

## TABLE OF CONTENTS

General Description.....	(1)
Specification.....	(2)
Operation.....	(6)
Installation.....	(7)
RF gain control adjustment.....	(8)
SQ control adjustments.....	(8)
General rules for best mobile antenna performance....	(8)
About SWR.....	(9)
Channel Information 1.....	(10)
Channel Information 2.....	(11)

# MEMO

## General Description

This Model is a combination transmitter-receiver designed primarily for mobile marine use. It employs the very latest technology to provide 480 channels of operation by means of digital frequency synthesis with PLL (phase-locked-loop) circuitry.

The use of PLL assures a precise on-frequency operation on every channel in both provide greater operation convenience and assure optimum communications under a wide range of conditions.

Operable on 480 channels divided into 12 groups of 40 channels.

High RF power output.

External speaker jack for an extra sound source.

Electrically floating chassis for negative or positive ground operation without switching.

A high-sensitivity dynamic microphone equipped.

Full channel auto scan.

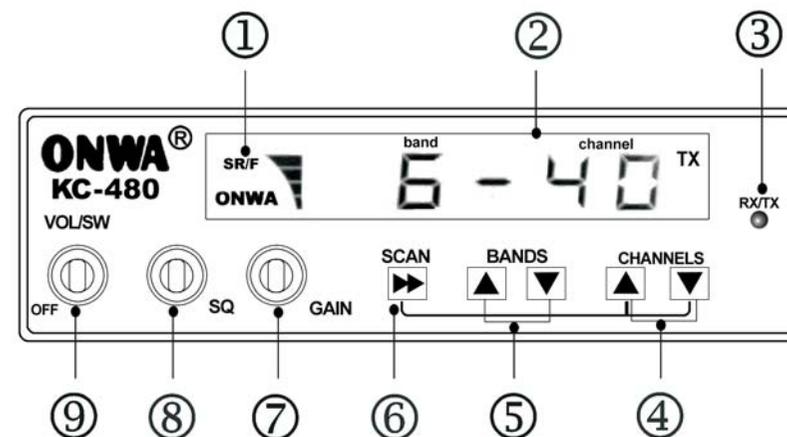
Last channel memory after turn off.

### CANUTION

FOR REPLACEMENT OF THE FUSE  
IN DC POWER CABLE, PLEASE BE SURE  
TO USE 3A FUSE.

