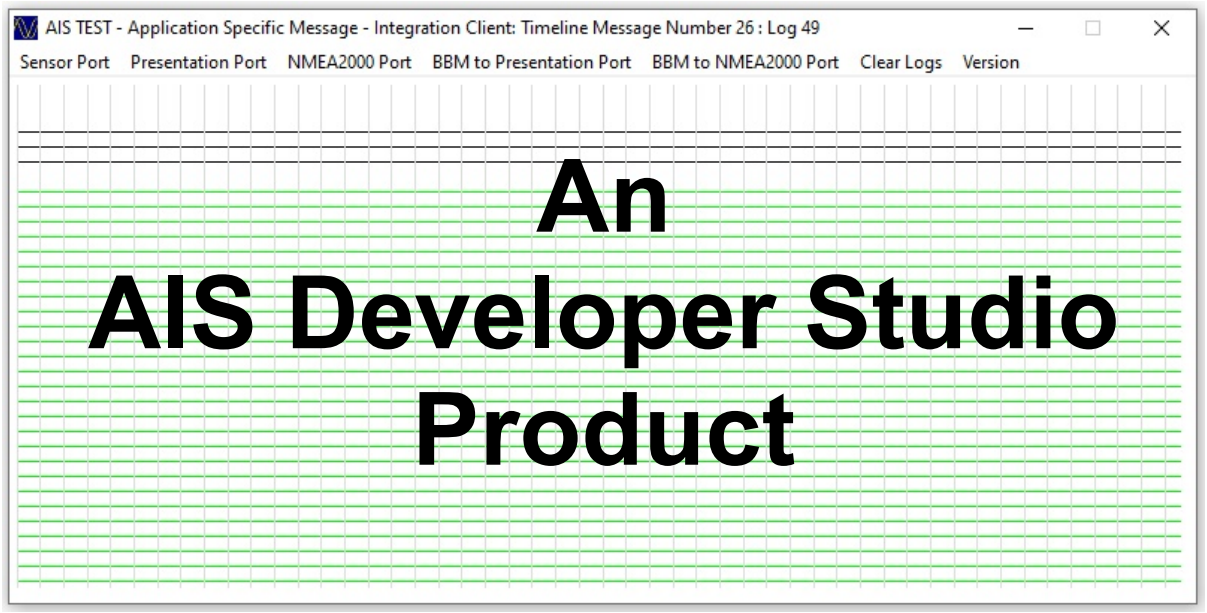

AIS Application-Specific Message Integration Client

Unlock Seamless Manual AIS Communication with Precision and Ease

Build 23092024R1.1

NOTICE

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Demonstration Program

An INTEGRATION program is provided free of charge. AIS TEST requires that the user request the demo program and documentation and validate it for their respective use prior to placing an order for the licensed version.

Limited Warranty

Where software discrepancies or module operational bugs are identified, they should be immediately brought to the attention of AIS TEST.

The warranty is limited to the rectification of the discrepancy or bug through a software upgrade and should not exceed the original operational and technical specifications as defined by AIS TEST in the respective AIS Developer Studio module manual.

Objective

The objective for the use of the AIS Application Specific Message Integration Client is to create a general interactive marine AIS environment using a PC which will evaluate sensor streams and external AIS transponder ABM/BBM interoperability.

This product should only be used for the purposes intended by its developers and only according to acceptable reference standards and operating procedures.

Any deviation from this may conflict with competent regional authorities in your area.

The AIS Developer Studio and / or interfaces should not be used to alter the operational status of any AIS unit unless authorized by a competent authority.

Under no circumstances should the AIS Developer Studio and / or interfaces be used to create any signal content outside the scope of this document using any procedure or method offered by the AIS Developer Studio interface.

AIS TEST, formerly Sine Qua Non Technology Holdings, would like to take this opportunity to congratulate you on your interest for one of the AIS Developer Studio suite of products.

We want to assure you that this product range is designed using over 40 years of combined radio and AIS experience and has been thoroughly tested to ensure your complete satisfaction.

Customization

If you have any questions, queries, or customization requests related to this product, please do not hesitate to contact us by email:

Thank you,

AIS TEST

Overview

Very simply, the AIS VHF Data Link is a broadcast system, operating in the VHF maritime mobile band.

It is capable of sending ship information such as identification, position, course, speed and more, to other ships and to shore.

It can handle multiple reports at rapid update rates and uses various Self-Organizing Time Division Multiple Access technologies to meet these high broadcast rates and ensure reliable and robust ship-to ship operation.

Application-Specific Message

AIS Application-Specific Messages can be sent to a specific receiver or broadcast to everyone.

The tech details and structure of these messages are laid out in ITU-R M.1371. The IMO came up with the content and format for different uses.

When you send an addressed AIS Application-Specific Message, the AIS station that is addressed will automatically send back a confirmation over the VHF Data Link.

Introducing the AIS Application Specific - Message Client

Revolutionize your Manual AIS data management with our cutting-edge AIS Application Specific - Message Client.

