Manual

Navico DSC1400
Class D DSC Controller

SIMRAD

A KONGSBERG Company

SIMRAD

CONTENTS

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1 General

1.1 Introduction

The DSC1400 is a Class D Digital Selective Calling (DSC) Controller designed for use with the Axis RT1400 VHF radio. With a DSC1400 the RT1400 will support the latest GMDSS requirements for non-SOLAS vessels from the International Maritime Organisation (IMO). It will enable you to make digitally selected calls, which are quicker and simpler to make than traditional voice calls using Channel 16. Should a distress situation occur, with the DSC1400 you can quickly raise an alert, indicating your identity, your position and automatically establish distress communication on the emergency voice channel.

Thank you for choosing Simrad

If you are pleased with your DSC controller we hope you will be interested in our range of marine electronic equipment, which is manufactured to the same high standards as Axis. Please contact your nearest Simrad Agent for a catalogue showing our full range of high tech marine electronic equipment.

Simrad Navico operate a policy of continual development and reserve the right to alter and improve the specification of their products without notice.

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DSC1400 Class D Digital Selective Calling Controller

1.2 Technical Summary

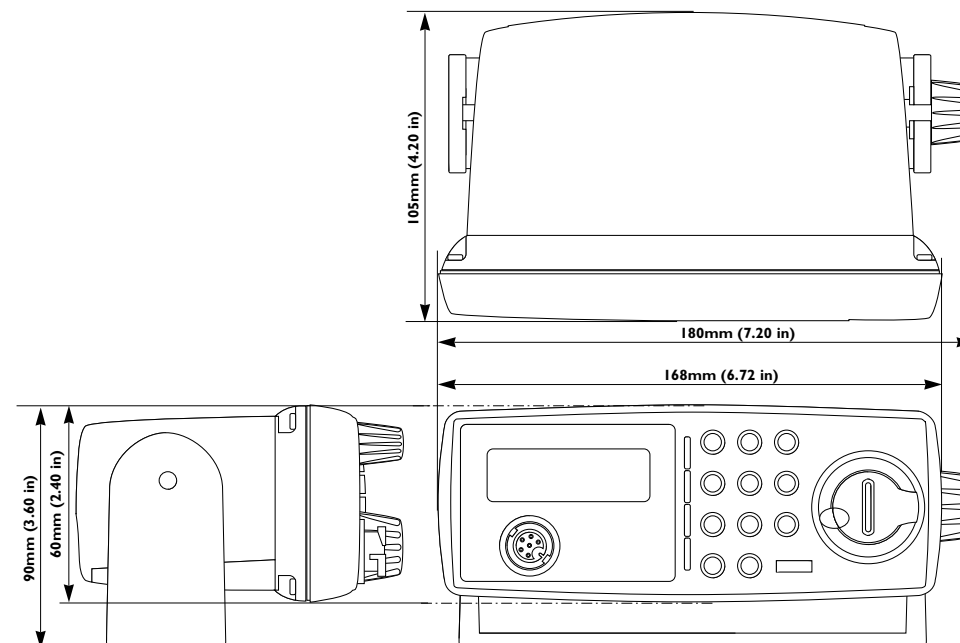|	
Display	122 x 32 pixels 54.8 x 19.1mm (2.19 x 0.76 in) viewing area
Controls	ITU Keypad 4 multi function softkeys Distress button with safety cover
Connections	Front 7 way plug for handset / fistmike Rear cable with 7 way socket for RT1400 connection Rear cable for NMEA0183 position input
Power	12v DC (Supplied by RT1400)
Weight	0.5 kg
Mounting	Desktop, bulkhead or panel mount (uses same mounting accessories as RT1400)
Type Approval	Meets EN301-025, Class D DSC Specification
Operating Temp	-15 to +55ºC
Humidity	0 to 95% non-condensing

Fig 1.1 - Dimensions

1.3 MMSI Number

For the DSC1400 to function an MMSI (Maritime Mobile Service Identifier) number will need to be entered. This can be obtained from the local radiocommunications authority.

