

# 1. GENERAL

## 1-1 GENERAL

This equipment , GMD-150 GMDSS is called 2 way portable marine radios.

The Frequency range is 156.025-162.975MHz, VHF operating channels for international marine mobile service.

## 1-2 CHARACTERISTIC

- a) All active device in this radio is composed of semiconductor and high density IC.
- b) To design this radio in compact and weight approximately 600g including battery pack, the module was used.
- c) CPU of this equipment is TMP 87CH21DF from TOSHIBA.
- d) Its power can operate by use of DC 9.6V Ni-Cd battery.
- e) This marine radio is of the watertight structure to a depth of one meter during 5 minutes and in water at +45°C.
- f) This equipment is maintained the specified mechanical and electrical performance after dropping and releasing from 1 m.
- g) This equipment is not affected by sodium chloride & oil.

## 1-3 COMPOSITION

This radio is composed of following.

- a) Transmitter
- b) Antenna
- c) Belt clip
- d) Primary battery
- e) Secondary battery

## 2. SPECIFICATION

### 2-1 GENERAL SPECIFICATIONS

- \* **Frequency Range : 156.025-162.975MHz**
- \* **Output Impedance : 50Ω Unbalance**
- \* **Modulation Type: 16K0F3E**
- \* **Communication Mode: Half duplex**
- \* **Channel Capacity: 99 channel**
- \* **Channel spacing : 25KHz**
- \* **Operating time : within 5 seconds**
- \* **Power : 9.6V**
- \* **Battery Life: >8 hours (TX 5% RX 5% STAND BY 90%)**
- \* **Operating Temperature : -20°C --- +55°C**
- \* **Water Resistant : waterproof at 1 m depth for 5 minutes**
- \* **Dimension : 272(H) X68(W)X43.5(D) mm**
- \* **Weight : 650g**

### 2-2 ELECTRICAL SPECIFICATION

#### A) TRANSMITTER SPECIFICATION

- \* **Output power : HIGH 5.0W , LOW 1.0(+20%, -50%)**
- \* **Frequency Stability : <  $f_c \pm 1.5\text{KHz}$  (-20°C -- +55°C)**
- \* **Modulation Method : FM**
- \* **Oscillation Method : PLL SYNTHESIZER**
- \* **Max. Frequency Deviation : <±5KHz**
- \* **Cooling Method : air-cooling Method**
- \* **Spurious Emission: <-70dB**
- \* **FM Hum/Noise: <-40dB(1 KHz 70% modulation)**
- \* **Distortion: <10%(1 KHz 70% modulation)**
- \* **TX Audio Response : 6dB /OCT ± 3dB PRE-EMPHASIS(300Hz-2.5KHz)**

## b) RECEIVER SPECIFICATION

- \* **Receive Method : Double Super Heterodyne**
- \* **Receive Sensitivity : -107 dBm(20dB SINAD)**
- \* **Squelch Sensitivity : 6-8 dB(12 dB SINAD)**
- \* **Selectivity : <-70dB(25KHz)**
- \* **Local Frequency Stability : <±0.001(-20°C --- +55°C)**
- \* **Spurious Response : >70dB**
- \* **Audio output : 500mW(8Ω load THD10%)**
- \* **Total Distortion : < 10%( 1 KHz 70% Modulation)**
- \* **RX Audio Response: 6dB/OCT ± 3 dB DE-EMPHASIS(300Hz—2.5KHz)**
- \* **S/N Ratio : < -40dB(1 KHz 70% modulation)**
- \* **IF : 1<sup>st</sup> IF=21.4MHz**  
**2<sup>nd</sup> IF=455KHz**
- \* **Local Frequency : 1<sup>st</sup> Local Frequency = fc-21.4MHz**  
**2<sup>nd</sup> Local Frequency = 20.945MHz**

### 3. OPERATION

#### 3-1 EACH FUNCTIONS

##### a) Antenna Connector

The flexible helical antenna of stud type is firmly assembled with this radio.

##### b) Shroud

6 PinConnector is used when using optional accessories like Mic & Speaker.

The function and frequency can be changed by use of the programmable cable.

##### c) Speaker :Procedure received sounds.

d) Mic : Talk to the microphone during calling and while transmitting, use 5 cm distant from Mic to communicate clearly.

e) 16 key : In RX or RX stand by mode, if you press 16 channel, absolutely the present mode returns to the RX stand-by of Emergency channel.

f) ▲ key : In the RX or RX stand by mode, when ▲ key is pressed, the volume level is increased. When ▲ key is pressed in squelch level is increased. If you press “ FUNC” key and ▲ key consecutively in RX or RX stand by, channel number is increased.

h) ▼ key : In the RX or RX stand-by, When ▼ key is pressed, the volume level is decreased. When ▼ key is pressed in the squelch and channel mode, the squelch level or channel is decreased.

i) Vol key : In the channel change mode, squelch level mode & other function mode, when Vol key is pressed, the radio unit turns to

the volume level change mode.