Engineered for Windows PCs and utilizing any WINDOWS compatible RS422 USB Comport adapters, this advanced software ensures seamless interaction between your PC and AIS Presentation Port or AIS Pilot Plug port.

Key Features

1. Comprehensive Data Display

- **Automatic Detection**: Effortlessly connect to the AIS VCP Port and instantly view all “source” VDO messages (1, 2, 3, 4, 5, 6, 7, 8, 13, 18, 21, 24).
- **MMSI Extraction**: Software automatically extracts and uses the Transponder source MMSI from incoming VDO packets.

2. Efficient Data Porting

- **Seamless Transmission**: Click on the “Send MSG 8 : BBM to Presentation Port” Button to create an “Application Specific Message” Broadcast Binary Message (BBM) NMEA 61162 compatible string and send it to the AIS VCP Port.
- **Automatic Display**: The Client Application immediately displays the AIS-created VDO message, and Transponder ABK message’s confirming successful transmission of BBM requests.

3. Detailed Response Tracking

- **ABK Decoding**: For ABMs, the Client decodes and displays the ACK from the destination MMSI in the timeline.
- **Dynamic Message Filter**: View and analyze your transmissions with the dynamic message filter for precise monitoring.

4. 5 Sensor Streams

- **Alpha Stream**: For the Integration Client only Alpha stream is enabled.

Why Choose Our Client?

- **User-Friendly Interface**: Designed for ease of use, our application simplifies a complex AIS data management task.
- **Reliable Connectivity**: Ensures consistent communication between your PC and AIS hardware.
- **Real-Time Feedback**: Provides immediate confirmation and detailed insights into your source AIS transmissions and destination receptions.
- **Customize**: As your need grows upgrade and add more ASM's

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Technical Specifications

- **Operating System**: Windows XP…10 PC
- **Hardware Requirements**: RS232/422 (USB - VCP) Presentation or Pilot Plug Adapter
- **Compatibility**: VCP: AIS Presentation Port, AIS Pilot Plug Port
- **Specifications**: NMEA 61162, ITU-R M.1371-5

Perfect For

- **Maritime Professionals**: Ensure accurate and efficient AIS communication.
- **Marine Researchers**: Gain precise data for analysis and research.
- **Safety and Navigation Experts**: Enhance vessel tracking and safety measures.

Get Started Today!

Transform your Manual AIS message handling with our upgradeable Application Specific Message Client.

For more information or to request a demo, contact us.

Elevate your maritime communication. Precision. Reliability. Innovation.

Example Connections For Evaluating: ICOM MA510TR transceiver

Our goal is to determine if the ICOM MA510TR will work as an AIS Transponder for the USER Client Application we want to purchase / license.

What inputs and outputs do we have in the system we want to configure?

1. Input a remote NMEA sensor ($TIDE) or other (NMEA Formatted) string.
2. Output a BBM AIS Presentation Port string containing meteorological and hydrographic information.
3. Input the result of (2) BBM operation VDO and or ABK from the AIS Transponder.

The USER Client application makes use of COM Ports. Within the PC OS these can be hardware or Virtual.

Lets take item 1.

The remote sensor can be local or anywhere on the coast. Its transmission can take any form as long as when it is input to the PC->User Client Application, Windows Enumerates it as a COM Port. Normally this will be a hardware / VCP (Virtual Com Port) ie. We will choose RS422 so what we need is a USB-VCP to RS422 Conversion Cable. It is the goal of this integration document to ascertain if it the SENSOR data can be correctly input into the PC->USER Client application.

Input a remote NMEA sensor ($TIDE) or other (NMEA Formatted) string		
PC	Types of Hardware or Cable	CHANNEL CONNECTION
COM_ALPHA_STREAM	USB-VCP to RS422 Conversion Cable	Network WIFI Internet Proprietry RS422

Lets take item 2.

We must first read the ICOM 510TR manual and we will get some idea if it is suitable. On page 35 it states that this is a NMEA2000 transmit function. As it is a Class B device, it is the goal of this integration document to ascertain if it will correctly process the BBM string with the resultant VDO transmission. So what we need is a USB-VCP to NMEA2000 Conversion Cable which supports BBM.

Output a BBM AIS Presentation Port string containing meteorological and hydrographic information		
PC	Types of Hardware or Cable	CHANNEL CONNECTION
COM_NMEA2000	USB-VCP to NMEA2000 Conversion Cable that supports BBM.	AIS Transponder NMEA2000 connector See page 35 of ICOM 510TR manual. Excerpt: 129797 AIS Binary Broadcast Message

Lets take item 3.

We must first read the ICOM 510TR manual and find out where is the VDO output string listed. We find that it is listed on page 41, *connector information* as an RS422 output.

We must determine if the ICOM 510TR USB connector endumerates to a VCP Com port in the WINDOWS OS and if so, how can it be be used.

The VDO string is output from an AIS Transponder after it has succesfully transmitted a VDL packet.

We want this string for 2 reasons.

