AMI MARINE UK

VHF Recorder

VR973

User Manual

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Document Issue	Date	Modification Number (where applicable) Brief Record of Change and Reason for Change
Iss02 Rev00	10.04.14	Complete Revision.
Iss02 Rev01	25.06.14	Update text.
Iss02 Rev02	25.06.14	Implementation of Dual Channel Audio.
Iss02 Rev03	13.02.15	Amendment of PL1 and PL2 connections.
Iss02 Rev04	18.05.15	Replaced SD Card with USB Drive.
Iss02 Rev05	29.05.15	Updated information regarding file time stamps.
Iss02 Rev06	13.02.15	Amendment of PL1 connections.

NOTE: All alterations must be verified and authorised by the Quality Manager.

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IMPORTANT WARNINGS

DANGER: HIGH VOLTAGE!
RISK OF ELECTRICAL SHOCK!

This unit has a voltage source inside.
Disconnect from the power before removing protective covers.
DO NOT remove the covers while the unit is switched on.
24 Volt DC electrical power on (when fitted) peripheral units.

NOTICE

Compass safe distance is 2 metres.

NOTICE

No user serviceable parts inside, servicing only by properly qualified and certified technical staff.

NOTICE

This manual is for informational use only, and may be changed without notice. This manual should not be construed as a commitment of AMI Marine (UK) Ltd. Under no circumstances does AMI Marine (UK) Ltd assume any responsibility or liability for any errors or inaccuracies that may appear in this document. The equipment should only be used for the purposes intended by the manufacturer; any deviation from this will void the warranty of the product.

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Product Description

OPERATORS MANUAL

CONTENTS

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Introduction

The VR973 VHF Recorder is designed to record the VHF audio, along with date, time and position, on-board workboats, fishing boats and other vessels that do not require a VDR/SVDR system. Clear communication is a vital part of marine operations and the VHF recorder is an effective tool to assist owners/operators of smaller vessels to create an accurate history of events, whether it is for litigation or training and education purposes.

Date, time and position are obtained from the vessels own GPS system and is a simple two wire connection with no setup required. The VHF audio is connected directly to the VR973 if available, as is the case with many modern VHF radios. For any VHF radios that do not have a dedicated output for a VDR/SVDR, which may be the case with older VHFs and those designed specifically for small boats, the KW973 VHF Interface may be used to combine the separate transmit and receive audio signals to be fed to the VR973 VHF Recorder.

The VR973 VHF Recorder now has dual audio input which can be used to record 2 individual VHF's or VHF and a bridge microphone.

The audio and GPS data are saved onto an USB Drive which can be accessed by any computer with a suitable USB Port. The saved files are in one minute increments and can be played back individually using an appropriate media player.

For dedicated playback software contact technical@amimarine.net.

Visual Overview

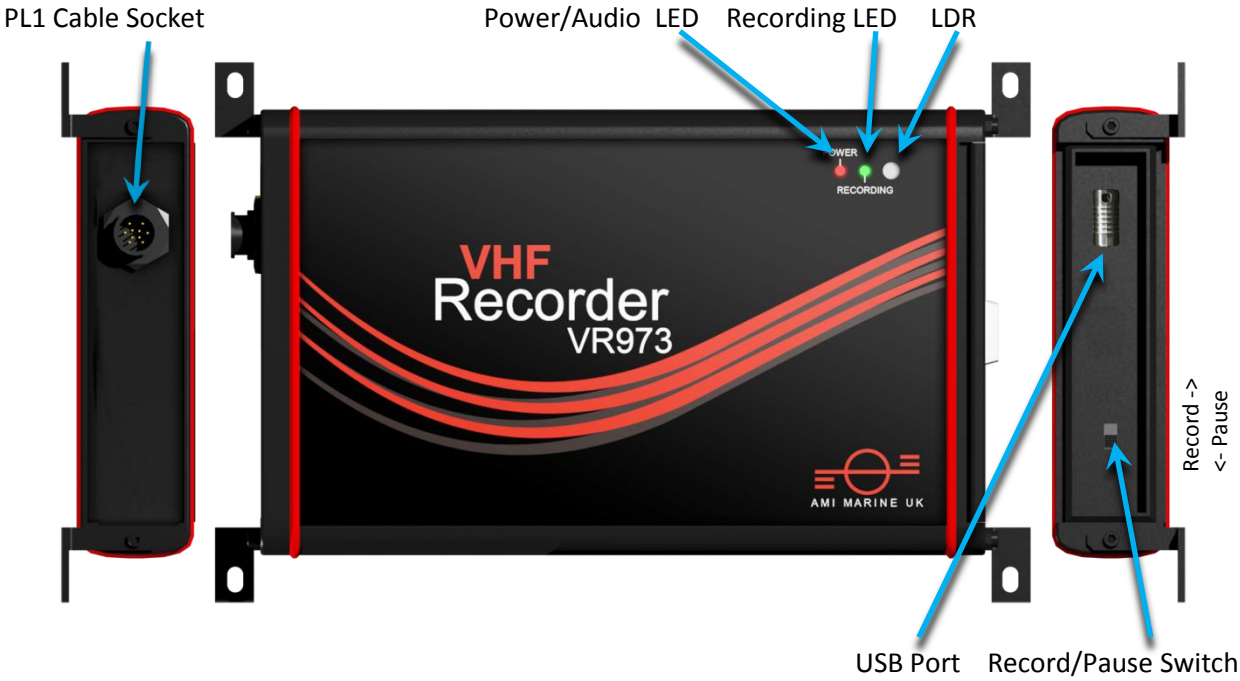


Figure 1.

Operating Instructions

To access the USB Drive / port and the System Record/Pause switch, unlock the side panel using the key supplied and lift open the cover.

Figure 2.

Figure 3.

Insert the USB drive into the USB port as shown in Figure 3.

