

FUTRONIC

Coast Station Verification Tool

User manual

Version 12 May 2023

This manual supports software version
682.0008.001 (Master)
682.0009.001 (Application)

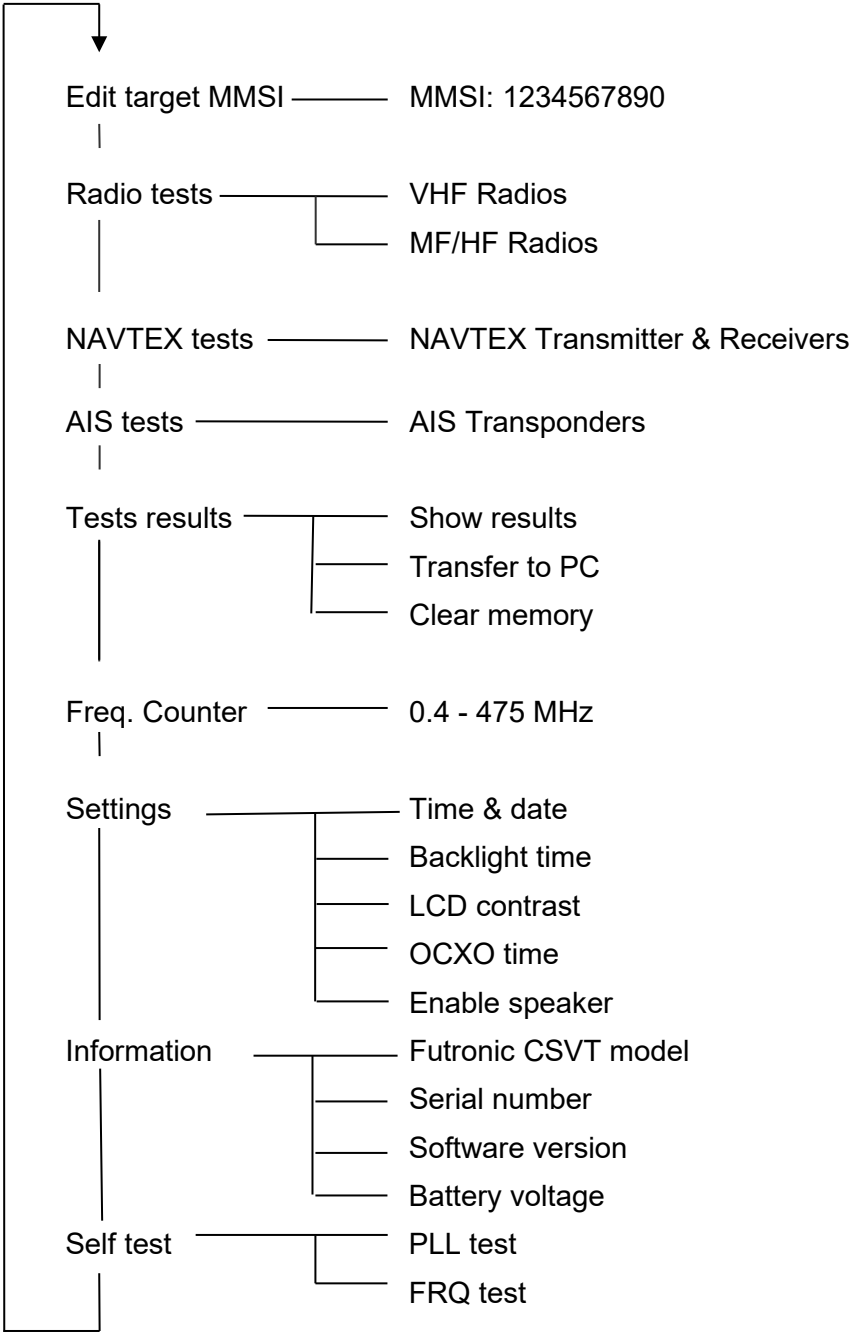


Tagholm 16. DK-9400 Noerresundby. Denmark
Tel: +45 96 44 44 44, Fax: +45 96 44 44 45
E-mail: danphone@danphone.com, www.danphone.com



SCROLL MENU SYSTEM - QUICK GUIDE

See detailed menu tree on page 9.



INTRODUCTION

This manual covers the full-featured Futronic CSVT GMDSS-AIS equipped for GMDSS and AIS tests.

GMDSS TESTS

For the testing of **VHF and MF/HF radios**, the Futronic CSVT can check DSC signals transmitted on any of the six distress frequencies on MF/HF and on VHF CH 70.

The Futronic CSVT can send either a GMDSS distress signal (all ships call) or a selective test call addressed to a particular MMSI number. The calls can be sent on any of the 6 distress frequencies on MF/HF as well as on VHF CH 70. Furthermore, the Futronic CSVT can send and receive DSC signals on the international calling frequencies 2177.0 and 2189.5 kHz.

The Futronic CSVT measures and displays the mark/space frequencies of the received DSC-signals.

On VHF channel 6, 8, 9, 13 and 16 the Futronic CSVT can measure the deviation on a received signal.

The Futronic CSVT is able to measure the transmitted and reflected power on any VHF channel, including CH 70, all Maritime MF/HF Bands with MF/HF Power Sensor and also to test the sensitivity of the receiver part.

For the testing of **NAVTEX Receivers**, the Futronic CSVT can send NAVTEX signals on 490 kHz, 518 kHz or 4209.5 kHz.

For the testing of **NAVTEX Transmitter**, the Futronic CSVT can receive NAVTEX signals on 490 kHz, 518 kHz or 4209.5 kHz.

AIS TESTS

The Futronic CSVT is capable of testing **AIS Class A transponders** for vessels, aircrafts and shore stations by checking their ability of sending and receiving AIS data and by making frequency measurements and power measurements on AIS channel 1 and AIS channel 2.

The Futronic CSVT is able to simulate ships appearing at four different positions, relative to the AIS transponder's position.

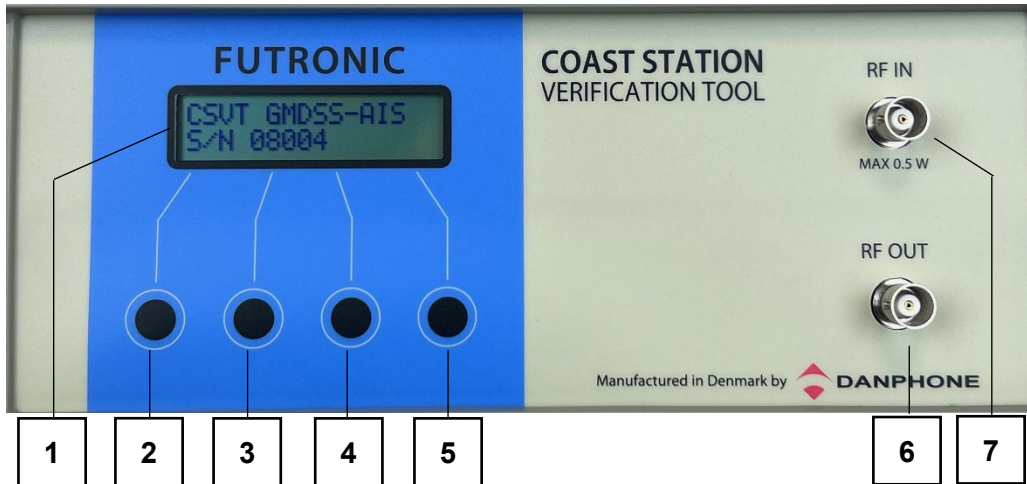
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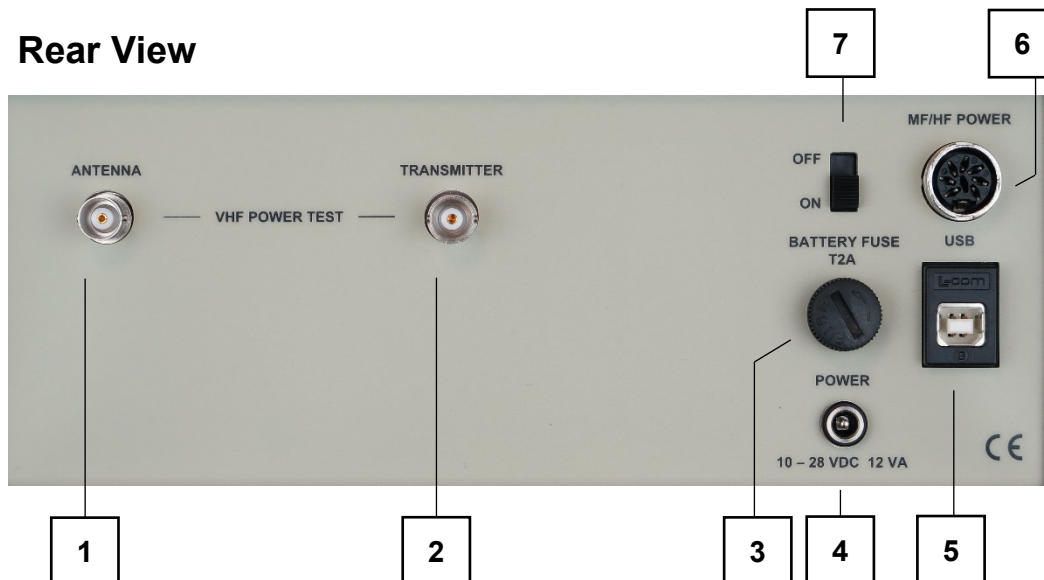
FUTRONIC CSVT

Front View



- 1 Two-Line LCD display
- 2 – 5 Push buttons
- 6 BNC socket for signal output
- 7 BNC socket for signal input

Rear View



- 1 BNC socket for connection to VHF antenna
- 2 BNC socket for connection to VHF transmitter
- 3 Fuse for 12V Battery. To be removed during transportation by air. Type: 5x20mm 250V-2A "T"
- 4 DC socket for connection to external power supply
- 5 USB socket
- 6 8-pin DIN socket for connection to MF/HF Power sensor
- 7 Slide switch for switching the Futronic CSVT ON/OFF

ACCESSORIES

The Futronic CSVT comes with the following standard accessories:

- 1 pcs Power adapter 100-240 VAC / 13,2 VDC
- 1 - USB cable for connection to PC
- 1 - Coax cable, 25 cm, with BNC
- 2 - Coax cable, 150 cm, with BNC
- 1 - Coax cable, 500 cm, with BNC
- 1 - AIS signal combiner / dummy load
- 1 - Audio Reference / AF Generator
- 1 - Telescopic antenna for VHF/AIS
- 1 - Wire antenna for MF/HF/NAVTEX
- 2 - UHF plug to BNC socket adapter
- 1 - UHF socket to BNC socket adapter
- 1 - BNC socket to BNC socket adapter
- 1 - N-N male adapter
- 1 - RF Amplifier
- 1 - Set of attenuators
- 1 - MF/HF 1 kW Power Sensor
- 1 - Watertight and Crush Proof Case
- 1 - User's Manual in English
- 1 - Calibration Certificates

POWER SUPPLY

The Futronic CSVT is usually powered by the external power adapter delivered with the Futronic CSVT. The adapter can be connected to 100-240 VAC and will provide DC power to the Futronic CSVT when connected to the POWER socket on the rear panel. However, any power supply providing DC between 10 and 28 VDC can be connected (+ on the center pin). For instance, a car charger can be used, enabling the battery inside the Futronic CSVT to be recharged while driving your car.

The Futronic CSVT is equipped with a rechargeable 12 V battery. Whenever external DC is connected to the Futronic CSVT, the battery is charged. If the DC supply is removed, the battery takes over, ensuring an uninterrupted switch between external and internal power supply.

Before using the Futronic CSVT in the field, make sure that the battery is fully charged. Fully charged, the battery should provide power for at least 8 hours of normal operation.

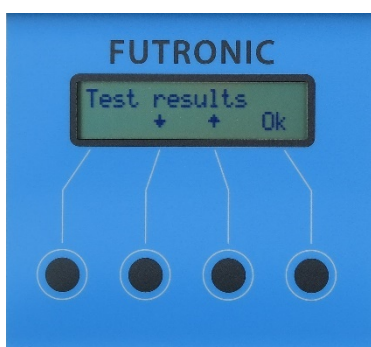
It is recommended from time to time to charge the battery over a full day and night. Also recommended if the battery has been completely discharged. This will keep the battery fit and fully restore its capacity. Loss of power will not cause any loss of data in the Futronic CSVT memory.

During transport by air you are advised to remove the battery fuse from the rear panel. With this, the Futronic CSVT is permitted as carry-on and check-in baggage. See the chapter "Declarations".

POWER-ON AND WARM-UP

When powered on, the tester's model type and serial number is briefly presented the LCD-display. After a few seconds of warming up the Futronic CSVT is ready for use.

PUSH BUTTON CONTROL AND MENU SYSTEM



The Futronic CSVT is controlled by means of 4 push buttons, each of them with a reference to the bottom line of the display.

↓ is used to scroll down to the next menu line, or to decrease numbers, frequencies etc.

↑ is used to scroll up to the previous menu line, or to increase numbers, frequencies etc.