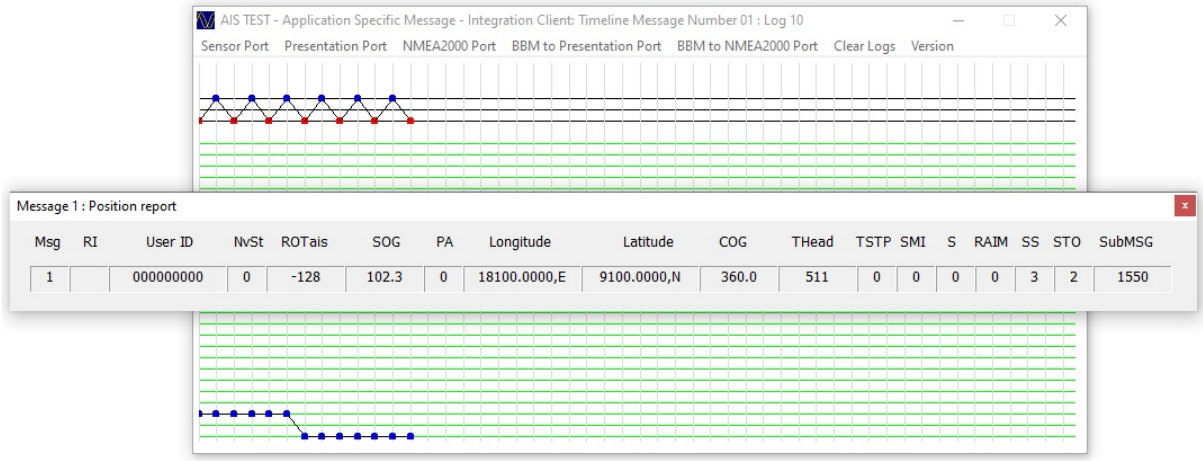
1. To check if the Class B transponder processes the BBM message and is correctly sent.
2. To log this VDO string in the USER Client to maintain a LOCAL data base of all AIS time stamped transmissions that have taken place.

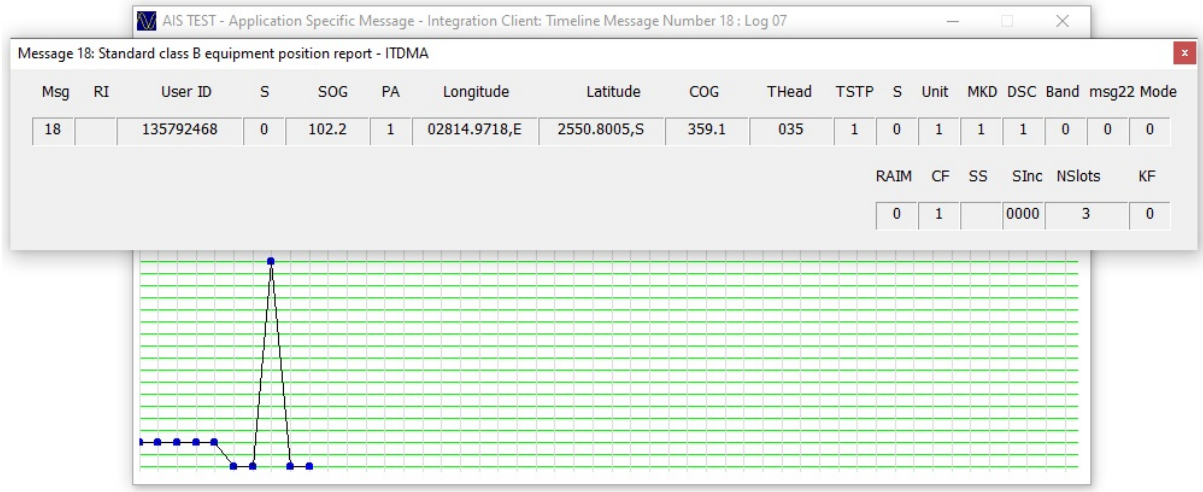
Input a result of (2) BBM operation VDO and or ABK from the AIS Transponder		
PC	Types of Hardware or Cable	CHANNEL CONNECTION
COM_PRESENTATION	USB-VCP to RS422 Conversion Cable OR Excerpt. DATA CONNECTOR Connects to a PC using a USB cable (A - mini B type) to output the received AIS messages, output GPS data, program the transponder, or update a firmware.	AIS Transponder RS422 connector See page 41 of ICOM 510TR manual. Excerpt: VDM, VDO, ACA, ACS, ALR, TXT, GGA*3, GNS*3, GLL*3, RMC*3, VTG*3