## CHANNEL INFORMATION 1

Ch	Freq																
A1	26.065	B1	26.515	C1	26.965	D1	27.415	E1	27.865	F1	28.315	D1	27.415	E1	27.865	F1	28.315
A2	26.075	B2	26.525	C2	26.975	D2	27.425	E2	27.875	F2	28.325	D2	27.425	E2	27.875	F2	28.325
A3	26.085	B3	26.535	C3	26.985	D3	27.435	E3	27.885	F3	28.335	D3	27.435	E3	27.885	F3	28.335
A4	26.105	B4	26.555	C4	27.005	D4	27.455	E4	27.905	F4	28.355	D4	27.455	E4	27.905	F4	28.355
A5	26.115	B5	26.565	C5	27.015	D5	27.465	E5	27.915	F5	28.365	D5	27.465	E5	27.915	F5	28.365
A6	26.125	B6	26.575	C6	27.025	D6	27.475	E6	27.925	F6	28.375	D6	27.475	E6	27.925	F6	28.375
A7	26.135	B7	26.585	C7	27.035	D7	27.485	E7	27.935	F7	28.385	D7	27.485	E7	27.935	F7	28.385
A8	26.155	B8	26.605	C8	27.055	D8	27.505	E8	27.955	F8	28.405	D8	27.505	E8	27.955	F8	28.405
A9	26.165	B9	26.615	C9	27.065	D9	27.515	E9	27.965	F9	28.415	D9	27.515	E9	27.965	F9	28.415
A10	26.175	B10	26.625	C10	27.075	D10	27.525	E10	27.975	F10	28.425	D10	27.525	E10	27.975	F10	28.425
A11	26.185	B11	26.635	C11	27.085	D11	27.535	E11	27.985	F11	28.435	D11	27.535	E11	27.985	F11	28.435
A12	26.205	B12	26.655	C12	27.105	D12	27.555	E12	28.005	F12	28.455	D12	27.555	E12	28.005	F12	28.455
A13	26.215	B13	26.665	C13	27.115	D13	27.565	E13	28.015	F13	28.465	D13	27.565	E13	28.015	F13	28.465
A14	26.225	B14	26.675	C14	27.125	D14	27.575	E14	28.025	F14	28.475	D14	27.575	E14	28.025	F14	28.475
A15	26.235	B15	26.685	C15	27.135	D15	27.585	E15	28.035	F15	28.485	D15	27.585	E15	28.035	F15	28.485
A16	26.255	B16	26.705	C16	27.155	D16	27.605	E16	28.055	F16	28.505	D16	27.605	E16	28.055	F16	28.505
A17	26.265	B17	26.715	C17	27.165	D17	27.615	E17	28.065	F17	28.515	D17	27.615	E17	28.065	F17	28.515
A18	26.275	B18	26.725	C18	27.175	D18	27.625	E18	28.075	F18	28.525	D18	27.625	E18	28.075	F18	28.525
A19	26.285	B19	26.735	C19	27.185	D19	27.635	E19	28.085	F19	28.535	D19	27.635	E19	28.085	F19	28.535
A20	26.305	B20	26.755	C20	27.205	D20	27.655	E20	28.105	F20	28.555	D20	27.655	E20	28.105	F20	28.555
A21	26.315	B21	26.765	C21	27.215	D21	27.665	E21	28.115	F21	28.565	D21	27.665	E21	28.115	F21	28.565
A22	26.325	B22	26.775	C22	27.225	D22	27.675	E22	28.125	F22	28.575	D22	27.675	E22	28.125	F22	28.575
A23	26.355	B23	26.805	C23	27.255	D23	27.705	E23	28.155	F23	28.605	D23	27.705	E23	28.155	F23	28.605
A24	26.335	B24	26.785	C24	27.235	D24	27.685	E24	28.135	F24	28.585	D24	27.685	E24	28.135	F24	28.585
A25	26.345	B25	26.795	C25	27.245	D25	27.695	E25	28.145	F25	28.595	D25	27.695	E25	28.145	F25	28.595
A26	26.365	B26	26.815	C26	27.265	D26	27.715	E26	28.165	F26	28.615	D26	27.715	E26	28.165	F26	28.615
A27	26.375	B27	26.825	C27	27.275	D27	27.725	E27	28.175	F27	28.625	D27	27.725	E27	28.175	F27	28.625
A28	26.385	B28	26.835	C28	27.285	D28	27.735	E28	28.185	F28	28.635	D28	27.735	E28	28.185	F28	28.635
A29	26.395	B29	26.845	C29	27.295	D29	27.745	E29	28.195	F29	28.645	D29	27.745	E29	28.195	F29	28.645
A30	26.405	B30	26.855	C30	27.305	D30	27.755	E30	28.205	F30	28.655	D30	27.755	E30	28.205	F30	28.655
A31	26.415	B31	26.865	C31	27.315	D31	27.765	E31	28.215	F31	28.665	D31	27.765	E31	28.215	F31	28.665
A32	26.425	B32	26.875	C32	27.325	D32	27.775	E32	28.225	F32	28.675	D32	27.775	E32	28.225	F32	28.675
A33	26.435	B33	26.885	C33	27.335	D33	27.785	E33	28.235	F33	28.685	D33	27.785	E33	28.235	F33	28.685
A34	26.445	B34	26.895	C34	27.345	D34	27.795	E34	28.245	F34	28.695	D34	27.795	E34	28.245	F34	28.695
A35	26.455	B35	26.905	C35	27.355	D35	27.805	E35	28.255	F35	28.705	D35	27.805	E35	28.255	F35	28.705
A36	26.465	B36	26.915	C36	27.365	D36	27.815	E36	28.265	F36	28.715	D36	27.815	E36	28.265	F36	28.715
A37	26.475	B37	26.925	C37	27.375	D37	27.825	E37	28.275	F37	28.725	D37	27.825	E37	28.275	F37	28.725
A38	26.485	B38	26.935	C38	27.385	D38	27.835	E38	28.285	F38	28.735	D38	27.835	E38	28.285	F38	28.735
A39	26.495	B39	26.945	C39	27.395	D39	27.845	E39	28.295	F39	28.745	D39	27.845	E39	28.295	F39	28.745
A40	26.505	B40	26.955	C40	27.405	D40	27.855	E40	28.305	F40	28.755	D40	27.855	E40	28.305	F40	28.755



(Front view)

### KC-480 operating controls and features front view)

- ① SIGNAL INDICATION:  
Transmission and receiver signal strength.
- ② BAND AND CHANNEL SCREEN:  
Numbered LCD indicates the selected band and channel you wish to operate on.
- ③ RX/TX LED INDICATOR:  
When in receive, the LED will be ON green.  
When in transmit the LED will be ON red.
- ④ CHANNEL UP/DOWN KEY:  
Selects the channel. press ▲ the channel will increase, press ▼ the channel will decrease.