Set the RECORD/PAUSE switch to RECORD i.e. towards the USB drive (see Figure 1.) after 45 seconds the red POWER/AUDIO LED will illuminate followed 1 minute later by the green RECORDING LED.

The green LED will flash on and off every second indicating that serial data is being received and the data recording process has started.

The red POWER/AUDIO LED will briefly go off every 60 seconds whilst the audio file is being compressed.

After one minute the first file will be saved onto the USB drive and the second file will begin to record.

This process will continue until the USB drive reaches capacity. At this time the oldest file will be overwritten by the newest to ensure continuous recording.

It will take approximately 2 to 3 minutes after the initial switching on for the system date and time to be synchronised with the GPS date and time. Should the GPS fail the CPU clock will continue to upkeep the date and time.

Switching the system to PAUSE will save the audio and data files currently being recorded; once complete the USB drive is unmounted ready for safe removal.

Once both the red and green LEDs are off it is then safe to remove the USB drive. This will take approx. 90 seconds.

Caution! Do not remove the USB drive until the red and green LEDs are both OFF or corruption to the current file may occur, or worse the possibility may occur that the complete USB drive will become corrupt and unreadable resulting in the necessary formatting and loss of all recorded data.

Recorded Files

To veiw the recorded files slot the USB drive into your computer's USB port.

Open file explorer and navigate to the USB drive. Once there you will find many folders, one created for each hour of recording.

The folder naming structure is YYYYMMDD-HH e.g. [20140625-17] 25th of June 2014 17:00 hours indicating the date and time the folder was created.

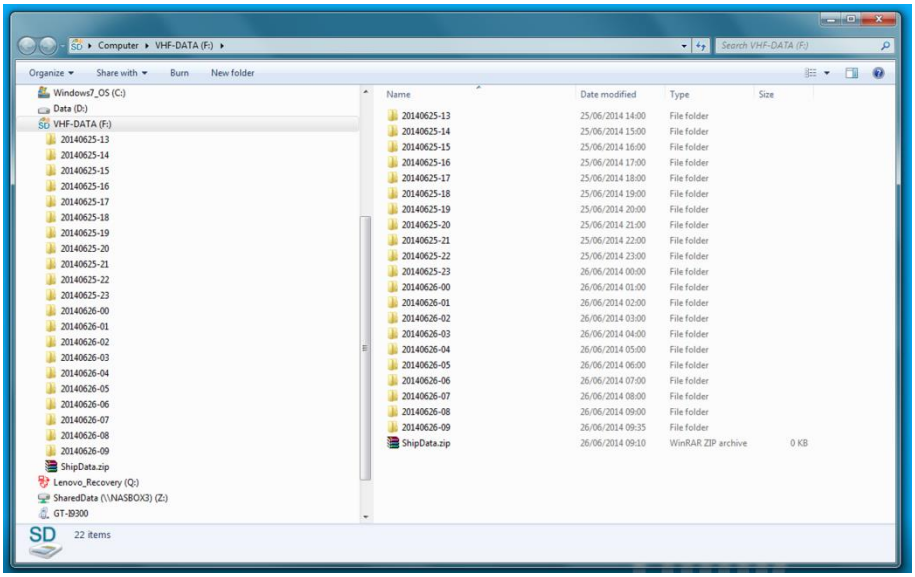


Figure 4.

Inside the folders the recorded zip files can be found, one SND file for every minute of audio and one VDR file for every 60 seconds of NMEA Data. The file name indicates when the file started recording. The 'Date modified' column in the file explorer indicates when the file finished recording and was saved.

Files are named: TYP – DATE – TIME. ZIP

For example VDR-25062014-17030000.ZIP

SND-25062014-17030000.ZIP

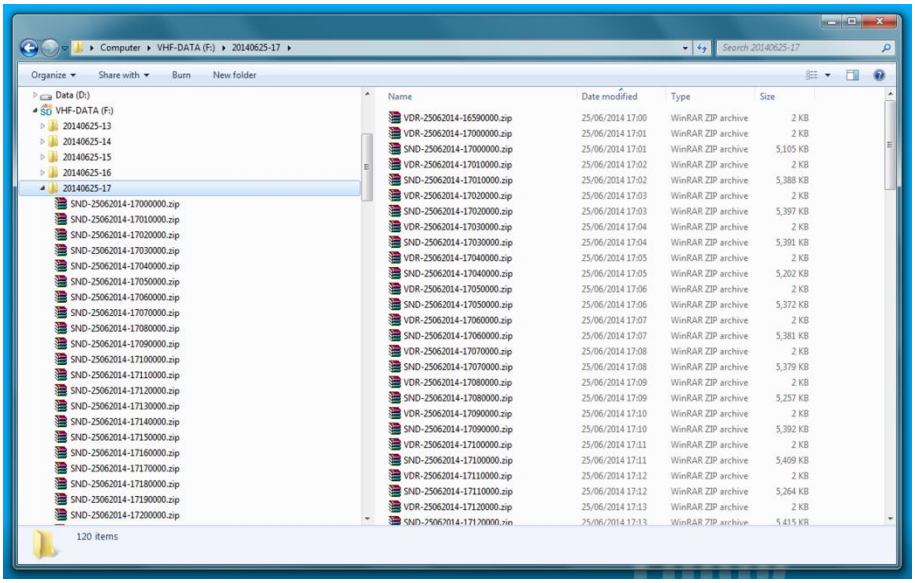


Figure 5.

Locate the date of the folder you are interested in and open. You can then further refine your search by locating the time stamp of the file you wish to veiw. Once located double click on the relevant file.

In the below example the VDR file once unzipped can be read using Windows Notepad or any text editor. In the text file you can easily read the NMEA data. As standard the GPS only will be recorded but if additional data is required to be recorded then an NMEA multiplexor/Combiner would be needed.