Then if you press ▲ key or ▼ key the volume level is increased or decreased.

When “ FUNC” key and “ Vol” key is pressed consecutively, the TX out power of a current channel is displayed on LCD panel and “ HIGH/LOW” icon Toggling

j) SQ key : In the RX or RX stand-by, when SQ key is pressed, the radio unit turns to the squelch level mode. Squelch level is increased or decreased with using ▲ key or ▼ key.

When “ FUNC” key and “ SQ” key is pressed consecutively,

the radio unit turns to the Dual watch mode and the current channel and CH 16 are alternatively watched under the preset scan speed time.

- k) FUNC key : In the RX or RX stand-by, when “ FUNC” key and the option keys (ex : CH(LOCK) key, ▲ key, ▼ key, Vol key & Squelch key----) consecutively, the radio units turns to each functions adjusted by the option keys.
- l) LAMP key : When the lamp key is pressed, Back light is illuminated.  
After back light is illuminated, if any other key is not pressed for 4 seconds, the back light is turned off. If any other key is pressed in 4 seconds, the back light is illuminated for 4 seconds again. When the back light is turned on by pressing lamp key more than 1 second, the back light is not off until lamp key is pressed again.  
When the “ FUNC” key and “ LAMP” key are pressed consecutively, Beep tone can be toggled.
- m) CH key : In RX or RX stand by mode, when CH key is pressed, key beep tone is heard with flickering “ CH” letter on LCD panel. By then pressing ▲ key or ▼key increases or decreases channel no.
- n) MONITOR key : While operating squelch, if the “MON” key is pressed.  
Monitoring works without generating a beep tone.  
The function of this key is not to bother other’s communications. When the radio power is off, if you press “ POWER” key with holding “ MON” key, the power will be on and the radio unit turns to program mode whenever you press “ FUNC” key in the program mode, PC program mode/master mode/slave mode is displayed by turns on LCD panel.
- o) PWR(ON/OFF KEY) :If you press “ PWR” key for about 1 second, power is turned on. When you press “ PWR” key for more than 1 second in the state of power on. Power will be turned off with power off beep tone.

**p) Battery Lock plate : The attached battery on this equipment can be separated by use of this plate.**

### **3-2 ICONS ON LCD**

- \* FUNC :This key is used with other function key always.**  
**“ FUNC” key is displayed as the additional function.**
- \* TX : The state of transmission is displayed on LCD.**
- \* RX : The state of Receive is displayed on LCD.**
- \* D/W : The state of dual watch is displayed on LCD.**
- \* SIG: The strength of signal is shown by the signal level bar.**
- \* SQ : The state of squelch level is shown by the SQ level bar.**
- \* LEVEL BAR: The strength of signal , the squelch and battery capacity is displayed by the level bar.**
- \* VOL : Volume Leval Bar Display**
- \* BATTERY: The state of battery is displayed by the battery level bar.**
- \* GRP: NOT USED.**
- \* UGT: NOT USED.**
- \* ▶ : This icon is shown the state of the battery saving.**
- \* LOW : This icon indicates Low output power in TX mode**
- \* HIGH: This icon indicates high output power in TX mode.**
- \* CALL : NOT USED**
- \* TSQ : NOT USED**
- \* LOCK ; The lock state of key pad is displayed on LCD.**
- \* MCA : NOT USED**

### **3-3 SETTING AND OPERATION**

#### **a) The points checked before power-on**

- 1. Check if the battery is installed on the equipment.**
- 2. Check if the antenna is firmly assembled with the radio.**
- 3. Check if the channel desired is displayed on LCD.**
- 4. And then press the PWR key or 1 second for POWER-ON.**
- 5. After the power is turned on, the radio is in RX stand by mode and ready for Transmission.**

#### **b) TX(CALL)**

- 1. TX(CALL) is performed by Audio call method.**
- 2. After a desired channel number is selected, while holding the PTT key on the left side of the radio, call up the partner station.**
- 3. At this time, TX icon is displayed on LCD.**
- 4. While communicating, talk to microphone 5 cm distant from the lips to communicate clearly.**

#### **c) RX**

- 1. When the TX is finished, if the PTT key is released, the radio unit turns to the RX stand-by.**
- 2. When a certain channel is receiving a signal, “RX” , “ SIG” icon and level bar are displayed and audio is generated.**

#### **---Remark—**

- \* As you don't want to use this equipment or just keep it, the power should be off by pressing the power key for 1 second.**
- \* Any attempt to attached the incorrect antenna or to forcibly remove the antenna will cause damage to the antenna or the equipment.**