 dB	0,8 KHz	2 KHz	60 dB	16 KHz	16 KHz
ATTENUATION	BANDWIDTH											
	A1	A2										
6 dB	0,8 KHz	2 KHz										
60 dB	16 KHz	16 KHz										
Blocking	A1 85 dB A2 50 dB											
Intermodulation	70 dB											
Image Rejection	better than 70 dB											
Audio output	1 W loudspeaker 50 mW headphones											
Power Supply	110/220 V AC - 50/60 Hz Other voltages with appropriate converter.											

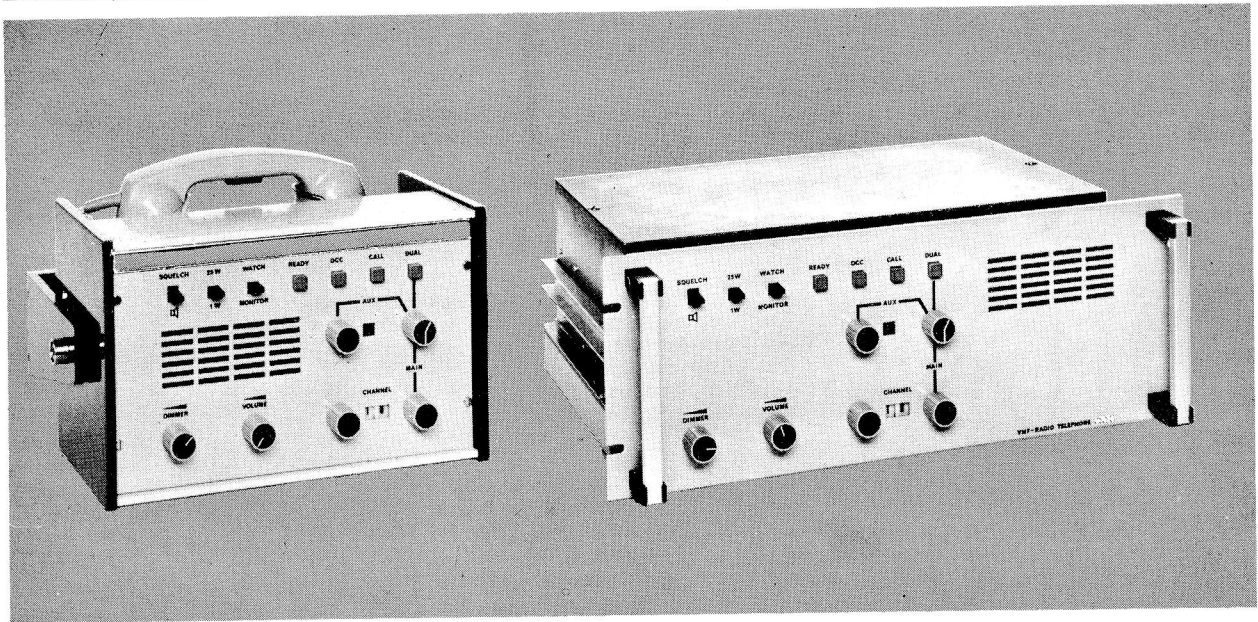
AERIAL DESCRIPTION

The aerial is a Bellini-Tosi type loop of particularly rigid construction. The loop can be supplied either for direct fitting on deck or mounted on a pedestal, as shown on drawing.



COMPLETE MARINE RADIO INSTALLATIONS ● RADIOTELEPHONE EQUIPMENT FOR SMALLER VESSELS ● MARINE RECEIVERS ● AUTO ALARMS
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VHF MARINE TELEPHONE EQUIPMENT ● MAST AND ROD AERIALS ● FACSIMILE RECORDERS FOR WEATHER CHARTS. Please write for further details

dansk radio aktieselskab



MARINE VHF FM RADIOTELEPHONE

SM 63

65 channels, simplex and duplex

Two channel listening

Completely transistorized

Integrated synthesizer

25 Watts output power

Low power consumption

Small size, simple installation

Modular construction

Sealed I.F crystal filter

Automatic selection of up to 4 control units

for up to date ship to ship and ship to shore telephone service, carefully designed to meet the new international specifications.

SM 63 is easy to install and easy to operate, all functions are remotely controlled from up to 4 control-boxes for 19" rack mounting or cabinet for desk or wall mounting.

The control unit has 3 channel selectors. 2 main selectors, one for each digit for the 57 international marine channels and 1 auxiliary selector for channel 16 and 7 channels for international or private service.