1.4 Keypad

The telephone style ITU keypad is used for entering numeric data. When required, the keys will automatically switch to character mode allowing letters, numbers and punctuation characters to be entered. Repeatedly pressing a key will cycle through the characters available on that key (Fig 1.2).
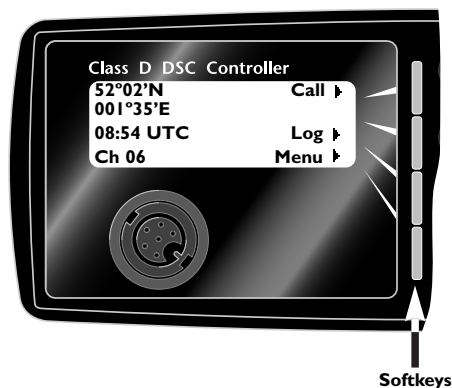
The Cancel key will stop a task and return to the main screen. The **ENTER** key is used to confirm actions, such as sending a call.

1.5 Softkeys

The functions of the four softkeys - one for each line of the display (Fig 1.3) - will change to suit the menu that is currently displayed. A label indicating the function of the softkey will be displayed on the right side of the corresponding display line.

1.6 Distress Button

The distress button is located under a protective cover that must be lifted before the button can be pressed (Fig 1.4). **THIS BUTTON MUST ONLY BE USED IN A DISTRESS SITUATION.** Refer to section 2.5 for more details.

1.7 Working Channels

While all DSC transmissions from the DSC1400 are made digitally on channel 70, once the call has been put through, communication with the other vessel or station will be via a normal voice channel, which is specified when the call is made. This is referred to in this manual as a *working channel*
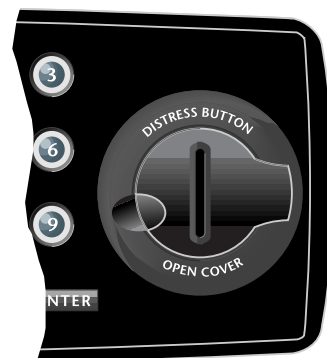
1 Press	0	1	2	3	4	5	6	7	8	9
2 Presses	sp	-	A	D	G	J	M	P	T	W
3 Presses	(	,	B	E	H	K	N	Q	U	X
4 Presses	)	.	C	F	I	L	O	R	V	Y
5 Presses	%	/	?	!	:	"	'	S	&	Z

Fig 1.2 - Keypad character map

Fig 1.3 - Softkeys

Fig 1.4 - Distress Button

2 Sending a Call

2.1 General

Making a DSC call using the DSC1400 is very simple. First, choose the call type (Routine, Safety, Urgency, Group or Distress Alert). If required, enter the destination and working channel, then press **ENTER**.

2.2 Routine

To make a routine call, either enter an MMSI number with the keypad from the main screen or press **Call** and use the **To** key to cycle through the numbers which have been previously entered into the directory (see section 4.2).

If the call is to a coast station, then the channel will be displayed on the screen as --, as the acknowledgement from the station will automatically tune the VHF to the working channel, which is selected by the coast station (Fig 1.5).

If the call is to another vessel, a working channel can be specified by pressing the ▶ channel softkey to select a channel from the list (see section 4.10). Alternatively, this can be selected using the channel knob on the RT1400.

Press **ENTER** to send the call. The DSC1400 will indicate that it is waiting for a reply. When the reply is received, the RT1400 will automatically set to the specified working channel. A voice call can then be made in the normal way.

2.3 Urgency & Safety

While the Routine DSC call will only be heard by the station or vessel with the specific MMSI number entered, both Urgency and Safety calls are All Ships calls - they will be heard by any vessel or station within VHF range.

From the main screen, press **Call** twice to select Safety Call (Fig 1.6) or three times to select Urgency Call. While you may use the RT1400 channel select knob to select a different working channel when making a Safety Call (default is 16), Urgency Calls always use channel 16.

Fig 1.5 - Sending Routine Call

Fig 1.6 - Sending Safety Call

Press the **ENTER** key to make the call. The DSC1400 will require confirmation of the call. Press **Yes** to send the call, or **No** to cancel.

When the DSC call is sent, the RT1400 will be set to the working channel. Allow a few seconds for the stations receiving the call to switch to the working channel, then make a normal voice call on the specified working channel.