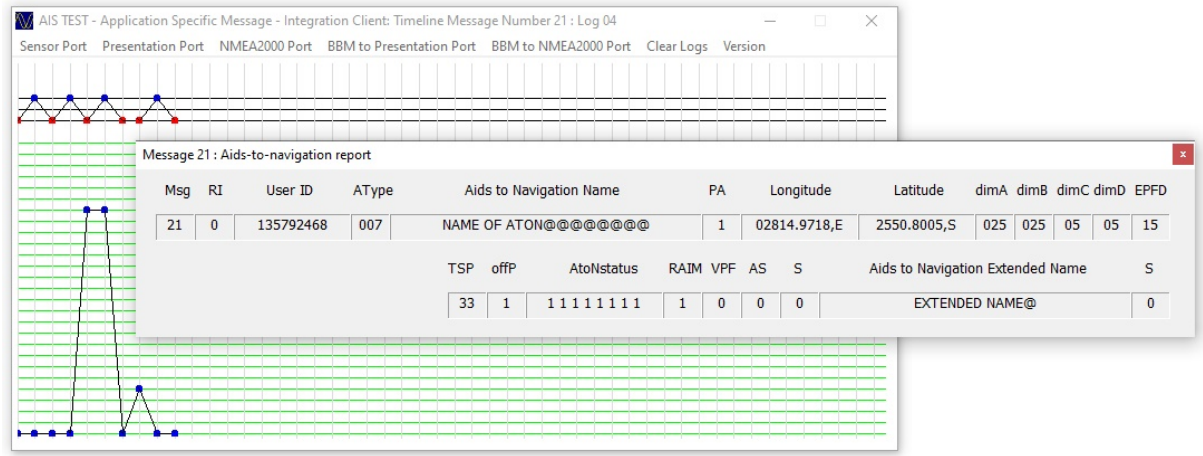
The ICOM 510TR Fails due to being Class B CS and CS devices may not do BBM.

AIS VDL Timeline

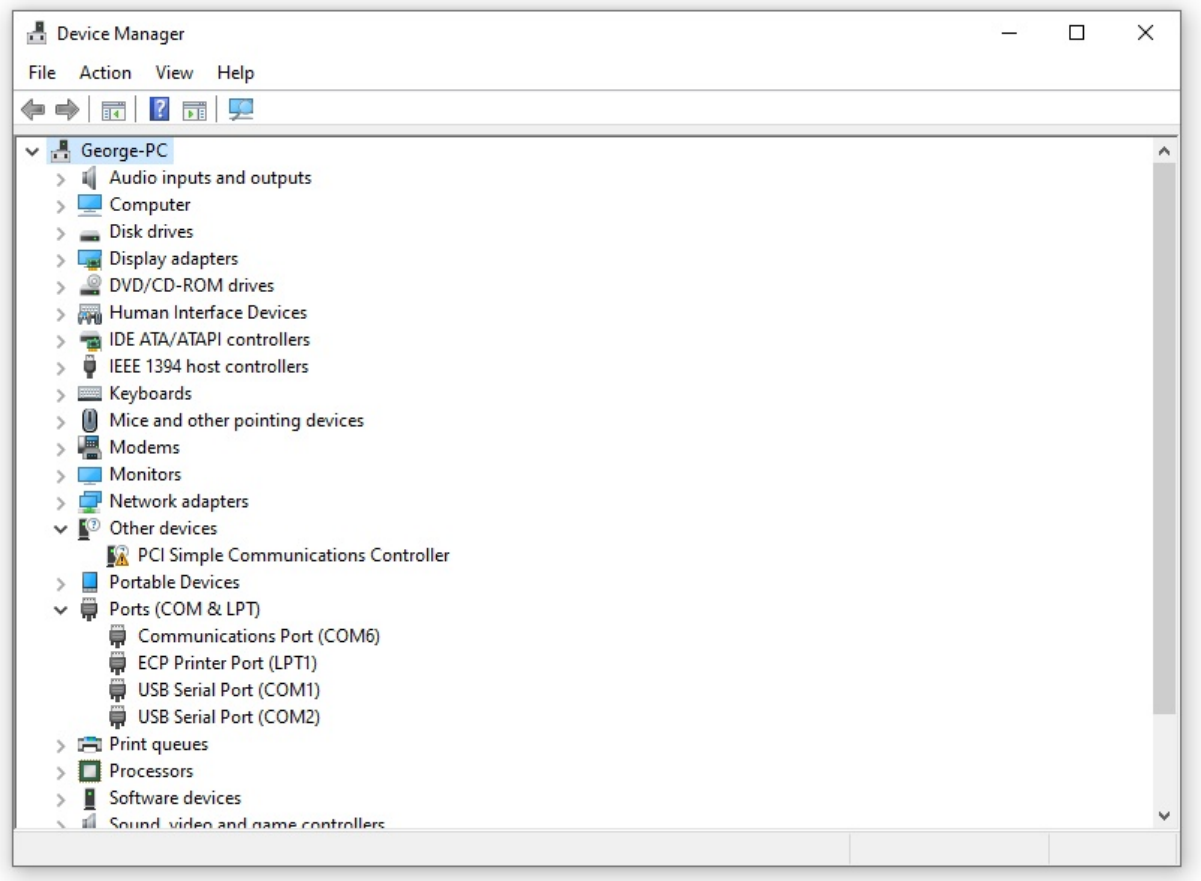
- 50 tracks per circular buffer timeline
- Horizontal timeline grid
- Vertical message grid
- Message Filter selection using mouse







WINDOWS Device Manager: You're PC



Example: Our Lab PC. "Ports (COM & LPT)"