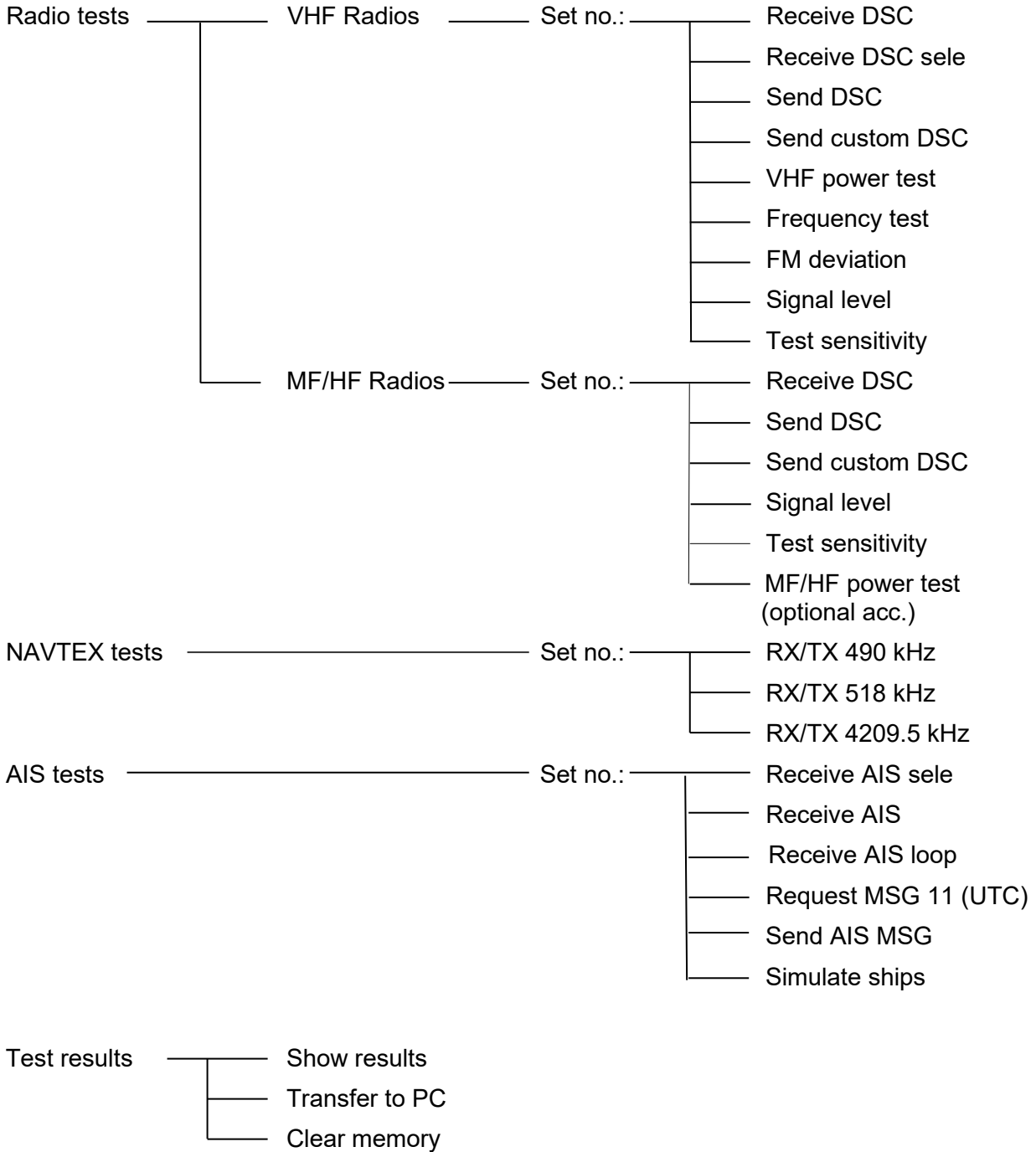
Ok is used to select or accept what's in the upper line of the display

Exit is used to move one step back in the menu system.

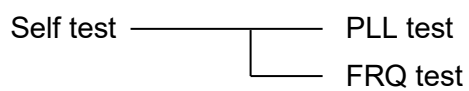
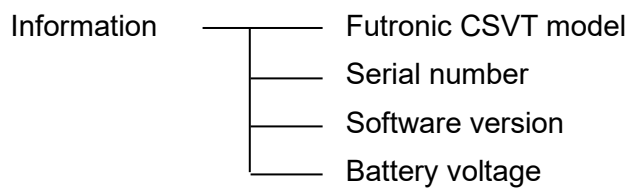
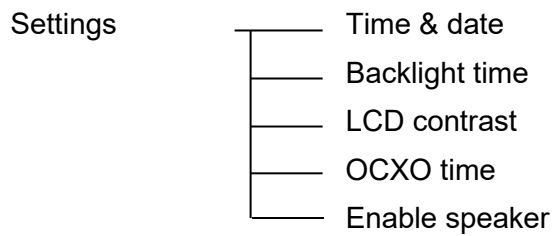
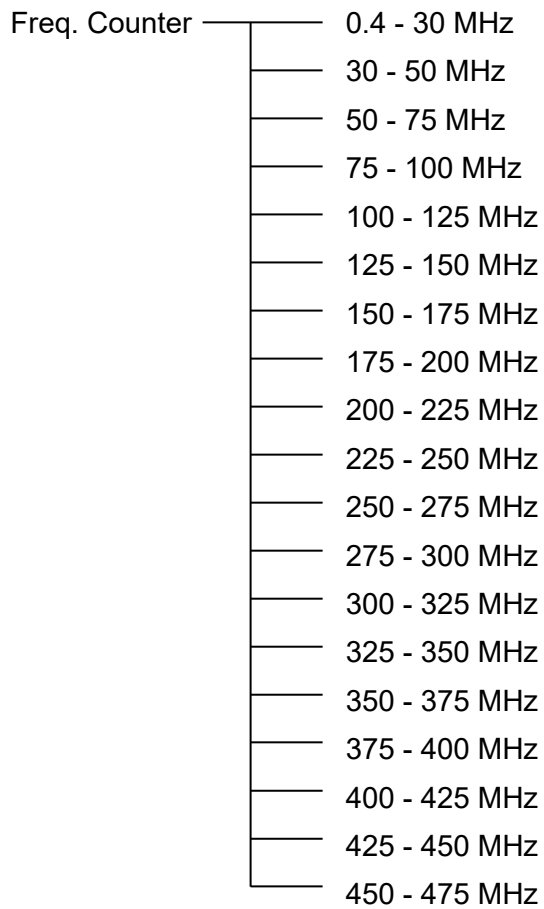
MENU TREE

Modes and menus, test setups and measurements are explained in more detail on page 12 and onwards. As you may wish to test several sets in a row, for instance several radios under the same MMSI, each set can be given its own individual number for recognition, for instance VHF no. 3

Edit target MMSI ——— MMSI: 1234567890



MENU TREE (CONTINUED)



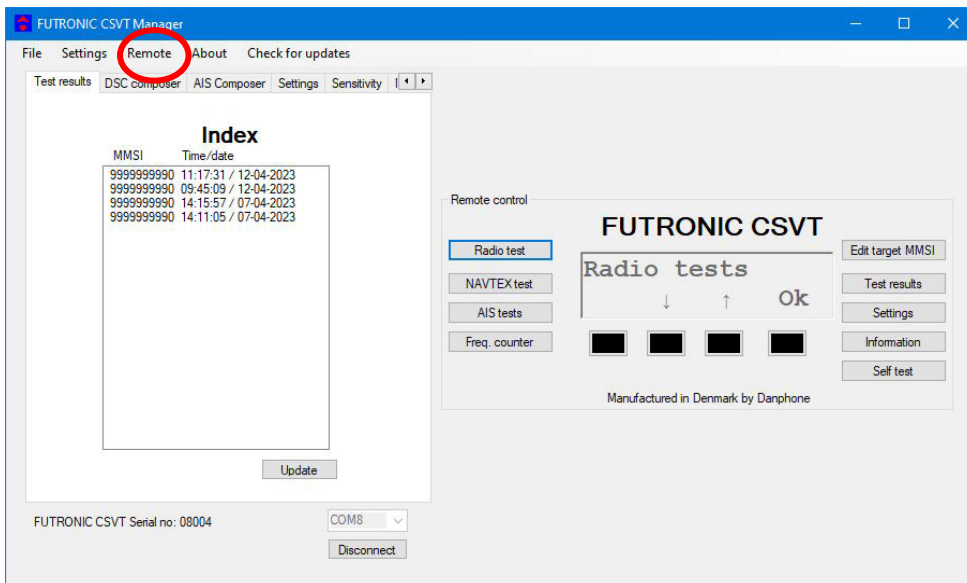
REMOTE CONTROL

The Futronic CSVT can be remote controlled from a PC.

Download the Futronic CSVT manager PC software (Version 610.0023.001) Connect the Futronic CSVT to the PC via USB cable (standard accessory).

Online software update is available on www.danphone.com/csvt/pc-software

All Futronic CSVT functions are available for remote control.



EDIT target MMSI

You can check the current target MMSI number registered by the Futronic CSVT in the Edit target MMSI menu. In this menu you can either accept the current number or enter a new MMSI, if required.

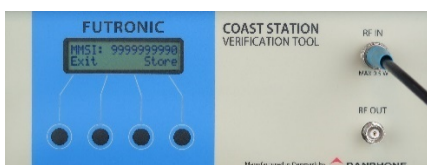
Press → to move the cursor. Press ↑ or ↓ to change the digit. Press EXIT to accept and store the number.

The Futronic CSVT is prepared for 10-digit numbers. If you enter a 9-digit number, add “0” in the end.

The Futronic CSVT will set the MMSI number automatically when performing the Receive DSC test for VHF radios described under **VHF radios, Receive DSC**, on the following page.

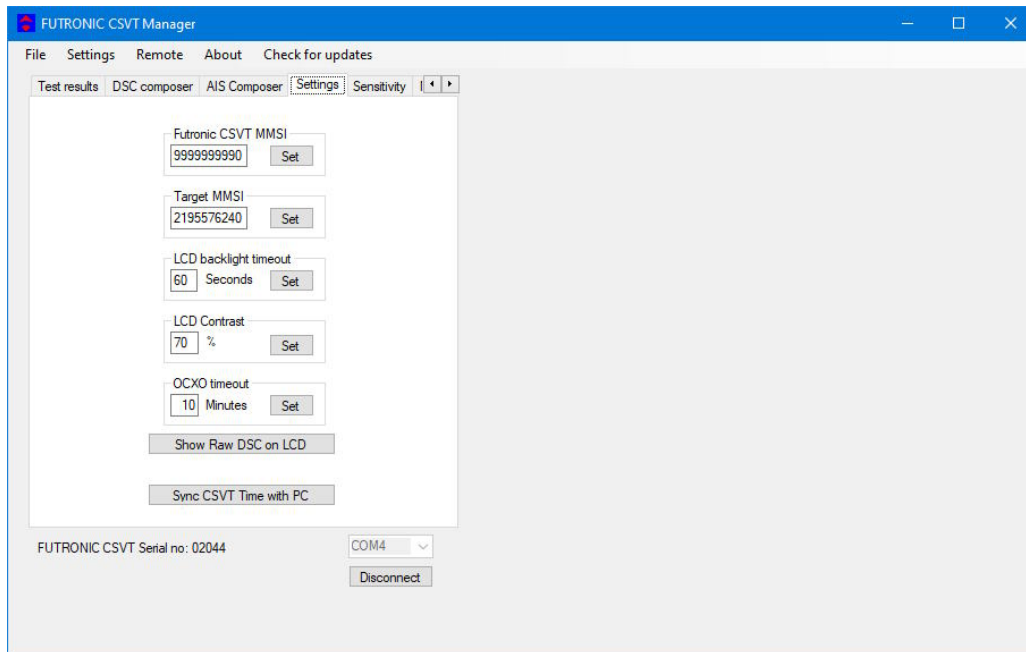


To save the new MMSI number press “View” and thereafter, “Store”.



FUTRONIC CSVT Manager

The *Settings* tab allows you to type in any MMSI number on the Futronic CSVT.



Futronic CSVT MMSI: Write and set new MMSI number for the Futronic CSVT here.

Target MMSI: Write and set MMSI number of the device to be tested here.

When changing the Target MMSI, a new entry in **Index** is created in the test results.

If a new entry in **Index** is to be created, press the at Target MMSI “Set” button in Futronic CSVT Manager. If the “Target MMSI” not changed, it’s only the timestamp which are changed in the Index entry.

Another way of adding a new entry in **Index** is the “Edit target MMSI” is used. A new entry is created in the test results if a minimum 1 digit is changed.

RADIO TESTS

VHF Radios

Set Number

As you may wish to test several radios under the same MMSI, each radio can be given its own individual set number for recognition. Default number is 1. Press OK to confirm or press ↑ or ↓ to change to another number. Then, press OK and go to the test you wish to perform.

Receive DSC

In the Receive DSC test mode, the Futronic CSVT will receive and display the radio's MMSI number and DSC data transmitted, and at the same time measure the frequency and the forwarded and reflected power.

Use this setup with the Receive DSC test:



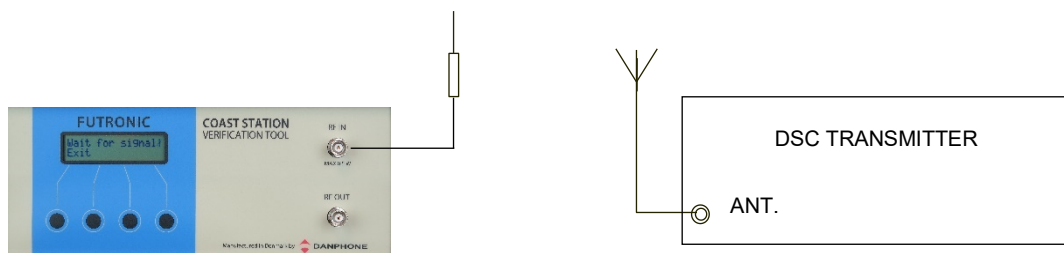
To perform the test, select **Receive DSC** and press OK and activate the transmitter to send a DSC call.

The received MMSI number, DSC data and the measured frequency and power values will be stored in the Futronic CSVT memory and at the same time appear in the LCD display, line by line. You may toggle between the lines using ↑ and ↓ to view all the results.