2.4 Group Call

If a group ID has been set up for the DSC1400 (see section 4.7), a call can be made to other members of the group.

Press the **Call** key four times to select the Group Call screen. Select a working channel from the list (see section 4.10) by pressing the ▶ channel softkey or use the RT1400 channel select knob (Fig 1.7).

Press **ENTER** to send the call, allow a few seconds for the other members of the group to reach their radios (all VHF radios in the group should automatically switch to the specified working channel upon acknowledgement), then make a normal voice call using the working channel.
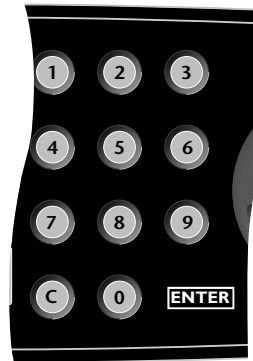
2.5 Distress Alert

NOTE - THIS CALL SHOULD ONLY BE MADE IF THE VESSEL IS IN A DISTRESS SITUATION. It is an offense to send a Distress Alert call if the vessel or crew are not in danger. Refer to section 5.1 for more details.

Lift the protective cover and press the **DIS-TRESS** button. The Distress Alert Screen will be displayed. If time permits, press the ▶ designation softkey to select the nature of the distress. There are 10 categories recognised as Distress Alert situations, which are - Abandoning, Adrift, Collision, Fire, Flooding, Grounding, Listing, Man Overboard, Piracy and Sinking. There is also a default Undesignated category, which is used if no category is selected here.

Press and hold the **DISTRESS** key a second

Class D DSC Controller
Group call ▶
To 100000000
On 06 ▶

Fig 1.7 - Sending Group Call

time, holding it down for five seconds (Fig 1.8). An alarm will sound and a countdown to the transmission will be displayed.
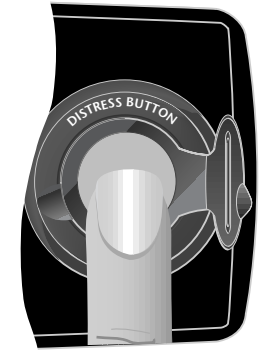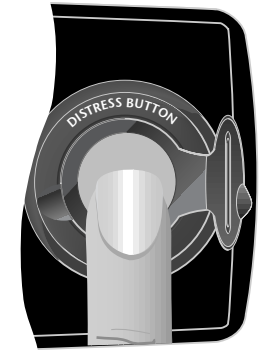
The Distress Alert transmission contains the following data -

* The vessel's MMSI
* The vessel's position (either from the NMEA0183 input, or manually entered)
* The time (from NMEA or manual)
* The nature of the distress

After the Distress Alert has been sent, the RT1400 will automatically tune to channel 16 and the DSC1400 will repeat the Alert approximately every four minutes until either an acknowledgement is received, or **C** is pressed (it is not recommended that the Distress Alert is cancelled manually by pressing **C** unless you are requested to do so by the rescue authorities).

While the Distress Alert remains active, an intermittent alarm will continue to sound.

When an acknowledgement is received from the Rescue Co-ordination Centre, this will cancel the Distress Alert transmission from the DSC1400 and automatically switch the RT1400 to the required working channel. The subsequent rescue co-ordination will be performed using the voice working channel.

Class D DSC Controller
DISTRESS ALERT
52°02'N 001°35'E
08:54 UTC
Fire ▶

HOLD FOR 5 SECS

Fig 1.8 - Sending distress alert

3 Receiving A Call

3.1 General

When a DSC call is received, the DSC1400 will switch to the call log screen to display the details of the call and ring or sound the alarm - depending on the nature of the call. The procedures that follow describe how to handle the types of calls that can be received.

3.2 Routine Calls

When a Routine call is received, the screen will show the details of the call, who it is from and the working channel (Fig 3.1). To stop the ringing, press the ⊡ softkey. An acknowledgement will be sent to the caller and the radio will be automatically switched to the working channel for normal voice communication.

Fig 3.1 - Routine Call received

3.3 Urgency and Safety

The procedures for Urgency and Safety calls are very similar.   An Urgency call will sound the distress alarm and switch the RT1400 to channel 16. A Safety call will sound a normal ring and switch the RT1400 to the specified working channel (Fig 3.2). Press the ⊡ softkey to stop the ringing, then listen for the voice message.

