

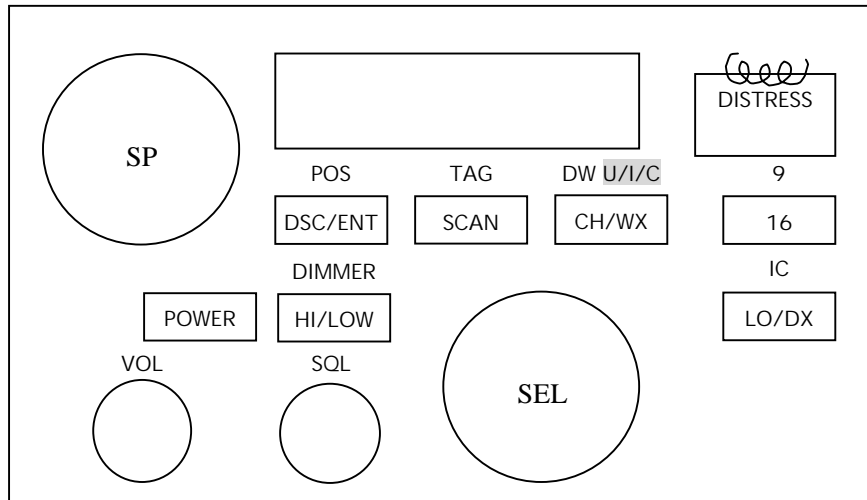
IC-M502 Operational Manual

Table of contents

1. Front panel layout
2. Rear Panel
3. Radio operation
 - I Display
 - ii Readout and operation
 - III DSC operation
 - iv User set mode

1. Front panel

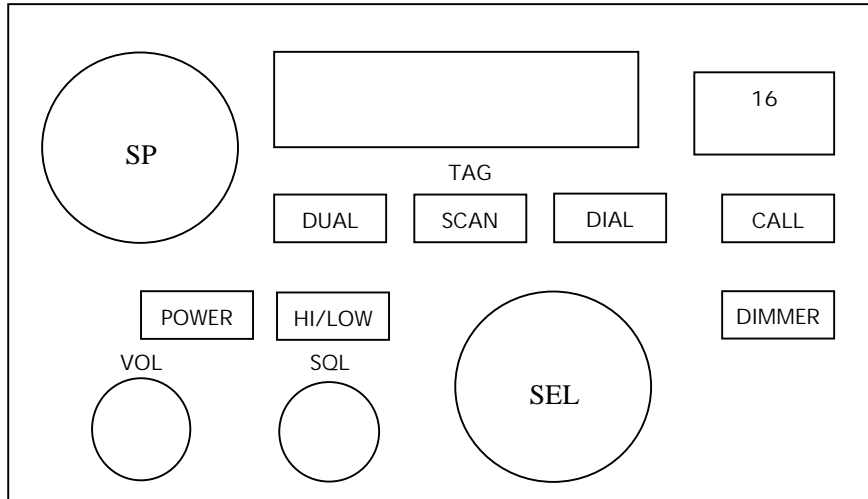
USA Model



Name	Operation	SIK Print	Function and Operation
16	Repress once	16	Recall CH16
	Holding for one sec.	9	Recall CH9 or reprogramming CALL CH when CH 9 is selected
	Repress 16 with holding HI/LOW button		Editing CH name
CH/WX	Repress once	CH/WX	Toggle between user CH and WX
	Holding for 1sec.	DW	Start/Stop Dual or tri watch
	Repress CH/WX with holding HI/LOW button	U/I/C	Selecting USA, INT or CANADA mode
SCAN	Repress once	SCAN	Start/Stop normal or priority scan
	Holding for 1sec.	TAG	Tag or un-tag channel for scanning
	Repress SCAN with holding HI/LOW button		Clear all tagged channel with holding those buttons
HI/LOW	Repress once	HI/LOW	Switch output power between 25W and 1W
	Holding for 1sec.		No function
	With Holding HI/LOW button		No function
DSC/ENT	Repress once	DSC/ENT	Selecting DSC call menu and selection
	Holding for 1sec.	POS	Display LAT/LON and time
	Repress DSC with holding HI/LOW button		No function
LO/DX	Repress once	LO/DX	Turning on/off ATT on receiver
	Holding for 1sec.	IC	Turning on/off intercom
	Repress LO/DX with holding HI/LOW button		Turning on/off scrambler
DI STRESS	Repress once		No function
	Holding for 5 sec.	DI STRESS	Transmitting distress signals
	Repress DI STRESS with holding HI/LOW button		No function
SELECTOR	Turning knob		Selecting CH
	Turning Dial knob with holding HI/LOW button		Adjusting dimmer
POWER	Repress	POWER	Turning on /off the radio
VOLUME	Turning knob	VOL	Adjusting receive audio
SQUELCH	Turning knob	SQL	Adjusting SQL

Turning on the radio with holding CH 16 will select radio setup mode

Europe Model



Name	Operation	SIK Print	Function and Operation
CALL	Repress once	CALL	Recall CALL CH
	Holding for one sec.		Reprogramming CALL CH
	Repress CALL with holding HI/LOW button		Editing CH name
DIAL	Repress once	DIAL	Switching to user CH mode
	Holding for 1sec.		No function
	Repress DIAL with holding HI/LOW button		Selecting USA, INT mode
SCAN	Repress once	SCAN	Start/Stop normal or priority scan
	Holding for 1sec.	TAG	Tag or un-tag channel for scanning
	Repress SCAN with holding HI/LOW button		Clear all tagged channel with holding those buttons
HI/LOW	Repress once	HI/LOW	Switch output power between 25W and 1W
	Holding for 1sec.		No function
	With Holding HI/LOW button		No function
DUAL	Repress once	DUAL	Start/Stop dual or tri watch
	Holding for 1sec.		No function
	Repress DUAL with holding HI/LOW button		No function
DIMMER	Repress once	DIMMER	Selecting Dimmer level
	Holding for 1sec.	DIMMER	No function
	Repress DIMMER with holding HI/LOW button		Turning on/off scrambler
16	Repress once	16	Recall CH16
	Holding for 1 sec.		No function
	Repress DISTRESS with holding HI/LOW button		No function
SELECTOR	Turning knob		Selecting CH
	Turning Dial knob with holding HI/LOW button		No function
POWER	Repress	POWER	Turning on /off the radio
VOLUME	Turning knob	VOL	Adjusting receive audio
SQUELCH	Turning knob	SQL	Adjusting SQL

Turning on the radio with holding CH 16 will select radio setup mode

2.Rear Panel

USA Model

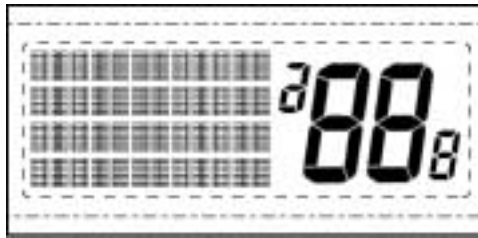
1. NMEA input jack (Pig Tail)
2. Speaker output jack (Pig Tail)
3. Socket for remote control unit
4. DC power cable (Pig Tail)