Example of Printout from the Memory:

```
VHF # 1 Time/date: 12:49:51 / 18-12-2019
DSC DATA: CH70-156.525 MHz
RX MMSI: 9999999990 Format 120 Category: 100 TX MMSI: 2195576240
1.telecommand: 100 2.telecommand: 126 Info.: 90 00 16 126 126 126
EOS: 117 ECC: 120 Status: OK
RF: 156,525.3 kHz Fwd.: 18.8 Watt Rev.: 0.1 Watt VSWR: 1.20
```

If you only want to check DSC data and frequency (no power measurement), connect the telescopic VHF antenna to RF IN and use this setup:



If there are DSC transmissions from more than one radio in the area – for instance in ports with many ships – the Futronic CSVT will receive data from the radio first detected.

To make sure that the Futronic CSVT will be receiving data from one particular radio, use the test mode “Receive DSC sele” below.

Receive DSC sele

In the Receive DSC sele mode, the Futronic CSVT will receive data from the radio having its MMSI number currently registered in the Futronic CSVT. So, please check and change number, if required, using the Edit target MMSI menu on page 12.

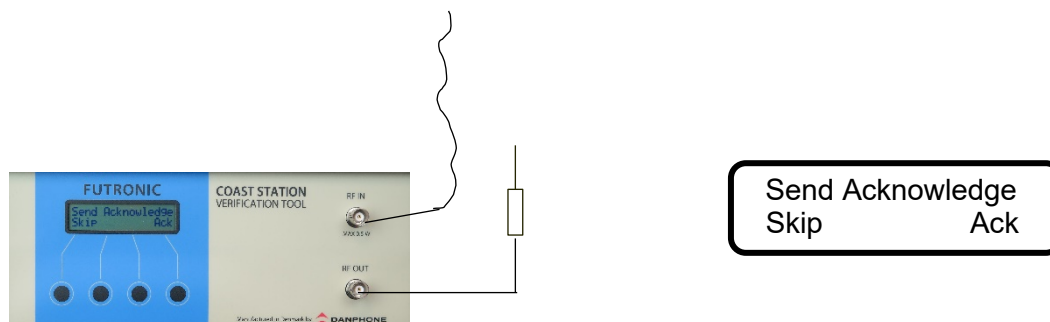
Use the same setup as above.

Example of Printout from the Memory:

```
VHF # 1 Time/date: 12:52:01 / 18-12-2019
DSC DATA: CH70-156.525 MHz
RX MMSI: 9999999990 Format 120 Category: 100 TX MMSI: 2195576240
1.telecommand: 100 2.telecommand: 126 Info.: 90 00 16 126 126 126
EOS: 117 ECC: 120 Status: OK
RF: 156,525.3 kHz
```

Generate 122 (Acknowledge back quote)

If a DSC message format 120 (Selective) and category 100 (Routine), 108 (Safety) or 110 (Urgency) and 117 (Ack. RQ) are received, the Futronic CSVT is able to generate a 122 (Ack. BQ). After receiving the message, the message is shown on the display. When exiting the results view, the following message is shown on the display.



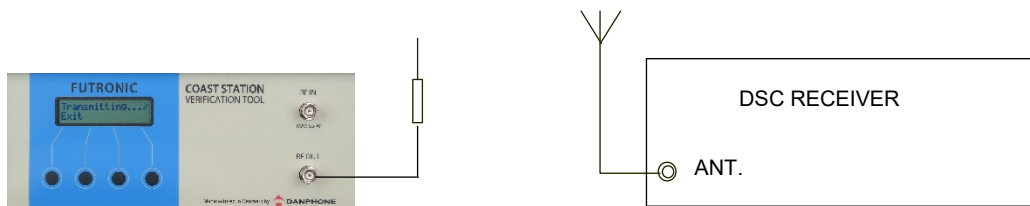
Select Ack for transmitting the Ack. BQ message. Remember to connect the antenna to RF Out on the Futronic CSVT.

Send DSC

In the Send DSC mode, the Futronic CSVT will transmit a DSC call for you to check on the DSC receiver accordingly.

It is a requirement that the MMSI number registered in the Futronic CSVT is identical with the MMSI of the radio to be tested. Please check and change number, if required, using the Edit target MMSI menu. See Page 12.

With selective calls, connect the telescopic VHF antenna to RF OUT and use this setup:



With distress calls, it is important to use a coax cable for the connection between the Futronic CSVT and the DSC receiver. This will prevent other ship stations to be alerted. Use this setup with distress calls:



Select **“Send DSC”** and press **“OK”**. The DSC frequency will appear in the display. Select **Dis** to send a distress call, **Tst** or **Sel** to send a selective call.

Following the DSC call, the Futronic CSVT will display **Received status**. Press **“OK”** if the call was successfully received. Press **“Fail”** if the call was not well received. The answer will be stored in the Futronic CSVT memory for your test report.

Tst - Send Safety Test call and wait for receiving Test call acknowledgement from the transceiver.

Remember to connect both RF OUT and RF IN on the Futronic CSVT.

Example of received Test call acknowledgement:

```
VHF # 1 Time/date: 08:29:25 / 29-01-2020
DSC DATA: CH70-156.525 MHz
RX MMSI: 9999999990 Format 120 Category: 108 TX MMSI: 2190155210
Test acknowledgement
EOS: 122 ECC: 66 Status: OK
RF: 156,525.1 kHz Fwd.: 22.3 Watt Rev.: 0.2 Watt VSWR: 1.24
```

The selective call transmits the following information:

120,120 Format specifier - individual call.

21,95,57,62,40	Address - 2195576240
100	Category - Routine
99,99,99,99,90	Self-identification = Futronic CSVT "MMSI no".
100	First telecommand
126	Second telecommand
90 0 6 90 0 6	Frequency or channel
117	Ack. RQ - End of sequence
76	Modulus-2 check sum

The distress call transmits the following information:

112, 112	Format specifier - Distress call
99,99,99,99,90	Futronic CSVT "MMSI no".
107	Category - Undesignated distress
99,99,99,99,99	Coordinates - 99 99 99 99 99 at test.
88,88	Time - 88 88 at test.
100	First telecommand
127	EOS - End of sequence
57	Modulus-2 check sum

The Test Safety call transmits the following information:

120,120	Format specifier - individual call
21,90,15,52,10	Address - 2190155210
108	Category - Safety
99,99,99,99,90	Self-identification = Futronic CSVT "MMSI no".
118	First telecommand - Test
126	Second telecommand - No information
126,126,126,126,126,126	No information
117	Ack. RQ - End of sequence
77	Modulus-2 check sum

Send custom DSC

The Send custom DSC mode enables the Futronic CSVT to send a custom-made DSC call composed in advance on a PC using Futronic CSVT Manager. Connect your PC to the Futronic CSVT via the USB cable supplied.

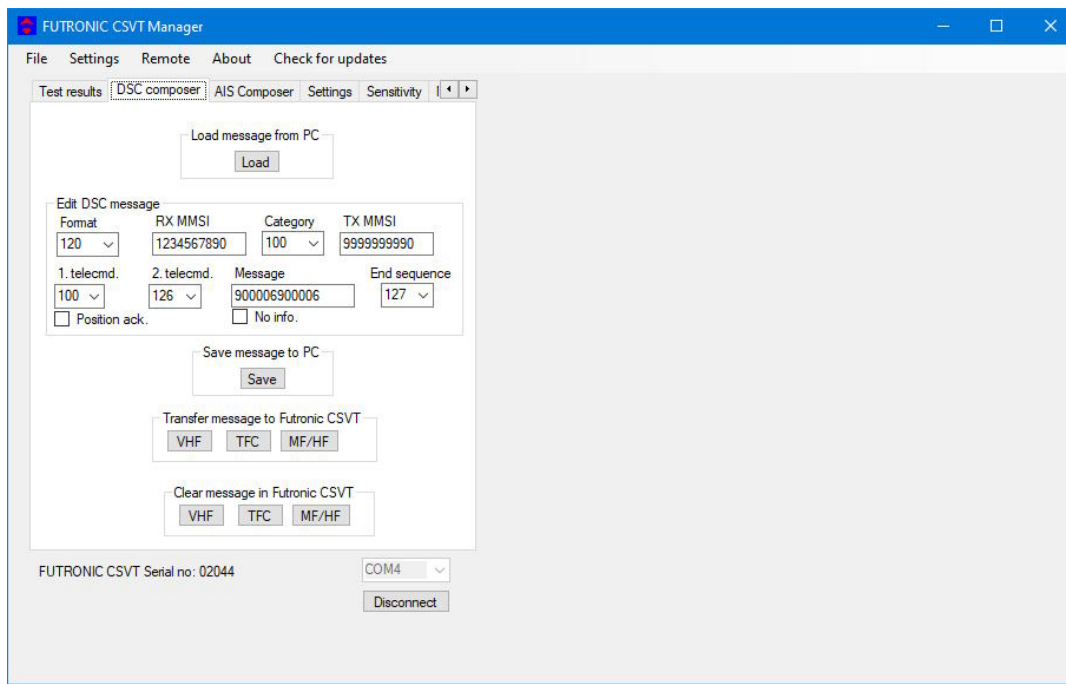
FUTRONIC CSVT Manager

Under the "DSC Composer" tab you can compose your own custom-made DSC messages and transfer them to the Futronic CSVT accordingly.

Please refer to ITU-R M.493 for composing of DSC messages.

In the section, *Transfer message to the Futronic CSVT*, select "**VHF**".

Custom-made DSC messages can also be saved on your PC for later use.



FUTRONIC CSVT

To make the Futronic CSVT transmit the custom-made call, select **“Send custom DSC”** on the Futronic CSVT. The DSC frequency will appear in the display. Press **“OK”** again to send the call.

Following the DSC call, the Futronic CSVT will display **Received status**. Press **“OK”** if the call was successfully received. Press **“Fail”** if the call was not well received. The answer will be stored in the Futronic CSVT memory for your test report.

VHF power test

The VHF power test mode is used to measure the transmitted and the reflected power from non-DSC VHF radios.

Use this setup with the VHF Power test:



Select **“VHF power test”** on the Futronic CSVT and press **“OK”**.

Then, activate the transmitter and keep it activated while selecting **“Meas”** or **“Cont”**.

In the Meas (= Measure) mode, the Futronic CSVT will perform and display a single power measurement and store it in the memory.

In the Cont (= continue) mode, the Futronic CSVT will continue taking measurements until pressing the EXIT button. Cont readings are not stored, but the feature can be used e.g. for checking/adjusting the antenna.

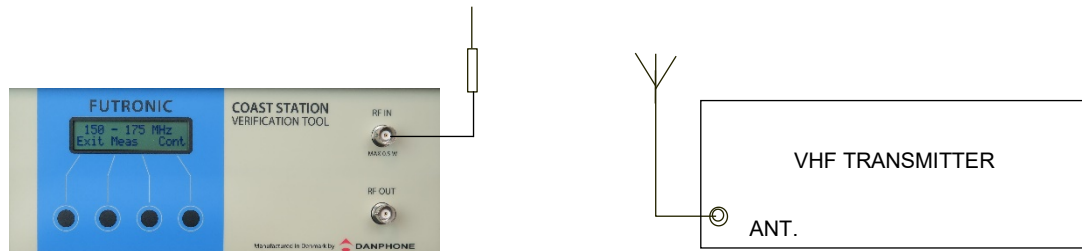
Example of Printout from the Memory:

VHF # 1 Time/date: 08:18:16 / 21-11-2011
Power Measure Fwd: 20.3 Watt Rev: 0.1 Watt VSWR 1.16

VHF Frequency test

In this mode you can decide whether you wish to perform a frequency test only or a simultaneous frequency and power test.

To measure the frequency only, use this setup:



On the Futronic CSVT, select “**Frequency test**” and the preferred frequency range. Then press “**OK**” and activate the transmitter. Select “**Meas**” or “**Cont**” to start measuring.

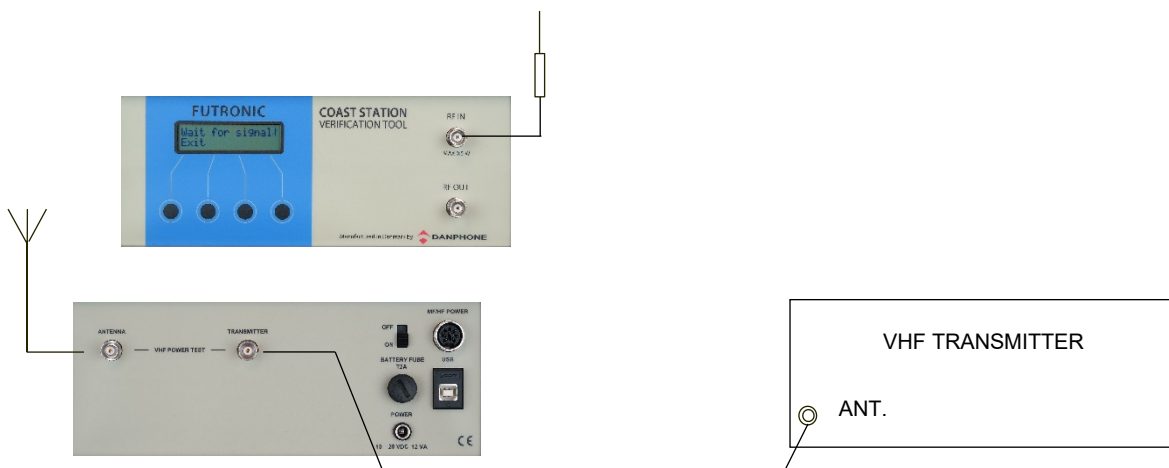
In the Meas (= measure) mode the Futronic CSVT will perform and display a single frequency measurement and store it in the memory.

In the Cont (= continue) mode the Futronic CSVT will continue taking measurements until pressing the EXIT button stops it. Cont readings are not stored, but the feature can be used e.g. for checking/adjusting the antenna.

Example of Printout from the Memory:

VHF # 1 Time/date: 15:00:52 / 22-11-2011
RF measure: 156,300,128 Hz

To perform a simultaneous frequency and power test, use this setup:



On the Futronic CSVT, select “**Frequency test**” and the preferred frequency range. Then press OK and activate the transmitter. Select “**Meas**” or “**Cont**” to start measuring.