## RF gain control adjustment

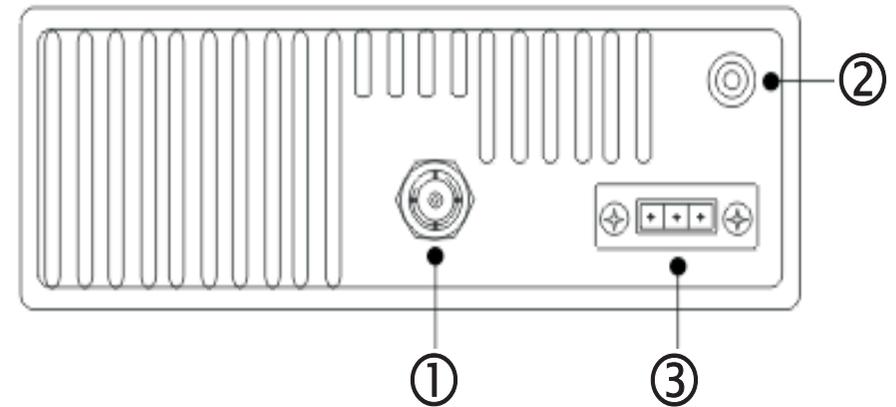
Normally, this control should be set to MAX. position to provide maximum receiver sensitivity for long range reception. However, when communicating with a nearby station, you may find that the strong signal from this station may cause overloading of your receiver. In such a case, you can use this control to reduce the receiver sensitivity and thus prevent any overloading and distortion that may occur as a result of the extremely strong incoming signals. First set the switch to center and if this position will not provide a sufficient reduction of overloading condition. Set to minimum position.

## SQ control adjustments

Adjust SQUELCH to cut out annoying background noise when no signal is being received. To do this, set the Channel Selector to a channel where no signals are present or wait until signals cease on your Channel. Then, rotate the SQUELCH control in a clockwise direction to the point where the background noise just tops. Now, when a signal is present, you will hear it, but will not be disturbed by noise on the channel between signals.

## General rules for best mobile antenna performance

- ① Mount antenna on vessel as high as possible.
- ② The higher percentage of the antenna length mounted above rooftop make the better performance.



(Rear view)

## KC-480 operating controls and features (rear view)

- ① RF coaxial holder.
- ② EXT SP holder.
- ③ DC power holder.

# Specification

## General

- ❖ Channel : 480 channel (40CH X 12)
- ❖ Frequency composition : Digital phase locked loop synthesizer
- ❖ Modulation mode : AM
- ❖ Frequency range : 24.265~29.655MHz
- ❖ Channel spacing : 10KHz
- ❖ Antenna impedance : 50 Ohm
- ❖ Power supply source : 13.8 VDC (Only negative ground)
- ❖ Operating temperature : -10 °C ~ +50 °C
- ❖ Dimensions : 20(W) X6(H) X28(D) cm
- ❖ Weight : 1.9kg

## Receiver

- ❖ Sensitivity : AM 1 μ V, S/N 19dB
- ❖ Selectivity : 60dB
- ❖ Squelch range : 0.2 μ V ~ 500 μ V
- ❖ IF : 1st 10.695MHz, 2nd 455KHz
- ❖ Audio output power : 3 watts at 8 Ohm
- ❖ Spurious response : 50dB

## Transmitter

- ❖ RF output power : 8W
- ❖ Frequency stability : ±0.005%
- ❖ Modulation capability : AM 100%
- ❖ Spurious emission : - 60dB

