

VHF MARINE DSC RADIO

TS18

TS18C

TS18S

TS18 Non DSC

User Manual



TS18/TS18C/TS18S/TS18 Non DSC User Manual

RF Radiation Information

RF Radiation Profile

Your radio is designed and tested to comply with a number of national and international standards and guidelines (listed below) regarding human exposure to radio frequency electromagnetic energy. This radio complies with the IEEE and ICNIRP exposure limits for occupational/controlled RF exposure environment at operating duty factors of up to 50% transmitting. In terms of measuring RF energy for compliance with the FCC exposure guidelines, your radio radiates measurable RF energy only while it is transmitting (during talking in PTT mode), not when it is receiving (listening) or in standby mode.

The device complies with SAR and/or RF field strength limits of RSS-102 requirement.

RF Radiation Safety

In order to ensure user health, experts from relevant industries including science, engineering, medicine and health work with international organizations to develop standards for safe exposure to RF radiation. These standards consist of:

United States Federal Communications Commission, Code of Federal Regulations; 47CFR part 2 sub-part J;
American National Standards Institute (ANSI)/Institute of Electrical and Electronic Engineers (IEEE) C95. 1-1992;
Institute of Electrical and Electronic Engineers (IEEE) C95. 1 – 1999;
International Commission on Non-Ionizing Radiation Protection (ICNIRP) 1998.

FCC Regulations

Federal Communication Commission (FCC) requires that all radio communication products should meet the requirements set forth in the above standards before they can be marketed in the U.S, and the manufacturer SHAIL post a RF label on the product to inform users of operational instructions, so as to enhance their occupational health against exposure to RF energy.

Part 15 Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help. Note: "Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment."

EU Regulatory Conformance

As certified by the qualified laboratory, the product is in compliance with the essential requirements and other relevant provisions of the Directive 2014/53/EU. Please note that the above information is applicable to EU countries only.

Manufacturer: HIMUNICATION

Trademark number : 11005103

Address : 3rd Floor,Block C,Huafeng Second Industry Park,Hangcheng Road,Gushu,
Xixiang town, Baoan District, Shenzhen,China

Warning - Limitations on Use

This TS18S product contains simple PPI chart, only as an aid to navigation for reference. Only Official Government Charts and Notice to Mariners contain all the current information needed for safe navigation. This products feature cannot be relied on as complete or accurate and may vary depending on location. It's the captain's responsibility to use official government charts, notices to mariners, caution, sound judgment and proper navigational skills when operating their boat using this product.

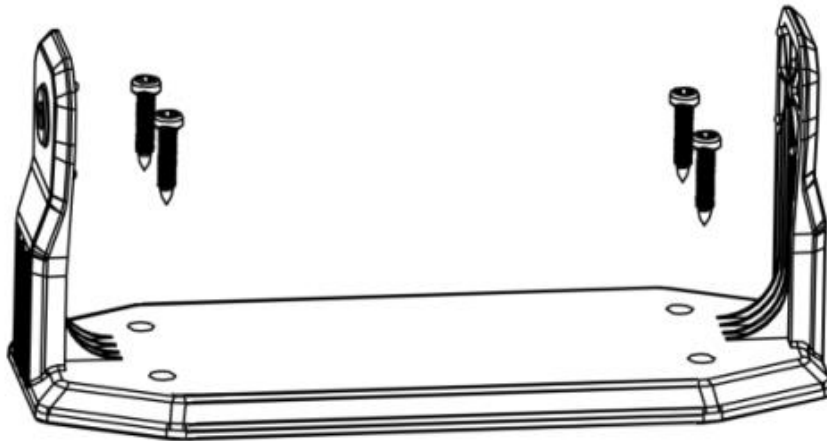
Contents

1. Installation	5
Optional Accessories Built-in GPS.....	9
Optional Accessories Handset/Wiring diagram Handset.....	9
3. LCD Display.....	10
4. Function key	10
5. ICON Function	10
GPS.....	11
HI/LO	11
BT.....	11
WPTT	11
HEADSET.....	11
MOBILE.....	11
CHAN.....	11
SCAN	11
PSCAN	11
DUAL.....	11
TRIW.....	12
MOB.....	12
HAIL	12
FOG.....	12
MEM	12
SAVE.....	12
DX/LOC	13
CH16	13
CH09	13
P2D.....	13
NIGHT.....	13
DASH.....	13
DSC	14
Detailed entrance for each catalogue as shown below	14
MY MMSI ID setup	15
Individual Call/Position Request/Group Call/Test call.....	15
ALL Ship Call	16
Receive Call Log.....	17
Send Call Log.....	17
Phone Book	18
DSC Setup	18
MAIN	19
Distress Menu & Send the Distress Message	19
VHF Operation	19
GPS Setup.....	20
AIS Setup(Only TS18S and TS18C)	21
CPA Range (Closest point of approach) Alarm distance setup.....	21
TCPA (Time closest point of approach)Alarm distance setup.....	22
ATIS Operation.....	22

DSC Operation	22
System Config	22
N2K Device	23
Dash simulator.....	23
Distress Menu & Send the Distress Message	23
AIS Operation(Only TS18S AND TS18C).....	23
BAND.....	25
LANGUE.....	23
DIMMER SETTING	25
6.Other Features and Solutions.....	26
Special function keys.....	26
TX Time Out	26
NMEA 0183 and NMEA 2000	26
TS18C/TS18S COMMUNICATION PGN.....	27
Appendix B – Channel List	28
International Marine VHF Channels & Frequencies	28
U.S. Marine VHF Channels and Frequencies.....	29
Canadian Marine VHF Channels and Frequencies.....	31
European Private Channels and Frequencies.....	34
Weather Channels and Frequencies	35
Specifications	35

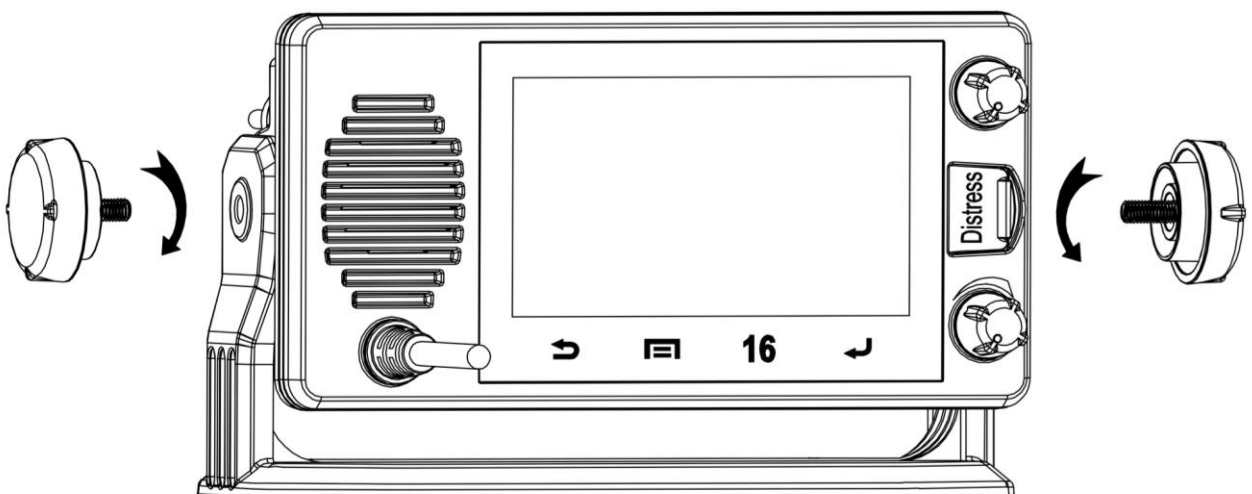
1. Installation

Yoke Mount Installation:



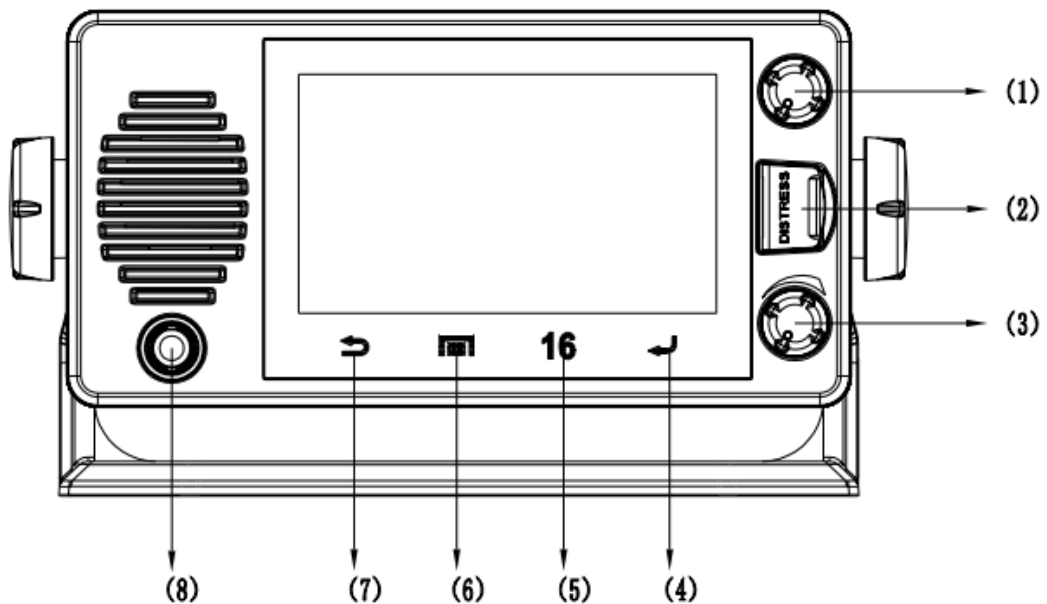
- 1、 Place and fasten the mounting bracket on the console by 4 screws;
- 2、 Mount the radio onto the bracket;
- 3、 Attach the supplied mounting knobs from two sides of the bracket to fix the base radio securely in the mounting bracket (as shown above).

