

# DSC for CSC

An Introduction to Digital Selective Calling  
on CSC Keelboats

# What is Digital Selective Calling?

- DSC-capable marine VHF radios can be used to hail vessels and send and receive certain information on channel 70 with the push of a few buttons.
- DSC-capable radios can be assigned a Maritime Mobile Service Identity (MMSI) number, similar to a phone number.
- Vessels can be hailed either individually, in designated groups, or generally.
- DSC is an addition to standard voice communications; it is not a replacement, and it is not required. DSC does not provide *private* voice communications.

# Why should I care?

- Channel 16 may be busy; DSC offers an alternative.
- When another vessel hails you, the radio rings like a telephone<sup>\*</sup>, making it easier to hear.
- When there are multiple boats on a cruise, DSC can be useful for communicating among cruising skippers.
- The emergency distress call feature can be useful if there are a limited number of crew on board who are needed to handle the emergency rather than the radio.
- You can discreetly hail the Coast Guard to report illegal or suspicious activity.

<sup>\*</sup> the way they used to – no personalized ring tones

# What can it do?

- Individual calls
  - All of the keelboats have MMSIs, and call directories have been programmed into their radios
- Group calls
  - A group number has been created for the CSC keelboats and programmed into the keelboat radios
- All-ships calls
  - Can specify “Urgency” (Pan Pan) or “Safety” (Securite)
- Distress calls
  - On the newer radios, you can specify the type of emergency from a list (Fire, Flooding, Collision, Grounding, Capsize, Sinking, Adrift, Abandoning, Piracy, and Mob!)
- Position reports and position requests

# How do I use it?

- The details vary somewhat from boat to boat; the boats do not all have the same model of radio. There are reference sheets on the boats.
- For non-emergency calls using DSC, the basic steps are as follows:
  - Bring up the DSC menu, then select the type of call (individual, group, all-ships, etc.).
  - For an individual or group call, select the name of the boat or group that you want to hail.
  - Select the channel you wish to talk on once contact is made.
  - The call is then transmitted, and the radio waits for a DSC acknowledgement signal. The radio will switch to the chosen frequency when an acknowledgement is received.
- To make a distress call
  - Lift the red cover and press and hold the DISTRESS key for 3 to 5 seconds (see the reference sheets for more details). The call will be received by other DSC-capable radios, not all vessels within range.
  - A DSC distress call is a digital “Mayday” – the same rules apply.

# Position Information

- DSC-capable radios can transmit and receive position information when available (normally from a GPS receiver, or you can enter it manually).
- DSC distress calls are especially helpful when position information is included.
- It is possible to connect a handheld GPS receiver to the radios (the newest radios will occasionally beep a warning if there is no GPS input).

# Position Information from a Handheld GPS Receiver

- Many handheld GPS receivers can be connected to a computer with a special cable and port.
- The keelboat radios have been fitted with connectors and adapters to connect with these GPS cables.
- The keelboat VHF radios use the “standard” interface for marine electronics, the NMEA 0183 format. Check your owner’s manual to see if your GPS receiver can output data in this format.
- If these are true for your GPS receiver, it should work with the radios (other handheld devices may or may not work).

# VHF GPS Connections

- Connectors have been installed on all of the radios and look like this:

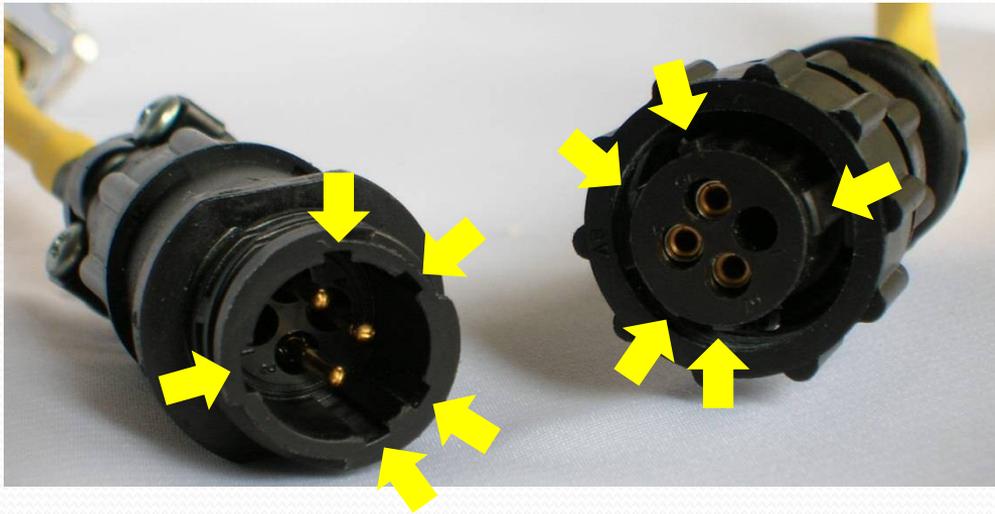


- There is an adapter with a mating plug that looks like this:



# Connecting the Adapter to the Radio

- The male and female ends go together only one way. Note the keys (right) and the slots (left):



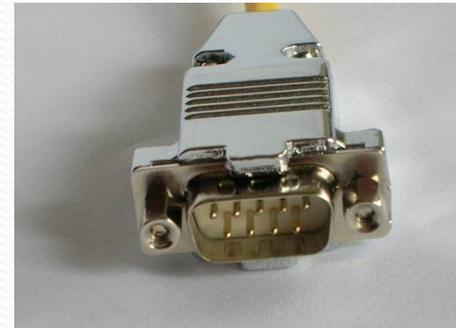
# Connecting the Adapter to the Radio

- Line up the two ends, push together, and rotate the locking ring. The ring will snap into place when fully tightened.



# Connecting the Adapter to a Handheld GPS Receiver

- The other end of the adapter looks like this. Once standard on computers, this connector is referred to by various names including “serial”, “DB-9”, “9-pin D-Sub”, and “RS-232”.
- Cables are available for many types of handheld GPS receivers that will mate with this type of connector (if the cable has pins (male) instead of holes (female), that is okay because there are converters).
- We have a cable that works with various Garmin units including the GPSMap 78, 76, 72, and 60 models (You will need to set the data format: in the “Setup” menu, choose “System”, then choose “Interface”, then choose “NMEA In/NMEA Out”).



# Is it working?

- If the connection is correct and everything is working, then your position will appear in the radio's display.



- When first turned on, some GPS receivers display the last known position until a new fix is obtained. This position does not get sent to the radio, so the radio will not show the position until the fix is updated.

# What if my navigation device has some other type of interface?

- This is more difficult. If your device has a USB port<sup>†</sup> AND your device supports peripheral devices, then it MIGHT work. A USB-to-serial adapter will also be required, and the correct driver must be installed on your device. There may be other settings on the device that have to be adjusted.

<sup>†</sup> It can be a mini port. For Apple devices, you can get an adapter to convert a port to USB.

# A Warning about Cables

- Computer cables are made for use in the home and the office, not at the seashore.
- The cable and the adapters are stored in a blue, re-sealable plastic bag. This bag prevents corrosion, so it is critical to keep them in the bag when not in use.
- When you are sailing, keep the cables below deck and dry as much as possible.
- **Do not leave cables or adapters on the boat after a sail.** They will get ruined in short order.



# Appendix: Reference Sheets

# Basic DSC Instructions

Standard Horizon Eclipse DSC+ GX1200 (Daisy, Uncle Donald, Doctor Who, and Meritorious)

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## Distress Calls

### • Unspecified Type Option

- Lift the red key cover. Press and hold the DISTRESS key. The DISTRESS menu will appear. The radio will wait 3 seconds and transmit the call.

### • Specified Type Option

- Press the CALL/MENU key. The DSC menu will appear.
  - Use the arrow keys to select "DIST ALT MSG" and press the key below **SELECT** in the display. The DISTRESS menu will appear. Press the key below **NATURE**.
  - Use the arrow keys to select the type of emergency, and press the key below **SELECT**.
  - Lift the red key cover. Press and hold the DISTRESS key. The radio will wait 3 seconds and transmit the call.
  - The call will repeat every 4 minutes. When a DSC acknowledgement is received, the radio will switch to channel 16.
  - To transmit a "CANCEL" message, press the key below **CANCEL** in the display and then the key below **YES**.
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## Individual Calls

### Sending

- Press the CALL/MENU key. The DSC Menu will be displayed.
- Use the arrow keys to move the pointer to "INDIVIDUAL" and then press the key below **SELECT** in the display.
- The INDIVIDUAL menu will appear. The last 4 boats called will be displayed.
- Use the arrow keys to select a boat and press the key below **SELECT**, or choose **NEW ID** to see the call directory.
- Use the arrow keys to select the channel you want to talk on after contact is made and press the key below **SELECT**.
- Press the key below **YES** in the display to send. "WAIT FOR ACK" will appear in the display.
- When a DSC acknowledgement is received, the radio will switch to the chosen frequency and ring.
- Listen on the new frequency to check that it is not in use. When clear, key the microphone to talk to the hailed vessel.