## CHANNEL INFORMATION 2

Ch	Freq										
101	24.265	201	24.715	301	25.165	401	25.615	501	28.765	601	29.215
102	24.275	202	24.725	302	25.175	402	25.625	502	28.775	602	29.225
103	24.285	203	24.735	303	25.185	403	25.635	503	28.785	603	29.235
104	24.305	204	24.755	304	25.205	404	25.655	504	28.805	604	29.255
105	24.315	205	24.765	305	25.215	405	25.665	505	28.815	605	29.265
106	24.325	206	24.775	306	25.225	406	25.675	506	28.825	606	29.275
107	24.335	207	24.785	307	25.235	407	25.685	507	28.835	607	29.285
108	24.355	208	24.805	308	25.255	408	25.705	508	28.855	608	29.305
109	24.365	209	24.815	309	25.265	409	25.715	509	28.865	609	29.315
110	24.375	210	24.825	310	25.275	410	25.725	510	28.875	610	29.325
111	24.385	211	24.835	311	25.285	411	25.735	511	28.885	611	29.335
112	24.405	212	24.855	312	25.305	412	25.755	512	28.905	612	29.355
113	24.415	213	24.865	313	25.315	413	25.765	513	28.915	613	29.365
114	24.425	214	24.875	314	25.325	414	25.775	514	28.925	614	29.375
115	24.435	215	24.885	315	25.335	415	25.785	515	28.935	615	29.385
116	24.455	216	24.905	316	25.355	416	25.805	516	28.955	616	29.405
117	24.465	217	24.915	317	25.365	417	25.815	517	28.965	617	29.415
118	24.475	218	24.925	318	25.375	418	25.825	518	28.975	618	29.425
119	24.485	219	24.935	319	25.385	419	25.835	519	28.985	619	29.435
120	24.505	220	24.955	320	25.405	420	25.855	520	29.005	620	29.455
121	24.515	221	24.965	321	25.415	421	25.865	521	29.015	621	29.465
122	24.525	222	24.975	322	25.425	422	25.875	522	29.025	622	29.475
123	24.555	223	25.005	323	25.455	423	25.905	523	29.055	623	29.505
124	24.535	224	24.985	324	25.435	424	25.885	524	29.035	624	29.485
125	24.545	225	24.995	325	25.445	425	25.895	525	29.045	625	29.495
126	24.565	226	25.015	326	25.465	426	25.915	526	29.065	626	29.515
127	24.575	227	25.025	327	25.475	427	25.925	527	29.075	627	29.525
128	24.585	228	25.035	328	25.485	428	25.935	528	29.085	628	29.535
129	24.595	229	25.045	329	25.495	429	25.945	529	29.095	629	29.545
130	24.605	230	25.055	330	25.505	430	25.955	530	29.105	630	29.555
131	24.615	231	25.065	331	25.515	431	25.965	531	29.115	631	29.565
132	24.625	232	25.075	332	25.525	432	25.975	532	29.125	632	29.575
133	24.635	233	25.085	333	25.535	433	25.985	533	29.135	633	29.585
134	24.645	234	25.095	334	25.545	434	25.995	534	29.145	634	29.595
135	24.655	235	25.105	335	25.555	435	26.005	535	29.155	635	29.605
136	24.665	236	25.115	336	25.565	436	26.015	536	29.165	636	29.615
137	24.675	237	25.125	337	25.575	437	26.025	537	29.175	637	29.625
138	24.685	238	25.135	338	25.585	438	26.035	538	29.185	638	29.635
139	24.695	239	25.145	339	25.595	439	26.045	539	29.195	639	29.645
140	24.705	240	25.155	340	25.605	440	26.055	540	29.205	640	29.655

- ⑤ **BAND UP/DOWN KEY:**  
Selects change the band. press  the band will increase, press  the band will decrease.
- ⑥ **SCAN KEY:**  
Initialize the channel scan function by pressing the SCAN key and channel up or down key, pressing the SCAN key again to stop the scan function or autostop when an enough signal strength.
- ⑦ **GAIN CONTROL KNOB:**  
Adjust RF gain (receiver sensitivity) of the transceiver in variations. In fully clockwise position, the receiver section provides maximum sensitivity so that it can pick up weak signals. Normally this switch should be placed in this position. In Fully counter-clockwise position, the receiver sensitivity is minimum, and the receiver will pick up only the strong signals. May be used when receiving strong (close) signal which are causing overload in receiving sound.
- ⑧ **SQUELCH CONTROL KNOB:**  
Used to eliminate any annoying background noise when on signals are present. The degree of sensitivity to incoming signals is adjustable. When the squelch control is rotated to the fully clockwise position, it provides minimum squelch.
- ⑨ **AF VOLUME/POWER ON-OFF KNOB:**  
Power is applied by turning the knob clockwise. To increase the volume, continue to turn the knob in the same direction. Likewise, turn the knob counter-clockwise to lower the volume. Power is switched off by turning the knob counter-clockwise until it on longer turns.

- ③ Centre antenna in middle of selected location ( i.e, boot, gutter or roof ).
- ④ Install an antenna cable line away from noise sources ( ignition system, gauges, etc. ).
- ⑤ Be sure to mount antenna with a good metal to-metal ground.
- ⑥ Prevent antenna cable damage.