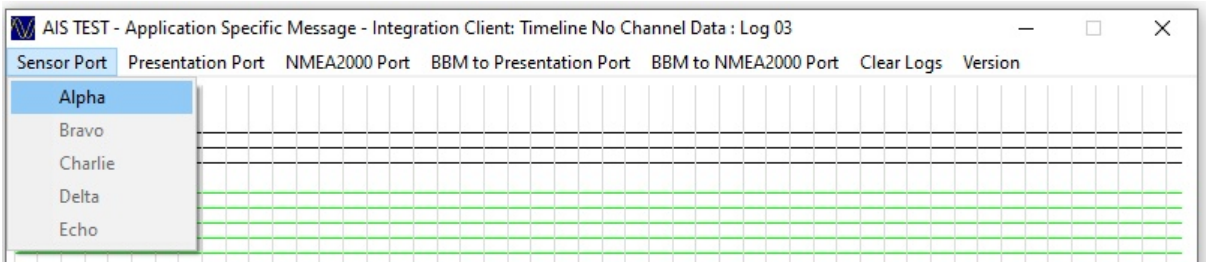
We have two (2) FTDI USB VCP Virtual Comports connected.
They are designated COM1 and COM2.

You PC will enumerate all your connected hardware which you can view in WINDOWS Device Manager.

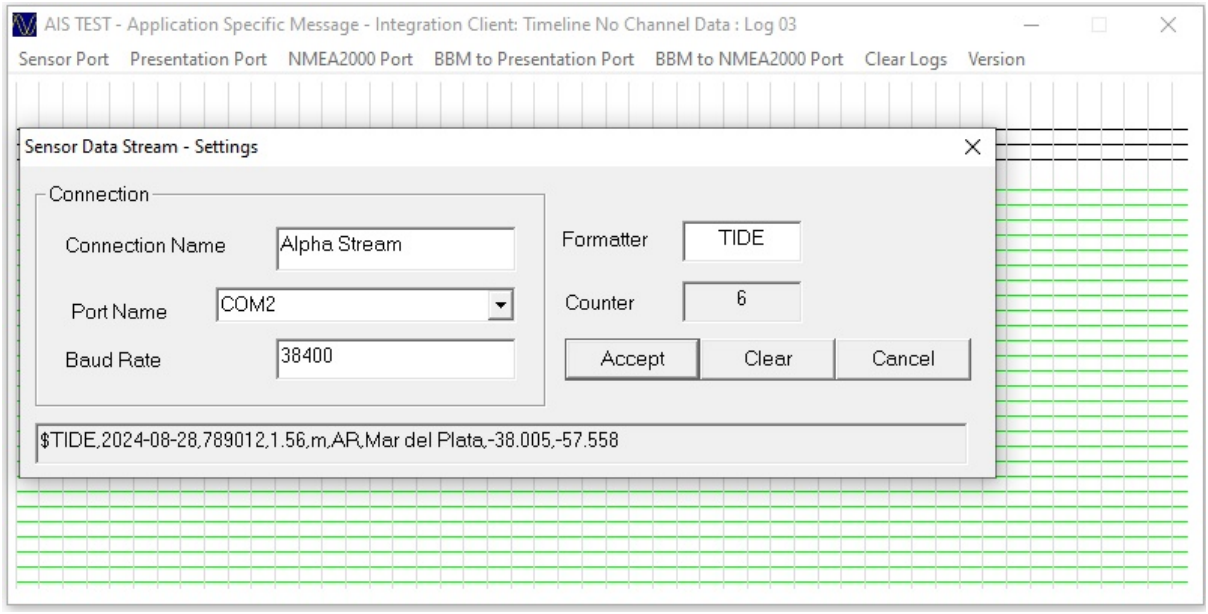
Once you know what is connected to what you can use that knowledge in our Integration Client or USER product.

Menu Options

Sensor Data Stream Selection:



Sensor Data Stream Connected:



1: Enter Sensor Data Stream Connection Name.

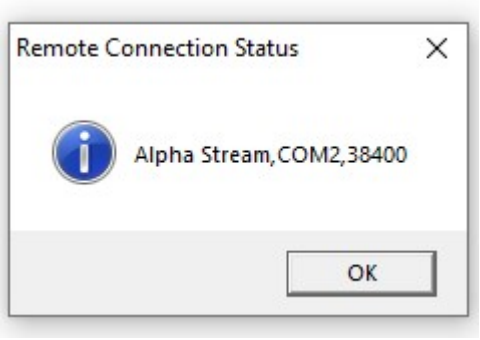
2: Select Sensor Input COM port number you have verified with WINDOWS Device Manager.

3: Enter Sensor Baud Rate.

This will depend on your hardware or (USB-VCP- RS232/422) (USB-VCP-NMEA2000) that you have connected to your PC.

4: Click Accept Button.