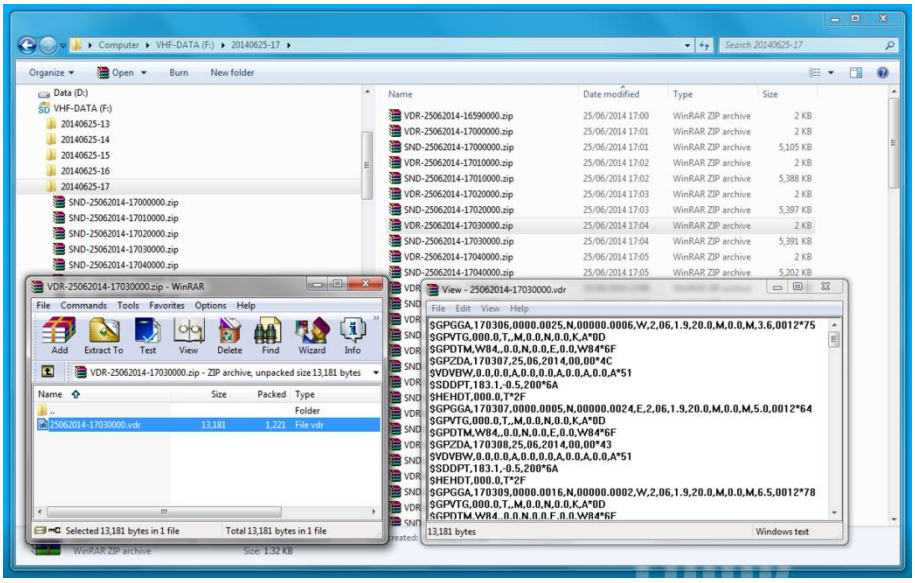


Figure 6.

In the below example the SND file once unzipped can be listened to using Windows Media Player or any WAV player.

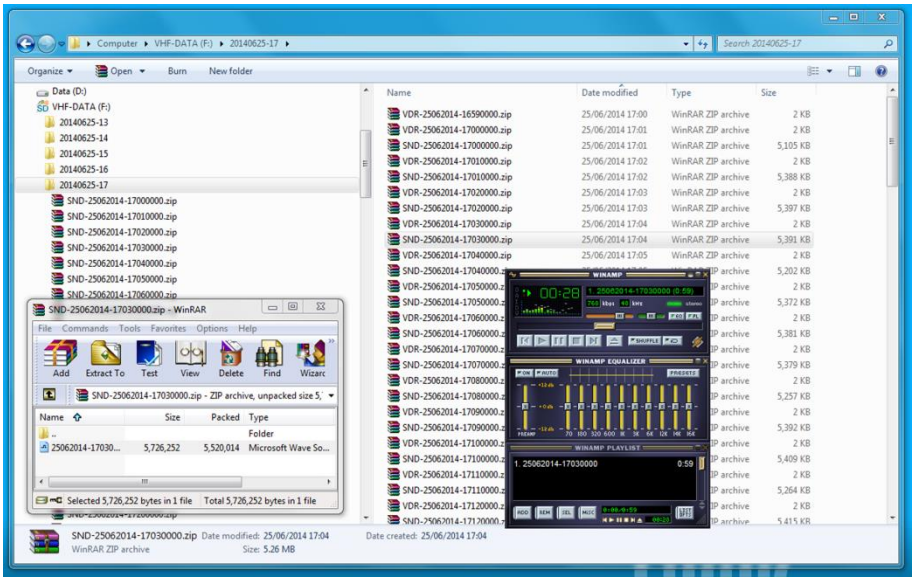


Figure 7.

Shipdata File

The shipdata.zip file is a small text file containing some of the vessels particulars and what it is actually recording. This will be used in the playback software to identify the vessel the USB drive originated from.

For playback software contact technical@amimarine.net.

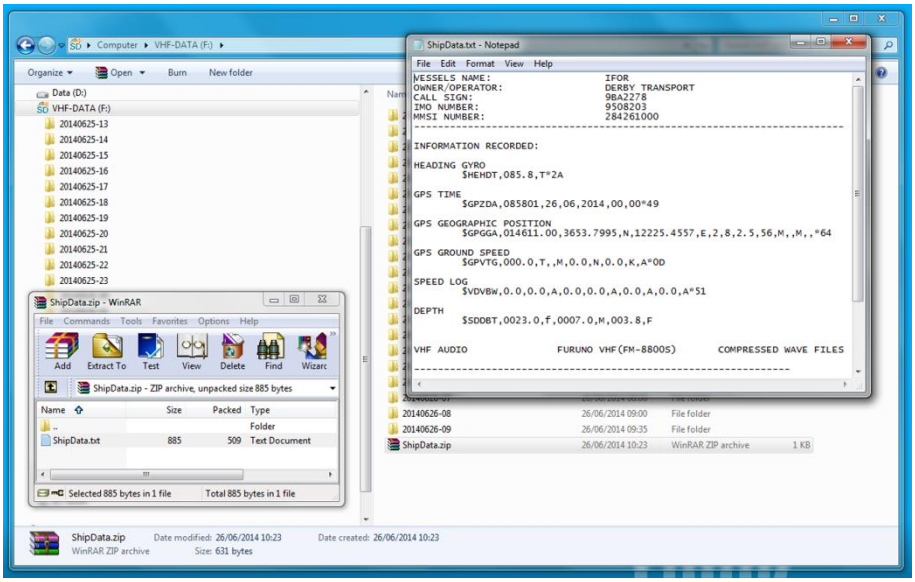


Figure 8.

