Section Two

of

Instruction Manual

for

MARCONI MARINE

CONQUEROR HS
G/P SSB TRANSMITTER
(TYPE N-01-1061-04)

Technical Description and Servicing

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THE MARCONI INTERNATIONAL MARINE CO. LTD.
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TECHNICAL SUMMARY

1. GENERAL

This is a high power SSB transmitter which provides comprehensive frequency coverage of the allocated bands between 405kHz and 26MMz with telephony and/or telegraphy as appropriate. Provision is made for connection to remote and local speaking units and to telephone terminal equipment.

The equipment has an output power of up to 1500W p.e.p. in the H.F. s.s.b. mode (maximum permitted by International Regulations). The modes of transmission are as follows:

A1	Continuous Wave (C.W.)	Telegraphy
A2H	Modulated Continuous Wave (M.C.W.)	
A3H	Compatible s.s.b.	Telephony (R/T)
A3A	S.S.B. with reduced carrier	
A3J	S.S.B. with suppressed carrier	

Provision is made for the automatic reversion of the transmitter to the A3H mode whenever 2182kHz is selected.

The transmitter can be mounted on top of its own power unit or on the bench with the power unit separate.

The transmitter meets the following British Board of Trade and Ministry of Post and Telecommunications specifications.

(a) As a main transmitter MF radiotelegraph on compulsorily fitted ships (MPT 1202).

(b) As a short wave radiotelegraph transmitter for ships (MPT 1214).

(c) As a MF/HF s.s.b. transmitter (TSC105(a), TSC101, MPT 1217).

(d) As an HF s.s.b. transmitter (MPT 1215).

The transmitter complies fully with the International Radio Regulations in respect of:

(a) A radiotelephone transmitter operating in the 4, 6, 8, 16 and 22MHz bands with a frequency tolerance within ±40Hz long term, ±3Hz short term.

(b) A radiotelegraph transmitter operating in the 405–525kHz band.

In addition the equipment will fully meet the requirements of article 12 of the International Radio Regulations applicable to s.s.b. equipment with the following tolerance:

(a) For ship stations short term limits (of the order of 15 minutes) of ±40Hz.

(b) For long term limit of ±100Hz in all bands.

2. TECHNICAL DATA

2.1. Frequency Bands

The transmitter provides seven spot frequencies in the MF band (410, 425, 454, 468, 480, 500 and 512kHz) and one spot frequency (2182kHz) on IF.2.

Indicated systems and continuous tuning are available on the following bands:

	Band	System Available
M.F.	405 – 525kHz	A1 or A2H
I.F.1	1·6 – 2·0MHz	A1, A2H, A3H, A3A or A3J
I.F.2	2·0 – 2·5MHz	A1, A2H, A3H, A3A or A3J
I.F.3	2·5 – 3·0MHz	A1, A2H, A3H, A3A or A3J
I.F.4	3·0 – 3·8MHz	A1, A2H, A3H, A3A or A3J
H.F.	4·063 – 4·231MHz	A1, A3H, A3A or A3J
H.F.	6·200 – 6·3455MHz	A1, A3H, A3A or A3J
H.F.	8·195 – 8·4595MHz	A1, A3H, A3A or A3J
H.F.	12·330 – 12·689MHz	A1, A3H, A3A or A3J
H.F.	16·460 – 16·9175MHz	A1, A3H, A3A or A3J
H.F.	22·000 – 22·374MHz	A1, A3H, A3A or A3J
H.F.	25·070 – 25·110MHz	A1, A3H, A3A or A3J

2.2. Brief Specification

2.2.1. R.F. Output Power

M.F.

A1 Mode 500W } into 4Ω, 750pF load
A2H Mode 320W } at 500kHz

I.F.

Limited to 400W p.e.p. on all modes of emission.

H.F.