Europe Model

1. Speaker output jack (Pig Tail)
2. Socket for DS-100 (DSC unit)
3. DC power cable (Pig Tail)

3. Radio Operation

i . . . Di spl ay



Fol l owi ng words are showi ng on di spl ay

TX	Transmi t i ndi cator	TAG	Tagged CH i ndi cator
BUSY	The BUSY i ndi cator shows radi o has i ncomi ng recei ve si gnal s	SCAN	Bl i nks duri ng scanni ng
	RF output power i ndi cator	DUAL WATCH	Bl i nks duri ng dual watch
CALL	Cal l channel i ndi cator	TRI - WACH	Bl i nks duri ng tri watch
CAN	Mode di spl ay	DUP	Shows duplex channel
USA		SC	Scrambl er i ndi cator
INT		LOCAL	Recei ve ATT on
WX		Low Battery	It shows DC vol tage i s less than 10 V
		CH di spl ay 7seg	It shows current selected CH
ALERT	WX al ert di spl ay	SP OFF	Internal speaker i s off

ii Display and operation

1. Transmit and receive readout

20

RX with SQL close

20

RX with SQL open

20

TX with high power

20

TX with low power

16

CH16 is selected

09

CALL CH is selected

2 Operation mode readout

Repressing CH/WX button while holding HI/LOW button

20

20

20

3 DUAL / TRI watch

Radio setup mode selects DUAL or TRI watch

20	20
----	----

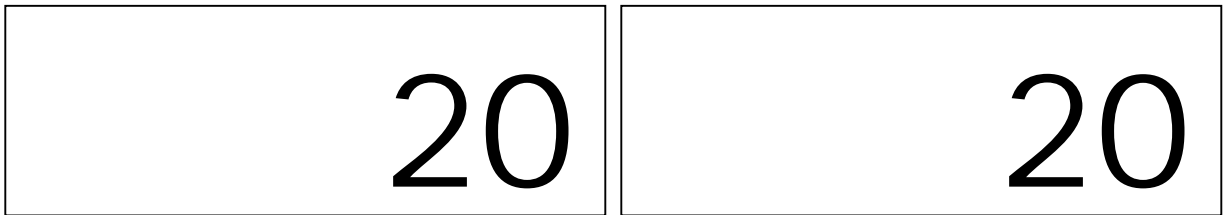
4 Scan

The radio comes with four different scanning modes, Normal scan, Normal scan with WX alert, Priority scan and Priority scan with WX alert, and you may select them from setup mode

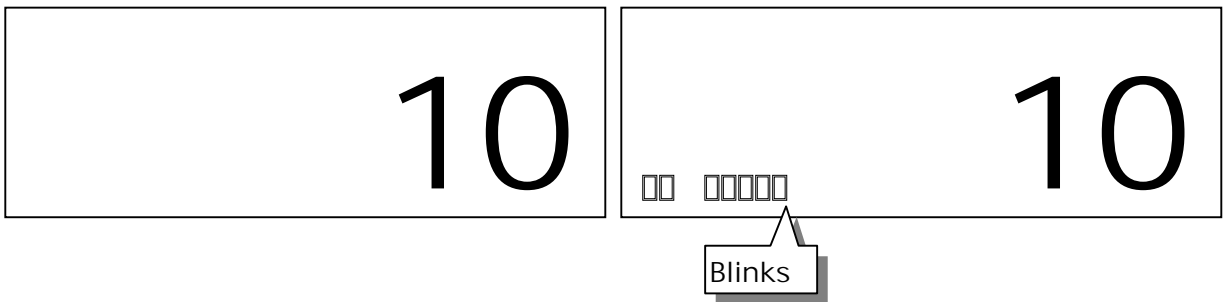
When you repressed UP or DOWN button, the radio will pause scan

If you repress UP or DOWN button again, the radio will display tagged channels, then the radio will resume scanning

During pausing scan, holding SCAN button for 1 sec. will un-tag the channel, and will resume scanning

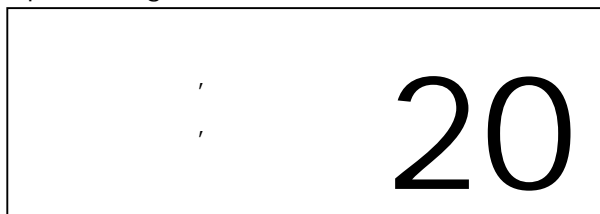


5 WX channel

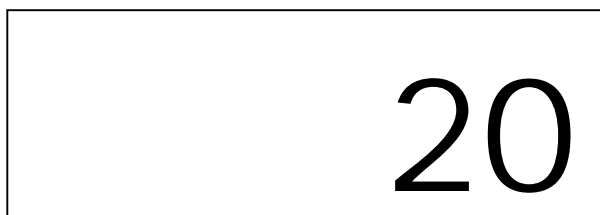


6 LAT/LON display

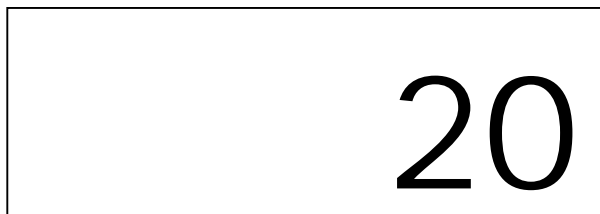
Holding DSC/ENT button for 1 sec will display position
 Repeating other button will cancel this mode



GPS connected



Position error from GPS

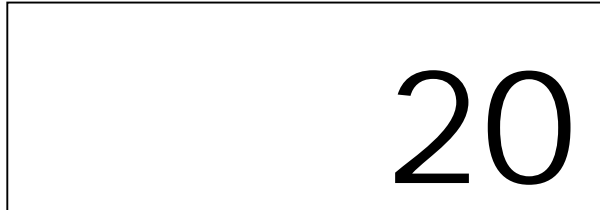


No GPS receiver is connected

7 Internal Speaker off

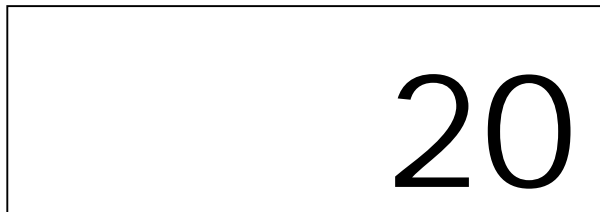
It shows that internal speaker is off

The radio was turned on ATT, the readout shows LOCAL instead



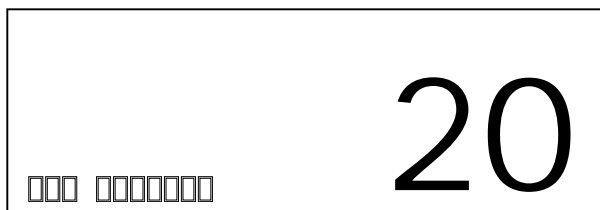
8 receive attenuator (Harbor mode) indicator

To eliminate interference at harbor, you may turn on the attenuator on the receiver



9 Low battery indicator

LOW BATTERY indicator shows up if supplied DC voltage is less than 10.8V. This will warn the operator to let him or her know the low DC supplied voltage to the radio





10 CH name editing

For USA version, repressing 16 button while holding HI/LOW button will enter CH name editing mode

After in the CH name editing mode, you may select cursor position by repressing SCAN button or CH/WX button, then you may select desired character by main dial knob

After you finish editing CH name, repress 16 button to return to normal mode

If press other button than 16 button, the radio return to normal mode without accept any change to the CH name

For European version, repressing CALL button while holding HI/LOW button will enter CH name editing mode

After in the CH name editing mode, you may select cursor position by repressing SCAN button or DIAL button, then you may select desired character by main dial knob

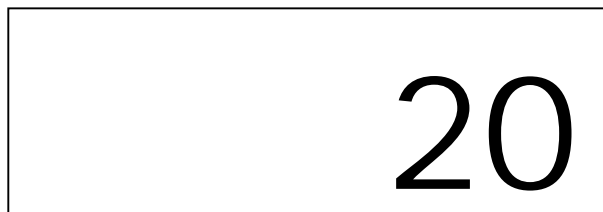
After you finish editing CH name, repress CALL button to return to normal mode

If press other button than CALL button, the radio return to normal mode without accept any change to the CH name



11 Voice scrambler (Option)

It shows voice scrambler on



12 Intercom (Option)

1. To enter the intercom mode, hold L0/DX button for 1sec.
2. If the radio is connected no controller, the radio will sound error beep, and will not accept entering intercom mode.
3. If radio is in the intercom mode, repressing 16 button will sound call beep from both radio and controller
4. To return to normal mode, repress IC button again



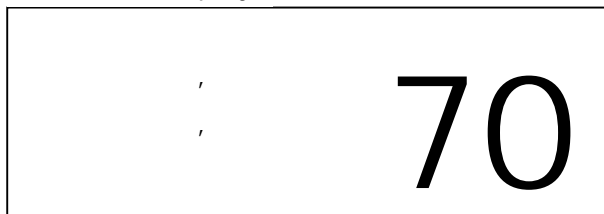
iii DSC Operation (For USA model)