Note. Mounting bracket, mounting knobs and 4 screws M4x20 are in a radio's package.



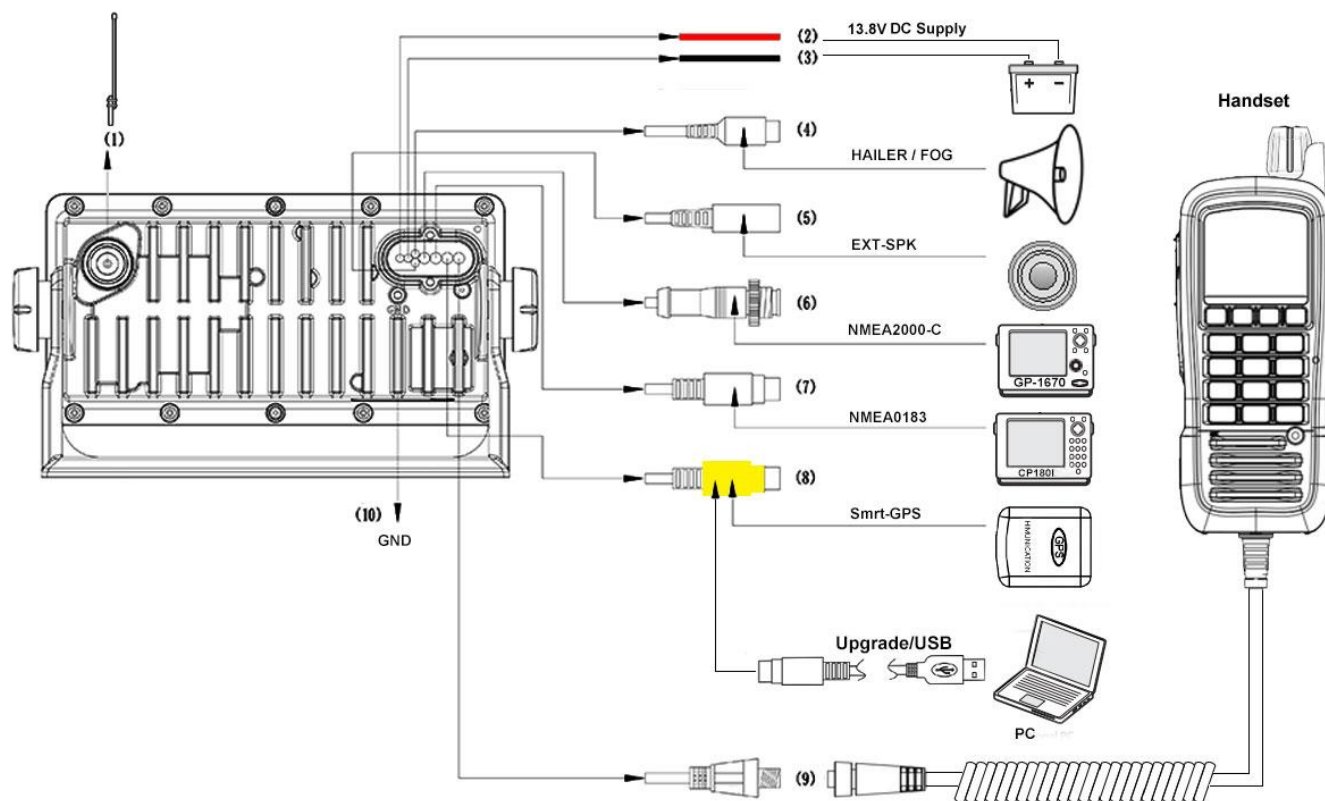
2. Front Panel/Back Panel

Front Panel



- 1、SQL Knob—The SQL will becomes larger while turning rotary knob by clockwise and vice versa.
- 2、DISTRESS key—Pull up key cover and press hold on to start Distress Alert Calling if you programmed your radio with an MMSI Number.
- 3、VOL Knob—When the radio is off, turn rotary knob by clockwise then radio power on and vice versa. Cotinue to rotate knob to get up/down function when radio is on.
- 4、Enter key—Any time,press this to enter.
- 5、16 key—Any time,press this to channel 16.
- 6、Homepage key—Any time,press this to homepage.
- 7、Return key—Any time,press this to return to previous level.
- 8、Standard Handset PTT—remote command microphone push this key to sent out radio frequency signals.

Back Panel



- 1、RF antenna port SMA (Female)
- 2、Power + wire (red, 210 mm length)
- 3、Power – wire (black, 210 mm length)
- 4、Hailer/Fog cable with 3.5 mm plug (180 mm length)
- 5、External speaker cable with 3.5 mm plug (180 mm length)
- 6、NMEA 2000 cable (180 mm length)
- 7、NMEA 0183 cable (180 mm length)
- 8、Smart GPS/Software upgrade (yellow, 180 mm length)
- 9、The second handset (Optional)
- 10、GND hole (M3x5)

As above show, the “number in picture” correspond to “wiring number” also correspond to “the number in the below table”
The details please check the below table.

The details please check the below table

Serial Number	General Description	Function Description	Different Color Code of the cable wires	
(1)	RF antenna connector SMA (Female)	VHF antenna	-	-
(2)	Red & Black Power	Power supply wires	Red	Power+ +13.8V
(3)			Black	Power- GND
(4)	Audio Connector RCA (Phone) Plug	Hailer/Fog	White	SPK
			Black	GND
(5)	Audio Connector Black 3.5 mm Plug	External Speaker	Red	AUDIO-OUT-
			Black	GND
			-	NC
(6)	NMEA 2000 connector	NMEA2000 network	-	
(7)	NMEA 0183 connector	NMEA0183 network	Yellow	GND
			Green	0183_IN
			Black	GND
			Brown	0183_OUT
			Orange	NC
			Red	NC
(8)	Smart GPS connector / Software upgrade	Smart GPS Device / Software upgrade	Red	USBRX
			Yellow	+5V
			Green	USBTX
			Black	GND
			Brown	NC
(8)			Orange	MINIGPS_RX
(9)	Remote command microphone connector (Optional)	Remote command microphone (Optional)	-	-
(10)	GND connection hole	Grounding ware	-	-

Connection cables in a package box

NMEA0183 connection cable, 0.4 m length (depending on a model)

Hailer cable, 0.4 m length

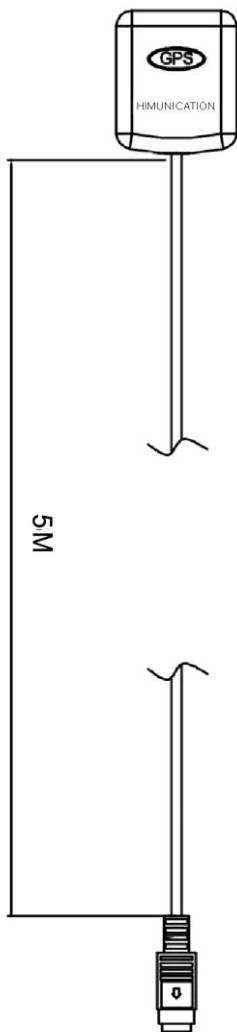
Optional accessories

Smart GPS Device (GPS module + antenna)

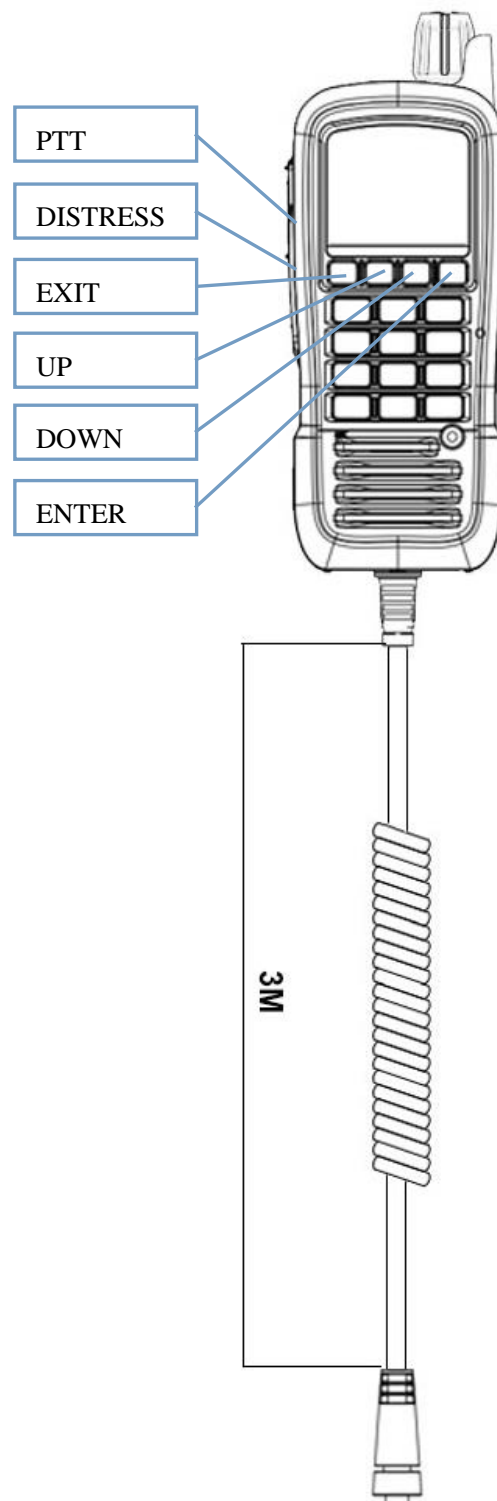
NMEA0183 connector cable, 3 m length

PC Programming cable, 1.5 m length

Optional Accessories Built-in GPS



Optional Accessories Handset/Wiring diagram Handset



3. LCD Display



Homepage 1



Homepage 2



Homepage 3

There are three homepages, you can swipe left or right to switch homepages.