3.4 Group Calls

When a Group call is received, the DSC1400 will display the details of the call, indicating who it is from and the working channel. Press the ⊡ softkey to stop the ringing and the RT1400 will switch to the working channel automatically.

3.5 Distress Alert

If a Distress Alert or a Distress Relay is received from another vessel, an alarm will sound and the RT1400 will switch to channel 16. The display will show the details of the Distress Alert, the MMSI of the vessel, it's position and time. Mute the alarm by pressing the ⊡ softkey and maintain a listening watch on channel 16 for the distress messages. Press **C** to clear the display.

Fig 3.2 - Safety call received

4 Additional Functions & Configuration

4.1 Call Log

The call log can be used to look back through the previous 20 calls that have been received, the most recent call first.   To access the log press the **Log** softkey in the main screen.

The ◀ and ▶ softkeys are used to move back and forward through the log (Fig 4.1). Use the ▼ and ▲ softkeys to display longer messages. The bottom left of the display shows the time the call was received in the form of *dd/hh:mm*.

4.2 Directory

The Directory screen is used to add, edit and delete entries from a list of up to 20 stored MMSI numbers, which can be recalled in the Routine Call screen (see section 2.2).

To access the directory function, press **Menu** in the main screen, then **Directory**.

To create a new entry, press **Add**. Use the keypad to enter a name of up to 14 characters, numbers or symbols (see section 1.3 for further information on the keypad character set). Use the ◀ and ▶ keys to move backwards and forwards along the line (Fig 4.2).

When the name has been entered, press **MMSI** to enter the MMSI number (9 numbers). Press **ENTER** to store the directory entry.

To edit an existing entry, press **Next** to select the appropriate name and then **Edit**. Use the ◀ and ▶ keys to move along the name field and use the keypad to edit the details. Press **MMSI** to change the MMSI code. Press **ENTER** to store the modified entry.

To delete an entry, press **Next** to select the appropriate name and then **Delete**. Confirm that the entry is to be deleted by pressing **Yes**, or press **No** to leave the entry in the directory.
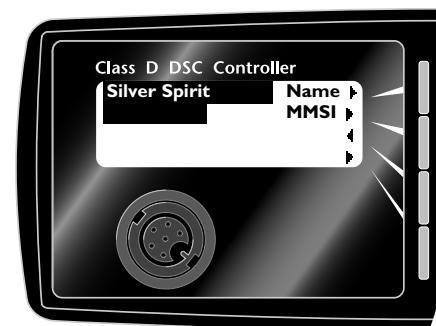
Press **C** to return to the main screen.

Fig 4.1 - Call log display

Fig 4.2 - Entering name into directory

4.3 Backlighting

The backlighting of the DSC1400 display and keypad is linked to the backlighting of the RT1400 display and keypad - if the lighting is adjusted on the RT1400, the same changes affect the DSC1400 and vice versa.

To change the backlighting of both units from the DSC1400, press **Menu**, then press **Backlight** the required number of times to select the desired lighting level (Fig 4.3). Note that the Distress key is always faintly lit even when the backlighting is switched off.
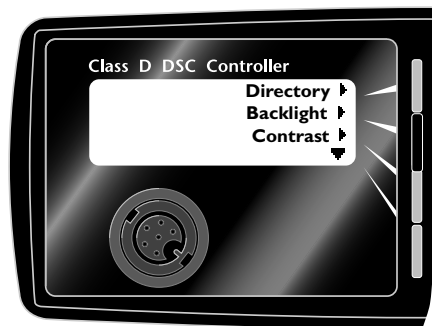
4.4 Contrast

To adjust the contrast of the DSC1400 display, press **Menu**, then **Contrast**. Use the **-▶** and **+▶** softkeys to decrease or increase the contrast level. The display shows a bar graph indicating the selected contrast level.
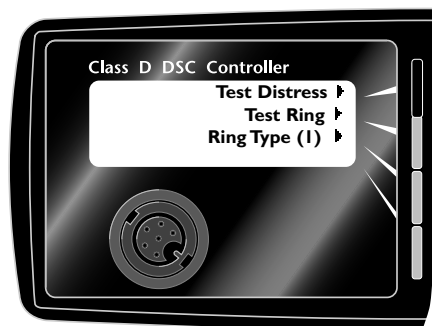
Press **C** to exit to the main screen.