Status: Result of process. PASS / FAIL



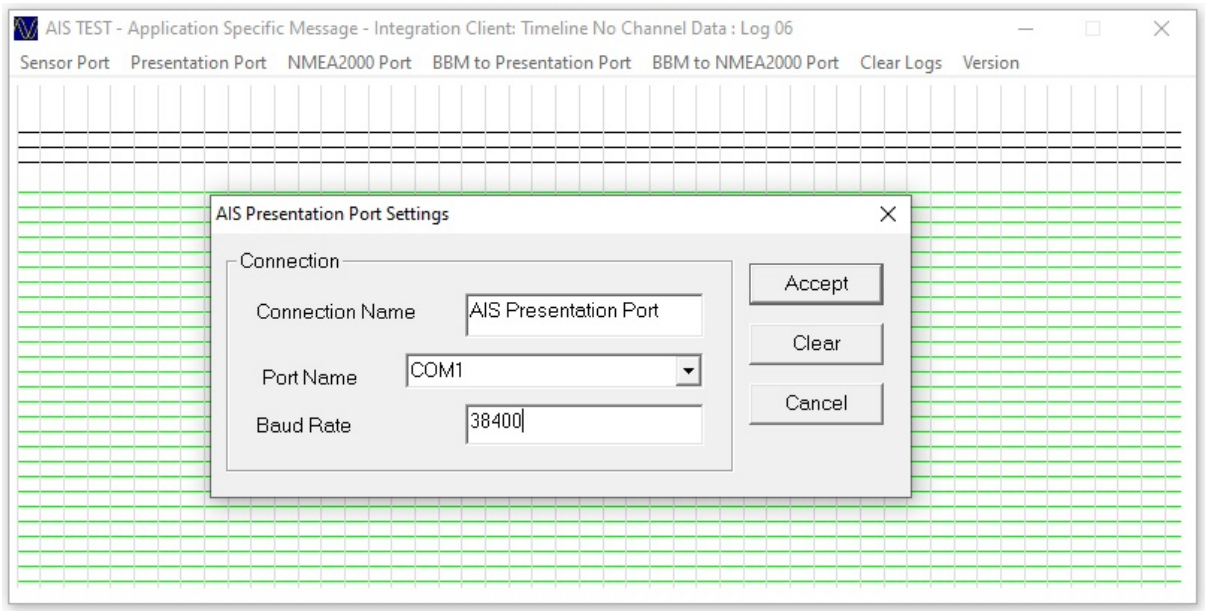
5: Enter: NMEA Format Field “TIDE”

The targeted NMEA Sensor input string should be displayed in the display at the bottom of the dialog.

Test String =
"$TIDE,2024-08-28,789012,1.56,m,AR,Mar del Plata,-38.005,-57.558"

INTEGRATION TEST 1: PASS / FAIL

AIS Presentation Port Selection:



6: Enter AIS Presentation Port Connection Name

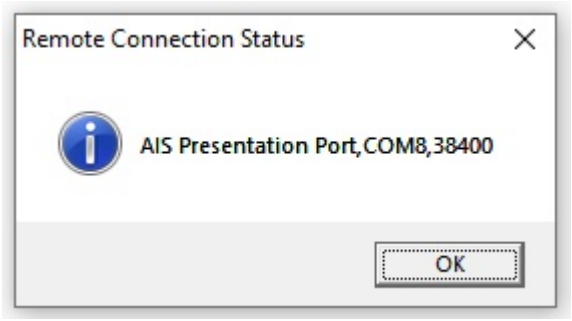
7: Select Presentation Port Output COM port number you have verified with WINDOWS Device Manager.

8: Enter Presentation Port Output Baud Rate.

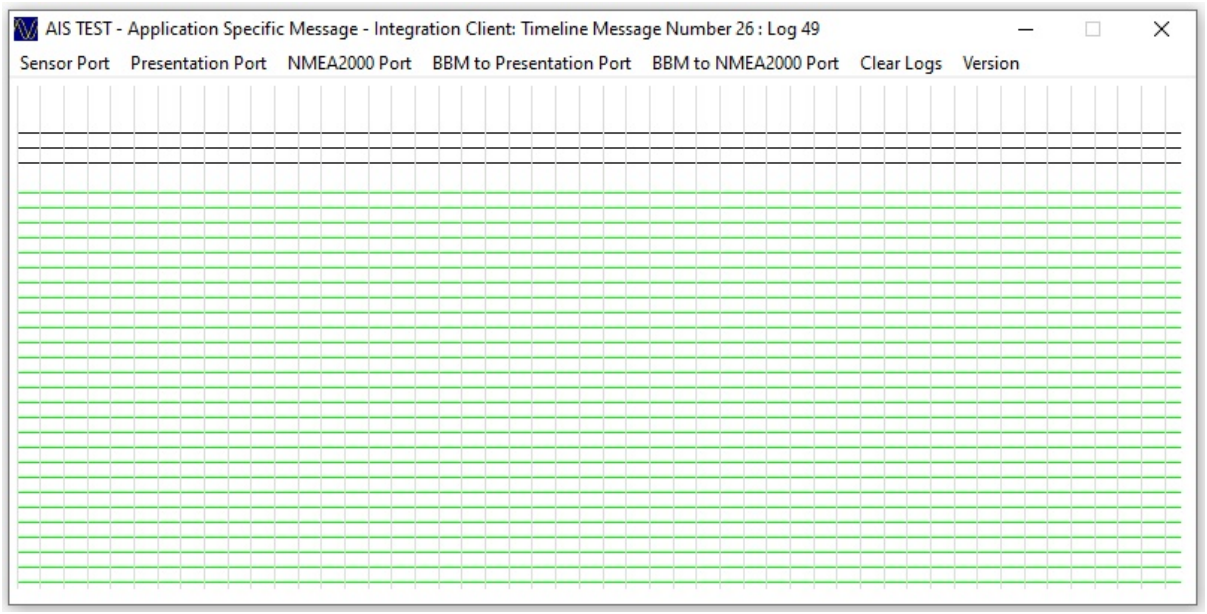
This will depend on your hardware or (USB-VCP- RS232/422) (USB-VCP-NMEA2000) that you have connected to your PC.