A1 Mode 1500W mean on 4 and 6MHz bands
1400W mean on 8, 12 and 16MHz bands
1100W mean on 22MHz band
Approx. 300W on 25MHz band

A3J Mode 1500W p.e.p. on 4, 6, 8 and 12MHz bands
1400W p.e.p. on 16MHz band
1100W p.e.p. on 22MHz band

2.2.2. Frequency Accuracy

M.F. Crystal Spot Frequencies

Better than 200pt in 10^6 long term, typically within ±30Hz.

I.F. Crystal Spot Frequency

Better than 100Hz long term, typically within ±30Hz.

Synthesized Frequencies

Capable of being set to 100Hz within 5Hz.

2.2.3. Frequency Stability

Better than 1 part in 10^8 per day

Better than 1 part in 10^9 per °C

2.2.4. Carrier Suppression

On A3J the carrier is suppressed to more than 40dB below p.e.p. The unwanted (lower) sideband is suppressed by more than 60dB for all modulating frequencies above 425Hz.

2.2.5. R.F. Harmonics

M.F.	2nd order – better than −60dB 3rd order – better than −72dB	relative to A1 carrier
I.F.	Better than −50dB typically −58dB below p.e.p.	
H.F.	2nd order – generally better than −50dB 3rd order – generally better than −60dB	below p.e.p.

2.2.6. Intermodulation Products

I.F.	3rd and 5th order –	better than −25dB relative to one tone, typically better than −33dB
H.F.	3rd and 5th order –	better than −25dB relative to one tone.

2.2.7. Keying Spectrum

A1 Mode (all bands)	±100Hz −28dB ±200Hz −43dB ±400Hz −50dB	below carrier
A2H Mode (M.F. and I.F.)	−1450Hz Better than −25dB +1550Hz Better than −32dB +2000Hz Better than −37dB −2000Hz Better than −24dB −1450Hz Better than −24dB −1550Hz Better than −37dB	below A2H carrier

(Modulation Frequency approx. 600Hz)

2.2.8. Aerial Matching

M.F.	Capacitance	– Minimum 300pF; Maximum 1000pF
	Resistance	– Minimum 1·8Ω; Maximum 30Ω
I.F.1 and I.F.2	Capacitance	– Minimum 250pF
	Resistance	– Minimum 6Ω
I.F.3 and I.F.4	Capacitance	– Minimum 250pF
	Resistance	– Minimum 10Ω
	Alternatively 50Ω coaxial	
H.F.	Resistance	– Lowest 20Ω (40Ω on 4MHz); Highest 2000Ω
	Reactance	– ±2000Ω
	Alternatively 50Ω coaxial	

2.2.9. A.F. Input

Local Microphone	A level −40dB relative to 0·7V into 300Ω at 1000Hz will produce p.e.p.
Line 1	600Ω input impedance balanced to earth; 1mW at 1000Hz will produce p.e.p.
Line 2	600Ω input impedance balanced to earth with no compression to make it suitable for Lincompex inputs.

A tone of 600Hz plus carrier is provided for tuning.

2.2.10. A.F. Response

The amplitude of the r.f. output, appearing as a signal in the wanted sideband, in response to an a.f. input to either of the line terminals, is:

Between 350 and 2500Hz	within a level of −4dB	relative to peak output
Between 2520 and 2640Hz	±0·5dB of a level not less than −4dB	relative to peak output

2.3. Power Supplies

107·5/120V phase to phase, 3-phase, 3-wire, a.c. 50/60Hz (tappings at 2·5V steps), tolerance ±10%.

Maximum power consumption approximately 3·9kVA.

May be operated from 220/250V or 380/440V, 3-phase a.c., utilising an external transformer.

2.4. Dimensions

	Height	*Width*	*Depth*	*Weight*
Transformer Unit	1241mm (48⅞in)	635mm (25⅝in)	610mm (24in)	109kgs (240lb)
Power Unit	451mm (17¾in)	635mm (25⅝in)	610mm (24in)	100·9kgs (222lb)