All the control boxes are identical which simplifies the operation. One of the boxes has the priority, usually the one on the bridge.

The radiotelephone can be supplied with a built-in VHF hybrid permitting simultaneous transmission-reception on one antenna.

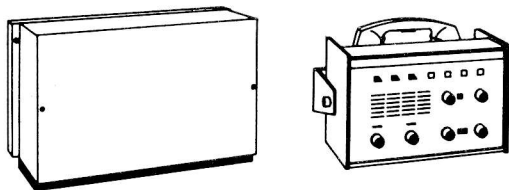
The station has 2 channel listening between one channel chosen by the main selector and one channel chosen by the auxiliary selector.

Transmitter and receiver are completely transistorized and mounted on small printed circuit boards for easy maintenance.

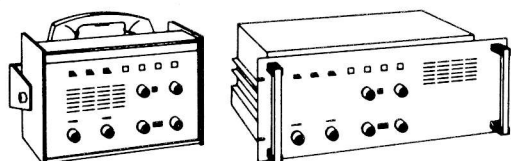
Microtelephones and loudspeakers on the bridge wings can be connected to the control boxes.

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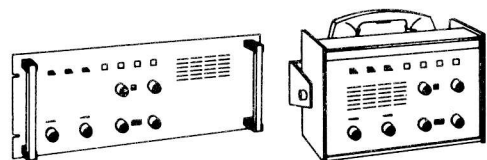
SYSTEMS



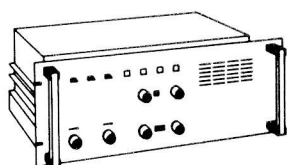
The most common system is the wall mounted transceiver with separate control box for desk or wall mounting.



A more advanced system is made with the wall or rack mounted transceiver and up to 4 19" rack mounted or wall mounted control boxes.

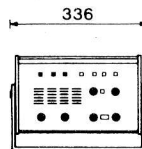


The transceiver can be operated from all the boxes, but one of them is given the priority and if in use it cannot be disturbed by the others.

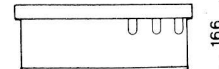
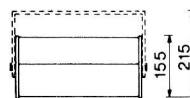
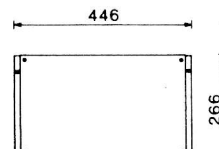


The most simple system is a 19" rack mounted transceiver with control unit mounted on the front. Bridge wing extension with microtelephones and loudspeakers can be connected to all control boxes.

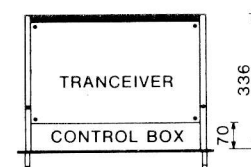
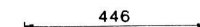
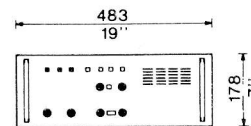
CONTROL BOX IN KABINET



TRANSCIVER



19" CONTROL BOX WITH TRANSCIVER



TECHNICAL DATA

The SM 63 complies with most countries relevant specifications for international maritime VHF Radio-telephones.

General

Frequency range : 156.025-157.425 Mhz
160.625-162.025 Mhz
(privat range:
157.425-157.825 Mhz)

Number of channels : 65 (57 international maritime VHF channels and provision for up to 8 dual or private national channels)

Operation mode : Simplex and duplex
Channel spacing : 25 KHz
Modulation : F3 pre-deemphasis 6 dB/oct.

Crystals : Synthesizer to obtain the 57 international channels. Dual and private channels require additional crystals

Transistorization : Fully transistorized

Power supply : $\pm 10\%$ for all performances
variation + 15% - 20% for reduced performance

Power consumption
stand-by : 25 Watts
transmit full power : 130 Watts
transmit reduced

power : 80 Watts
Supply voltage : 230, 220, 210, 115, 110, 105
Volts. 50-60 Hz

RF impedance : 50 ohms

Transmitter

Power output at
standard voltage : 25 Watts - 1 Watt
Max. deviation : ± 5 KHz

Receiver

Sensitivity : $< 0.5 \mu V$ ($1 \mu V$ EMF)
20 dB signal/noise (by use of private channels the sensitivity might be reduced to $1.8 \mu V$ EMF)