The bottom row is the shortcut. If you want to relocate the icon, hold on the icon and drag it to the blank area to release it.

4. Function key



Any time, press this to return to previous step.



Any time, press this to homepage.



Any time, press this to channel 16.



Any time, press this to enter.

5. ICON Function



GPS

Click the "GPS" icon to check current position when connecting antenna



HI/LO

Click the "HI/LO" to toggle the TX power from Hi to Lo or vice versa. The corresponding "25W/1W" icon will be displayed on the LCD.

Some of the channels (such as channel 16 initially set for high power channel 13&67 initially set for low power) have been initially set to be low power or high power, but can be reprogrammed manually to high power or low power.



BT

Click the "BT" icon to enter the Bluetooth mode, there are three choices: WPTT, HEADSET and MOBILE.

WPTT

Choose the “WPTT”, “*” and “connected ” will be displayed on the LCD when connected.

HEADSET





Choose the “HEADSET” , then power on your own Bluetooth headset, click the match key to enter into the match mode, there would be “connected” displayed on the LCD.

Please Note:WPTT and HEADSET could connect to VHF in the meantime.

MOBILE

Choose the “MOBLE” , turn on the bluetooth of the mobile, search for the devlice name you would like,click it,there would be “connected” displayed on the LCD.

When giving a call,there is  displayed,click it if you want to hangup.

When getting a call,there are  and ,click  if you want to hangup,click  if you want to answer.



CHAN

Click the “CHAN” icon to select channel,you can click slide to left or click “◀” page up,slide to right,or click “▶” to page down.Select the desired channel and return to normal mode.



SCAN

Click the ”SCAN” icon to enter scan interface.



Click “Start” to activate the scan function which is searching for currently all working channels. All scanning: CH1-CH2-CH3-...-CH88.Memory scanning: M1 – M2 – M3 - ...M10 – M1- ...

When a signal is detected, the scan pauses until the signal disappears.

If you want to stop,click”Stop”.



PSCAN

Click the “PSCAN” icon to enter Pscan interface.

Click “Start” to activate the Priority Scan.

Priority memory scanning: M1 – CH 16 – M2 – CH 16 - ... CH 16 – M1...

Priority all scanning: CH1-CH16-CH2-CH16-CH3-CH16-...CH88-CH16-L1-CH16-



DUAL

At the normal mode, Click the ”DUAL” icon to enter dual interface.

Click “Start” to activate the DUAL WATCH mode. Monitor the current channel and CH16 in cycle. Whenever weather

alert is activated, the WX Alert channel will be monitored once every 4 seconds.

TRIW



Click the "TRIW" icon to enter triw interface.

Click "Start" to activate the TRI WATCH mode. Monitor CH16, current channel and one programmed channels in cycle.

MOB



Click the "MOB" icon, "MOB" icon will be shown on LCD, then Press Distress for 3 seconds, Distress call with nature MOB is sent.

MOB mark is outputted via NMEA. A MOB mark is immediately sent to the chart plotter to have a position as accurate as possible.

HAIL



Click the "HAIL" icon to enter "HAILER LISTEN MODE" for setup as you wish. Sounds received through the horn can be heard through the radio speaker. Press and hold the PTT key and speak your announcement. Release the PTT key to listen.

FOG



Click the "FOG" and enter "Foghorn Menu", then select preferred item from list. Press PTT key on the microphone or handset to sound the horn. The horn will stop when you release the PTT key in Manual Mode .

MEM



Enter /Exit the memory mode:

Click the "MEM" icon to enter the memory mode, the memory channel will be marked and "M" icon show on the right side next to channel number. At the left side of the current channel will mark a "MEM" icon which means already entered the user memory mode.

At the Memory mode, short press the MEM key to exit the memory mode. The "M" icon and "MEM" icon will disappear.

SAVE



Adding/Deleting memory CH:

- 1、 At the normal mode, select desired channel for programming.
- 2、 Click the "SAVE" icon to store up the channel as memory channel.
- 3、 "M" icon will be shown on LCD to indicate the current CH has been saved in the memory.
- 4、 No limitation for saving memory channels.
- 5、 For USA, International, and Canadian Frequency can be saved separately.
- 6、 At the normal mode, select the memory channel to be deleted.
- 7、 Click the "SAVE" icon to delete the selected channel from the memory mode.

DX/LOC



Click the “DX/LOC” to get conversion between local and distance mode (DX allows normal receive sensitivity; and “LOCAL” eliminates receiver noise, but degrades receiver sensitivity meanwhile “LOCAL” icon display on LCD).

CH16



At the normal mode, Click the “16” to jump to priority CH16 at High Power if the current channel is not the priority channel.

After the channel is tuned to priority CH16, “P” icon is lit to indicate the priority CH16 has been reached. Slide the channel to left or right to return to normal mode.

CH09



At the normal mode, Click the “CH09” to jump to priority CH09 at High Power if the current channel is not the priority channel.

After the channel is tuned to priority CH9, “P2D” icon is lit to indicate the priority CH09 has been reached. Slide the channel to left or right to return to normal mode.

P2D



Click the “P2D” ,all channels will be display on the screen,you can click slide to left or click “◀” page up,slide to right,or click “▶” to page down.Select the desired channel and return to normal mode.

NIGHT



Click the “NIGHT” icon to switch between night mode and day mode.



Night mode



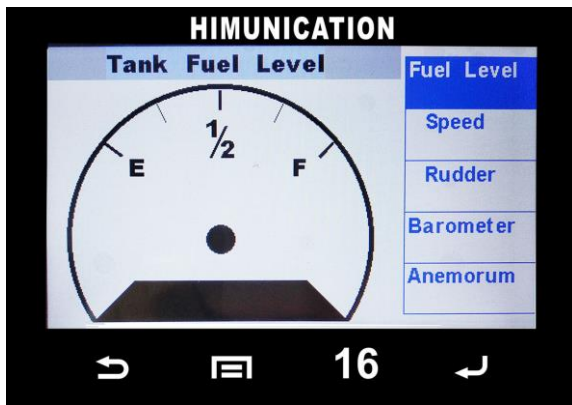
Day mode

DASH



Click the “DASH” icon to enter dash board.You can see the instrument panels.

Connect the N2K line.If there is data input from N2K interface line,you can click the icon to display the panel.








DSC

Click the “DSC”, the DSC Menu will be displayed as below on LCD:

DSC Menu	
Individual Call	>
Position Request	>
All Ship Call	>
Group Call	>
Test Call	>

Detailed entrance for each catalogue as shown below:

Individual Call	Individual Call	Receive Call Log▶	Receive Call Log
	Input Address		 Distress Call
	From Phone book		 Others Call
Position Request▶	Position Request	Send Call Log▶	Send Call Log
	Input Address		 Distress Call
	From Phone book		 MOB Call
 Others Call			
All Ship Call▶	All Ship Call	Phone Book▶	Phone Book
	Safety		Buddy List
	Urgency		Group List
Group Call▶	Group Call	DSC Setup▶	DSC Setup
	Input Address		Position Input
	From Phone book		Position Reply
Test Ack			
Test Call▶	Test Call	My MMSI ID▶	My MMSI ID
	Input Address		10000008
	From Phone book		

MY MMSI ID setup

Firstly, press MAIN icon to enter “Main Menu”.
Secondly, click to select “DSC Operation” to enter “MY MMSI ID”.
Then you can set up your related MMSI ID as below, generally you need to double confirm the MMSI ID. Once confirmed, your MMSI ID will be locked by this radio.

My MMSI ID

123456789

When input 9 digits, click the number on the soft keyboard for choosing the number from 0 to 9. You need to input all numbers from the left to right one by one until all finished. Once fulfilled 9 digits, then press “ENTER” to confirm.

My MMSI ID

Input MMSI

123-----

01

23

45

67

89

My MMSI ID

123456789

01

23

45

67

89

Note. You must enter your user MMSI before you can access the DSC functions. This is a once-only operation.

Individual Call/Position Request/Group Call/Test call

Click the DSC icon and choose “Individual Call”, then choose “Input Address” or “From Phonebook”.
Take individual call as example-

First select the “Input Address”, then
input 9 MMSI digits manually such as
123456789 for your address as below:

Then select the type of individual call such as
Routine

Input Address

Input 9 digits

0-----

◀

▶

01

23

45



67

89

Individual Call

Routine

Next select the preferred channel such
as 01 port operation and confirm to call

Individual Call  1/2 

Select Channel:

04A	08	12	16	21A	64A	68	73
05A	09	13	17	22A	65A	69	74
06	10	14	18A	61A	66A	71	77
07A	10	15	19A	62	67	72	78A



Individual Call
To: 100000000
Routine
Telephony by
Channel 16

Then the individual call is sent as below shown

DSC USA
SQL:5
VOL:4

16
DISTRESS
Elapsed 00: 56

All Ship Call

Select the All Ship item

DSC Menu
Individual Call
Position Request
All Ship Call
Group Call
Test Call
Receive Call Log
Send Call log
Phone Book
DSC Setup
My MMSI ID



The All Ship Call is sent.