4.5 Sound

The sound option allows the alarm and ringing tones to be tested and changed. Press **Menu**, then ▼, then **Sound**.

To test the Distress Alert alarm, press **Test Distress**. Press **C** to cancel the test.

To test the ringing tone, press **Test Ring**. Press **C** to cancel.

To select one of four different ringing tones, press **Ring Type** until the preferred ringing sequence (1-4) is shown. Press **Test Ring** to hear each sequence.

Note that the alarm and ringing tones are at a set volume level and cannot be muted.

4.6 MMSI

To show the MMSI number programmed into the DSC1400 and also the software version number of the unit (necessary if a fault develops with the unit), press **Menu**, then ▼, then **MMSI** (Fig 4.5).
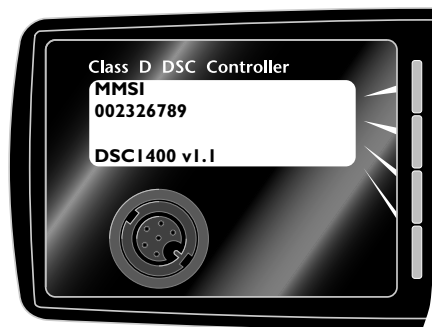
Press **C** to exit to the main screen.

Fig 4.3 - Adjusting backlighting level

Fig 4.4 - Testing distress ring tone

Fig 4.5 - Displaying MMSI & software version

4.7 Group ID

To enter a Group ID (if for example, the vessel is part of a flotilla or fishing fleet etc) press **Menu**, then ▼, then **Group** (Fig 4.6).

Use the keypad to enter the Group ID and press **ENTER** to select.

Press **C** to exit to the main screen.

4.8 Date & Time

Normally, the date and time is supplied by the NMEA0183 navigational input (from a GPS etc). If a navigator is not connected, or the signal has been lost, the missing data can be manually entered here. Press **Menu**, then ▼ twice, then **Date and Time**.

Enter the data in the following format (Fig 4.7) -

dd/mm/yyyy hh:mm

Note that the time should be UTC (GMT) and entered in 24 hour clock format. Press **ENTER** to accept the setting and **C** to return to the main screen.

4.9 Manual Position

As with the date and time, if the position of the vessel cannot be obtained from a navigator via the NMEA0183 input, this data can be entered manually. Press **Menu**, then ▼ twice, then **Manual Position**.

Use the ◀ and ▶ keys to move along the position and time fields, using the keypad to enter the required data (Fig 4.8). Press **ENTER** to accept the position entered.

If no data is being received from the NMEA input, a **!** symbol will flash after the time on the main screen display and the DSC1400 will prompt for a manual input every four hours. After 23 hours, if the DSC1400 has not received any position data, either manually or from the NMEA input then it will show "No position information" if a Distress Alert is transmitted.

Fig 4.6 - Entering Group ID

Fig 4.7 - Manually entering date & time

Fig 4.8- Manually entering position

4.10 Channels

The DSC1400 includes a list of 9 working channels which can be scrolled through when using the Routine or Group Calling options (see sections 2.2 and 2.4 respectively). The first four channels are preset as 06, 08, 72 and 77. These cannot be amended. The remaining five channels are programmable.

Press **Menu**, then ▼ twice, then **Channels** (Fig 4.9). Use the ◀ and ▶ keys to move along the five programmable channels, the ▼ and ▲ keys to scroll through the available channels programmed into the RT1400. To turn the programmable channel off, set it to **--** (below 01).

Always consult your local authority requirements when choosing suitable working channels. Be aware of which channels are Duplex and will not allow ship to ship communication.

Press **ENTER** to accept settings and return to the main screen.

Fig 4.9 - Setting working channels

5 Installation

5.1 Fitting the DSC1400

Choose a suitable location that is free from moisture, excessive heat and vibration, and which is sufficiently close to the RT1400 radio for the interconnecting cable to reach.