Sample shipdata text file.

```
VESSELS NAME:          M/V Happy Day
OWNER/OPERATOR:        All Your Needs Ltd
CALL SIGN:             AMI12Z
IMO NUMBER:            480450
MMSI NUMBER:           442380480
-------------------------------------------------

INFORMATION RECORDED:-
GPS Time
          $GPZDA

GPS Position
          $GPGGA

GPS Course Over Ground and Ground Speed
          $GPVTG

VHF Audio              Compressed WAV files
-------------------------------------------------
SERIAL NUMBERS
VR973 VHF Recorder              - AMI45001
KW973 VHF Interface             - AMI45002
-------------------------------------------------
Manufactured in the UK by AMI Marine (UK) Ltd.
Website:     www.amimarine.net
E-Mail:      sales@amimarine.net
```

Once the shipdata.txt file is created and has the relevant information the text file will need to be zipped and added to the USB drive and if possible emailed back to technical@amimarine.net to be archived in our database.

Installation

Locate a suitable area for mounting the VR973 keeping in mind to keep enough space to access the right hand side for inserting and operating the key, inserting and removing the USB drive and also the fitting of cable PL1. A space of 400 x 200mm is recommended. The orientation of the legs can be changed as preferred. A Torx 10 screwdriver is required to remove and refit the legs.

The system comes with 1 x 1 metre cables. Cable PL1 is a 10 pin bayonet type plug.

For a neat and tidy installation a junction box with a 10 way terminal strip is recommended to connect the PL1 cable to the peripheral equipment. AMI can supply as extra.

If the VHF equipment does not have available a dedicated output for a VDR then use of the KW973 VHF interface may be required. There is a dedicated 12v supply from the VR973 specifically for the KW973 VHF interface.

If connecting to a Sailor VHF or OEM, then KW973 VHF interface should be placed in a position close to the VHF to enable the handset cable to reach. All cables are to be fed through the glands supplied and connected to the appropriate connectors.

Connection to the Sailor RT2048 or similar is simply ‘Plug and Play’.
Disconnect the handset from the Sailor Unit and plug into DSK9.
Connect the ribbon cable from PL1 (SK1) to the Sailor RT2048 Handset socket.

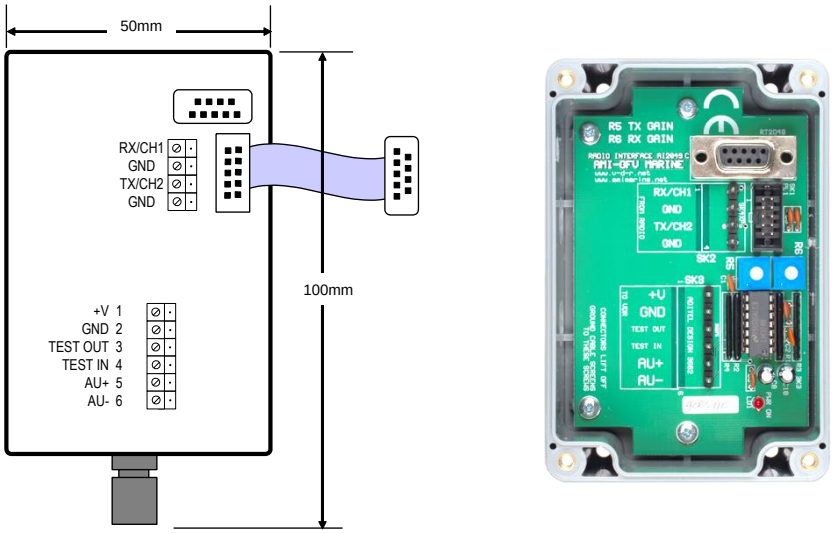


Figure 6.

When connecting to other VHF systems connect the TX and RX pairs to SK2.

RX Speaker connection should be made to SK2 Pins 1 and 2, and TX Microphone connection should be made to SK2 Pins 3 and 4 as per Table 2.

Connect AU+, AU-, and +V, GND as per Table 3.

GPS Data and Audio Inputs

GPS data required is the IEC61162-1 NMEA Standard at 4800Bd.
The following NMEA sentences should be made available to ensure that the VR973 VHF Recorder has all the minimum information required.
$GPZDA or $GPRMC must be present and correct for the VR973 to accurately record files with the correct date and time stamps.

`$GPGGA or $GPGLL, $GPZDA or $GPRMC, $GPVTG,`

Using an NMEA data combiner other equipment if availabel e.g. Gyro, Speed log and echo sounder can also be recorded.

Audio input required is a 600Ω balanced pair. Most new VHF units (i.e. Furuno FM8800) have this output available for connection directly to a VDR/SVDR (see Figure 7).

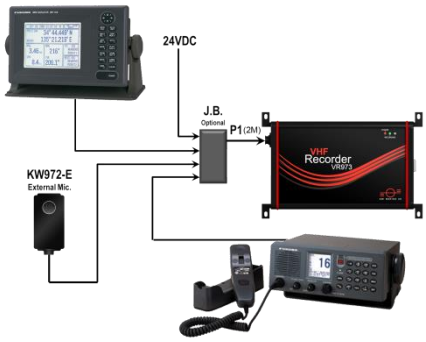


Figure 7.

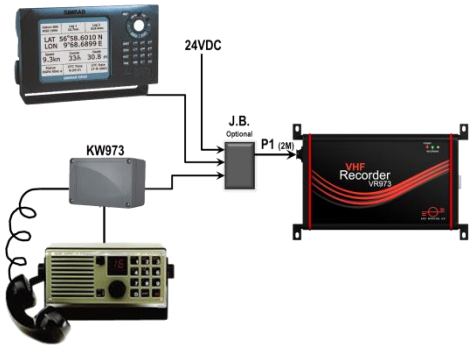


Figure 8.