All Ship Call
Safety
Urgency

Safety
Select Channel:
01 telephone
02 telephone
03 telephone
04 port ops
05 port ops/vts
06 safety
07 port ops
08 commercial

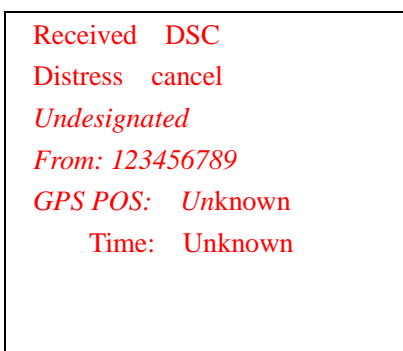
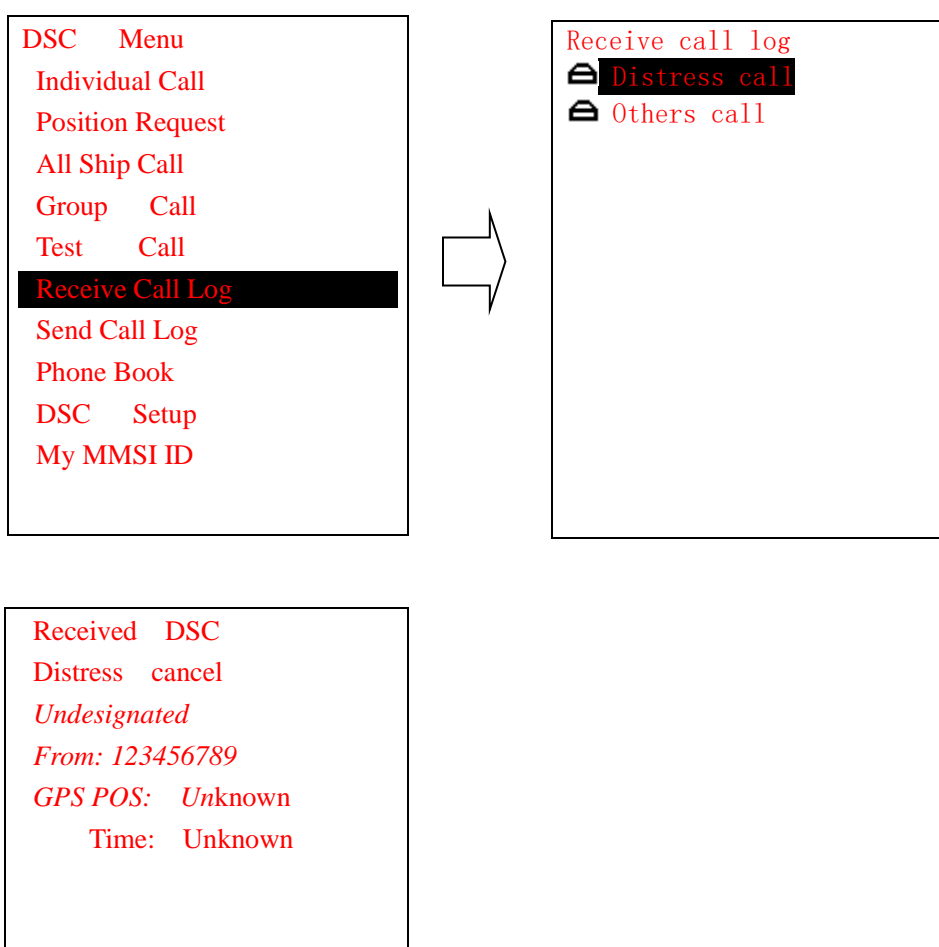


All Ship Call
To : All Ship
Safety
Telephone by
Channel 01



Receive Call Log

When received DSC, you can check those messages from the “Distress Menu” and see the exact message.

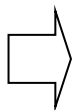


Send Call Log




Press “CALL/MENU” key to choose “Send Call Log” item and see previous distress call, MOB call and other call that you have sent.

DSC Menu

Individual Call
Position Request
All Ship Call
Group Call
Test Call
Receive Call Log
Send Call Log
Phone Book
DSC Setup



Send Call Log

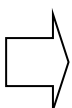
 Distress Call
 MOB Call
 Others Call

Phone Book

Press “CALL/MENU” key to choose “Phone Book” item and can check the contacted ship by “Buddy List” and “Group List”

DSC Menu

Individual Call
Position Request
All Ship Call
Group Call
Test Call
Receive Call Log
Send Call Log
Phone Book
DSC Setup
My MMSI ID



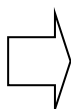
Phone Book

Buddy List
Group List

DSC Setup

DSC Menu

Individual Call
Position Request
All Ship Call
Group Call
Test Call
Receive Call Log
Send Call Log
Phone Book
DSC Setup
My MMSI ID



DSC Setup

Position Input
Position Reply
Test ACK

MAIN



Click the “MAIN” icon will display as below,slide up or down to see more menus:

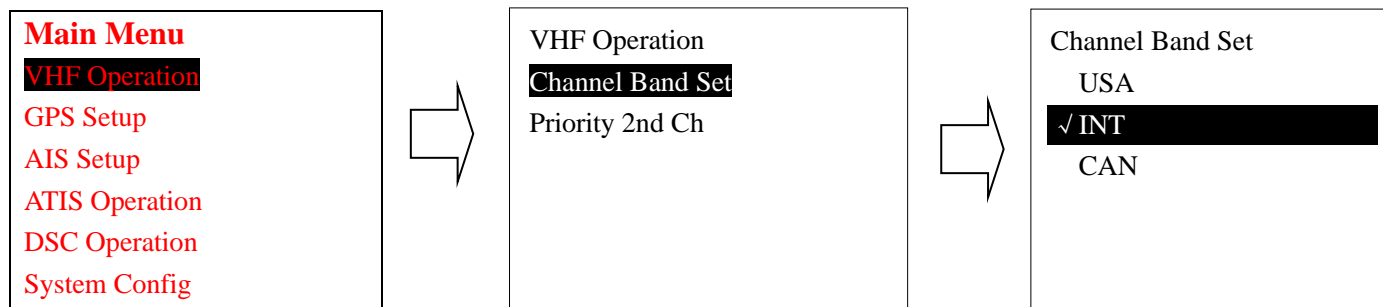
Main Menu
VHF Operation
GPS Setup
AIS Setup
ATIS Operation
DSC Operation
System config

Detailed entrance for each catalogue as shown below:

VHF Operation	Channel Band Set		ATIS Operation	My ATIS ID
	Priority 2nd Ch		ATIS Function	
GPS Setup	GPS Source		DSC Operation	My MMSI ID
	GPS Setting			DSC Function
	NMEA0183 Setting			
	GPS ALARM			
			System Config	BackLight lumi
AIS Setup	AIS Output			Key Beep
	AIS Display Set			Version Info
	AIS ALARM	Factory Reset		
				Language Select
		N2k Device		
	Dash Simulator			

VHF Operation

Click the “VHF Operation” to enter “VHF Operation” item as below for setup:



For priority 2nd Ch, you can select your preferred channel from below as your priority second channel.