The DSC1400 has been designed to use the same mounting accessories as the RT1400 and so can be desktop, overhead or flush mounted. The MB1000 standard bracket for desktop and overhead mounting is supplied with the unit (Fig 5.1), and the flush mounting bracket FMB1000 is available as a separate accessory.

Allow at least 15mm (0.6in) clearance behind the DSC1400 for the cables when choosing a location. Note that, unlike the RT1400, the DSC1400 is not waterproof and therefore should always be fitted in an interior position.
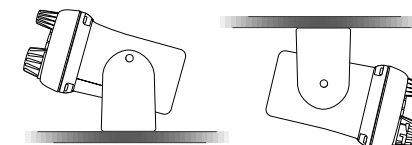
5.2 Electrical Installation

To connect the DSC1400 to the RT1400, simply unplug the Fistmike/Handset from the front of the RT1400 and plug in the cable from the back of the DSC1400, which supplies all data and power to the DSC1400 from the RT1400. Plug the Fistmike/Handset into the socket on the front of the DSC1400 (Fig 5.2).

5.3 Interfacing via NMEA

The DSC1400 incorporates an internal NMEA0183 processor which is used to provide position, date and time data from an external navigator - ideally a GPS.

The DSC1400 can process NMEA0183 version 2.0 sentences **RMC, GGA** and **GLL**, either of which will provide the necessary data. NMEA0183 version 1.5 is also compatible, if **ZDA** is provided in addition to **GLL**.

    Brown – NMEA Data OUT (+)

    Blue – NMEA Common (-)

Fig 5.1 - Mounting options

NMEA0183
Brown Data In
Blue Common

Fig 5.2 - Connecting DSC1400 to RT1400 + NMEA

5.4 Startup

The first time that the DSC1400 is switched on, it will be necessary to enter the vessel's MMSI number (Fig 5.3). Use the keypad to enter the 9-digit MMSI. If a mistake is made, use the the ◄ key to move back and edit the error. When the number is entered, the DSC1400 will ask for verification. **It is important that the MMSI entered is checked carefully, as it can only be entered once.**

To change the MMSI number after it has been programmed the unit must be returned to an authorised Simrad Dealer to erase the existing number.

Once the MMSI is entered and confirmed, the main screen should show the current position of the vessel, the time the last position fix was taken and the channel selected on the RT1400.

If the position is not shown, check the connections and settings of the navigational receiver used. If there is no signal being received, a **!** will flash next to the time. If the **!** is not flashing, this indicates that the DSC1400 is using a manually entered position/time.
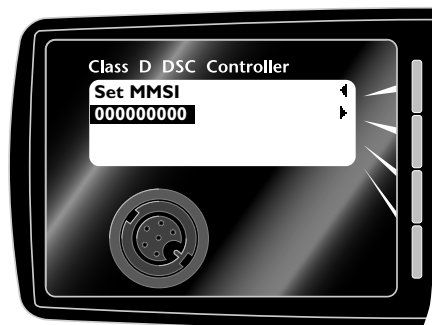
Fig 5.3 - Entering MMSI number

6 Operating Procedures

The following operating procedure summary has been proposed by the UK Maritime and Coastguard Agency. It is not exhaustive and should not be regarded as a replacement for information provided by the proper two day VHF/DSC training course required for all VHF license holders.

6.1 Sending a Distress Alert

1. Send a Distress Alert using DSC/

2. Wait approx 15 seconds for a DSC acknowledgement from the Coastguard or a ship station.

3. On receipt of a DSC acknowledgement or after about 15 seconds, transmit the Distress call on channel 16 -

> "Mayday, Mayday, Mayday"
> "This is (*name of vessel repeated three times*)
> "Mayday"
> *MMSI number and name of vessel or callsign*, spoken once
> *Position*
> *Nature of distress*

If the vessel is not in "grave and imminent danger", an All Ships Urgency call followed by a spoken "Pan Pan" call or a routine call to the nearest coastguard station may be more appropriate. It is a prosecutable offense to initiate a Distress Alert call for any other reason than that the vessel and/or crew is in imminent danger.