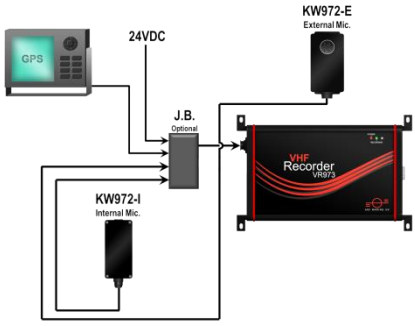


Figure 9

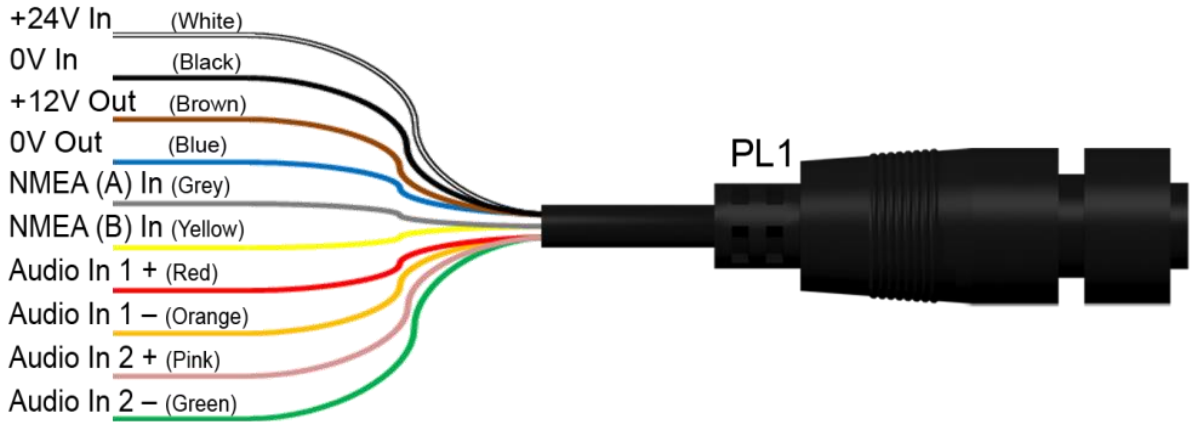
If the VHF unit has separate TX and RX channels this can be connected via AMI's KW973 VHF interface which will combine the 2 audio signals into 1 (see Figure 8). There is also the facility in the KW973 VHF interface to balance the volume levels (see Figure 6).

Adjusting KW973 Audio Levels
Turn the gain on both the TX and RX (see Figure 6). fully counter clockwise (CCW), adjust each gain level clockwise (CW) 25% of the full movement. Remove the USB drive and replay the recording. Adjust until a good clear audio is achieved.
If it is not possible to connect to the existing VHF then there is the option of connecting up to 2 microphones, a combination of internal or external or 2 x internal etc. (see Figure 9).

Adjusting Microphone Audio Level
Remove microphone 2 and connect microphone 1.
Turn the gain fully (CCW), adjust each gain level (CW) 25% of the full movement. Remove the USB drive and replay the recording. Adjust until a good clear audio is achieved.
Remove microphone 1 and connect microphone 2. Repeat the above procedure ensuring only one microphone is connected at any one time during the testing.

On completion connect both microphones.

Terminations and Connections PL1 Only



VR973 – Terminal and Optional Junction Box Connections						
Equipment Termination		**Colour**	**J.B. Term**	**Colour**	**CABLE**	**VR973**
DC Supply			**JB1-1**	White	PL1	Pin 3 +24v DC
			JB1-2	Black		Pin 9 0v DC In
VHF or **Mic Pwr**			**JB1-3**	Brown		Pin 1 +12v DC Out
			JB1-4	Blue		Pin 2 0v DC Out
GPS In			**JB1-5**	Grey		Pin 5 GPS NMEA-A
			JB1-6	Yellow		Pin 6 GPS NMEA-B
VHF1 or **Mic1**			**JB1-7**	Red		Pin 8 Audio In 1 +
			JB1-8	Orange		Pin 10 Audio In 1 –
VHF2 or **Mic2**			**JB1-9**	Pink		Pin 7 Audio In 2 +
			JB1-10	Green		Pin 4 Audio In 2 –