<i>Format specifier</i>	<i>Category</i>	<i>1st Telecommand</i>	<i>Receive</i>	<i>Transmit</i>
<i>Distress</i>	-----			
<i>All ships</i>	<i>Distress</i>	<i>Distress ACK</i>		
<i>All ships</i>	<i>Distress</i>	<i>Distress Relay</i>		
<i>All ships</i>	<i>Urgency</i>			
<i>All ships</i>	<i>Safety</i>			
<i>All ships</i>	<i>Routine</i>			<i>W</i>
<i>Geographical</i>	<i>All category</i>			
<i>Individual</i>	<i>Distress</i>			
<i>Individual</i>	<i>Urgency</i>			
<i>Individual</i>	<i>Safety</i>			
<i>Individual</i>	<i>Routine</i>			

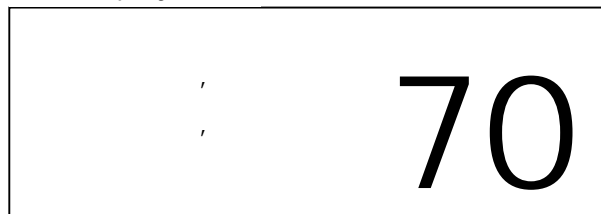
1 Transmitting Distress Call

- Removing protective cover and holding DESTRESS button
- The radio beep once, and will switch to CH70
- The radio is capable to display local time if operator set local offset time from UTC

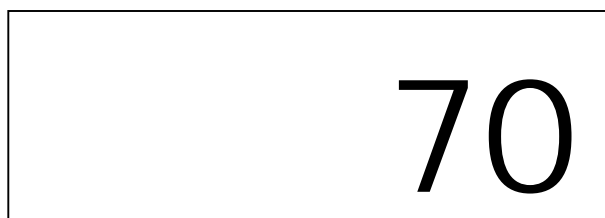
Local time display



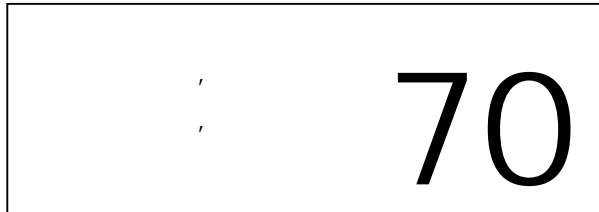
UTC display



No GPS receiver is connected or has error on position

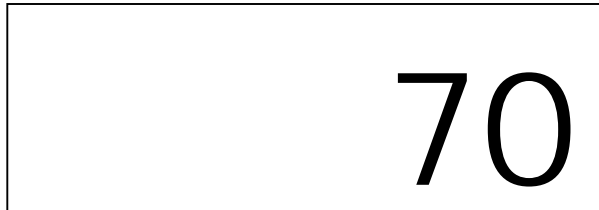


Continue holding DISTRESS button will cause radio to beep once a second. After 4 second, the radio will beep long beeping sound for one second, then the radio will transmit distress call



Transmitting Distress Call

After distress call transmission, the radio will wait for the acknowledgment at CH70



If the radio did not receive acknowledgment within 3.5 – 4.5 minutes, the radio will repeat distress call transmission

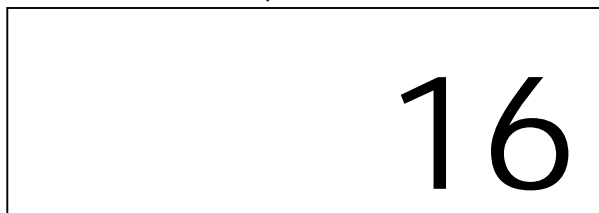
If you want to cancel repeating distress call transmission, repress one of button on the front panel



If the radio received acknowledgment from coast station, the radio sound alarm signals, and will switch the channel to CH16 automatically

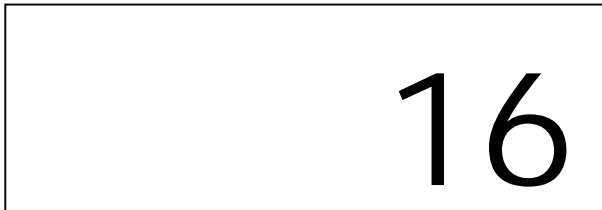
You may stop alarm sound by repressing one of button on the front panel

Or the radio will stop alarm sound after 2 minutes



2 Receiving Distress Call

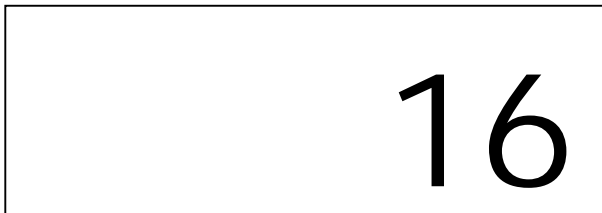
When you received Distress Call, the radio will display "Received DISTRESS call"
At same time, the radio sounds alarm signals. Then the radio will switch to CH16
The alarm sound can be cancelled by repressing one of button on the front panel
Or the radio will stop the alarm sound after 2 minutes



3 Receiving Distress ACK

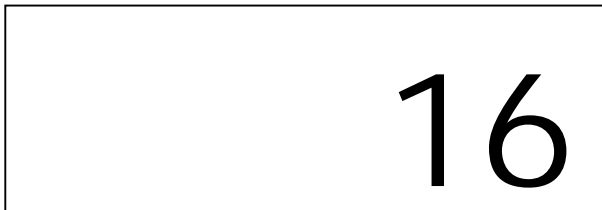
If you received distress acknowledgment for other ship, the radio will display "Received DISTRESS ACK", and will sound alarm signals as well as will switch to CH16

The alarm sound signals can be cancelled by repressing one of button.
Or the radio will stop alarm sound signals after 2 minutes



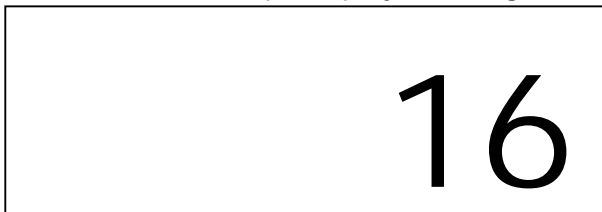
4 Receiving Distress Relay ACK

Same as above except display showing "Received DISTRESS RELAY ACK"



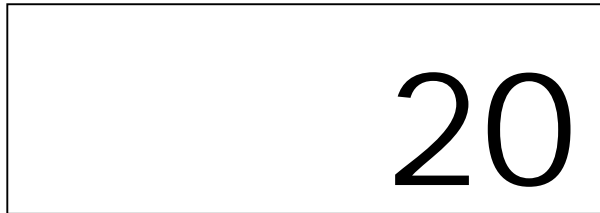
4 Receiving Distress Relay

Same as above except display showing "Received DISTRESS RELAY"



6 Transmitting Individual Call

When you repress DSC/ENT button, the radio will show DSC related menu
 Then you select INDIVIDUAL from menu and repress DSC/ENT button, the radio will switch the channel to CH70 automatically
 When you scroll menu all way down to bottom and selected EXIT or repress other then DSC/ENT button, the radio will exit DSC related menu selection, and will return to normal operation



DSC menu and contents is as follows

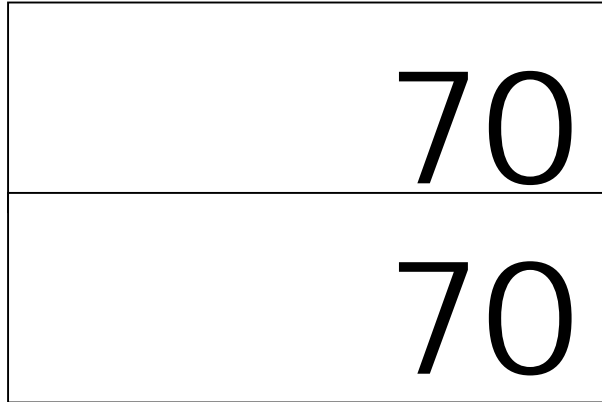
Readout	DSC Operation
INDIVIDUAL	Transmitting Individual call
INDV ACK	Transmitting individual acknowledgement
ALL SHIP	Transmitting All ship call
RCV CALLS	Displaying received message
DTRS SET	Temporal Distress information input
SET-UP	Editing Individual ID
EXIT	Exit this menu