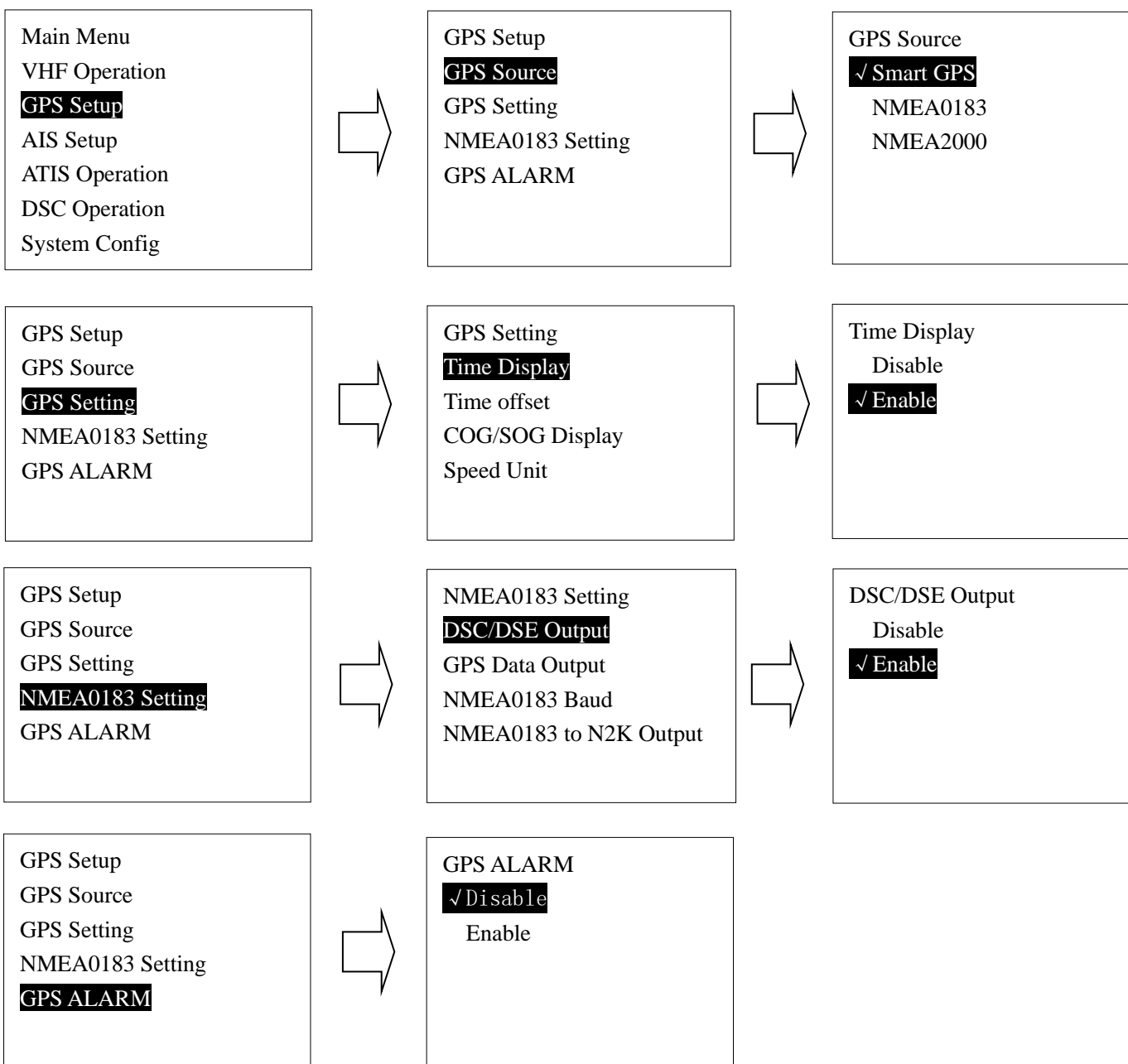
Priority 2nd Ch

Select Channel:

- 01 telephony
- 04 sar
- 05 port ops/ vts
- 06 inter ship
- 07 commercial**
- 08 commercial

GPS Setup

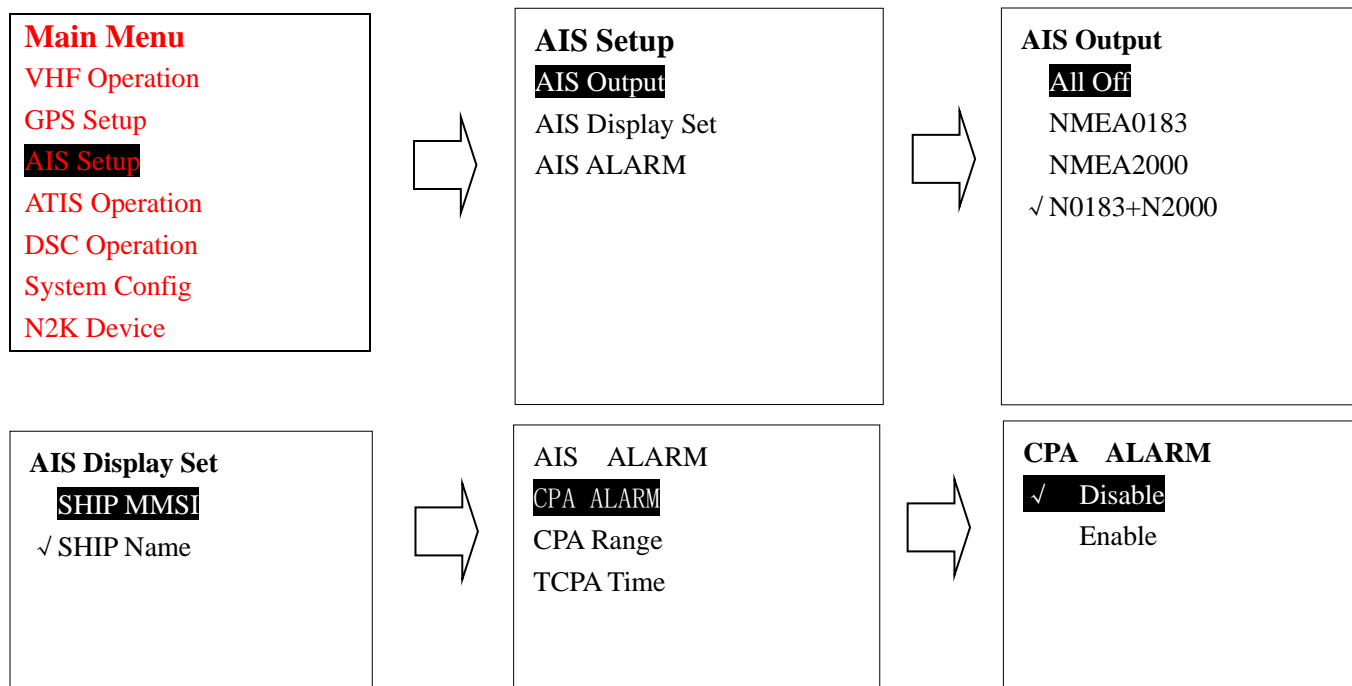
Click the “GPS Setup” to enter “GPS Setup” item for setup as below shown.



Follow like this, you can setup your priority as you wish.

AIS Setup (Only TS18S AND TS18C)

Long press the CALL/MENU key to enter “AIS Setup” item for setup as below shown



CPA Alarm enable Choose “Disable” or “Enable” item to enter disable or enable AIS alarm, then press “ENTER” key to confirm.

CPA Range
Input Range
03.0NM

CPA Range (Closest point of approach) Alarm distance setup

Press UP/DOWN key to input digital one by one, after you have done this, press “ENTER” key to confirm, the maximum input range is 25.0NM, if the input value over than 25.0NM, than this operation is invalid, the system will ask for re-enter, the default CPA value is 3.0NM.

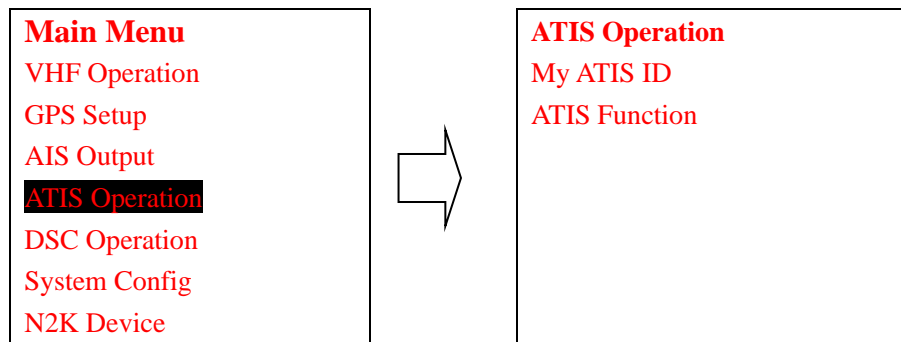
TCPA Time
Input Time
10:00Min

TCPA (Time closest point of approach)Alarm distance setup

Press UP/DOWN key to input digital one by one, after you have done this, press “ENTER” key to confirm, the maximum input range is 30 minutes, if the input value is over than 30 minutes, the input is invalid, then the system will ask for re-enter, the default CPA value is 10:00 Min.

ATIS Operation

Click the “ATIS Operation” to enter “ATIS Operation” for setup.

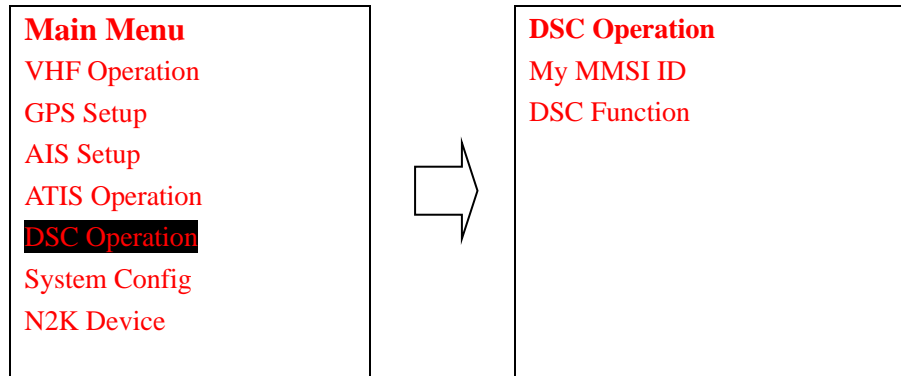


Choose to press for setup or more function as you wish.

Note. You must enter your user ATIS ID before you can access the ATIS functions. This is a once-only operation.

DSC Operation

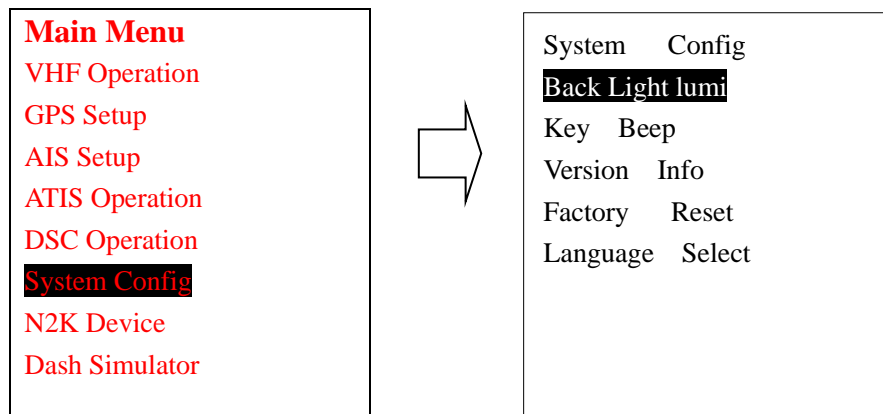
Click the “DSC Operation” to enter “DSC Operation” for setup.



(My MMSI ID setup have been explained in previous chapter, please see Page 7)

System Config

Click the “System Config” to enter “system config” for setup.



N2K Device

Display the list of device connected in NMEA2000.