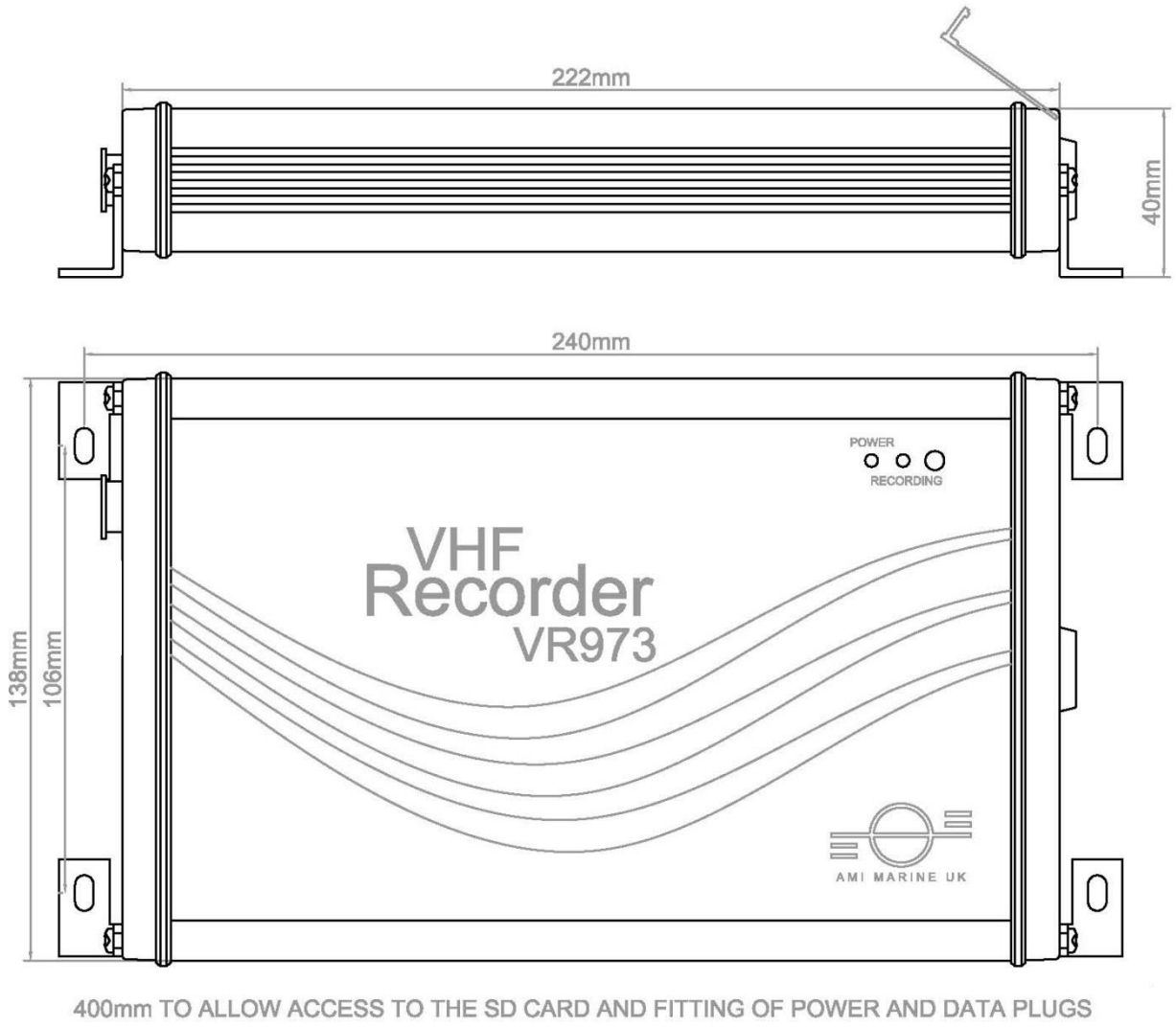
KW973 – From Non Sailor VHF Terminal Connections			
VHF Termination		**Colour**	**KW973 Termination**
RX			SK2-1 RX/CH1
			SK2-2 GND
TX			SK2-3 TX/CH2
			SK2-4 GND
To Junction Box Terminal Connections			
SK3-1 +V			JB1-7 +12vDC Out
SK3-2 GND			JB1-8 0vDC Out
SK3-5 AU+			JB1-5 Audio + In
SK3-6 AU–			JB1-6 Audio – In

Terminations and Connections PL1 & PL2

VR973 – Terminal and Optional Junction Box Connections						
Equipment Termination		**Colour**	**J.B. Term**	**Colour**	**CABLE**	**VR973**
DC Supply			**JB1-1**	White	PL1	Pin 4 +24v DC
			JB1-2	Black		Pin 3 0v DC In
VHF or **Mic Sup**			**JB1-3**	Brown		Pin 1 +12v DC Out
			JB1-4	Blue		Pin 2 0v DC Out
GPS			**JB1-5**	Black	PL2	Pin 4 GPS NMEA-A
			JB1-6	Yellow		Pin 3 GPS NMEA-B
VHF1 or **Mic1**			**JB1-7**	Red		Pin 5 Audio In 1 +
			JB1-8	Blue		Pin 1 Audio In 1 –
VHF2 or **Mic2**			**JB1-9**	White		Pin 6 Audio In 2 +
			JB1-10	Green		Pin 2 Audio In 2 –

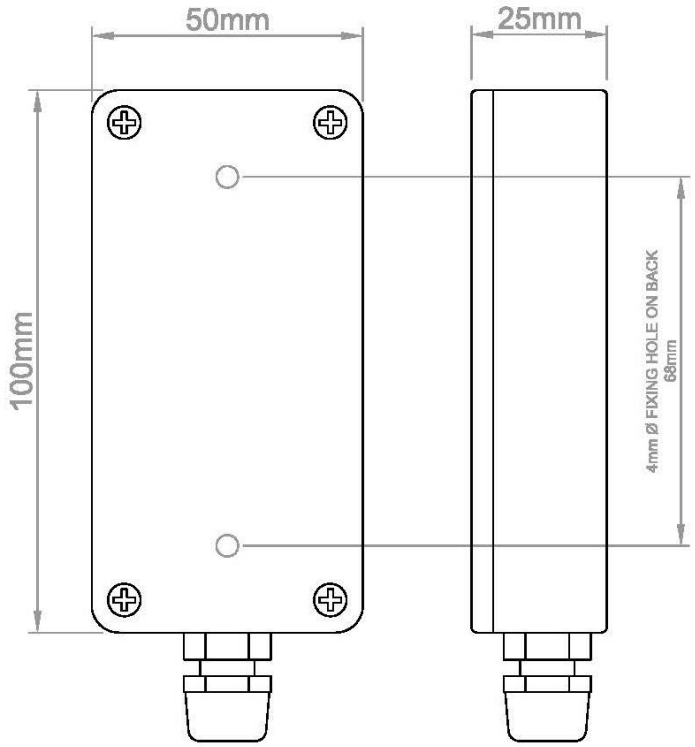
KW973 – From Non Sailor VHF Terminal Connections			
VHF Termination		**Colour**	**KW973 Termination**
RX			SK2-1 RX/CH1
			SK2-2 GND
TX			SK2-3 TX/CH2
			SK2-4 GND
To Junction Box Terminal Connections			
SK3-1 +V			JB1-7 +12vDC Out
SK3-2 GND			JB1-8 0vDC Out
SK3-5 AU+			JB1-5 Audio + In
SK3-6 AU–			JB1-6 Audio – In