IF frequency : 10.7 MHz
Output power : > 2 W

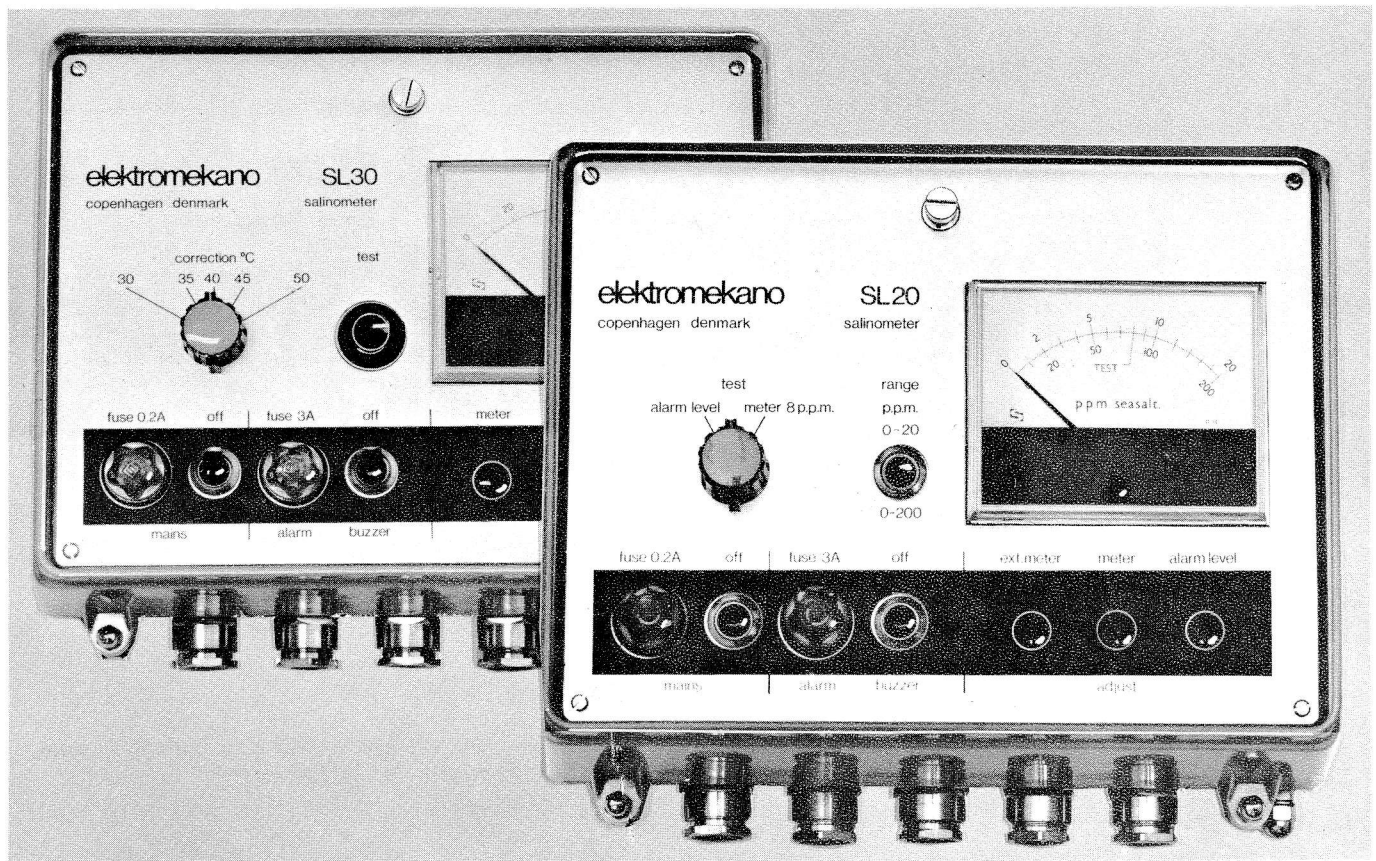
Simultaneous : Receiver switched between 2
reception channels. Channel I is switched on for 1/10 second every second, and if a signal is received the receiver stops on this channel. Channel II is received with 1/10 second interruption. This will not affect the intelligibility.