In the Meas (= measure) mode the Futronic CSVT will perform and display a single frequency and power measurement and store it in the memory.

The Futronic CSVT displays the result in two lines. Scroll down to read line two.

In the Cont (= continue) mode the Futronic CSVT will only take frequency measurements and continue until pressing the Exit button stops it or Meas button for the Meas mode. Cont readings are not stored, but the feature can be used e.g. for checking/adjusting the antenna.

Example of Printout from the Memory:

VHF # 1 Time/date: 18:11:42 / 22-01-2018
 RF Measure: 156,300,008 Hz Power Fwd.: 19.4 Watt Rev.: 0.1 Watt VSWR: 1.16

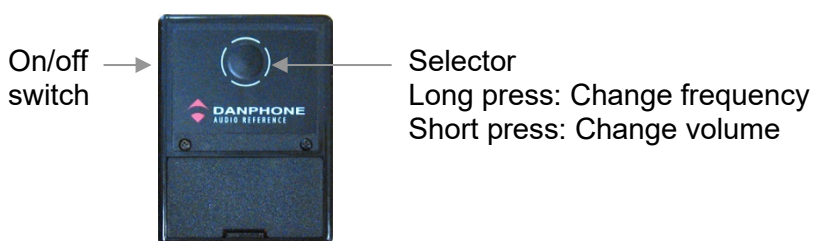
FM Deviation

There are 3 types of audio reference devices:

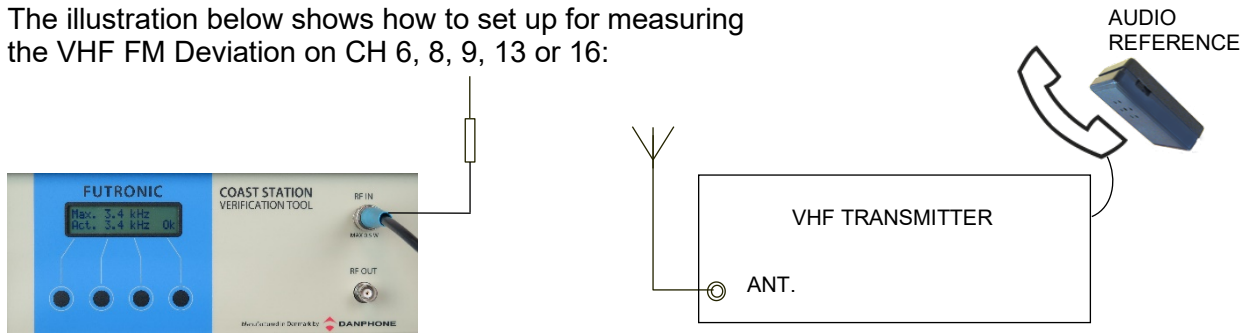
Model no.: 152.4002.001/152.4002.002 – single tone (1kHz)

Model no.: 152.4002.003 – with three tone frequencies (1 kHz, 2 kHz, 500 Hz) and two volume levels.

Model no.: 152.4002.004 – with four tone frequencies (multi tone 1+2 kHz, 1 kHz, 2 kHz and 500 Hz) and two volume levels.



The illustration below shows how to set up for measuring the VHF FM Deviation on CH 6, 8, 9, 13 or 16:



The test procedure is as follows:

- 1) Select **“FM Deviation”**.
- 2) Select between CH 6, 8, 9, 13 or 16 with the up/down buttons and press Ok.
- 3) Hold the audio reference device / AF generator close to the transmitter’s microphone and activate the tone,
- 4) Activate the transmitter on selected channel
- 5) Press **“OK”** on the Futronic CSVT. Maximum deviation and actual deviation are shown on the LCD display,
- 6) Press **“OK”** on the Futronic CSVT, and the maximum deviation value will be stored in the memory,
- 7) Stop the transmitter.

Example of Printout from the Memory:

VHF # 1 Time/date: 08:54:38 / 26-11-2019
 CH08-156.400 MHz Maximum deviation: 3.6 kHz

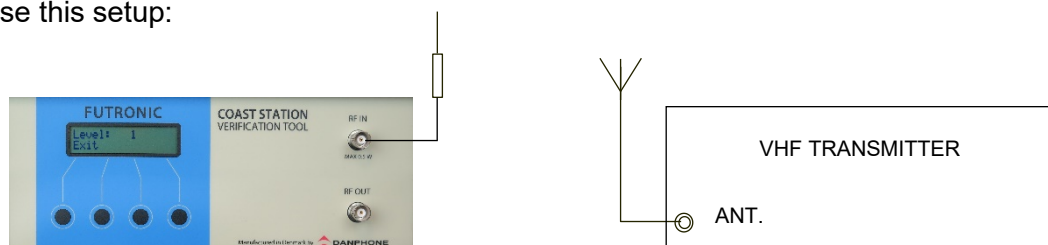
VHF # 1 Time/date: 08:54:51 / 26-11-2019
 CH06-156.300 MHz Maximum deviation: 3.6 kHz

Signal level

This mode can be used to check the signal strength level of the received signals at 156.300 MHz and 156.525 MHz transmissions respectively.

The level figure is used to indicate if the signal strength is sufficient to ensure proper radio communication between the Futronic CSVT and the GMDSS station during the following test.

Use this setup:

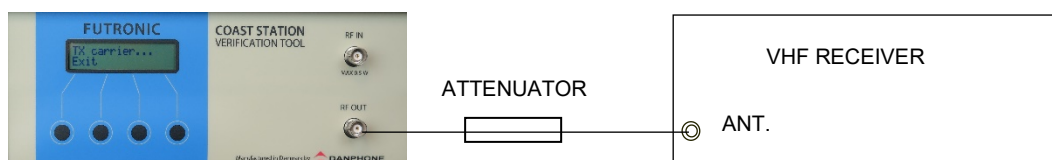


For an indication of the actual signal strength level, select **“Signal level”** on the Futronic CSVT and press **“OK”**. Select frequency. Then, press OK and start transmission from the radio. The level figure appears in the Futronic CSVT display. A figure of 70 or higher is advisable.

Test sensitivity

In the Test sensitivity mode, the Futronic CSVT outputs a modulated signal on VHF channels 6, 13, 16, 67, 18 and 28 as default. Using Futronic CSVT Manager, *Sensitivity tab*, the default channels can be set to any number between 00 – 28 and 60 – 88, 1019, 1020, 1027, 1028, 1078, 1079 respectively. With an external attenuator (not supplied with the Futronic CSVT) this test can be used to check the sensitivity of a ship's VHF radio. The modulated signal can be heard and checked in the radio's speaker as a 1 kHz tone.

Use the setup below. It is very important to use coax cables for the connection of the equipment.



Select “**Test Sensitivity**” and press “**OK**”. CH 06 will appear as the default channel in the display. Other channels can be selected by pressing ↑ or ↓.

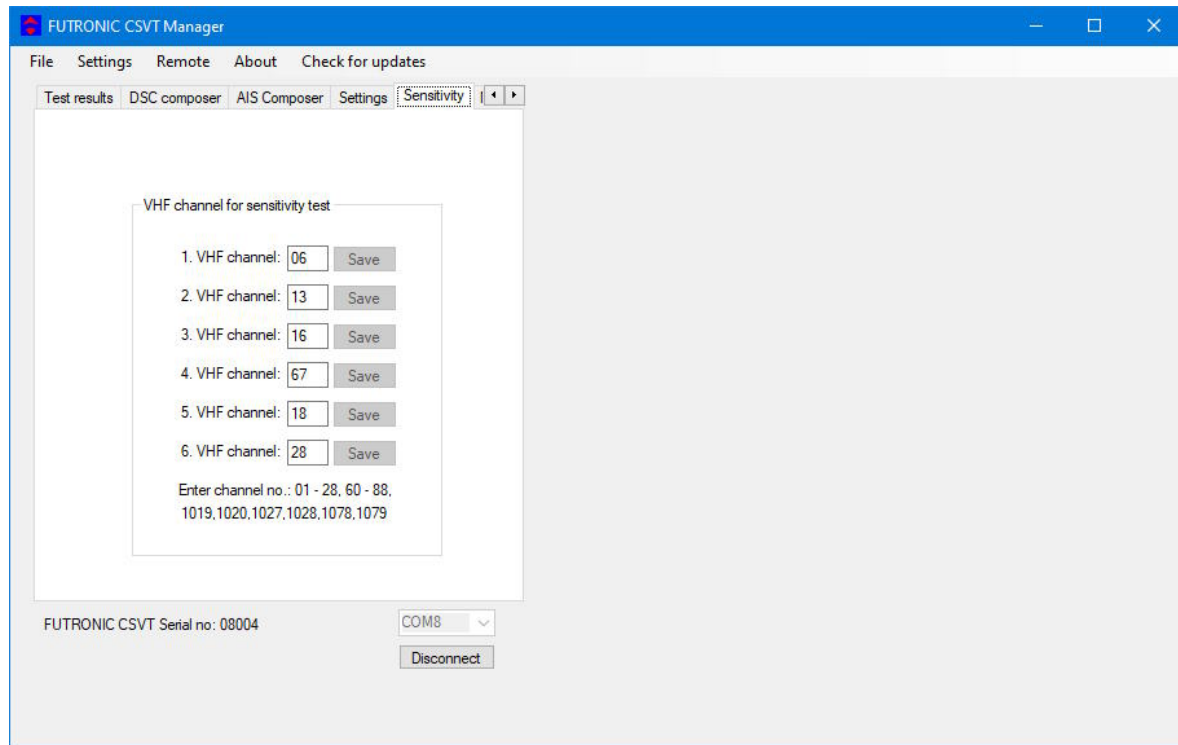
At the desired frequency, press “**OK**” and the Futronic CSVT will keep sending the modulated signal. To stop the transmission, press “**EXIT**”.

For reference, the Futronic CSVT RF output level is approx. -45 +/- 2 dBm. In order to match with the sensitivity of a ship's radio (approx. -115 dBm), the attenuator to be used should be approx. -70 dB.

FUTRONIC CSVT Manager

It is possible to change the VHF channels by using Futronic CSVT Manager, to set the 6 VHF channels for sensitivity test.

Determine the VHF channels to be tested for sensitivity.



Futronic CSVT Manager allows you to configure the Futronic CSVT on 6 selected VHF channels. Set the VHF channel between 00 – 28 or 60 – 88, 1019, 1020, 1027, 1028, 1078, 1079 and press **“Save”**.

The channel is hereby visible on the Futronic CSVT and ready for testing.

Press ↑ and ↓ on the Futronic CSVT to choose between the predefined channels.

MF/HF Radios

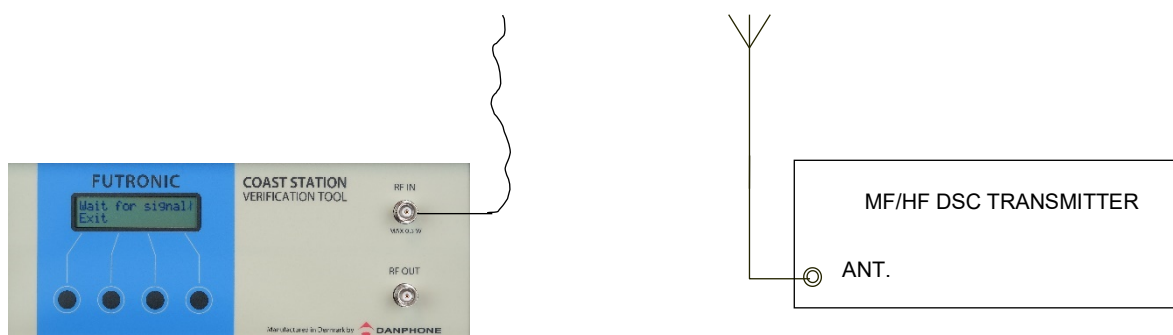
Set Number

As you may wish to test several radios under the same MMSI, each radio can be given its own individual set number for recognition. Default number is 1. Press “OK” to confirm or press ↑ or ↓ to change to another number. Then, press “OK” and go to the test you wish to perform.

Receive DSC

In the Receive DSC test mode, the Futronic CSVT will receive the radio’s MMSI number and DSC data transmitted, and at the same time measure the frequency of the transmission.

Connect the wire antenna supplied with the Futronic CSVT and use the setup below. The Futronic CSVT antenna should be able to “see” the transmitter’s antenna.



Select “Receive DSC” and press “OK”. Then select whether the Futronic CSVT is going to receive the call on one of the “TFC” channels or “MF/HF” distress channels. Press “OK” and select frequency. Finally, press “OK” again and activate the transmitter.

The Futronic CSVT remains in receive mode until a DSC call is received. A press on the EXIT button can interrupt the mode, provided that the Futronic CSVT has not started to receive a call, in which case you have to wait for a few seconds. MMSI number, data and the MARK/SPACE frequencies are presented in the display and stored in memory, provided that the checksum is OK.

Test results are displayed line by line. Press ↑ or ↓ to toggle between the lines.

If the MARK/SPACE frequencies do not appear on the LCD display, the signal is most likely outside the limits 1770-1800 Hz / 1600-1630 Hz, or the signal was unstable during the header or that the header was too short (less than 11 bit). If data are shown as 255, it's because they were received in error.