To selecting DSC category, rotate main dial to select desired category, and repress DSC/ENT button to finish the selection

Foe USA model, the radio does not support this, unless category selection was turned on by Cloning software



Next, select address ID selection, Dial up desired individual ID with main dial knob.
Then repress DSC/ENT button to finish the selection
If the radio does not have pre-stored individual ID, the radio will show Manual SET instead of individual ID



When manual ID set mode is selected, you may select cursor position by repressing SCAN button or CH/WX button, then you may select desired character by main dial knob
After you finish editing CH name, repress DSC/ENT button to finish entering individual ID



After selected individual ID, hold DSC/ENT button for 5 seconds to transmit individual call
During holding DSC/ENT button, the radio beeps once a one second,
After 5seconds, the radio beeps for one second indicating transmitting individual transmission



After transmitted Individual call, the radio will wait for acknowledgment

70

If the radio received acknowledgment or repressed button on the front panel, the radio will back to the user channel

20

7 transmitting Individual acknowledgement

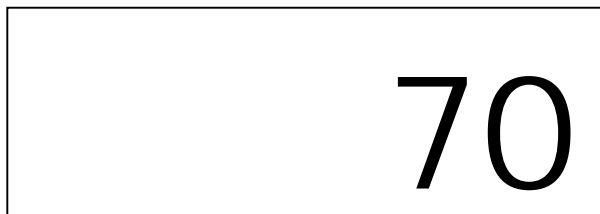
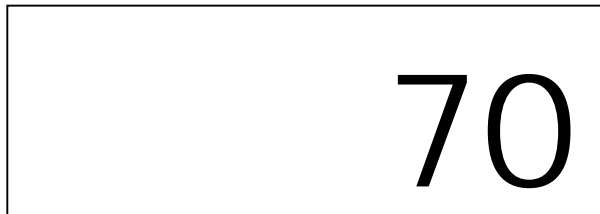
When the radio received Individual Call, the radio will show display below

Also After selecting DSC menu by repressing DSC/ENT button, and selecting INDV

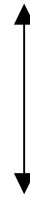
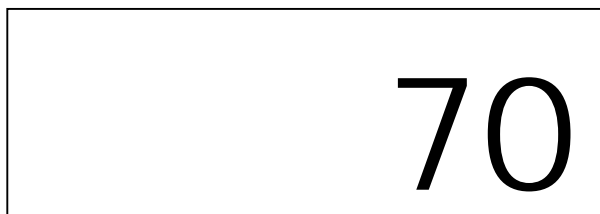
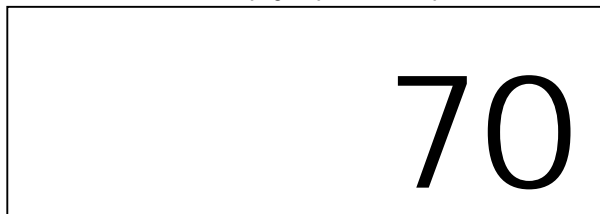
ACK by DSC/ENT button, the radio will switch to CH70



After selecting desired person, repress DSC/ENT button



Select desired comply option, repress DSC/ENT button



Select Reason with main dial knob, and repress DSC/ENT button

70

Contents of Reason selection

Readout for Reason
reason given
Congestion
Busy
Queue indication
Station barred
No operator
Equipment disable
Unable channel
Unable mode

After holding DSC/ENT button for 5seconds, the radio will transmit Individual ACK

After transmission is completed, the radio will back to user channel

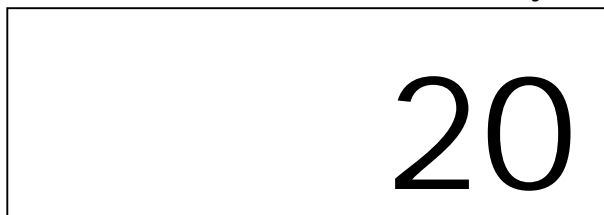
70

8 Transmitting All Ship Call

Repress DSC/ENT button to show the DSC selection menu

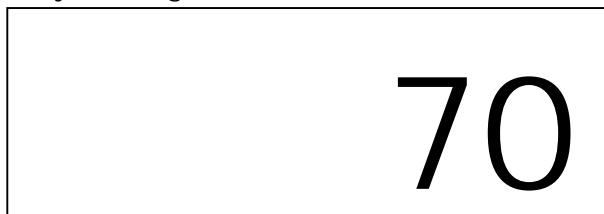
Then select ALL SHIP by main dial knob, and repress DSC/ENT button to finish the selection

The radio will switch to CH70 automatically

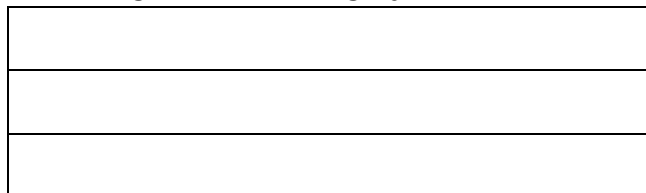


To selecting DSC category, rotate main dial to select desired category, and repress DSC/ENT button to finish the selection

Foe USA model, the radio does not support this, unless category selection was turned on by Cloning software



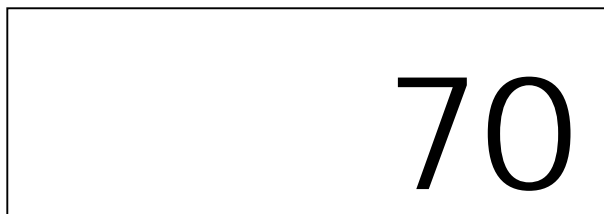
Selecting items for category



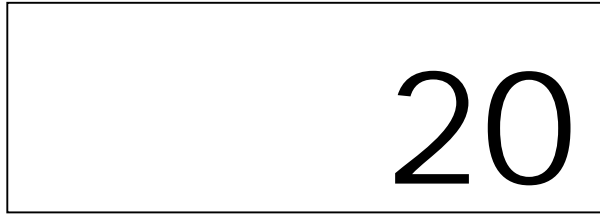
After selected individual ID, hold DSC/ENT button for 5 seconds to transmit individual call

During holding DSC/ENT button, the radio beeps once a one second,

After 5seconds, the radio beeps for one second indicating transmitting individual transmission



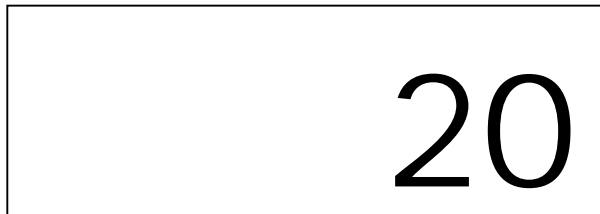
After transmission of ALL SHIP CALL, the radio will switch back to user channel



9 Displaying received message (Distress)

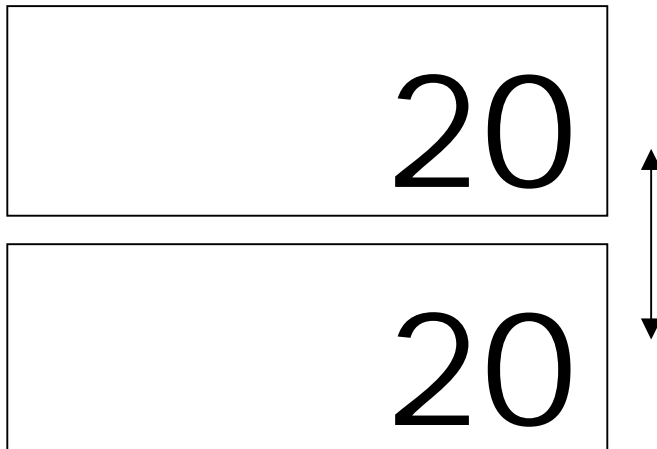
Repress DSC/ENT button to show the DSC selection menu

Then select RCV CALLS by main dial knob, and repress DSC/ENT button to finish the selection