### Receiving

- The radio will make a ringing sound when you are being hailed. Press any key to stop the ringing.
  - The radio is set to automatically send an acknowledgement saying you are able to comply (there is a manual option).
  - The radio will automatically switch to the channel selected by the hailing vessel. Key the microphone to talk to the hailing vessel, or press the key below **QUIT** in the display to exit the DSC mode.
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## Group Calls

### Sending

The procedure is similar to that for making individual calls, except that the after pressing the CALL/MENU key, select "GROUP" from the DSC Menu. After the call is transmitted, the radio will switch to the selected frequency.

### Receiving

- The radio will make a ringing sound when you are being hailed. Press any key to stop the ringing.
  - Press the key below **ACCEPT** to switch to the requested channel (the radio will switch automatically after 30 seconds).
  - To exit the DSC mode and return to the channel you were on before the call was received, press the key below **QUIT**.
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## All-Ships Calls

### Sending

- Press the CALL/MENU key. The DSC menu will appear in the display.
- Use the arrow keys to move the pointer to "ALL SHIPS", and press the key below **SELECT** in the display.
- Use the arrow keys to select "SAFETY" (for "Securite") or "URGENCY" (for "Pan Pan"), and press the key below **SELECT**.
- Use the arrow keys to select the channel you want to talk on (usually 16), and press the key below **SELECT**.
- Press the key below **YES** in the display to transmit the message.
- The radio will switch to the chosen frequency. Check that the channel is clear. Key the microphone, call "Pan Pan" or "Securite" as appropriate 3 times, call "All stations...", identify your boat, and describe the situation.

### Receiving

An alarm will sound. Press any key to stop the alarm. Press the key below **ACCEPT** to switch to the requested channel (the radio will switch automatically in 30 seconds if no key is pressed). Press the key below **QUIT** to exit the DSC mode.

# Basic DSC Instructions

Standard Horizon Eclipse DSC+ GX1150 (Portugal Princess and Pomodoro)

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## Distress Calls

### • Unspecified Type Option

- Lift the red key cover. Press and hold the DISTRESS key. The DISTRESS menu will appear. The radio will wait 3 seconds and transmit the call.

### • Specified Type Option

- Lift the red key cover and press the DISTRESS key momentarily. The DISTRESS menu will appear.
  - Press the ENT key, use the arrow keys to choose the type of emergency, and then press the ENT key again.
  - Press and hold the DISTRESS key. The radio will wait 3 seconds and transmit the call.
  - The call will repeat every 4 minutes. When a DSC acknowledgement is received, the radio will switch to channel 16.
  - To transmit a “CANCEL” message, press the CLR/WX key and then the ENT key.
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## Individual Calls

### Sending

- Press the CALL/MENU key. The DSC Menu will be displayed.
- Use the arrow keys to move the cursor to “INDIVIDUAL”, and then press the ENT key.
- The individual directory will appear. Use the arrow keys to select a boat and press the ENT key (MMSIs not in the call directory can be entered manually).
- Use the arrow keys to select the channel you want to talk on after contact is made, and press the ENT key.
- Press the ENT key again to send. “WAIT FOR ACK” will appear in the display.
- When an acknowledgement is received, the radio will switch to the chosen frequency and ring.
- Press the CLR/WX key to listen on the new frequency to make sure it is not in use. When clear, key the microphone to talk to the hailed vessel.

### Receiving

- The radio will make a ringing sound when you are being hailed. Press any key to stop the ringing.
  - The radio is set to automatically send an acknowledgement saying you are able to comply (there is a manual option).
  - The radio will automatically switch to the channel selected by the sender.
  - Key the microphone to talk to the hailing vessel.
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## Group Calls

### Sending

The procedure is similar to that for making individual calls, except that after pressing the CALL/MENU key, select “GROUP” from the DSC Menu. After the call is transmitted, press the CLR/WX key and hail the other vessels.

### Receiving

- The radio will make a ringing sound when you are being hailed. Press any key to stop the ringing.
  - Press the ENT key to switch to the requested channel. The radio will switch channels after 30 sec. if no key is pressed.
  - If you want to stay on the channel you were on before the call was received, press the CLR/WX key.
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## All-Ships Calls

### Sending

- Press the CALL/ MENU key. The DSC Menu will appear in the display.
- Use the arrow keys to move the pointer to “ALL SHIPS” and press the ENT key. (Press the CLR/WX key to cancel.)
- Use the arrow keys to select “SAFETY” (for “Securite”) or “URGENCY” (for “Pan Pan”), and press the ENT key.
- Use the arrow keys to select the channel you want to talk on and press the ENT key
- Press the ENT key to transmit the message.
- The radio will switch to the chosen frequency (not displayed). Check that the frequency is not in use. Key the microphone, call “Pan Pan” or “Securite” as appropriate 3 times, call “All stations...”, identify your boat, and describe the situation.

### Receiving

Press any key to stop the alarm. Press the ENT key to switch to the requested channel (the radio will switch to the requested channel in 30 seconds if no key is pressed).