Dash simulator

Demonstrate the dashboard.

Distress Menu & Send the Distress Message

Pull the DISTRESS red cover and press the DISTRESS key. Then below “Distress Menu” will be displayed on LCD.

Distress Menu

Undesignated
Fire, Explosion
Flooding
Collision
Grounding
Capsizing
Sinking
Adrift
Abandoning
Piracy
Man Overboard

Choose one distress item such as “sinking”, press and hold this for more than 3 seconds for transmitting sinking message out.

Distress Menu

Undesignated
Fire, Explosion
Flooding
Collision
Grounding
Capsizing
Sinking

You can also choose to resend, pause or exit after this message was sent.

AIS Operation(Only TS18S AND TS18C)



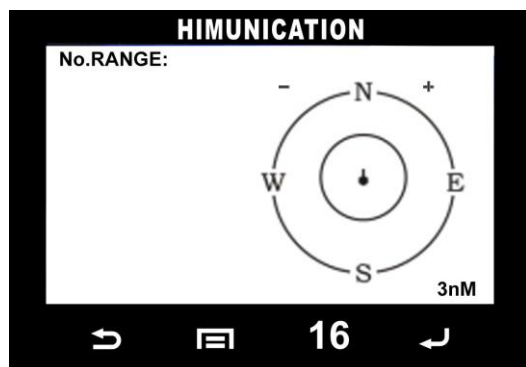
Click the “ AIS” icon to enter this interface.

Ship Info menu
 Ship info List
 Ship plotter
 AIS Alarm list

From the AIS ship info menu, you have three options: List mode, plotter mode, AIS Alarm list alarm list mode. If you choose option 'AIS ship info list' and press 'enter', you will open the list mode.

NO.	01/05 MMIS	Bearing	distance
01	413903183	257°	0.79NM
02	413997668	256°	0.80NM
03	413401340	259°	1.25NM
04	413454520	239°	1.28NM
05	000000000	277°	1.49NM

If you choose option 'All ship plotter' and press 'enter', you will open the plotter mode.



when the CPA ALARM is turned on, If you choose option 'AIS Alarm List' and press enter, you will open the AIS alarm list mode.

NO.	MMIS	01/04
01	413903183	233° 0.96nM
02	000000000	237° 5.54nM
03	000000000	265° 1.13nM
04	413401340	277° 1.48nM

From either mode, you can choose a target with Confirm key, then press enter to display the target details.

MMIS :413903183
 IMO NO:-----
 Call Sign:
 NAME:YUE HEYUAN
 Lat:22°35.733'N
 Lon:113°48.922'E
 Bearing:232°
 Dist:0.96nM
 SOG:0.0KIS
 COG:225.4°
 Rot:-----

BAND



Click the “BAND” icon to select band.Click the band you want,click to ensure.



LANGUAGE

Click the “LANGUAGE” icon to select language,you can select English or french.

DIMMER SETTING



Use the button "DIM" to enter the dimmer setting page.



You can see GPS information if received,channel,SQL,VOL,HI/LO power.You can click key to return to homepage.



6. Other Features and Solutions

Special function keys

The software's
Upgrading by PC
Please wait----

if you press and hold the "DISTRESS" Key then power on, you can enter the upgrade mode directly. LCD display as below:

The Private
Channels are
Cloning by PC
Please wait---

if you press and hold the "PTT" Key then power on, later you can enter the writing channel mode directly. LCD display as below:

TX Time Out

The transmission will be automatically turned off after PTT key pressed over 5 consecutive minutes. The TX mode will be terminated and back to Rx mode. Once the PTT key is released, the TX time out timer will be reset. PTT key will back to work normally.

The Local Time & Date on Screen:

When TS18 cannot receive the GPS signal to display the current position, screen will automatic display the time and date. When radio received the GPS signal, screen will show the current GPS location, related UTC time and date will be shown below the GPS location mark.

Click "MAIN" and enter "GPS Setup" to select the "Time offset" item for setting user's local time based on UTC time. Then press "Enter" to confirm. User need to pass the entire item from hour-minute-second then able to see enter option to click and confirm.

In other words, the process is the same as your setup of local time on your computer.

NMEA 0183 and NMEA 2000

The TS18S can be connected to both NMEA0183 and NMEA2000 networks. When you connect your radio to a NMEA 0183 network or a NMEA2000 network, the following data can be transferred; the radio can receive GPS position. GPS position can be displayed on the screen and is transmitted with DSC calls. When GPS data is not present, the radio will signal for you to enter your position manually every four hours.

This setting indicates whether you are connected to a NMEA 0183 or NMEA 2000 network; the radio can communicate over two networks at the same time.

Compass safe distance is 0.8m

Appendix A – List of Abbreviations

AE	Auxiliary Equipment
CE	Conducted Emissions
EMC	Electromagnetic Compatibility
EN	European Norm
EUT	Equipment Under Test
FTB	Fast Transient Burst
MED	Marine Equipment Directive
QP	Quasi Peak

TS18C/TS18S COMMUNICATION PGN

TS18S SEND NMEA2000 PGN:

59392 ISO acknowledgement
60928 ISO Address Claim
126208 Nmea request/command/acknowledge Group function
126464 PGN List
126720 fast data packet, multi_frame, proprietary PGN
126996 Product information
129799 Radio frequency/Mode/power
129025 Position,rapid update
129026 COG/SOG Rapid update
129033 time & date update
129038 Class A position report (Rx,Tx) note:ais msg 1/2/3
129039 Class B position report (Rx,Tx) note:ais msg 18
129040 Class B ext_position report (Rx,Tx) note:ais msg 19
129793 UTC and date report (Tx) note:ais msg 4/11
129794 Class A static and voyage related data (Rx,Tx) note:ais msg 5
129801 Addressed safety msg (Rx,Tx) note:ais msg 12
129802 Broadcast safety msg (Rx,Tx) note:ais msg 14
129808 Dsc call information
129809 AIS Class B 'CS'Static Data Report, Part A note:ais msg 24A
129810 AIS Class B 'CS'Static Data Report, Part B note:ais msg 24B

TS18C SEND NMEA2000 PGN:

59392 ISO acknowledgement
60928 ISO Address Claim
126208 Nmea request/command/acknowledge Group function
126464 PGN List
126720 fast data packet,multi_frame, proprietary PGN
126996 Product information
129025 Position,rapid update
129026 COG/SOG Rapid update
129033 time & date update
129799 Radio frequency/Mode/power
129808 Dsc call information

TS18C AND TS18S RECEIVE NMEA2000 PGN:

59392 ISO acknowledgement
59904 ISO request
60928 ISO Address Claim
126208 Nmea request/command/acknowledge Group function
126464 PGN List
129026 COG/SOG Rapid update
129029 GNSS Position data

Appendix B – Channel List

International Marine VHF Channels & Frequencies

CH No.	XMIT Freq	RCVFreq	Single	Freq Use
01	156.050	160.650		Public Correspondence, Port Operations and Ship Movement
02	156.100	160.700		Public Correspondence, Port Operations and Ship Movement
03	156.150	160.750		Public Correspondence, Port Operations and Ship Movement
04	156.200	160.800		Public Correspondence, Port Operations and Ship Movement
05	156.250	160.850		Public Correspondence, Port Operations and Ship Movement
06	156.300	156.300	x	Intership 1
07	156.350	160.950		Public Correspondence, Port Operations and Ship Movement
08	156.400	156.400	x	Intership
09	156.450	156.450	x	Intership, Port Operations and Ship Movement
10	156.500	156.500	x	Intership, Port Operations and Ship Movement 2
11	156.550	156.550	x	Port Operations and Ship Movement
12	156.600	156.600	x	Port Operations and Ship Movement
13	156.650	156.650	x	intership Safety, Port Operations and Ship Movement 3
14	156.700	156.700	x	Port Operations and Ship Movement
15	156.750	156.750	x	Intership and On-board Communications at 1W only 4
16	156.800	156.800	x	Distress, Safety and Calling
17	156.850	156.850	x	Intership and On-board Communications at 1W only 4
18	156.900	161.500		Public Correspondence, Port Operations and Ship Movement
19	156.950	161.550		Public Correspondence, Port Operations and Ship Movement
20	157.000	161.600		Public Correspondence, Port Operations and Ship Movement
21	157.050	161.650		Public Correspondence, Port Operations and Ship Movement
22	157.100	161.700		Public Correspondence, Port Operations and Ship Movement
23	157.150	161.750		Public Correspondence, Port Operations and Ship Movement
24	157.200	161.800		Public Correspondence, Port Operations and Ship Movement
25	157.250	161.850		Public Correspondence, Port Operations and Ship Movement
26	157.300	161.900		Public Correspondence, Port Operations and Ship Movement
27	157.350	161.950		Public Correspondence, Port Operations and Ship Movement
28	157.400	162.000		Public Correspondence, Port Operations and Ship Movement
60	156.025	160.625		Public Correspondence, Port Operations and Ship Movement
61	156.075	160.675		Public Correspondence, Port Operations and Ship Movement
62	156.125	160.725		Public Correspondence, Port Operations and Ship Movement
63	156.175	160.775		Public Correspondence, Port Operations and Ship Movement
64	156.225	160.825		Public Correspondence, Port Operations and Ship Movement
65	156.275	160.875		Public Correspondence, Port Operations and Ship Movement
66	156.325	160.925		Public Correspondence, Port Operations and Ship Movement
67	156.375	156.375	x	Intership, Port Operations and Ship Movement 2
68	156.425	156.425	x	Port Operations and Ship Movement
69	156.475	156.475	x	Intership, Port Operations and Ship Movement
71	156.575	156.575	x	Port Operations and Ship Movement
72	156.625	156.625	x	Intership
73	156.675	156.675	x	Intership 2

74	156.725	156.725	x	Port operations and Ship movement
75	156.775	156.775	x	See Note 5
76	156.825	156.825	x	See Note 5
77	156.875	156.875	x	Intership
78	156.925	161.525		Public correspondence, Port Operations and Ship Movement
79	156.975	161.575		Public correspondence, Port Operations and Ship Movement
80	157.025	161.625		Public correspondence, Port Operations and Ship Movement
81	157.075	161.675		Public correspondence, Port Operations and Ship Movement
82	157.125	161.725		Public correspondence, Port Operations and Ship Movement
83	157.175	161.775		Public correspondence, Port Operations and Ship Movement
84	157.225	161.825		Public correspondence, Port Operations and Ship Movement
85	157.275	161.875		Public correspondence, Port Operations and Ship Movement
86	157.325	161.925		Public correspondence, Port Operations and Ship Movement
87	157.375	157.375	x	Port Operations and Ship Movement
88	157.425	157.425	x	Port Operations and Ship Movement

• Intership channels are for communications between ship stations. Intership communications should be restricted to Channels 6, 8, 72 and 77. If these are not available, the other channels marked for Intership may be used.