Example of Printout from the Memory:

```
MF/HF # 1 Time/date: 08:56:20 / 04-12-2019
DSC DATA: 2187.5 kHz
RX MMSI: 9999999990 Format 120 Category: 100 TX MMSI: 2190155210
1.telecommand: 109 2.telecommand: 126 Info.: 02 26 50 02 26 50
EOS: 117 ECC: 94 Status: OK
Mark: 2187428 Hz Space: 2187592 Hz
```

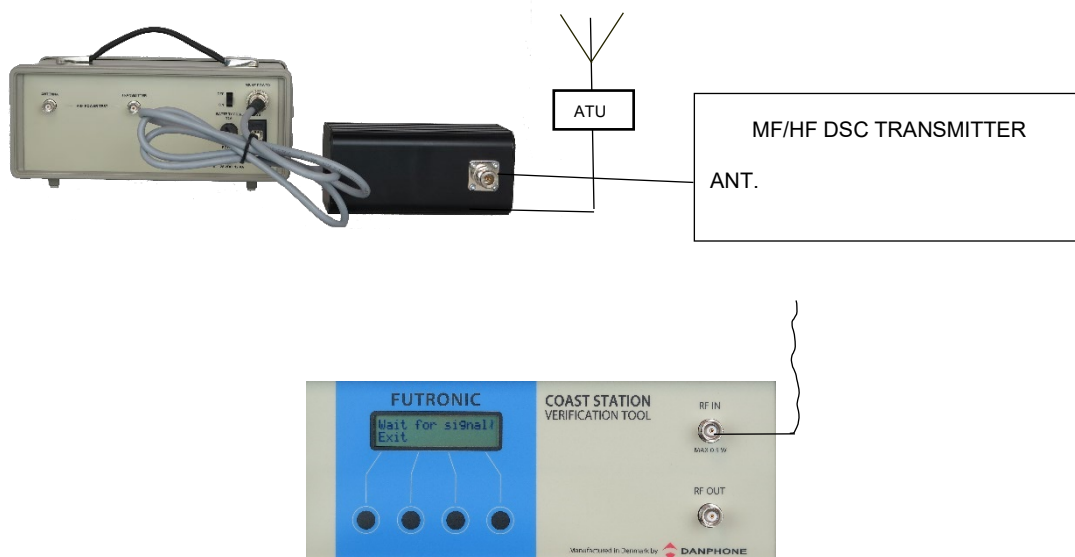
The SPACE and the MARK frequencies are measured during the initial part of the DSC call. The measurements are done by means of a time measurement on an AF signal (1700 Hz +/- 85 Hz) derived from the MF/HF MARK/SPACE signal.

The time measurements for MARK and SPACE respectively are converted to frequency and the calculated values are added to an offset frequency for the actual MF/HF frequency. By adding the offset frequency to the measured/calculated frequencies the actual MF/HF MARK/SPACE frequencies are obtained.

The AF signal used for calculation of the MARK/SPACE frequencies must be within 1615 +/-15 Hz and 1785 +/-15 Hz respectively to be accepted.

Simultaneous MF/HF power test

When the MH/HF Power Sensor (optional accessory) is connected between the transmitter output terminal and the antenna tuner Futronic CSVT will display the PEP power and VSWR. The test results are stored in the Futronic CSVT memory along with the DSC data.

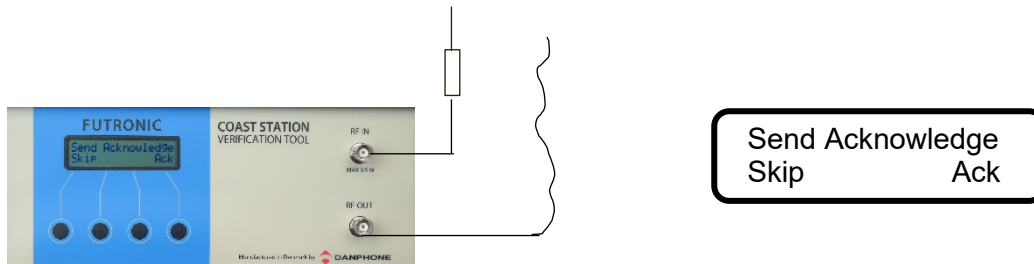


Example of Printout from the Memory:

MF/HF # 1 Time/date: 08:58:01 / 04-12-2019
DSC DATA: 2187.5 kHz
RX MMSI: 9999999990 Format 120 Category: 100 TX MMSI: 2190155210
1.telecommand: 109 2.telecommand: 126 Info.: 02 26 50 02 26 50
EOS: 117 ECC: 94 Status: OK
Mark: 2187428 Hz Space: 2187592 Hz Fwd: 264 Watt PEP Rev: 1 Watt PEP VSWR: 1.1

Generate 122 (Acknowledge back quote)

If a MF/HF DSC message format 120 (Selective) and category 100 (Routine), 108 (Safety) or 110 (Urgency) and 117 (Ack. RQ) are received, the Futronic CSVT is able to generate a 122 (Ack. BQ). After Receiving the message, the message is shown on the Display. When Exiting the results view, the following message is shown in the display.



Select Ack for transmitting the Ack. BQ message. Remember to connect the antenna to RF Out on the Futronic CSVT.

Example of printout from the memory if the MF/HF DSC message is received:

```
MF/HF # 2 Time/date: 08:35:07 / 29-01-2020
DSC DATA: 12577.0 kHz
RX MMSI: 9999999990 Format 120 Category: 100 TX MMSI: 2190155210
1.telecommand: 109 2.telecommand: 126 Info.: 12 35 30 12 35 30
EOS: 117 ECC: 94 Status: OK
Mark: 12576916 Hz Space: 12577085 Hz

MF/HF # 2 Time/date: 08:35:28 / 29-01-2020
12577.0 kHz Received ok
```

Send DSC

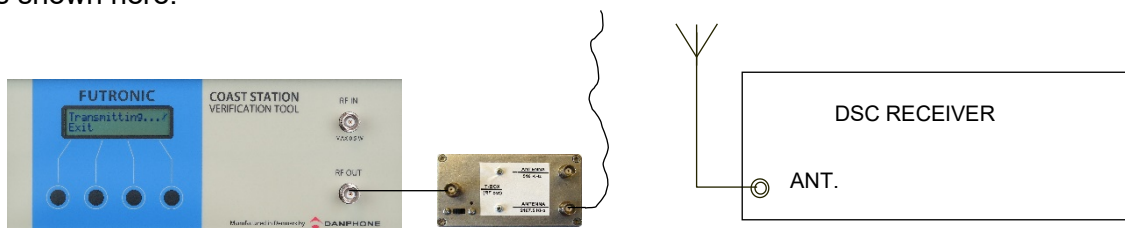
In the Send DSC mode, the Futronic CSVT will transmit a DSC call for you to check on the DSC receiver accordingly.

It is a requirement that the MMSI number registered in the Futronic CSVT is identical with the MMSI of the radio to be tested. Please check and change number, if required, using the Edit target MMSI menu. See Page 12.

With selective calls, connect the relevant antenna supplied with the Futronic CSVT to RF OUT and use the setup below.



If the transmission signal is not strong enough to enable the test, you may use the RF Amplifier as shown here:



With distress calls, it is important to use a coax cable for the connection between the Futronic CSVT and the DSC receiver. This will prevent other ship stations to be alerted.

Use this setup with distress calls:



To send a DSC call, select **“Send DSC”** and press **“OK”**. Then, select **“TFC”** or **“MF/HF”** respectively.

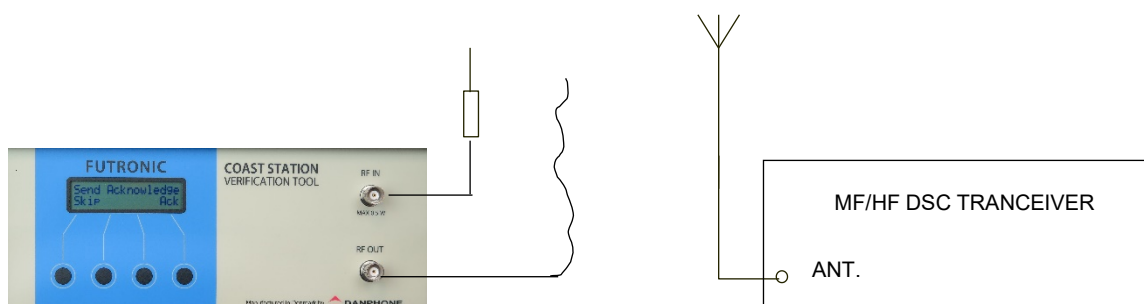
With **“TFC”**, select frequency and press **“OK”**. Select **“Normal”** or **“Reduced”** output power. Usually, normal power is recommended to send the call.

With **“MF/HF”**, select frequency and press **“OK”**. Select **“Dis”** to send a distress call, **“Tst”** or **“Sel”** to send a selective call. Select **“Normal”** or **“Reduced”** output power. Usually, normal power is recommended to send selective calls. Distress calls are always sent at reduced power.

Following the DSC call, the Futronic CSVT will display **“Received status”**. Press **“OK”** if the call was successfully received. Press **“Fail”** if the call was not well received. The answer will be stored in the Futronic CSVT memory for your test report.

Tst - Send Safety Test call and wait for receiving Test call acknowledgement from the transceiver.

Remember to connect both RF OUT and RF IN on the Futronic CSVT.



Example of printout from the memory of received Test call acknowledgement:

MF/HF # 2 Time/date: 08:34:07 / 29-01-2020
DSC DATA: 12577.0 kHz
RX MMSI: 9999999990 Format 120 Category: 108 TX MMSI: 2190155210
Test acknowledgement
EOS: 122 ECC: 66 Status: OK
Mark: 12576912 Hz Space: 12577081 Hz

Please note: Some DSC receivers have a built-in delay of 1-2 minutes before they acknowledge distress calls.

The TFC and MF/HF selective call transmits the following information:

120,120	Format specifier - individual call.
21,95,57,62,40	Address - 2195576240
100	Category - routine
99,99,99,99,90	Self-identification = Futronic CSVT "MMSI No".
109	First telecommand
126	Second telecommand
126 126 126 126 126 126	Frequency or channel 126 transmitted six times
117	Ack. RQ End of sequence
69	Modulus-2 checksum

The MF/HF test safety call transmits the following information:

120,120	Format specifier - individual call.
21,95,57,62,40	Address - 2195576240
108	Category - safety
99,99,99,99,90	Self-identification = Futronic CSVT "MMSI No".
118	First telecommand
126	Second telecommand
126 126 126 126 126 126	Frequency or channel 126 transmitted six times
117	Ack. RQ End of sequence
86	Modulus-2 checksum

The MF/HF distress call transmits the following information:

112,112	Format specifier - Distress call
99,99,99,99,90	Address - Futronic CSVT "MMSI No".
107	Category - Undesignated distress
99,99,99,99,99	Co-ordinates - 99 99 99 99 99 at test.
88,88	Time - 88 88 at test.
109	First telecommand
127	EOS - End of sequence
48	Modulus-2 checksum

Send custom DSC

The Send custom DSC mode enables the Futronic CSVT to send a custom-made DSC call composed in advance on a PC using Futronic CSVT Manager. Once downloaded, connect your PC to the Futronic CSVT via the USB cable supplied.

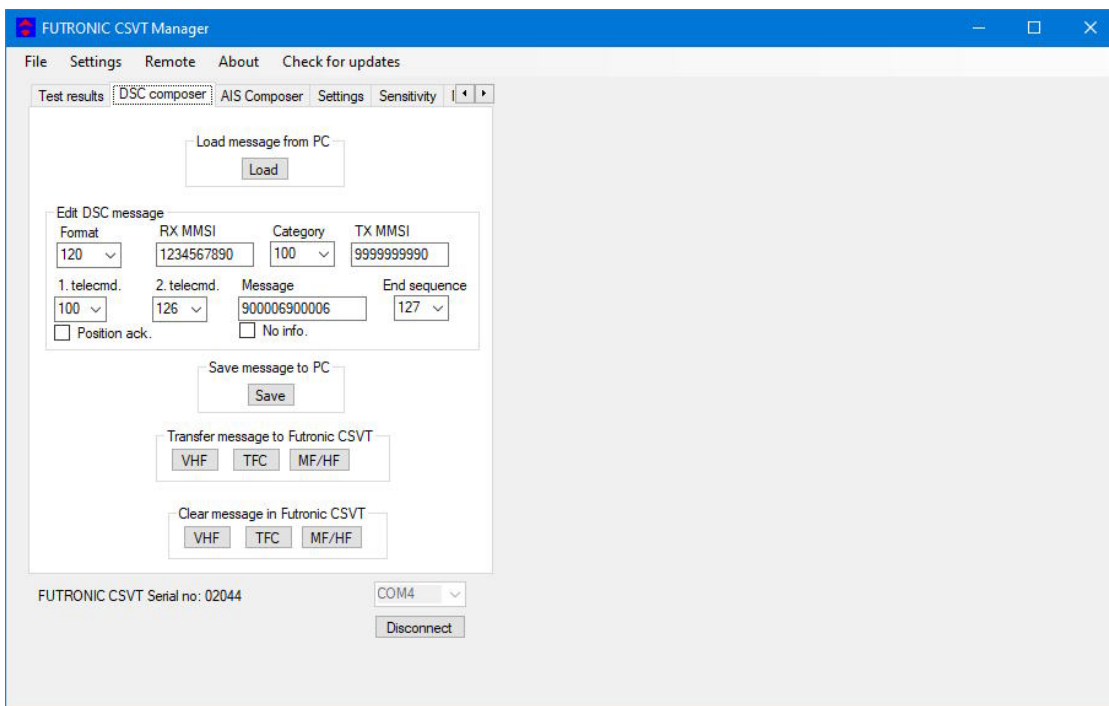
FUTRONIC CSVT Manager

Under the “DSC Composer” tab you can compose your own custom-made DSC messages and transfer them to the Futronic CSVT accordingly.

Please refer to ITU-R M.493 for composing of DSC messages.

In the section, *Transfer message to the Futronic CSVT*, select “**MF/HF**” or “**TFC**”.

Custom-made DSC messages can also be saved on your PC for later use.



Futronic CSVT

To make the Futronic CSVT transmit the custom-made call, select “**Send custom DSC**” on the Futronic CSVT and press “**OK**”. Then, select “**TFC**” or “**MF/HF**” respectively.

With “**TFC**”, select frequency and press “**OK**”. Select “**Normal**” or “**Reduced**” output power. Usually, Normal is recommended to send the call.