Selective call : Space is provided for at selective call receiver

Control unit includes

: Switch for reduced power
Squelch on/of
Volume control knob
Auxiliary channel selector (channel 16 or optional other dual or/and private channels)
Light dimmer
Two channel listening switch (dual watch)
Main channel selectors (decimal selector channel 1-28 and 60-88)
Lamp indicator of
(1) ready
(2) set occupied
(3) two channel listening
(4) call

dansk radio aktieselskab



Salinometer types

elektromekano SL20 & SL30

for marine freshwater generators

Continuous check on water passing from condenser to freshwater tank

Audible and visible warning when the salinity surpasses a given value

A built-in controlling device facilitates the routine check

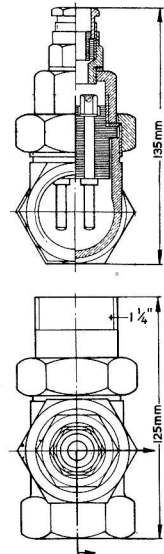
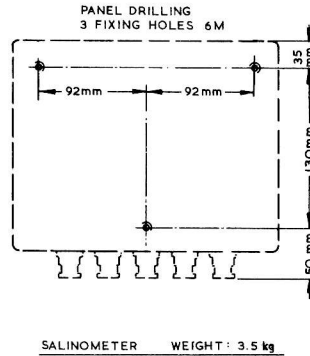
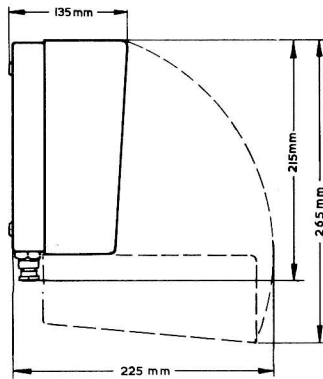
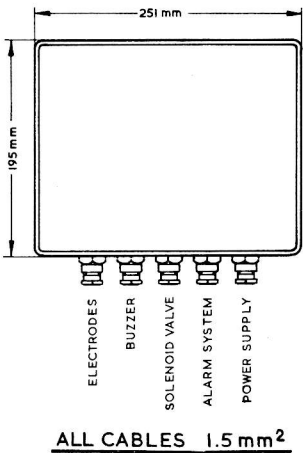
Accurate direct readings of the salinity

Automatic warning in case of internal or external failure

Dansk Radio Aktieselskab
33, Amaliegade, DK-1256 Copenhagen K, Denmark
telephone (01) 13 13 33
telegrams.: Dariose
telex 27058

The transistorized Salinometers Types SL 20 and SL 30 are constructed to measure and supervise the salinity of freshwater produced by distillation of sea water.

SPECIFICATIONS	SL 20	SL 30
Mains Supply:	110-127 and 220 V 50-60 Hz or D.C.	110-127 and 220 V 50-60 Hz
Power:	20-220 VA	5-240 VA
Measuring Range:	0-20 and 0-200 p.p.m. sea salt	0-200 p.p.m. sea salt
Alarm Level of Salinity:	Continuously variable 2-20 and 20-200 p.p.m.	Fixed 50 p.p.m.
Temperature Correction:	Automatic in the range 20-100°C	Manually operated in the range 30-50°C
Test:	A complete check of the salinometer can be carried out by means of a built-in test circuit.	
Adjustment:	Adjustments can easily be carried out from the front plate of the instrument.	
Cable Connections:	<ol style="list-style-type: none"> 1) Mains 2) Normally energized solenoid valve 3) Normally de-energized solenoid valve 4) Alarm buzzer (can be silenced) 5) External alarm system, normally closed contacts 6) External alarm system, normally open contacts 7) Electrode unit 8) External meter or "data logger", only SL 20 	
Failure Warning:	If connected to an external alarm system, the salinometer will give warning in case of failure of ship's mains or if a fault is present in the salinometer.	
Semiconductors:	Only silicon devices are used.	
Ambient Temperature:	0-50°C	
Electrode Unit:	The electrode unit consists of a 1 1/4" pipe size cast-brass fitting in which the rhodium-plated electrodes are mounted in such a way that they can easily be taken out for inspection.	



(All data are subject to possible alterations of design)

COMPLETE MARINE RADIO INSTALLATIONS ● RADIOTELEPHONE EQUIPMENT FOR SMALLER VESSELS ● MARINE RECEIVERS ● AUTO ALARMS
 DIRECTION FINDERS ● AUTOMATIC ALARM SIGNAL KEYS ● PORTABLE LIFEBOAT EQUIPMENT ● MOTOR LIFEBOAT EQUIPMENT
 SALINOMETER FOR FRESHWATER GENERATORS ● MEASURING INSTRUMENTS ● ECHO SOUNDERS FOR VERTICAL AND HORIZONTAL USE
 RADAR EQUIPMENT ● LORAN EQUIPMENT ● ANTI INTERFERENCE AERIAL EQUIPMENT FOR RADIO AND TV ● LOUDHAILER EQUIPMENT
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