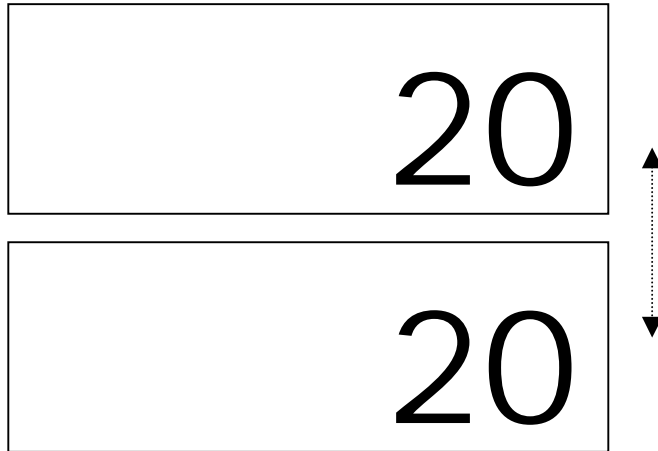


Select message type with main dial knob, and repress DSC/ENT button to finish the selection

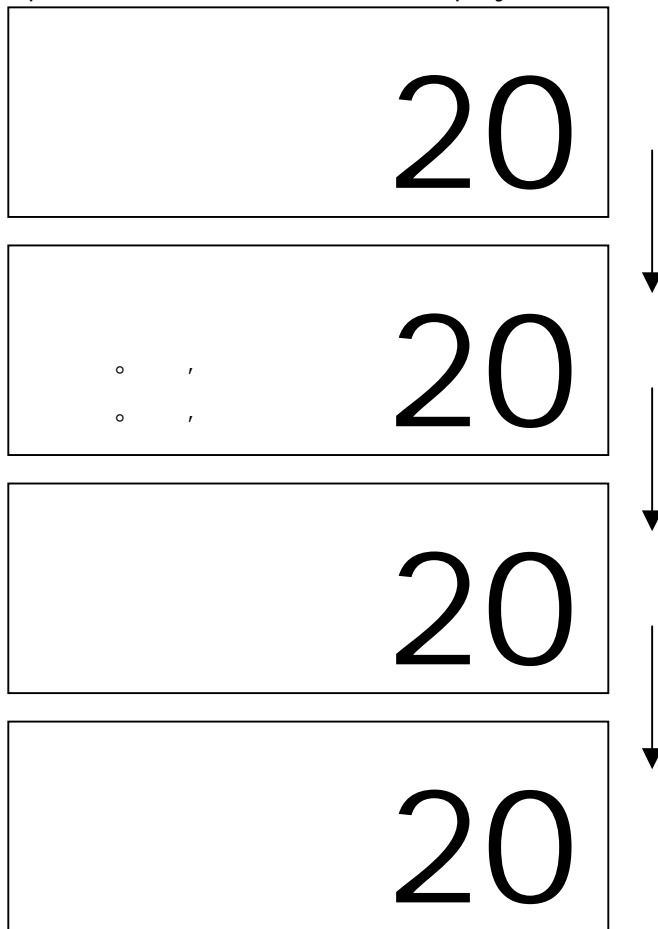
(Stored messages are up to 20 message for both Distress and Other)



Select desired distress message with main dial knob, and repress DSC/ENT button to finish the selection



Repressed DSC/ENT button to display nature of distress message in details



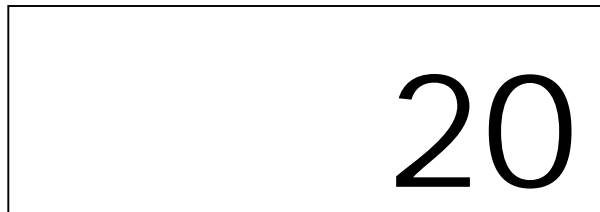
IF you want to erase data, repress H/L button

Nature of DISTRESS display

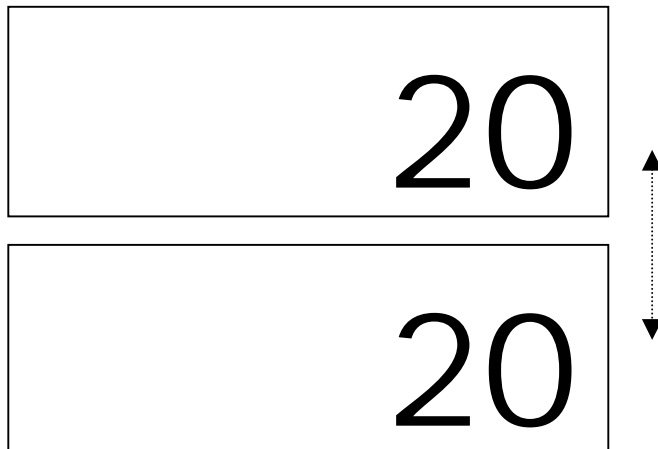
Explosion	Disable Adrift
Flooding	Abandoning Ship
Collision	Piracy Attack
Grounding	Man Overboard
Capsizing	
Sinking	

10 Displaying received message (Other)

Select message type for other with main dial knob, and repress DSC/ENT button to finish the selection



Select desired message with main dial knob, and repress DSC/ENT button to finish the selection

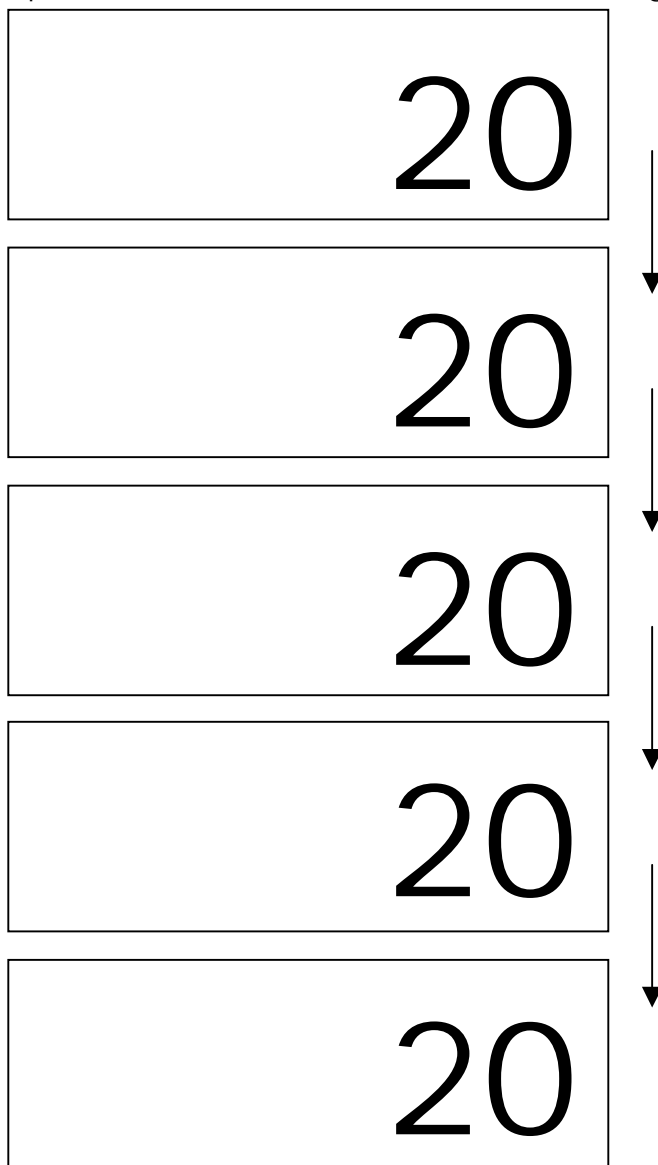


Message type display

Readout	Details
ALL	All ships
GEOGRAPHIC	Geographical area
DTRS RELAY	Distress relay
DTRS ACK	Distress acknowledgement
DTRS RL AC	Distress relay acknowledgement
INDV ACK	Individual acknowledgement
INDV CALL	Individual call