6.2 Cancelling a Distress Alert

If a DSC Distress Alert is sent accidentally, cancel it immediately on the DSC1400 by pressing the C button to prevent repeats, then make the following announcement on channel 16 -

> "This is (*name of vessel, callsign, MMSI*)"
> "Cancel DSC Alert sent (*date & time UTC*)

Do not simply cancel the DSC alert without verbally cancelling it as well, otherwise the rescue authorities will not be aware that this is a false alarm.

6.3 Acknowledging a Distress Alert & Relaying Alert.

When a DSC Distress Alert is received, an audible alarm will sound. Immediately cease any transmission that may interfere with distress traffic and continue a watch on channel 16.

If there is no DSC acknowledgement from a coast station or ship, after a short interval acknowledge by voice on channel 16 -

> "Mayday
> (*MMSI of vessel in distress repeated three times*)"
> "This is (*name of own vessel, repeated three times*)"
> "Received Mayday"
> (State the assistance you can give).

A similar response should be given to a Distress Relay, using the words "Mayday Relay" instead of "Mayday" in the message above.

6.4 Alerting All Vessels Within Range

If the vessel is outside of coast radio range and needs to issue a safety warning to all vessels within radio range, transmit an All Ships Safety call by DSC. After about 15 seconds transmit on channel 16 the safety call and message as follows -

> "Securité, Securité, Securité"
> "All stations (*or called station*)" repeated three times
> "This is (*MMSI and name or callsign of own vessel*)"
> *Repeat text of safety message*.

6.5 Calling a Coast Radio Station

Enter the MMSI of the station into the DSC1400, either manually or from the directory. When the call is acknowledged, the working channel for voice communication will be indicated and the RT1400 will automatically switch to that channel. Make a voice call as normal.

6.6 Making an intership call

Enter the vessel's MMSI into the DSC1400, either manually or from the directory. Before sending the call, enter the inter-ship channel to be used for subsequent communication. When the alarm sounds on the called vessel, its operator should acknowledge by DSC, then respond by voice on the selected channel.

If the MMSI number of the vessel is not known, call as now on channel 16. If no response is received, call on channel 13. This is the GMDSS bridge to bridge communication channel.

7 Appendix

7.1 Warning To Users

Use of marine radio distress procedures is governed by international law and improper use may incur legal penalties. A Distress Alert should only be activated if your vessel is in "grave and imminent danger" or if a person is lost overboard. Unauthorised users, such as children, should be instructed not to tamper with this equipment.

If a Distress Alert is activated accidentally, it is vitally important that it be cancelled (see procedure in section 6.2) to avoid others commencing a search for your vessel.

7.2 Important Information

At the time of issue of your vessel's radio license, an MMSI (Maritime Mobile Service Identifier) must be requested. This is a nine digit number which must be permanently entered into the DSC1400, otherwise it will not function.

If either the boat or the DSC1400 are subsequently sold, the DSC1400 must be returned to an authorised Simrad Dealer for the existing MMSI number to be erased so that the new owner's number can be entered.

For European leisure vessels fitted with VHF DSC equipment, a CEPT Short Range Certificate is required by the operator. Additional requirements, such as GOC or ROC may apply to operators on commercial vessels. Please enquire with your local licensing authority for full details.

7.3 Service & Warranty

The DSC1400 may be cleaned when necessary by wiping with a damp cloth. The equipment should be regularly checked by making routine calls to other stations. On an annual basis, test the Distress Alert button by pressing it **ONCE**. This will display the Distress Alert screen and ensure that the button is functioning. Press **C** to return to the main screen - **DO NOT HOLD DOWN THE DISTRESS BUTTON.**

Your DSC1400 should seldom need servicing, but if it is necessary to have the unit repaired, the warranty card supplied with the unit should have been filled in and sent to Simrad when the unit was purchased. Please refer to the warranty information for more details.

The unit is guaranteed for 12 months from date of retail sale. If it is necessary to have the unit repaired, return it carriage prepaid to the agent in the country of purchase with a copy of the receipted invoice showing the date of purchase. Where possible, return all the components unless you are certain that you have located the source of the fault. If the original box is not available, ensure that it is well cushioned in packing; the rigours of freight handling can be very different from the loads encountered in the marine environment for which the unit is designed.

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