Unit Dimensions



Unit Dimensions: 235 x 162 x 40mm
Weight: 750 g
Power Input: 24Vdc
Data Input: GPS NMEA - $GPGGA, $GPZDA, $GPGLL
Audio Input: 2 x Mono Audio 600Ω balanced pair
Environmental: Not suitable for outside

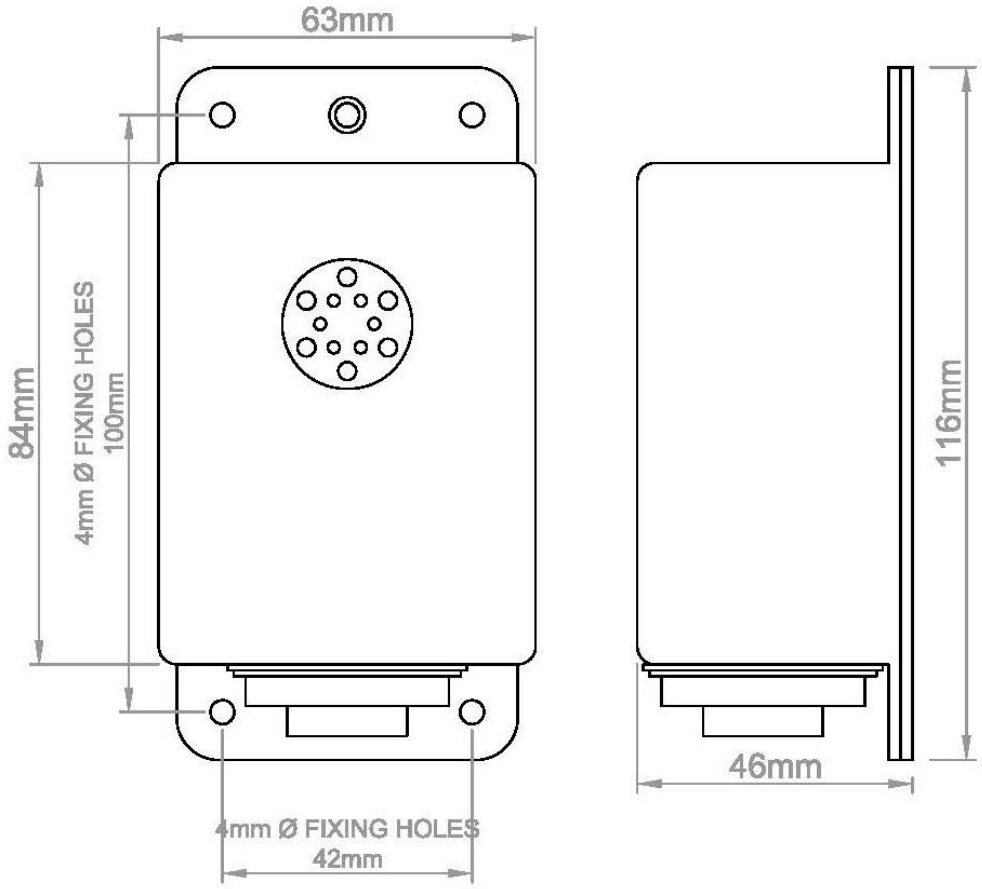
ISS	CHANGE	INIT.		Drawn: 28 FEB 2012	VR973 VHF Recorder Dimensions
1	Original	RAG		Checked: 28 FEB 2012	
				File Name: VR973-001.doc	
			VR973 VHF Recorder Dimensions	Drawing No: AMI973V-007-02-0	



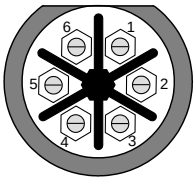
VOLTAGE: 12VDC
CURRENT: 50mA
OUTPUT: SELF TEST STATUS
OUTPUT: AUDIO
TERMINATIONS: REMOVABLE CONNECTORS
HOUSING: ABS Case
COLOUR: BLACK/WHITE
APPROX WEIGHT: 75g

Fixing 2 x M3 Self tapping screws (not supplied).

ISS	CHANGE	INIT.		Drawn: 28 FEB 2006	KW972-I Microphone Dimensions
1	Original	RAG		Checked: 28 FEB 2006	
				File Name: KW972-I Mic.doc	
			KW972-I Microphone Dimensions	Drawing No: AMI2272-007-02-0	