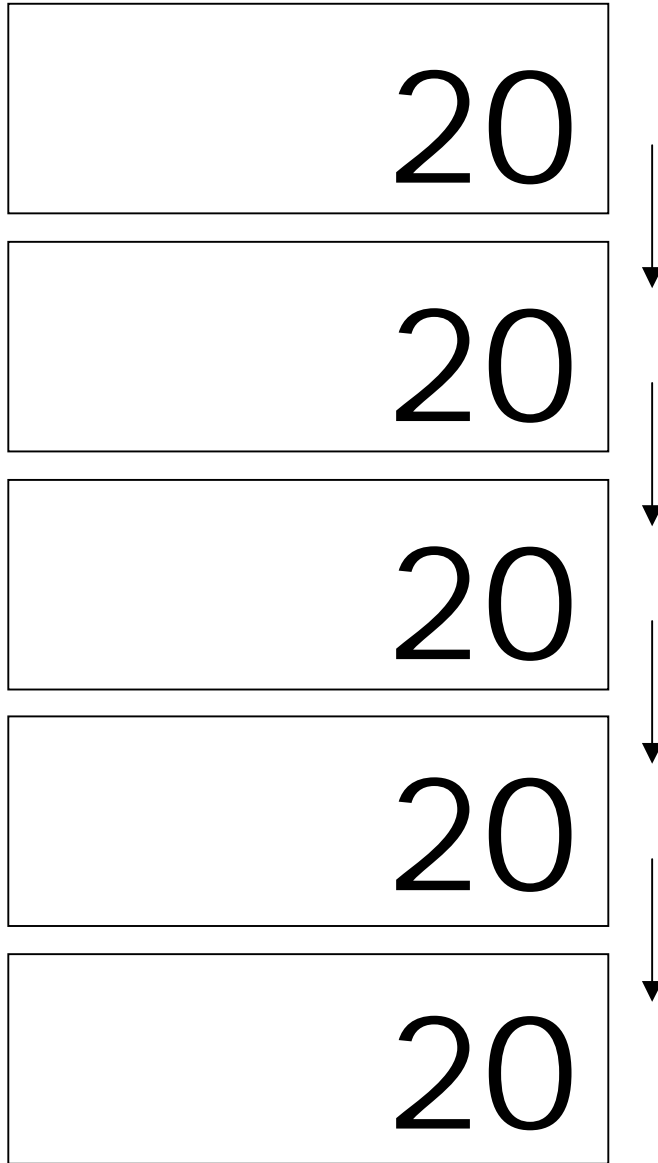
Displaying ships call message

Repress DSC/ENT button to review detail message



Displaying Individual Call message

Repress DSC/ENT button for reviewing detail message



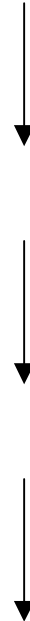
Displaying Individual acknowledgement message

20

20

20

20



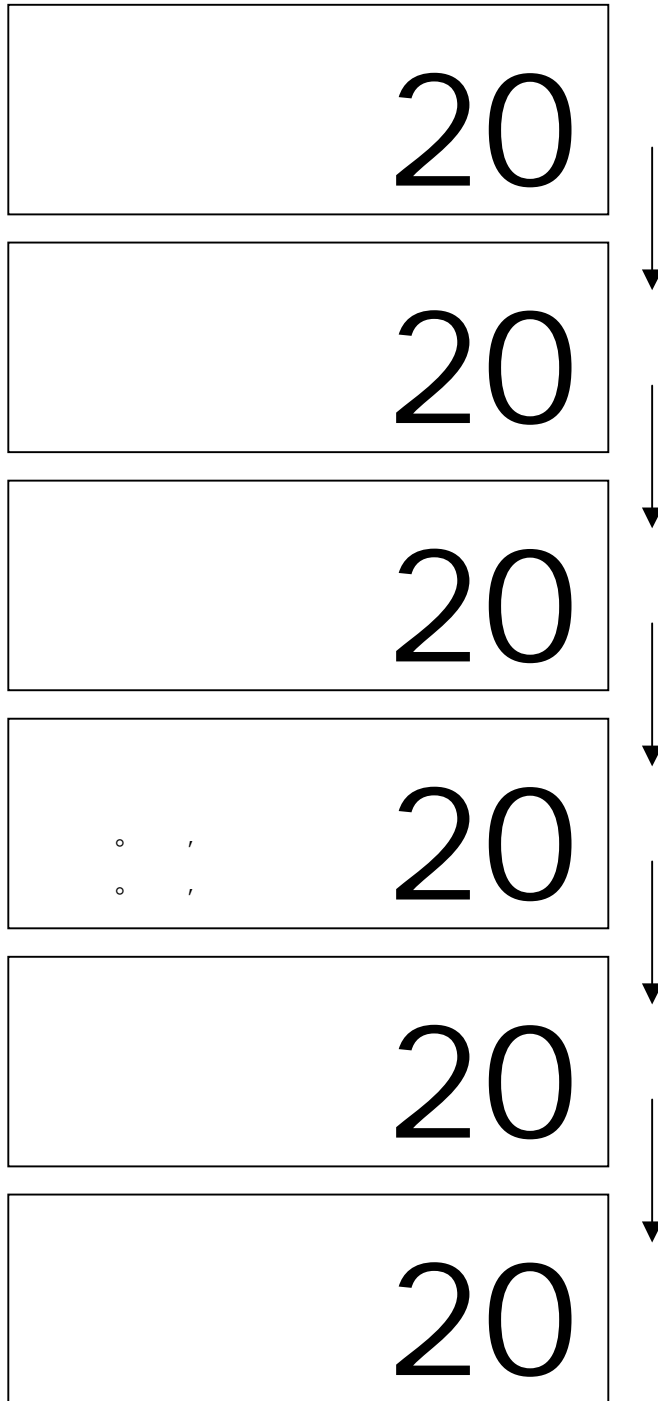
Displaying Comply

Readout	Details
	Unable comply
	Able comply

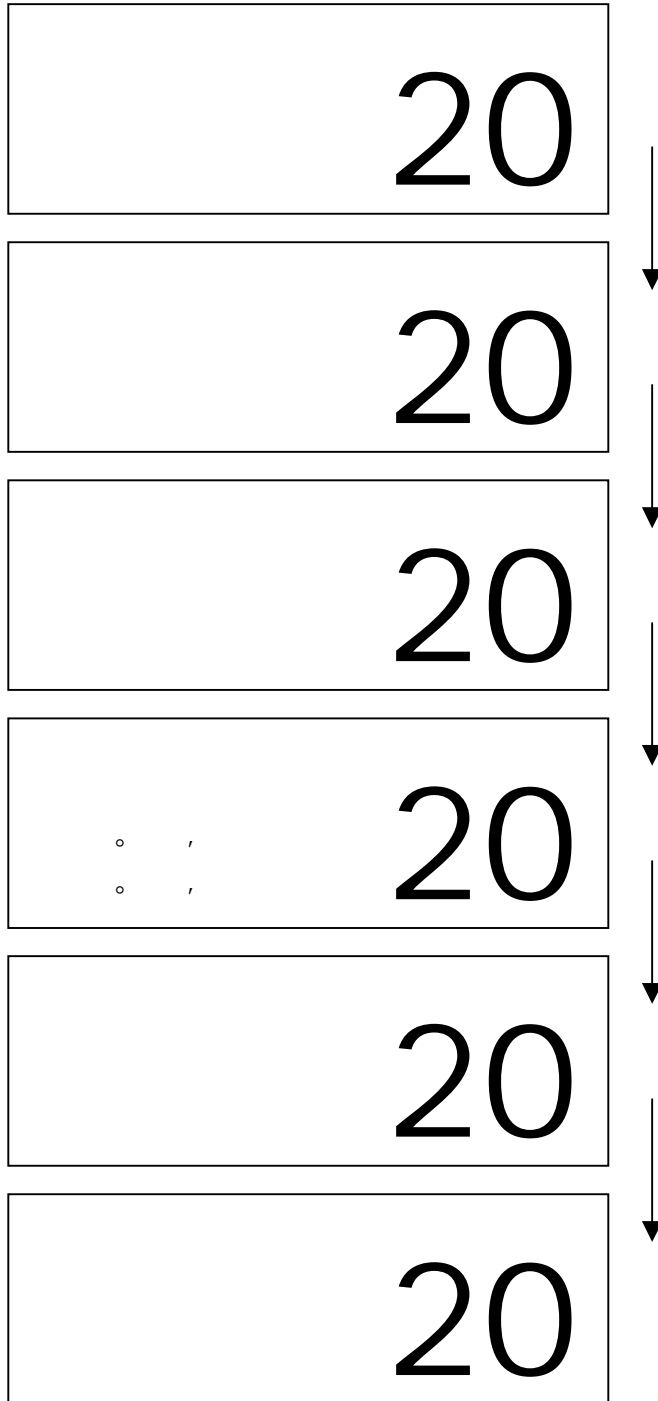
Displaying Reason

Readout
reason given
Congestion
Busy
Queue indication
Station barred
No operator
Equipment disable
Unable channel
Unable mode