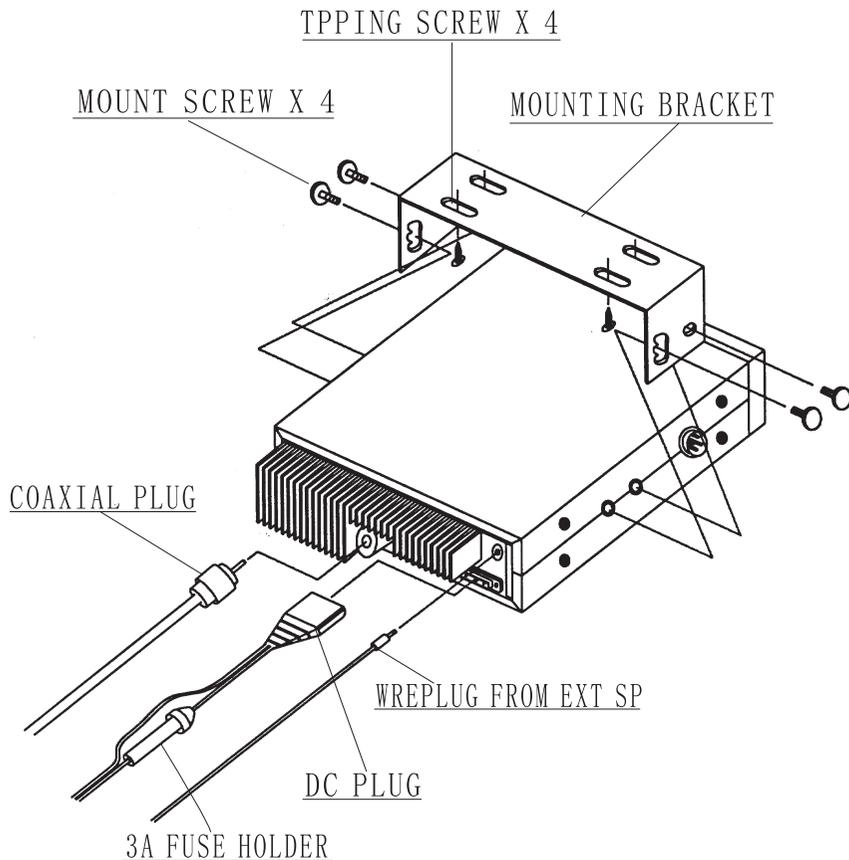
## About SWR

Antenna performance may be peaked by slightly adjusting its length ( 1/8" to 1/4" ) using an SWR standing wave ratio meter. This meter is purchased separately or the SWR can be checked professionally. Most antennas are factory-tuned, but this adjustment may improve antenna efficiency. An SWR reading below 3:1 is desired, as this indicates that over 75% of the transmit power is broadcast into the air. The rest is ' reflected ' back into your transceiver and dissipated as harmless as heat. See chart below. An SWR of 2:1 or below is good, 2.5 or even 3 is usually not user noticeable or significant.

SWR Reading	Output Power Transmitted
1:1	100%
1.3:1	98.3%
1.5:1	96.0%
1.7:1	93.3%
2:1	89.0%
3:1	75.0%
4:1	64.0%
5:1	58.0%
6:1	49.0%

## Operation

- ① Turn the Volume control clockwise to apply power to the transceiver. The LED display should be illuminated.
- ② Rotate the Squelch control counter clockwise fully.
- ③ Set the RF Gain control maximum position.
- ④ Select the channel desired.
- ⑤ To transmit, depress the transmit switch on microphone, to receive, release the switch.



## Installation

### ① ANTENNA CONNECTOR:

Use the 50 ohm coaxial cable with M-type male connector (PL-259) to connect antenna. The antenna output impedance is 50 ohm.

### ② DC POWER:

Connect accessory power cable. The supply voltage is DC 13.8 VDC+10% with a power consumption of 3A or more.

### ③ EXTERNAL SPEAKER JACK:

Used to connect an external speaker (8 Ohm 4w) as an sound source. Insertion of the plug from a speaker will silence the internal speaker automatically.

### ④ INSTALLING INSTRUCTIONS:

Install the mounting bracket in the ship's cabin as shown in the illustration. Be sure to install in a position which will not interfere with the navigation of the ship and which will enable easy operations of the transceiver.

### ⑤ PRECAUTIONS:

Before using the transceiver, please check the following as it may otherwise result in damage or defect of the transceiver. Avoiding hot, humid locations or places exposed to sea water, and especially locations exposed to sunlight, install the transceiver in a ventilated locations.

Ensure sufficient space behind the rear panel to get heat sink's cooling effect to the best.

High SWR may result in inefficient transmission. the supply voltage of the transceiver is DC 12V, Therefore, the transceiver can not be connected to AC 100V lines.

# Operation Manual

## KC-480

480 Channel Mobile  
AM Marine Transceiver