With “**MF/HF**”, select frequency and press **OK**. Select “**Normal**” or “**Reduced**” output power. Usually, Normal is recommended to send the call.

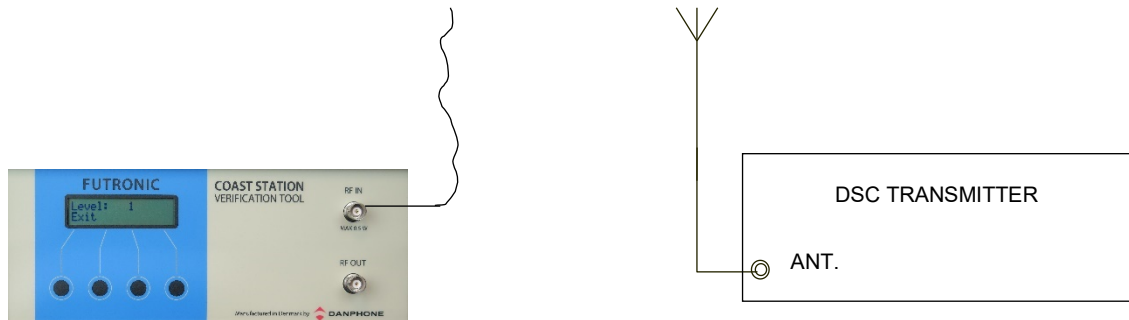
Following the DSC call, the Futronic CSVT will display “**Received status**”. Press “**OK**” if the call was successfully received. Press “**Fail**” if the call was not well received. The answer will be stored in the Futronic CSVT memory for your test report.

If there is no custom-made call in the Futronic CSVT, the display will say “**No custom data**”.

Signal level

This mode can be used to check the signal strength level of the received signal at 2187.5 kHz.

The level figure is used to indicate if the signal strength is sufficient to ensure proper radio communication between the Futronic CSVT and the radio during the following tests.



For an indication of the actual signal strength level, select **“Signal level”** and press **“OK”**. Following this, the frequency will appear in the display. Then, press **“OK”** and start transmission from the radio. The level figure appears in the Futronic CSVT display. A figure of 70 or higher is advisable.

Test Sensitivity

This test mode enables you to check the sensitivity of a MF/HF receiver.

Use this setup:



- 1) Set the receiver to 22,000 kHz.
- 2) Select **“Test Sensitivity”** on the Futronic CSVT and press OK.
- 3) Select **“High”** to send a test signal at -90 dBm, or **“Low”** to send the signal at -110 dBm. With this, the Futronic CSVT transmits 22,001 kHz modulated with 1 kHz at the requested level.
- 4) Check that a 1 kHz tone can be heard in the radio's speaker.

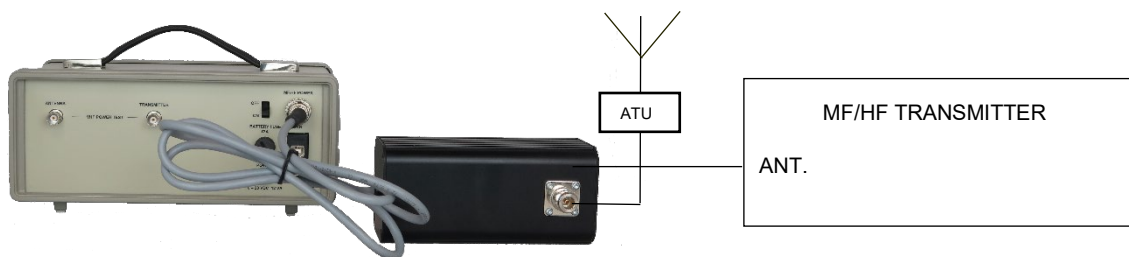
MF/HF Power test

In the MF/HF Power test mode, the Futronic CSVT can measure output power and VSWR on 2 MHz to 25.2 MHz. Accuracy: ± 0.5 dB

The Futronic CSVT will display MF/HF power test when connected to the Futronic CSVT via the pilot socket.

The MF/HF Power Sensor is connected between the transmitter output terminal and the antenna tuner.

Use this setup to perform the MH/HF power test.



Select “**MF/HF Radios**” and set number. Select “**MF/HF power test**” and choose MF/HF band by pressing \uparrow or \downarrow to scroll up and down. Press “**OK**” to confirm.

Use Audio Reference for modulation with dual tone for measuring.

Then, activate the transmitter and keep it activated while selecting “**Meas**”.

In the Meas (= measure) mode, the Futronic CSVT will perform and display a single power measurement and store it in the Futronic CSVT memory.



Danphone's Audio reference

In the Cont (= continuous) mode, the Futronic CSVT will continue taking measurements until pressing the EXIT button. Cont readings are not stored, but the feature can be used e.g. for checking/adjusting the antenna.

Example of Printout from the Memory:

MF/HF # 1 Time/date: 08:48:28 / 04-12-2019
RF range: 25.0 - 25.2 MHz Fwd: 264 Watt PEP Rev: 1 Watt PEP VSWR: 1.1

MF/HF # 1 Time/date: 08:49:06 / 04-12-2019
RF range: 6.0 - 6.3 MHz Fwd: 261 Watt PEP Rev: 0 Watt PEP VSWR: 1.0

NAVTEX TESTS

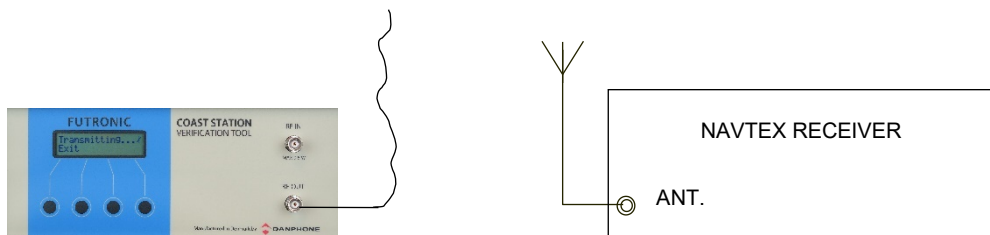
In the NAVTEX test mode, the Futronic CSVT can receive (RX), send NAVTEX messages (Msg) or carrier (Car.) on 490 kHz, 518 kHz or 4209.5 kHz.

NAVTEX receiver test.

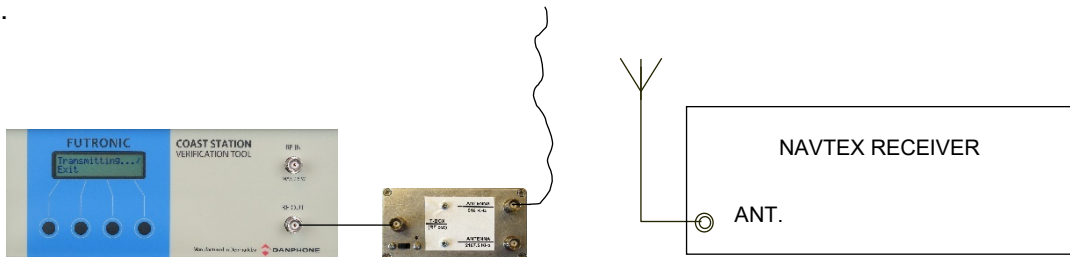
Set Number

As you may wish to test several NAVTEX receivers, each receiver can be given its own individual set number for recognition. Default number is 1. Press **“OK”** to confirm or press \uparrow or \downarrow to change to another number. Then, press **“OK”** and go to the test.

Connect the wire antenna supplied with the Futronic CSVT to RF OUT and use this setup:



If the signal is not strong enough to enable the test, you may connect the RF Amplifier as shown below.



- 1) Select frequency and press **“OK”**.
- 2a) Select **“Car.”** To send the un-modulated carrier. Press EXIT to stop transmission.
- 2b) Select **“Msg”** to send a pair of test messages – a navigational warning and a SAR message.
- 3) Use \uparrow or \downarrow to set the number of times you wish to transmit the test messages.
- 4) Use \uparrow or \downarrow to set the transmitter site letter in your NAVTEX message.
- 5) Press OK to send. The display will count down for every pair of test messages being sent.
- 6) Check that the NAVTEX receiver receives/prints the following messages:

```
NAVTEX MESSAGE XZ01 *  
0123456789ABCDEFGHIJKLMNQRSTU  
NAVTEX TEST SEQ BY FUTRONIC  
GMDSS FUTRONIC CSVT
```

```
NAVTEX MESSAGE XD00 *  
0123456789ABCDEFGHIJKLMNQRSTU  
NAVTEX TEST SEQ BY FUTRONIC  
GMDSS FUTRONIC CSVT  
SECOND TIME  
FIRST MESSAGE ID 01
```

7) After transmitting the Futronic CSVT asks: Received status? Select **“Fail”** or **“OK”**.

Example of Printout from the Memory:

NAVTEX # 1 Time/date: 08:34:36 / 16-08-2019
Send 518 kHz Received ok

*) Transmitter site letter (X) may vary. Depends on your own setting.
The messages are identified by X = Transmitter site, Z = **“No messages on hand”** (for test purposes), D = SAR message, 00-99 = Message No.

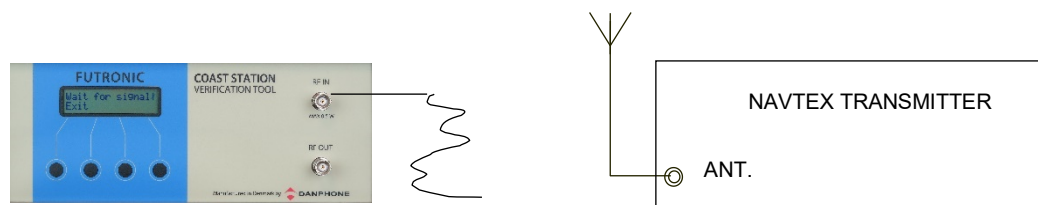
Please note that the NAVTEX receiver may have been set to neglect routine messages with a transmitter ID letter and message number already received within a certain period of time. If so, a test signal from the Futronic CSVT may also be neglected. In order to solve this problem, the Futronic CSVT automatically adds 09 to every routine message number being sent.

Changing the Transmitter ID letter in the test message may also solve the problem.

SAR messages are always received, even if they are transmitted repeatedly.

NAVTEX transmitter test.

Connect the wire antenna supplied with the Futronic CSVT to RF IN and place the wire antenna near the NAVTEX transmitter antenna.



Receive NAVTEX message.

- 1) Select frequency and press **“OK”**.
- 2) Select **“RX”** for receiving a NAVTEX message. Press EXIT to stop receiving.

The result shows station and message ID, Mark and Space frequencies.

Example of Printout from the Memory:

NAVTEX # 1 Time/date: 11:01:17 / 06-03-2023
RF: 518 kHz ID: HZ06 Mark: 517914 Hz Space: 518084 Hz

AIS TRANSPONDER TESTS

Use the terms:
 AIS 1: 161.975 MHz
 AIS 2: 162.025 MHz

Set Number

As you may wish to test several transponders under the same MMSI, each transponder can be given its own individual set number for recognition. Default number is 1. Press “OK” to confirm or press ↑ or ↓ to change to another number. Then, press “OK” and go to the test you wish to perform.

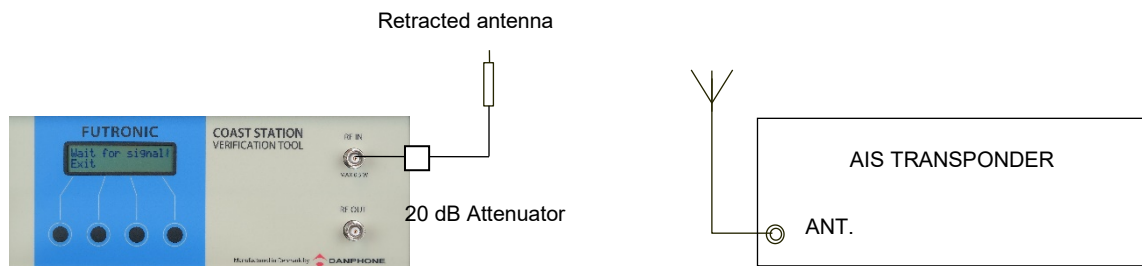
The Futronic CSVT is capable of decoding the following AIS messages:

MSG No.	Name of message	MSG No.	Name of message
1	Position report (Scheduled)	11	UTC/Date response
2	Position report (Assigned)	12	Safety related addressed msg.
3	Position report (Interrogated)	14	Safety related broadcast msg.
4	Base Station report	15	Interrogation
5	Static and voyage related data	18	Class B position report
8	Inland specific message FI 10	19	Class B extended pos. report
9	SAR Aircraft position report	21	Aids-to-Navigation (AtoN) report
10	UTC/date inquiry	24	Class B Static data

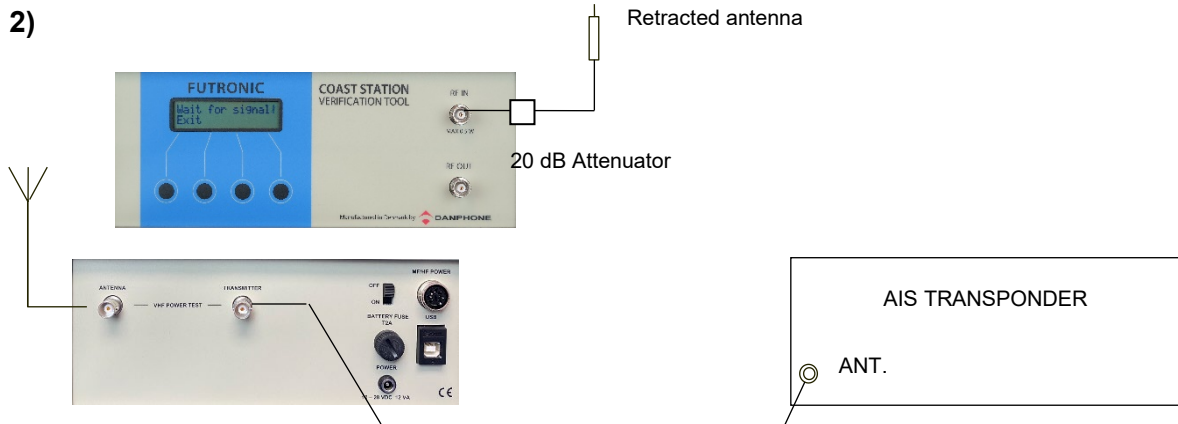
Setup for AIS tests

There are 5 different setup options for the AIS transponder tests:

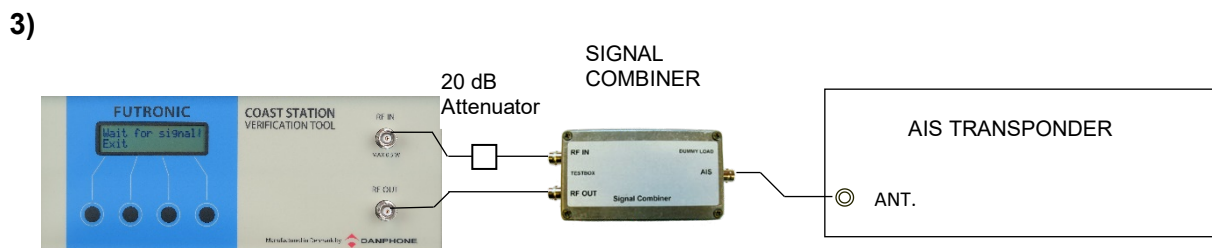
1)



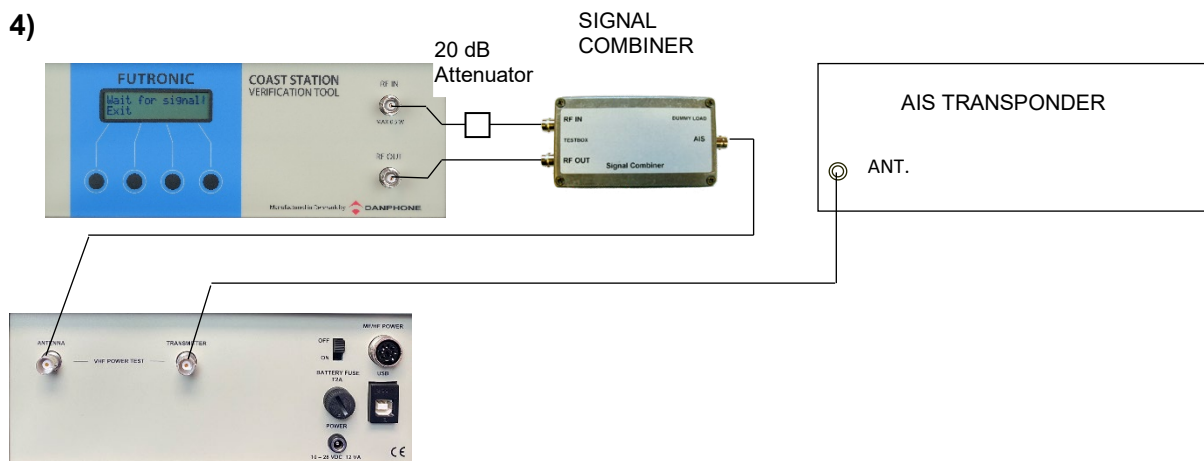
In this setup it is possible to receive AIS messages.



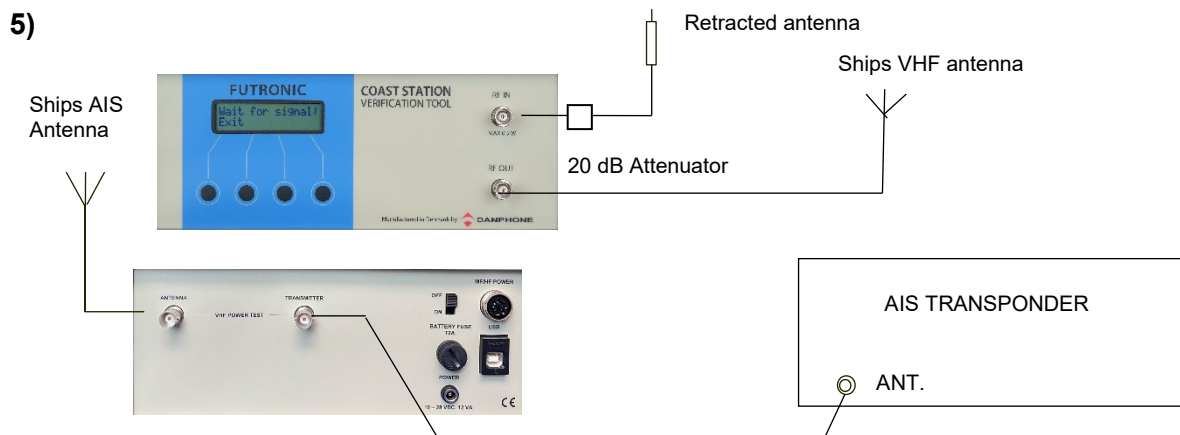
In this setup it is possible to receive AIS messages and measure power level from the AIS transponder.



In this setup it is possible to send and receive AIS messages.



In this setup it is possible to send and receive AIS messages and measure power level from the AIS transponder.



In this setup it is possible to send and receive AIS messages and measure power level from the AIS transponder via the ships AIS antenna.

Receive AIS sele

In the Receive AIS sele test mode, the Futronic CSVT will receive the selected transponder's MMSI number and AIS data, and at the same time measure the frequency and the forwarded and reflected power. The test can be performed on AIS1 and AIS2 respectively.

It is a requirement that the MMSI number registered in the Futronic CSVT is identical with the MMSI of the AIS transponder to be tested. Please check and change number, if required, using the Edit taget MMSI menu on page 12.

Select "**Receive AIS sele**" on the Futronic CSVT and press "**OK**". Select AIS channel and press "**OK**" again to request for data. It may take up to 20 seconds until the AIS transponder transmits its data.

Test results are displayed line by line. You may toggle between the lines using ↑ and ↓ to view all the results. Results are also stored in the Futronic CSVT memory.

The Futronic CSVT must receive AIS data on RF IN in order to start the power measurement. If the Futronic CSVT keeps waiting to receive for some time, it is likely because the AIS transponder is still waiting to transmit its data. Please note the transponder's reporting interval depends on the ship's speed. The lower speed, the longer interval. Reporting Intervals for ships at anchor or moored may be up to 3 minutes for each AIS channel.

Examples of Printout from the Memory:

```
AIS # 1 Time/date: 07:25:56 / 26-09-2017
Message ID: 1 MMSI: 219557624
Position: 57d12.3732 N 9d41.0067 E Pos. accuracy: 0 Navigational status: 0
COG: 321.2d SOG: 0.1 Knots ROT: N/A HDT: N/A Time stamp: 01
AIS1 RF: 161,975.2 kHz Fwd.: 11.7 Watt Rev.: 0.6 Watt VSWR: 1.59
```

```
AIS # 1 Time/date: 07:26:26 / 26-09-2017
Message ID: 1 MMSI: 219557624
Position: 57d12.3730 N 9d41.0060 E Pos. accuracy: 0 Navigational status: 0
COG: 341.8d SOG: 0.1 Knots ROT: N/A HDT: N/A Time stamp: 31
AIS2 RF: 162,025.6 kHz Fwd.: 11.7 Watt Rev.: 0.6 Watt VSWR: 1.59
```

You can check that the Futronic CSVT is able to receive AIS data from the actual transponder by requesting a Message 5. See page 38. Upon this request the transponder should respond within a few seconds.

Use setup 1, 2 or 5 from “Setup for AIS tests”.

Receive AIS

In the Receive AIS mode, the Futronic CSVT will receive the MMSI number, AIS data and frequency of the first transponder being detected by the Futronic CSVT. Use setup 1, 2 or 5 from “Setup for AIS tests”.

Select “**Receive AIS**” on the Futronic CSVT and press “**OK**”. Select AIS channel and press “**OK**” again to request for data. It may take up to 20 seconds until the AIS transponder transmits its data.

Test results are displayed line by line. You may toggle between the lines using ↑ and ↓ to view all the results.

Example of Printout from the Memory:

```
AIS # 1 Time/date: 08:26:12 / 14-09-2017
Message ID: 1 MMSI: 219023274
Position: 57d35.6062 N 9d57.5732 E Navigational status: 15
COG: 293.8d SOG: 0.0 Knots ROT: 0d HDT: 159 Time stamp: 09
AIS2 RF: 162,025.1 kHz
```

Receive AIS loop

In the Receive AIS loop mode the Futronic CSVT will receive and display the MMSI number and message ID continuously from all AIS transponders within reach – one at a time. The result is kept in the display until the next is received. Results are displayed only, not stored in the memory.

In this mode you also have a choice between AIS1 and AIS2.

Use setup 1, 2 or 5 from “Setup for AIS tests”.

Request Message 11 (UTC)

Use setup 3, 4 or 5 from “Setup for AIS tests” to request the UTC time. Select “**Request AIS Message 11**” and press “**OK**”. Then, select AIS frequency and press “**OK**” again.

The Futronic CSVT will automatically synchronize with the AIS transponder; transmit the request and then switch to receiving mode. Wait for the transponder to respond and check the MSG 11 information appearing on the Futronic CSVT display.

The received MSG 11 information will also be stored in the Futronic CSVT memory.

Example of Printout from the Memory:

```
AIS # 1 Time/date: 13:06:06 / 22-01-2018
Message ID: 11 MMSI: 111661003
Position: 57d12.3745 N 9d41.0067 E Electronic position fixing device: 1
Date: 22-01-2018 Time: 12:05:58
AIS1 RF: 161,974.7 kHz Fwd.: 11.6 Watt Rev.: 0.6 Watt VSWR: 1.59
```

Send AIS message

The Futronic CSVT can transmit a fixed default AIS message or a custom-made message. Following the transmission, you can check that the AIS transponder receives the AIS message correctly.

Use setup 3 or 5 from “Setup for AIS tests”.

The default AIS message already loaded in the Futronic CSVT is a MSG 1 that includes a vessel position of 45°N 45°W.

To transmit the message, just select “**Send AIS MSG**” on the Futronic CSVT and press OK. Then, select AIS frequency and press OK again.

Following this, the Futronic CSVT will await a response from the transponder and then automatically send the message.

It is possible to force an AIS transmission by pressing the button on the right side, whilst the Futronic CSVT is in “waiting” position.

After the transmission, the Futronic CSVT will display **Received status**. Press “**OK**” if the call was successfully received. Press “**Fail**” if the call was not well received. The answer will be stored in the Futronic CSVT memory for your test report.

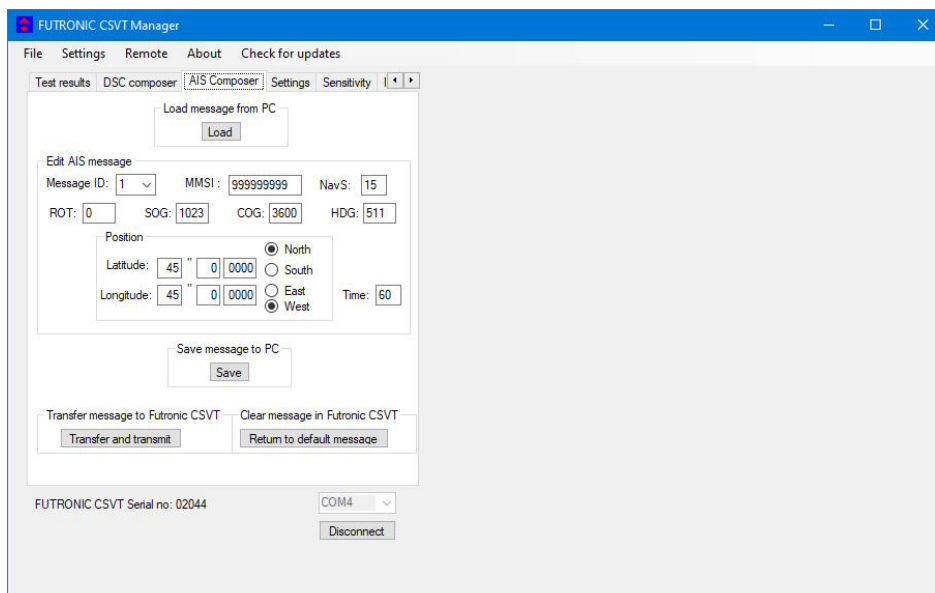
Example of Printout from the Memory:

AIS # 1 Time/date: 13:11:25 / 22-11-2011
AIS2 162.025 MHz. Received OK

Send custom AIS message

The Send custom AIS mode enables the Futronic CSVT to send a custom-made DSC call composed in advance on a PC using Futronic CSVT Manager. Connect your PC to the Futronic CSVT via the USB cable supplied.

Futronic CSVT Manager



Under the “AIS Composer” tab you can compose and save your own custom-made AIS messages.

When transferred to the Futronic CSVT, the AIS message will be transmitted on both AIS channels, AIS1 and AIS2.

Once composed, the message can be transferred from the PC to the Futronic CSVT via the USB cable supplied with the Futronic CSVT. When connected, follow the instructions on the screen, and the custom-made AIS message will replace the default MSG 1.

If the custom-made AIS message is removed from the Futronic CSVT later on, the default MSG 1 will automatically load again.

Simulate Ships

Using setup 3 or 5 from “Setup for AIS tests” to simulate ships being located at four different positions around the AIS transponder to be checked. Following the transmissions from the Futronic CSVT, you can check that the AIS transponder receives the four positions correctly.

Since the virtual ships (= the Futronic CSVT) will simulate its positions relative to the position of the AIS transponder being tested, the Futronic CSVT must first receive position data from the AIS transponder.