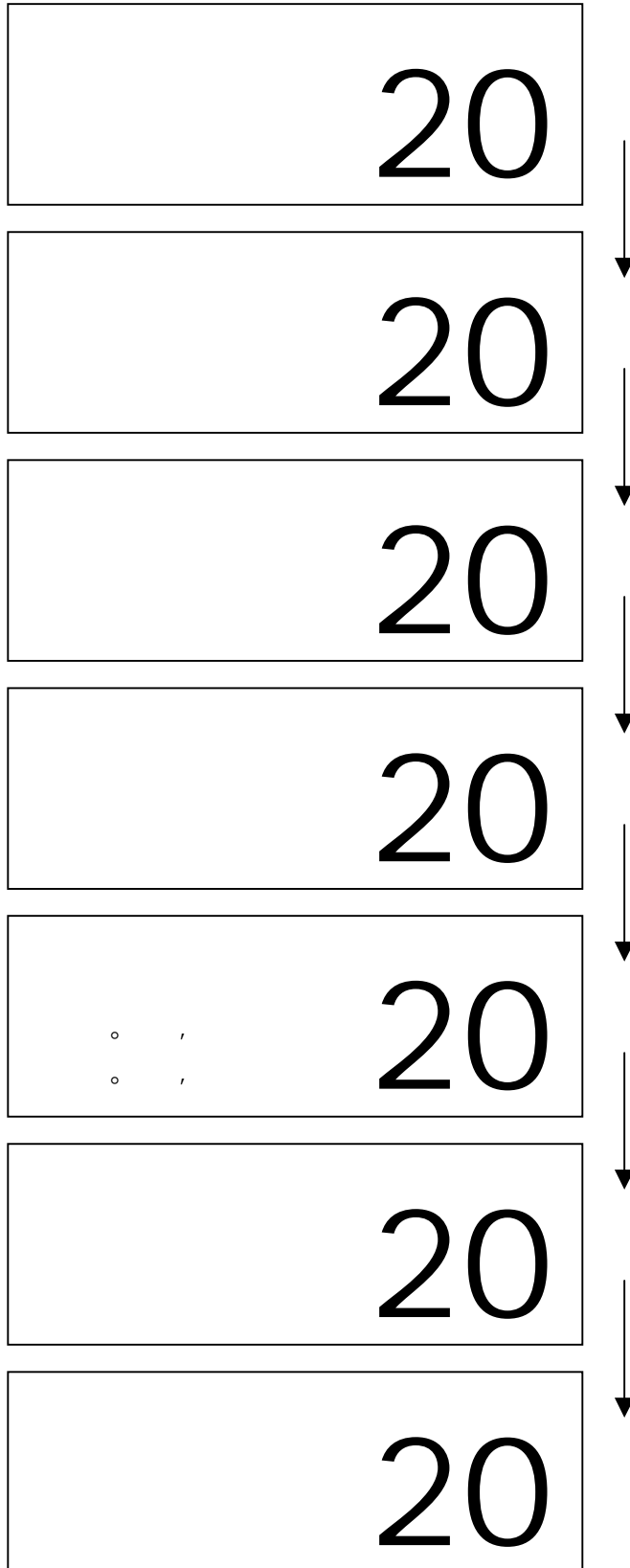
Displaying Distress acknowledgement message



Displaying Distress relay acknowledgement message



Displaying Distress relay message



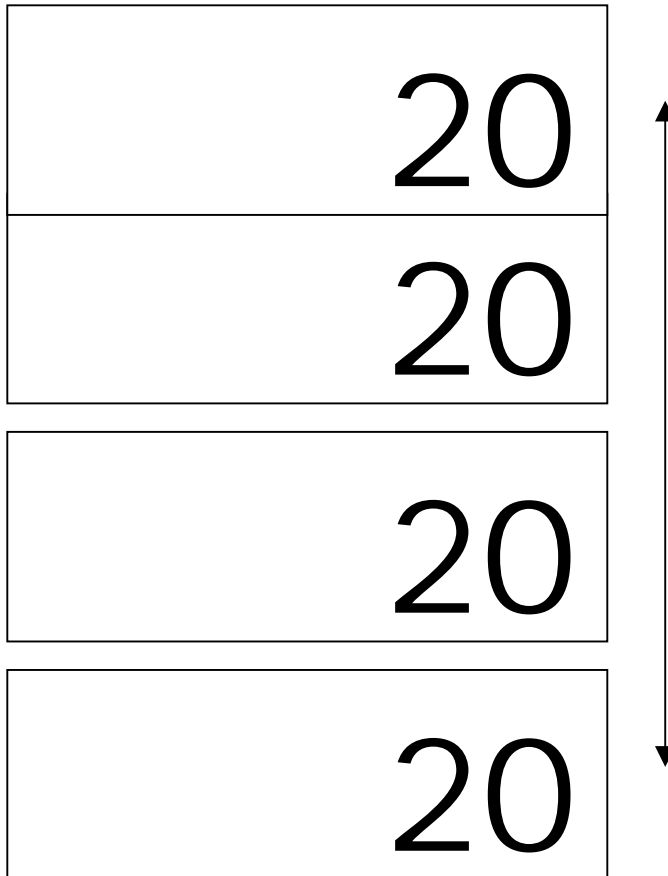
11 Distress information input

Repress DSC/ENT button to show the DSC selection menu

Then select DTRS SET by main dial knob, and repress DSC/ENT button to finish the selection

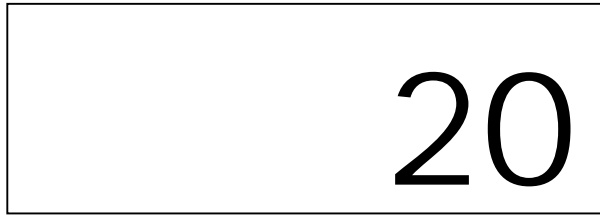


Select desired menu with main dial knob, and repress DSC/ENT button to finish the selection



Setting of Distress

Select desired message by main dial knob, and repress DSC/ENT button to finish the selection



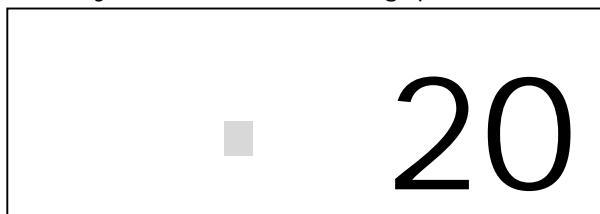
Setting Position

You may select cursor position by repressing SCAN button or CH/WX button, then you may select desired number N, W, .S or E by main dial knob. After you finish editing position, repress DSC/ENT button to finish



Setting Time

You may select cursor position by repressing SCAN button or CH/WX button, then you may select desired number N, W, .S or E by main dial knob. After you finish editing position, repress DSC/ENT button to finish