9: Click Accept Button.

Status: Result of process. PASS / FAIL

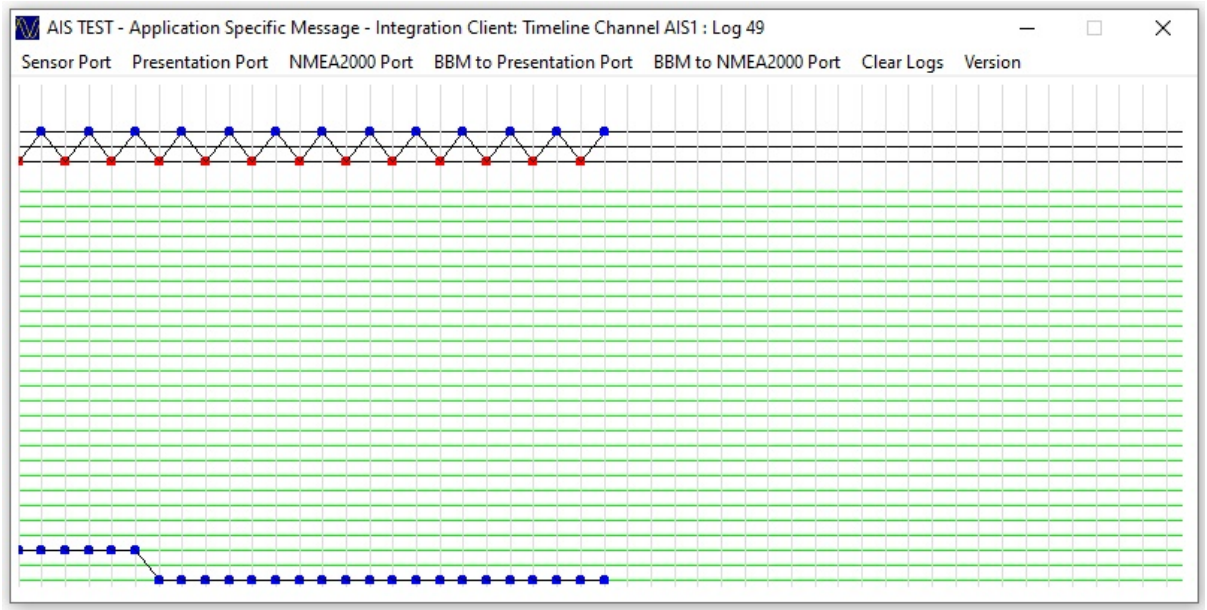


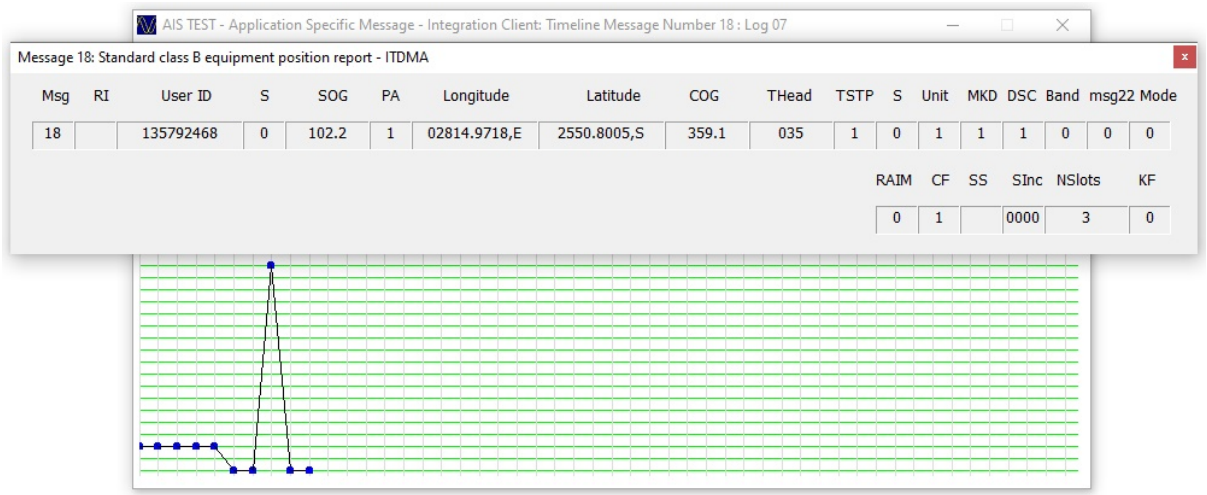
Wait: When the AIS unit creates a VDO string, then that string will be displayed on the Integration Client time line.