• Channel 70 is used exclusively for Digital Selective Calling (DSC) and is not available for regular voice communications.

Notes:

1. Channel 06 may also be used for communications between ship stations and aircraft engaged in coordinated search and rescue operations. Ship stations should avoid harmful interference to such communications on channel 06 as well as to communications between aircraft stations, ice breakers and assisted ships during ice seasons.
2. Within the European Maritime Area and in Canada, channels 10, 67 and 73 may also be used by the individual administrations concerned for communication between ship stations, aircraft stations and participating land stations engaged in coordinated search and rescue and anti-pollution operations in local areas. Channels 10 or 73 (depending on location) are also used for the broadcast of Marine Safety Information by the Maritime and Coast Guard Agency in the UK only.
3. Channel 13 is designated for use on a worldwide basis as a navigation safety communication channel, primarily for intership navigation safety communications.
4. Channels 15 and 17 may also be used for on-board communications provided the effective radiated power does not exceed 1 Watt.
5. The use of Channels 75 and 76 should be restricted to navigation related communication only and all precautions should be taken to avoid harmful interference to channel 16. Transmit power is limited to 1 Watt.

U.S. Marine VHF Channels and Frequencies

CH. No	XMIT Freq	RCV Freq	Single	Freq Use
01A	156.050	156.050	x	Port Operations and Commercial, VTS. Available only in New Orleans / Lower Mississippi area. 1
03A	156.150	156.150	x	U.S. Government only
05A	156.250	156.250	x	Port Operations or VTS in the Houston, New Orleans and Seattle areas.
06	156.300	156.300	x	Intership Safety
07A	156.350	156.350	x	Commercial

08	156.400	156.400	x	Commercial (Intership only)
09	156.450	156.450	x	Boater Calling. Commercial and Non-Commercial.
10	156.500	156.500	x	Commercial
11	156.550	156.550	x	Commercial. VTS in selected areas.
12	156.600	156.600	x	Port Operations. VTS in selected areas.
13	156.650	156.650	x	Intership Navigation Safety (Bridge-to-bridge). Ships >20meters in length maintain a listening watch on this channel in US waters. 2, 6
14	156.700	156.700	x	Port Operations. VTS in selected areas.
15	–	156.750	x	Environmental (Receive only). Used by Class ‘C’ EPIRBs.3
16	156.800	156.800	x	International Distress, Safety and Calling. Ships required to carry radio, USCG, and most coast stations maintain a listening watch on this channel. 4
17	156.850	156.850	x	State Control 5
18A	156.900	156.900	x	Commercial
19A	156.950	156.950	x	Commercial
20	157.000	161.600		Port Operations (duplex)
20A	157.000	157.000	x	Port Operations
21A	157.050	157.050	x	U.S. Coast Guard only
22A	157.100	157.100	x	Coast Guard Liaison and Maritime Safety Information Broadcasts. Broadcasts are announced on channel 16.
23A	157.150	157.150	x	U.S. Coast Guard only
24	157.200	161.800		Public Correspondence (Marine Operator)
25	157.250	161.850		Public Correspondence (Marine Operator)
26	157.300	161.900		Public Correspondence (Marine Operator)
27	157.350	161.950		Public Correspondence (Marine Operator)
28	157.400	162.000		Public Correspondence (Marine Operator)
61A	156.075	156.075	x	U.S. Government only
63A	156.175	156.175	x	Port Operations and Commercial, VTS. Available only in New Orleans / Lower Mississippi area.
64A	156.225	156.225	x	U.S. Coast Guard only
65A	156.275	156.275	x	Port Operations
66A	156.325	156.325	x	Port Operations
67	156.375	156.375	x	Commercial. Used for Bridge-to-bridge communications in lower Mississippi River. Intership only. 6
68	156.425	156.425	x	Non-Commercial
69	156.475	156.475	x	Non-Commercial
71	156.575	156.575	x	Non-Commercial
72	156.625	156.625	x	Non-Commercial (Intership only)
73	156.675	156.675	x	Port Operations
74	156.725	156.725	x	Port Operations
77	156.875	156.875	x	Port Operations (Intership only) 5
78A	156.925	156.925	x	Non-Commercial
79A	156.975	156.975	x	Commercial. Non-Commercial in Great Lakes only.
80A	157.025	157.025	x	Commercial. Non-Commercial in Great Lakes only
81A	157.075	157.075	x	U.S. Government only – Environmental protection operations.
82A	157.125	157.125	x	U.S. Government only
83A	157.175	157.175	x	U.S. Coast Guard only
84	157.225	161.825		Public Correspondence (Marine Operator)

84A	157.225	161.825	Public Correspondence (Marine Operator)
85	157.275	161.875	Public Correspondence (Marine Operator)
85A	157.275	161.875	Public Correspondence (Marine Operator)
86	157.325	161.925	Public Correspondence (Marine Operator)
86A	157.325	161.925	Public Correspondence (Marine Operator)
87	157.375	161.975	Public Correspondence Marine Operator)
87A	157.375	161.975	Public Correspondence Marine Operator)
88	157.425	162.025	Public Correspondence only near Canadian border
88A	157.425	157.425	x Commercial, Internship only

- Recreational boaters normally use channels listed as Non-Commercial: 68, 69, 71, 72, 78A.
- Channel 70 is used exclusively for Digital Selective Calling (DSC) and is not available for regular voice communications.
- Channels 75 and 76 are reserved as guard bands for Channel 16 and are not available for regular voice communications.

Notes:

1. The letter "A" following a channel number indicates simplex use of the ship station transmit side of an international semi-duplex channel. Operations are different from that of international operations on that channel.
2. Channel 13 should be used to contact a ship when there is danger of collision. All ships of length 20 meters or greater are required to guard VHF channel 13, in addition to VHF channel 16, when operating within U.S. territorial waters.
3. Channel is Receive Only.
4. Channel 16 is used for calling other stations or for distress alerting.
5. Output power is fixed at 1 watt only.
6. Output power is initially set to 1 watt. User can temporarily override this restriction to transmit at high power.

Canadian Marine VHF Channels and Frequencies

CH No.	XMIT Freq	RCV Freq	Area of Operation Use
01	156.050	160.650	PC Public Correspondence
02	156.100	160.700	PC Public Correspondence
03	156.150	160.750	PC Public Correspondence
04A	156.200	156.200	PC Internship, Ship/Shore and Safety: Canadian Coast Guard S&R
05A	156.250	156.250	Ship Movement
06	156.300	156.300	All areas Internship, Commercial, Non-commercial and Safety: May be used for search and rescue communications between ships and aircraft.
07A	156.350	156.350	All areas Internship, Ship/Shore, Commercial
08	156.400	156.400	WC, EC Internship, Commercial and Safety: Also assigned for operations in the Lake Winnipeg area.
09	156.450	156.450	AC Internship, Ship/Shore, Commercial, Non-commercial and Ship Movement: May be used to communicate with aircraft and helicopters in predominantly maritime support operations.
10	156.500	156.500	AC, GL Internship, Ship/Shore, Commercial, Non-commercial, Safety and Ship Movement: May also be used for communications with aircraft engaged in coordinated search and rescue and antipollution operations.
11	156.550	156.550	PC, AC, GL Internship, Ship/Shore, Commercial, Non-commercial and Ship Movement: Also, used for pilotage purposes.