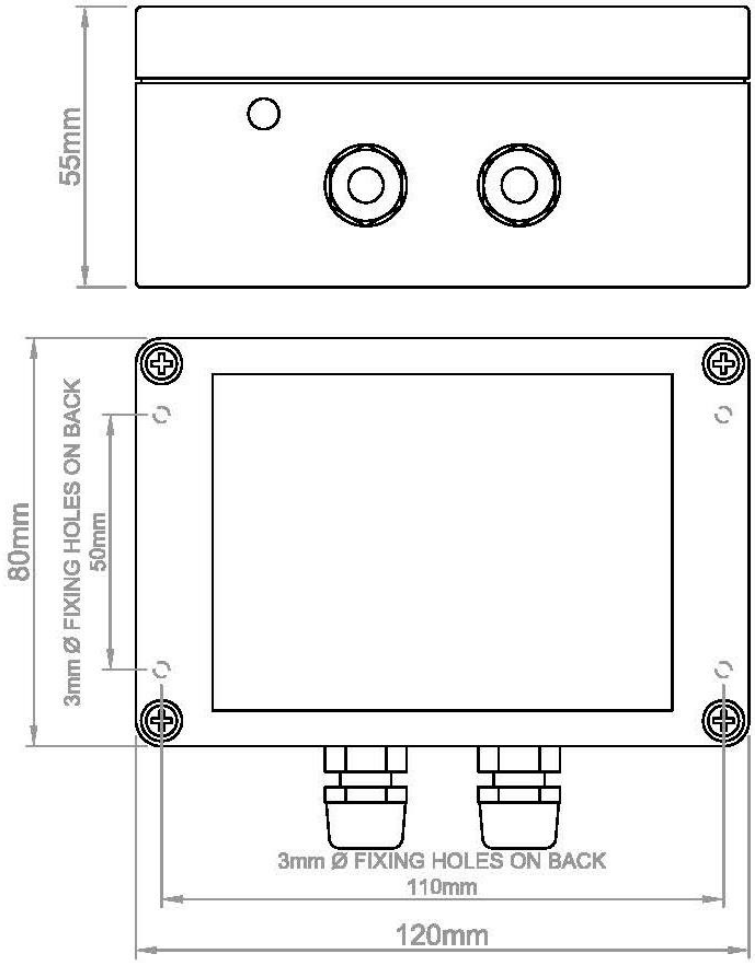


(12V+)	M4-SK Pin 1
(0V)	M4-SK Pin 2
Not Used	M4-SK Pin 3
Not Used	M4-SK Pin 4
(AUDIO+)	M4-SK Pin 5
(AUDIO–)	M4-SK Pin 6



VOLTAGE:	12VDC
CURRENT:	50mA
OUTPUT:	SELF TEST STATUS
OUTPUT:	AUDIO
TERMINATIONS:	6 WAY BUCCANEER Socket
HOUSING:	ABS Case
COLOUR:	BLACK
APPROX WEIGHT:	275g
FIXINGS:	M4 Self Tapping Screws (not

ISS	CHANGE	INIT.		Drawn: 08 AUG 2009	KW972-E Microphone Dimensions
1	Original	RAG		Checked: 08 AUG 2009	
				File Name: KW972-E_V2 Mic.doc	
			KW972-E Microphone Dimensions	Drawing No: AMI2272-007-02-0	



(12V+)	M4-SK Pin 1
(0V)	M4-SK Pin 2
Not Used	M4-SK Pin 3
Not Used	M4-SK Pin 4
(AUDIO+)	M4-SK Pin 5
(AUDIO–)	M4-SK Pin 6

VOLTAGE:	12VDC
CURRENT:	50mA
OUTPUT:	SELF TEST STATUS
OUTPUT:	AUDIO
TERMINATIONS:	6 WAY BUCCANEER Socket
HOUSING:	ABS Case
COLOUR:	BLACK
APPROX WEIGHT:	275g
FIXINGS:	M4 Self Tapping Screws (not

ISS	CHANGE	INIT.		Drawn: 08 AUG 2009	KW973 VHF Interface Dimensions
1	Original	RAG		Checked: 08 AUG 2009	
				File Name: KW973-001.doc	
			KW973 VHF Interface Dimensions	Drawing No: AMI973-007-02-0	

FAQ

Q1. I have just switch on for the first time and on the playback the screen says the NMEA string is too long and there is no position or time etc.
A. Check the NMEA from the GPS, it is most likely the A and B are the wrong way round.

Q2. On playback I cant hear any audio.
A. Check all terminations are good and that there is not a break in the cable.

Q3. On switch on the green LED does not come on.
A. Check that the USB driveis fitted fully.

Q4. On switch on neither of the LEDs come on.
A. Check that there is 24vDC at the junction box and all terminations are good.

Q5. The audio is too loud or distorted.
A. Check the volume levels in the KW973 VHF interface and if there microphones connected also check the gain in the microphone. They should all be pre-set to 25%

Installation & Commissioning Report

AMI MARINE UK

VR973 VHF Recorder
Installation & Commissioning Report

	Serial Number	Software Version
VR973 VHF Recorder		
KW973 VHF Interface		
KW909-FM Data Combiner		

Ships Particulars

Vessel Name:	
Owner/Operator:	
Call Sign:	
IMO Number:	
MMSI Number:	

Inputs

	Yes	No
VHF.		
GPS.		
Gyro.		
Speed Log.		
Echo Sounder.		

Notes:

Installation Completed Satisfactory

Installation Engineer

Initials & Name

Signature

Date

Ships Representative

Initials & Name

Signature

Date

Ship's Stamp

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Warranty Form

AMI Marine (UK) Warranty; (abbreviated, full version on request)
The Warranty Period is 12 months return to base, parts and labour from date of purchase unless an alternative period has been otherwise agreed in writing.

This warranty shall only apply where the REGISTRATION CARD supplied with the goods has been properly completed and returned to AMI within the period of 21 days from installation.

The registration form can also be downloaded from the AMI Marine website www.amimarine.net

Returns Procedure;
Send an email RE: REQUEST FOR RETURN AUTHORISATION to technical@amimarine.net

Please do NOT send items back to AMI Marine until after you have received a Return Authorisation Response Email instructing you to do so.

Documents to be included;
A copy of the original INSTALLATION REPORT, and a print out of your RETURN MATERIAL AUTHORISATION INFORMATION EMAIL, and enclose both in the return package.

Be sure to pack the returning product securely and according to carrier instructions. Damage incurred during return shipping due to inadequate protection will render the item ineligible for repair or exchange under the Warranty Terms. Items not received by AMI Marine, will not be credited.

MOST authorised returns should be returned to the address below - however there are some exceptions, so DO NOT ship to this address without first reviewing your RETURN AUTHORISATION INFORMATION EMAIL for applicable return instructions:

AMI Marine (UK) Ltd
Unit 9, Crosshouse Centre
Crosshouse Road
Southampton
SO14 5GZ
United Kingdom

A full explanation of AMI Marine (UK) Ltd warranty conditions can be found on our web site or requested via email.

* Terms of Service and Policies are subject to change without notice.

✂----------

Please complete and return to AMI Marine either by post to the above address or by email to technical@amimarine.net

Warranty Registration Form	
Model Number	
Serial Number	
Date of Purchase	
Vessel Name	
IMO Number	

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