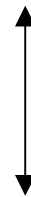
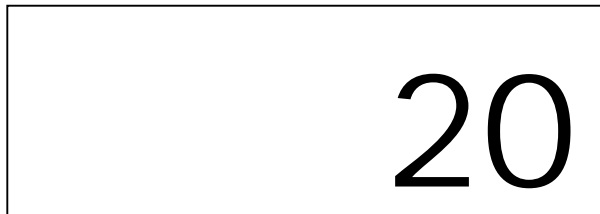
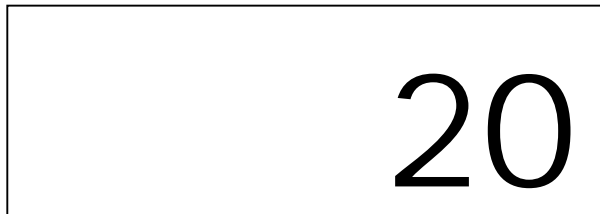
12 Editing Individual ID

Repress DSC/ENT button to show the DSC selection menu

Then select SET-UP by main dial knob, and repress DSC/ENT button to finish the selection



Select desired menu by main dial knob, and repress DSC/ENT to finish



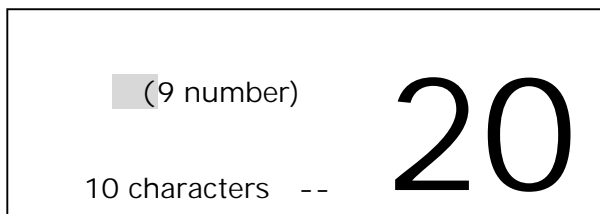
ADD ID (Adding Individual ID)

This menu is adding individual ID, and to editing this individual Id is as follows

You may select cursor position by repressing SCAN button or CH/WX button,

then you may select desired character by main dial knob

After you finish editing Individual ID editing, repress DSC/ENT button to finish

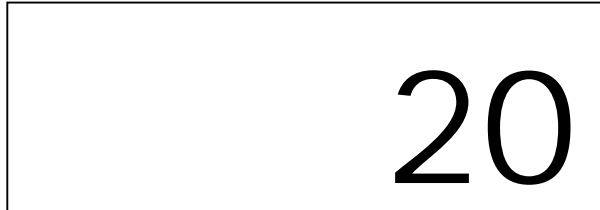


DELETE ID (Deleting Individual ID)

Select desired ID by main dial knob, and repress DSC/ENT to finish the selection

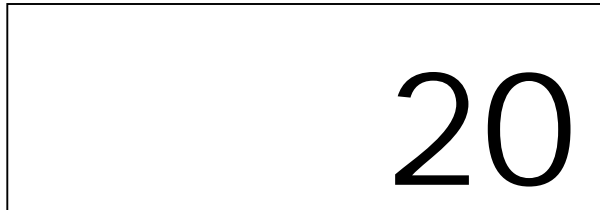
When you have only one memory, the radio does not show MORE

Also if you do not have any stored ID, the radio will sound error beep, and will not show the following screen



To erase ID, repress H/L button

If you repress DSC/ENT button, the contents will not be erased



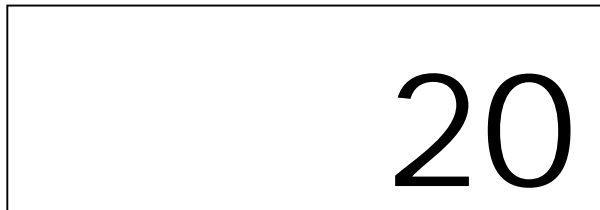
13

ATIS Reducer

When radio received ATIS signals, the radio will mute audio

Readout for receiving ATIS signals

When the radio received ATIS signals, the radio will display ID for 10 seconds



14 Operation with DSC terminal connected

When DSC terminal is connected the radio, DSC terminal will commands channel selection for DSC operation

Transmitting Distress Call

1. When operator repressed DISTRESS button on DS-100, the Radio will beep once, and will switch the channel to CH70

Continue holding DISTRESS button will beep once a second for 5 seconds. Then DSC terminal will send distress signals to radio for distress transmission

At that time the radio emits beep sound with full volume

2. After transmission of distress call, the radio will switch to CH16 for voice communication

3. If the DSC terminal does not receive acknowledgment within 3.5 – 4.5 minutes, the radio will switch the channel to CH 70 at 5 seconds before repeating distress call transmission.

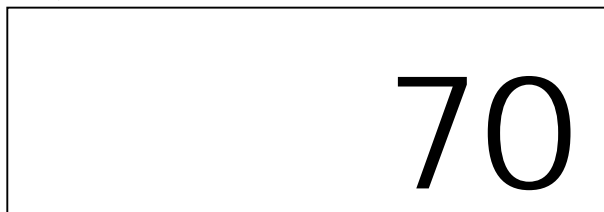
After transmission of repeating distress call, the radio will switch back to CH16



Transmitting All ship call

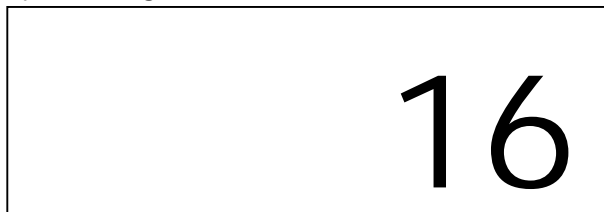
1. When transmitting ALL SHIP CALL, the DSC terminal (DS-100) commands radio to switch the channel to CH70. Then supplying All Ship Call signals to radio for transmission

2. After transmission of All Ship Call, the radio will switch the channel to CH16 for voice communication (Gateway channel can be set by DS-100 if you desired)



Receiving Distress call

1. When the radio received Distress Call signals, the radio will switch the channels to CH16, and sound alarm with full volume
2. Reprising cancel button on DS-100 will stop alarm sound



Receiving Routine and Safety Individual call

1. When the radio received Routine or Safety individual call, the radio will switch the channel to CH16 for voice communication
(Gateway channel can be set by DS-100 if you desired)

Receiving Urgency Individual call

1. When the radio received Urgency individual call, the radio will switch the channel to CH16 for voice communication, and same time the radio will sound alarm signals
(Gateway channel can be set by DS-100 if you desired)
Reprising cancel button on DS-100 will stop alarm sound

Receiving Routine and Safety All ships call

1. When the radio received Routine or Safety All Ship call, the radio will switch the channel to CH16 for voice communication
(Gateway channel can be set by DS-100 if you desired)

Receiving Distress and Urgency All ships call

1. When the radio received Distress and Urgency All Ship call, the radio will switch the channel to CH16 for voice communication, and same time the radio will sound alarm signals
(Gateway channel can be set by DS-100 if you desired)

Repressing cancel button on DS-100 will stop alarm sound

User setup mode

Item	Readout	Readout	Details
Beep	(*)		Setting Beep ON / OFF
Scan	(*)		Normal Scan Priority Scan
WX Alart	(*)		WX Alart ON / OFF
Scan Timer	(*)		Resume after 5sec from pausing scan Resume after 3sec from signal drop
Dual watch	(*)		Dual Watch TRI Watch
Time Offset	± (Default =0)		Setting Local time from UTC
Scrambler	(*)		Scrambler ON / OFF
Scrambler code	0 (Default =0)		Setting scrambler code
Internal SP	(*)		Internal Speaker ON / OFF

--	--	--	--

(*) Default

on

n-

1

¹27

V Other mode

Band Extension Mode

This mode opens all channels including private channel and free channels
 This mode can be activate by cloning software or internal switch

Setting USA version

If USA Initial is on by cloning software, Holding CH/WX button and turning radio will initialize factory default for USA version

DSC alignment mode

- To enter the DSC alignment mode, turning radio while holding HI/LOW button
- CH16 button will select items
- UP or DOWN button will select desired channel
- Reprising PTT will transmit with selected items
- Cycle the radio power to return the normal operation,

Items	Readout	Contents
DSC 1300Hz		1300Hz single tone (Dev. 2.6kHz)
DSC 2100Hz		2100Hz single tone (Dev. 4.2kHz)
DSC 50% duty		1300Hz/2100Hz alternating tone (Dev. 2.6/4.2kHz)
DSC code		Distress call output (Dev. 2.6/4.2kHz)
ATIS 1300Hz		1300Hz continuous single tone (Dev. 1.3kHz)
ATIS 2100Hz		2100Hz continuous single tone (Dev. 2.1kHz)
ATIS 50% duty		1300Hz/2100Hz alternating tone (Dev. 1.3/2.1kHz)
Un mod		No modulation