12	156.600	156.600	WC, AC, GL Intership, Ship/Shore, Commercial, Non-commercial and Ship Movement: Port operations and pilot information and messages.
13	156.650	156.650	All areas Intership, Commercial, Non-commercial and Ship Movement: Exclusively for bridge-to-bridge navigational traffic. Limited to 1-watt maximum power.
14	156.700	156.700	AC, GL Intership, Ship/Shore, Commercial, Non-commercial and Ship Movement: Port operations and pilot information and messages.
15	156.750	156.750	All areas Intership, Ship/Shore, Commercial, Non-commercial and Ship Movement: All operations limited to 1-watt maximum power. May also be used for on-board communications.
16	156.800	156.800	All areas International Distress, Safety and Calling ²
17	156.850	156.850	All areas Intership, Ship/Shore, Commercial, Non-commercial and Ship Movement: All operations limited to 1-watt maximum power. May also be used for on-board communications.
18A	156.900	156.900	All areas Intership, Ship/Shore and Commercial: Towing on the Pacific Coast.
19A	156.950	156.950	All areas except PC Intership and Ship/Shore: Canadian Coast Guard only.
20	157.000	161.600	All Ship/Shore, Safety and Ship Movement: Port operation
21A	157.050	157.050	All areas Intership and Ship/Shore: Canadian Coast Guard only.
21B	-	161.650	All areas Safety: Continuous Marine Broadcast (CMB) service. ³
22A	157.100	157.100	All areas Intership, Ship/Shore, Commercial and Non-commercial: For communications between Canadian Coast Guard and non-Canadian Coast Guard stations only.
23	157.150	161.750	PC Ship/Shore and Public Correspondence: Also in the inland waters of British Columbia and the Yukon.
24	157.200	161.800	All areas Ship/Shore and Public Correspondence
25	157.250	161.850	PC Ship/Shore and Public Correspondence: Also assigned for operations in the Lake Winnipeg area.
25B	-	161.850	AC Safety: Continuous Marine Broadcast (CMB) service.
26	157.300	161.900	All areas Ship/Shore, Safety and Public Correspondence
27	157.350	161.950	AC, GL, PC Ship/Shore and Public Correspondence
28	157.400	162.000	PC Ship/Shore, Safety and Public Correspondence
28B	-	162.000	AC Safety: Continuous Marine Broadcast (CMB) service.
60	156.025	160.625	PC Ship/Shore and Public Correspondence
61	156.075	160.675	PC Intership and Ship/Shore: Canadian Coast Guard only.
61A	156.075	156.075	EC Intership, Ship/Shore and Commercial: Commercial fishing only.
62	156.125	160.725	PC Intership and Ship/Shore: Canadian Coast Guard only.
62A	156.125	156.125	EC Intership, Ship/Shore and Commercial: Commercial fishing only.
64	156.225	160.825	PC Ship/Shore and Public Correspondence
64A	156.225	156.225	EC Intership, Ship/Shore and Commercial: Commercial fishing only.
65A	156.275	156.275	Intership, Ship/Shore, Commercial, Non-commercial, Safety: Search & rescue and antipollution operations on the Great Lakes. Towing on the Pacific Coast. Port operations only in the St. Lawrence River areas with 1W maximum power. Pleasure craft in the inland waters of Alberta, Saskatchewan and Manitoba (excluding Lake Winnipeg and the Red River).
66A	156.325	156.325	Intership, Ship/Shore, Commercial, Non-commercial, Safety and Ship Movement: Port operations only in the St. Lawrence River/Great Lakes Areas with 1-watt maximum power.
67	156.375	156.375	EC Intership, Ship/Shore and Commercial: Commercial fishing only.

			Non-commercial Safety: May also be used for communications with aircraft engaged in coordinated search and rescue and antipollution operations.
68	156.425	156.425	All areas Intership, Ship/Shore and Non-commercial: For marinas and yacht clubs.
69	156.475	156.475	All areas except EC Intership, Ship/Shore, Commercial and Non-commercial
71	156.575	156.575	PC Intership, Ship/Shore, Commercial, Non-commercial, Safety and Ship Movement
72	156.625	156.625	EC, PC Intership, Commercial and Non-commercial: May be used to communicate with aircraft and helicopters in predominantly maritime support operations.
73	156.675	156.675	EC Intership, Ship/Shore and Commercial: Commercial fishing only
74	156.725	156.725	EC, PC Intership, Ship/Shore, Commercial, Non-commercial and Ship Movement.
77	156.875	156.875	Intership, Ship/Shore, Safety and Ship Movement: Pilotage on Pacific Coast. Port operations only in the St. Lawrence River/Great Lakes areas with 1W maximum power.
78A	156.925	156.925	EC, PC Intership, Ship/Shore and Commercial
79A	156.975	156.975	EC, PC Intership, Ship/Shore and Commercial
80A	157.025	157.025	EC, PC Intership, Ship/Shore and Commercial
81A	157.075	157.075	PC Intership, Ship/Shore and Safety: Canadian Coast Guard antipollution.
82A	157.125	157.125	PC Intership, Ship/Shore and Safety: Canadian Coast Guard use only.
83	157.175	161.775	PC Ship/Shore and Safety: Canadian Coast Guard use only.
83A	157.175	157.175	EC Intership and Ship/Shore: Canadian Coast Guard and other Government agencies.
83B	-	161.775	AC, GL Safety: Continuous Marine Broadcast (CMB) Service.
84	157.225	161.825	PC Ship/Shore and Public Correspondence
85	157.275	161.875	AC, GL, NL Ship/Shore and Public Correspondence
86	157.325	161.925	PC Ship/Shore and Public Correspondence
87	157.375	161.975	AC, GL, NL Ship/Shore and Public Correspondence
88	157.425	162.025	AC, GL, NL Ship/Shore and Public Correspondence

AC: Atlantic Coast, Gulf and St. Lawrence River up to and including Montreal

EC (East Coast): includes NL, AC, GL and Eastern Arctic areas

GL: Great Lakes (including St. Lawrence above Montreal)

NL: Newfoundland and Labrador

PC: Pacific Coast

WC (West Coast): Pacific Coast, Western Arctic and Athabasca-Mackenzie Watershed areas

All areas: includes East and West Coast areas

Notes:

1. An "A" following a channel number indicates simplex use of the ship station transmit side of an international duplex channel. Operations are different from that of international operations on that channel.
2. Channel 16 is used for calling other stations or for distress alerting.
3. The letter "B" following a channel number indicates simplex use of the coast station transmit side of an international duplex channel. That is, the channel is Receive Only.
4. Channel 70 is used exclusively for Digital Selective Calling (DSC) and is not available for regular voice communications.
5. Channels 75 and 76 are reserved as guard bands for Channel 16 and are not available for regular voice communications.

European Private Channels and Frequencies

In addition to the channels listed above in the International Marine VHF Channels & Frequencies table, your radio may also include some of the following private channels. Which channels are included depend upon the country in which the radio is to be operated and whether you possess the appropriate licensing

Country	CH No.	XMIT Freq	RCV Freq	Freq Use
Belgium	96	162.425	162.425	Marina
Denmark	L1	155.500	155.500	Leisure
	L2	155.525	155.525	Leisure
Denmark, Finland, Norway & Sweden	F1	155.625	155.625	Fishing
	F2	155.775	155.775	Fishing
	F3	155.825	155.825	Fishing
Finland, Norway&Sweden	L1	155.500	155.500	Leisure
	L2	155.525	155.525	Leisure
	L3	155.650	155.650	Leisure
Netherlands	31	157.550	162.150	Marina
	37	157.850	157.850	Leisure
UK	M1	157.850	157.850	Marina
	M2	161.425	161.425	Marina

Note: A license may be required to operate the radio on the private channels. It is your responsibility to obtain the proper license to operate the radio on these frequencies.

Weather Channels and Frequencies

WX channel	Frequency(MHz)		Remarks
	Transmit	Receive	
1	RX only	162.550	Weather(receive only)
2	RX only	162.400	Weather(receive only)
3	RX only	162.475	Weather(receive only)
4	RX only	162.425	Weather(receive only)
5	RX only	162.450	Weather(receive only)
6	RX only	162.500	Weather(receive only)
7	RX only	162.525	Weather(receive only)
8	RX only	161.650	Weather(receive only)
9	RX only	161.775	Weather(receive only)
10	RX only	163.275	Weather(receive only)

Specifications

---VHF radio

TX Frequency.....	156.025--157.425MHz
RX Frequency.....	156.300--162.000MHz
Digital Selectivity Calling (DSC).....	Class-D with dual receiver (individual CH70)
CH70.....	156.525MHz
Channel spacing.....	25kHz
Channel banks.....	All INT/USA/Canadian 10 WX (only available for USA and Canada)
Modulation mode.....	FM (16K0G3E), DSC/ATIS (16K0G2B)
Antenna impedance.....	50Ω (nominal)
Power supply.....	13.8V DC
Sensitivity at 12dB SINAD.....	≤-5 dB μ V (EMF)
Squelch sensitivity.....	< - 5 dBμ (EMF)
Spurious Resp.Rej.....	70 dB
Adjacent Channel Rejection.....	70 dB
Audio output power.....	5W @ 4 Ω
Audio Power Output (hailer).....	20W @ 4 Ω
Audio Distortion.....	5%
RF Output power.....	High:25W / Low:1W
Harmonic Emissions.....	0.25μW
Current drain, Stdby / TX (high) / RX.....	0.5A/ 6A / 1A (@ 13.8V
Maximum frequency deviation.....	± 5.0kHz
Local Oscillator mode.....	PLL
Ambient temperatures.....	operating -15°C to +55° C
Waterproof.....	IP67
Compass safe distance.....	0.8m
Buddy list (TS18\TS18C\TS18S).....	20/50/100
Private channels.....	99

----Communications

Comm. port NMEA 0183.....	9600 baud
Comm. port NMEA 2000 (TS18C/TS18S only).....	NMEA 2000
NMEA 0183 input (receive).....	RMC, GGA, GLL, ZDA, VTG, GSV
NMEA 0183 output (transmit).....	DSC (for DSC call), DSE (for enhanced position) AIVDM (AIS)

---AIS Receiver

Frequency.....	161.9750MHz/162.025MHz
Number of Channels.....	(2) Dual Channels

---Dimension & Weight

Fixed unit dimensions (LxWxH).....	8.0"x 4.25"x 2.25" (201 mm x 111 mm x 57 mm)
Fixed unit dimensions on mounting bracket.....	8.5"x 5.25"x 2.25" (216 mm x 134 mm x 57 mm)
Fixed unit Weight.....	3.3 Lbs (1.2 kg)