The required position data may be registered in the Futronic CSVT already, for instance if you have made other AIS tests prior to Simulate ship. Check this out in the **Test results / Show results** menu, looking for the latest position data received.

If you prefer not to use these data, perform a new Receive AIS test that includes the receipt of position data. The Futronic CSVT will always use the latest received position data for the Simulate ship test.

With the correct position data in place, select “**Simulate ships**” and press “**OK**”.

Press “**Short**” or “**Long**” to initiate transmissions from the Futronic CSVT. Select “**Short**” to have the virtual ship placed at a short distance (~50 meter) around the transponder. Select “**Long**” to have the ship placed at a longer distance (~800 meter).

Following this, the Futronic CSVT will await a response from the AIS transponder and then automatically send the first position. After transmission of the first position, the Futronic CSVT waits for a new response from the AIS transponder before the second position is transmitted, and so on.

It is possible to force an AIS transmission by pressing the button on the right side, whilst the Futronic CSVT is in “sending” position.

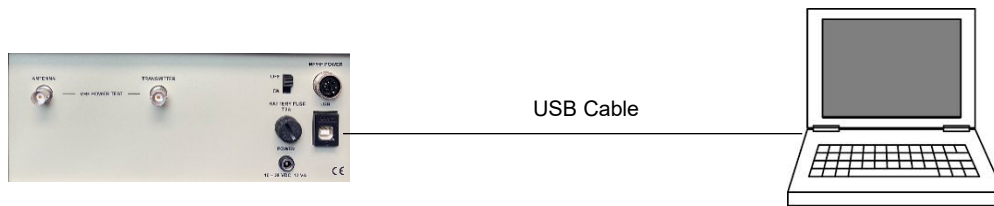
TEST RESULTS

Test results are automatically stored in the Futronic CSVT memory with the facility of transferring them to a PC or printer. The test result memory can contain a total of 600 measurements. If more measurements are done, the oldest will be deleted.

Show results

Test results can be retrieved from the memory and viewed on the display. Select “**Show results**” and press “**OK**”. Every test recorded is organized with a header under which the various test results are displayed line by line. Press ↑ and ↓ to toggle between the lines.

Transfer to PC



Test results can be transferred to your PC via Futronic CSVT Manager which is available for download from Danphone’s website.

Alternatively, any serial software set for 38,400 Baud N81 (No parity 8 data bit and 1 stop bit) should be able to receive the data and test results from the Futronic CSVT.

Here is how to use a HyperTerminal program within Windows. Usually the program can be found on your PC under Start/Accessories/Communications. If not, we advise you to download a HyperTerminal program from the Internet.

1) Connect your Futronic CSVT to the PC, using the USB cable supplied with the Futronic CSVT.

2) Create a HyperTerminal connection on your PC; select COM port and do the following settings:

Bits per second = 38,400

Data bit = 8

Parity = None

Stop bit = 1

Flow control = Hardware

Press OK, and the PC is now ready to receive data from your Futronic CSVT

3) On your Futronic CSVT, select **Transfer to PC** and press “**OK**”.

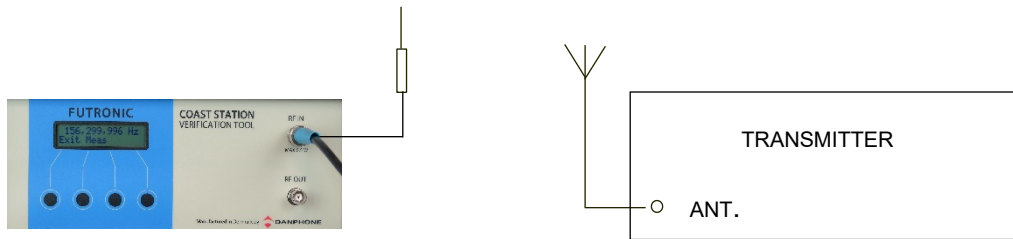
4) Press **Sele**, and you may select each individual test result you wish to transfer. The latest result is displayed first – or press “**All**”, and all test results in the memory will be transferred

Clear Memory

This will clear all test results store in the Futronic CSVT memory.

FREQUENCY COUNTER

The frequency counter enables you to measure any frequency between 0.4MHz to 475 MHz. To measure the frequency, use this setup using wire antenna or telescopic antenna.



- 1) Select "**Frq. Counter**" on the Futronic CSVT and press "**OK**".
- 2) Press \uparrow and \downarrow to select frequency range and press "**OK**".
- 3) Choose between "**Meas**" and "**Cont.**" Then, activate the transmitter.

In the Meas (= measure) mode the Futronic CSVT will perform and display a single frequency measurement and store it in the memory.

In the Cont (= continue) mode the Futronic CSVT will continue taking measurements until pressing the EXIT button stops it. Cont readings are not stored, but the feature can be used e.g. for checking/adjusting the antenna.

FUTRONIC CSVT SETTINGS

Time & date

In the Set Time & Date mode, press \rightarrow to move the cursor and \uparrow to change the digit. Press "**OK**" to store.

Backlight time

The backlight time can be adjusted from 0 to 200 seconds. Default is 60 seconds. Press \uparrow or \downarrow to adjust and "**OK**" to store.

LCD contrast

The LCD contrast can be adjusted from 0 to 100%. Default is 90%. Press \uparrow or \downarrow to adjust and **OK** to store.

OCXO time

The Oven-Controlled Crystal Oscillator (OCXO) may not be active all the time, only when required during tests etc. In order to save battery and thereby increase operation time with battery power, the OCXO can be set to go to sleep after a adjustable time between 0 and 99 minutes. Default is 10 minutes. Press \uparrow or \downarrow to adjust and "**OK**" to store.

Enable speaker

Audio can be heard in speaker when receiving VHF DSC signals, measuring deviation and measuring signal level. Default setting is speaker off. Press \uparrow or \downarrow to enable speaker and "**OK**" to store.

Return to Default Settings

Turn the Futronic CSVT off and keep the "**OK**" button down while turning on again.

FUTRONIC CSVT INFO

This menu presents the following information in the Futronic CSVT display. The information may consist of two or more lines. Press ↑ or ↓ to toggle between the lines.

Futronic CSVT model

Serial number

Software version

Battery voltage

Battery capacity indication (for guidance only):

13.0 V = 100%, 12.2 V = 50%, 11.9 V = Needs charging now.

SELF TEST

In the SELF TEST mode, it's possible to check the function of some of the circuits in the Futronic CSVT. This should be used to check the Futronic CSVT before it is used for inspection of a GMDSS installation. The following self-test functions can be performed:

PLL TEST: This mode performs an automatic test to assure that the frequency synthesizer-controlled oscillator goes into "lock" at all the applied synthesis frequencies. The frequency synthesizer-controlled oscillator is programmed to each frequency in turn and then the "lock detect" output is watched for about 1 sec. to check for a correct lock. In case of a lock failure, the test is stopped and the LCD display indicates the frequency out of lock. The test continues when one of the push buttons are activated.

FRQ TEST: This mode is used for test of the MARK/SPACE frequencies in the MF/HF range by means of the internal frequency counter.

To check the generation and measurement of MF/HF mark/space frequencies, connect a coax cable from RF IN to RF OUT, choose the MF/HF frequency to be checked and select MARK or SPACE:



FRQ TEST gives the possibility for control of MF/HF MARK/SPACE frequencies as well as the frequency counter as the chosen MARK/SPACE frequency is available at the RF OUT socket and can be measured via RF IN. The result is shown on the LCD display. The SPACE frequency should be 85 Hz higher than the center frequency. The MARK frequency should be 85 Hz lower than the center frequency.

TECHNICAL SPECIFICATIONS

Size (HxWxD):	103x258x140 mm
Weight:	2.8 Kg
Power supply:	10 - 28 VDC
Power consumption:	max. 12 VA
Ambient temperature:	0 to 50 Deg. C
Storage temperature:	-30 to +60 Deg. C

Measurement Accuracy:

Frequency measurements general:	+/- 0.2 ppm +/- 1 digit
Frequency measurements at CH70, AIS1 AND AIS2:	+/- 0.2 kHz
Output signals:	nominal frequency +/- 0.2 ppm
Freq. deviation measurements:	+/- 0.1 kHz at 5 kHz +/- 0.5 kHz at 1-6 kHz
VHF Power measurements:	+/- 0.5 dB 0-75 W

PERFORMANCE CHECK

Check mark/space frequencies in SELFTTEST mode.

Specification: +/- 0.1 ppm +/- 1 digit.

Check output level at the following frequencies:

518 kHz: -15 dBm +/- 3 dBm

156.525 MHz: -46 dBm +/- 3 dBm

Normal:

2.1875 MHz: -13 dBm +/- 3 dBm

16.804,5 MHz: -15 dBm +/- 3 dBm

Reduced / distress:

2.1875 MHz: -57 dBm +/- 3 dBm

16.804,5 MHz: -57 dBm +/- 3 dBm

22.001 MHz: Low -110 dBm +/- 2 dB

22.001 MHz: High -90 dBm +/- 2 dB

Check sensitivity at MF/HF DSC receiving.

Specification: <= -80 dBm

Check sensitivity on CH 70

Specification: <= -90 dBm

Check accuracy for frequency measurements.

All band (0.4 - 475 MHz).

Specification: <= +/- 0.1 ppm with -30 dBm >= Pin <= 0 dBm

VHF channel 70.

Specification: <= +/- 0.2 kHz with -30 dBm >= Pin <= 0 dBm

MF/HF Power Sensor

All Maritime MF/HF Bands

Accuracy: ± 0.5 dB

Max. 1000 Wpep in 5 minutes.

DECLARATIONS

- Declaration of Conformity to EMC Directive
- Declaration of the Built-in Battery
- Declaration of Battery Conformity to IATA Regulations

Declaration of Conformity

Declaration of Conformity to the European EMC Directive 2014/30/EU

Equipment Name: Futronic Coast Station Verification Tool

Equipment Category: Test instrument
For the testing of coast radio systems

Manufacturer: Danphone A/S
Tagholm 16
DK-9400 Noerresundby
Denmark

Declaration Statement: I hereby declare that the above mentioned test instrument conforms to the requirements given in relevant articles of the European EMC Directive 2004/108/EEC

Date: 25th April 2023

Signature:



Claus Falk
Chief Executive Officer
Danphone A/S

Letter of Declaration



DANPHONE

DANPHONE A/S
Tagholm 16 • DK-9400 Noerresundby • Denmark
Tel. +45 98 44 44 44
E-mail: danphone@danphone.com
www.danphone.com
Co. Reg. No. 13640378



Quality System
according to
DS/EN ISO 9001:2015

Date: 25. April 2023

I hereby declare that we

Danphone A/S, Tagholm 16, DK-9400 Noerresundby, Denmark

are the manufacturers of the

Futronic Coast Station Verification Tool.

I also declare that the above-mentioned test instrument is used for the testing of coastal radio systems and conforms to the requirements given in relevant articles of the European EMC Directive 2004/108/EEC.

The CSVT does not contain any dangerous materials.

The built-in battery is a rechargeable, valve regulated, sealed Lead-Acid battery classified as "Class 8, Group III UN No. 2800 Battery, wet, non-spillable electric storage, special provision A67".

The CSVT is permitted as carry-on and check-in baggage on aircrafts, as the battery's voltage and watt-hour rating does not exceed 12V and 100Wh and the battery terminals are protected against short circuits in accordance with provision A67.

If the fuse is removed there is no connection between the battery and the unit.

On behalf of
DANPHONE A/S

Claus Falk
Chief Executive Officer



DOCUMENT: QAT02-B

TRANSPORTATION OF YUASA BATTERIES (TYPES NP, NPH, NPC, NPL, RE, REL, UXL, ENDURANCE) BY AIR, SEA OR ROAD

1. AIR TRANSPORT

Under IATA Dangerous Goods Regulations, the subject batteries are classified as:

"Class 8, Group III UN No. 2800 Batteries, wet, non-spillable, electric storage, special provision A67."

These batteries are classified as **non-spillable** because they have been shown to meet the requirements of Packing Instruction 806.

Special Provision A67, contained in IATA Dangerous Goods Regulations and the ICAO publication, Technical Instructions for the Safe Transport of Goods by Air and states that:

"Non-spillable batteries are not subject to these Instructions if, at temperature of 55° C, the electrolyte will not flow from a ruptured or cracked case and there is no free liquid to flow and if, when packaged for transport, the terminals are protected from short circuit."

These batteries were classified as meeting the A67 requirement after testing by PIRA, who stated that the batteries may be regarded as non-dangerous. Several other independent internationally recognised laboratories are also in agreement that these battery types are non-dangerous.

In meeting the requirements of packaging instruction 806 and Special Provision A67 the subject batteries may be regarded as **non-dangerous**

2. TRANSPORT BY ROAD AND AS SEA FREIGHT

The International Maritime Dangerous Goods (IMDG) code states that to be classified as **non-spillable and non-dangerous**, "The battery must be able to satisfactorily withstand without leakage the vibration and attitude tests described below.....". (Refer to IMDG Code on Batteries, Wet, Non-Spillable Electric, Storage, Class 8, Stowage Category A, UN2800, Special Provision A67). These Yuasa battery types have satisfactorily completed these tests as certified by Giltspur Packaging Ltd. Certificate of Test Serial No RDT3330/45/2, Job No 4000/0775 issued under Ministry of Technology Authority Ref. No 30260. They have also satisfied the requirements of Special Provision A67 as described above

3. PACKAGING - GENERAL

These batteries can be shipped in any quantity by air, road and sea. They are exempt from any special packing requirement other than to ensure that the battery terminals are protected from short circuit. **TREM cards are not required**

The normal packaging provided is suitable in this respect for batteries not secured in equipment. If in equipment, the batteries must be securely fastened in the battery compartment of the equipment.

Yuasa Battery Sales (UK) Ltd., Hawksworth Industrial Estate, Swindon, Wiltshire SN2 1EG
Tel: 01793-645700 Fax: 01793-645701
Registered number 1548820