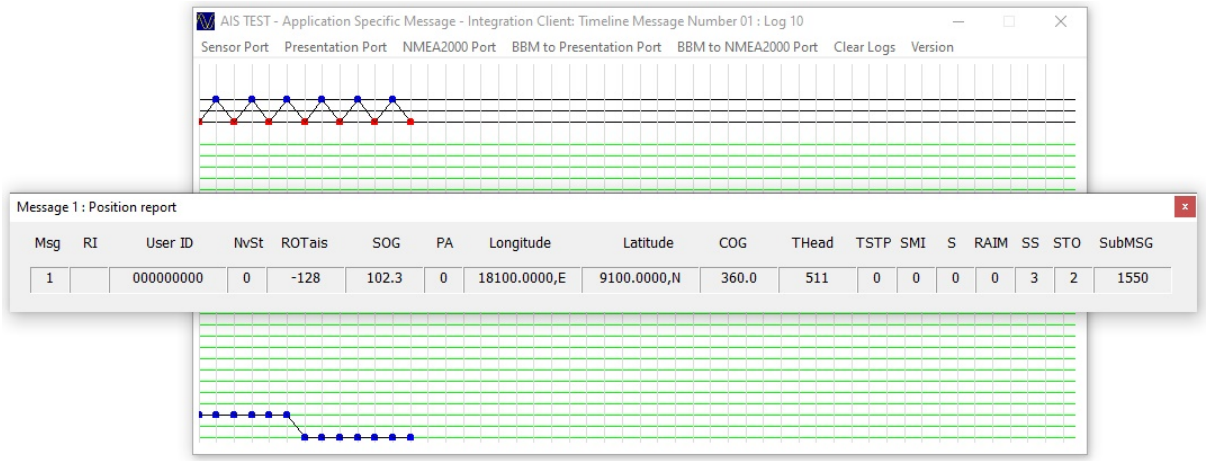


If NO AIS VDO strings are displayed than this indicates a problem with the connection ie… PC Hardware (Virtual) and or wiring to the AIS Presentation Port. Any one of the following should / could be received and decoded by the Integration Client: VDO messages (1, 2, 3, 4, 5, 6, 7, 8, 13, 18, 24).

Correct Operation:







User ID = 135792468 : Our lab Class B Test Bed.

User ID = 000000000 : Our lab Class A Test Bed.

INTEGRATION TEST 2: PASS / FAIL

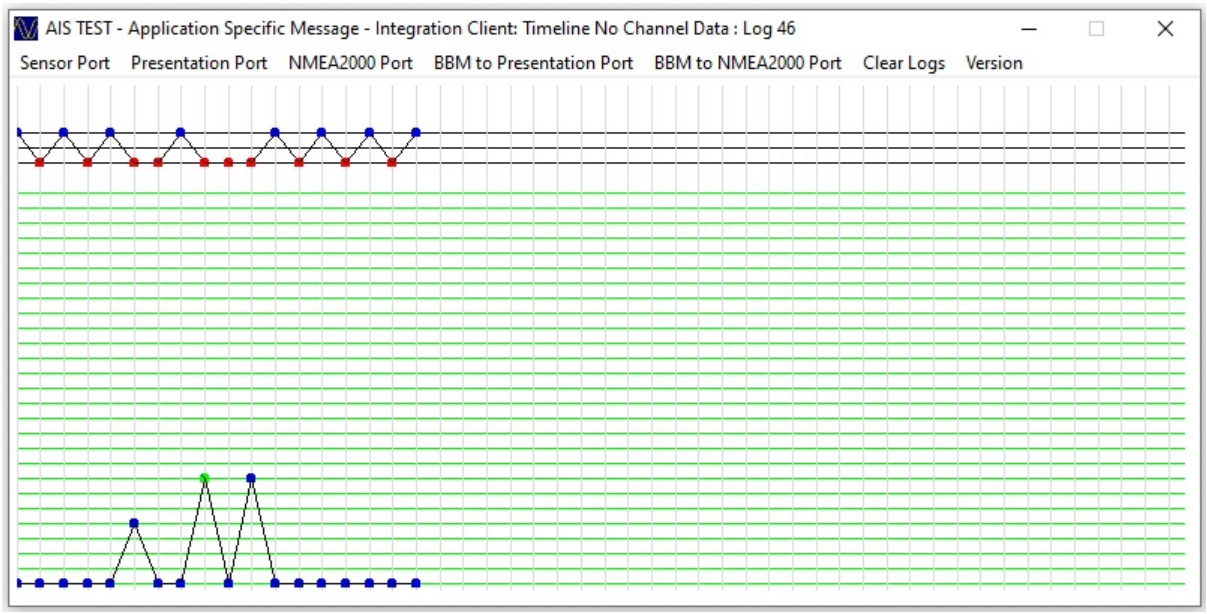
If Test 1 and Test 2 PASS then we can attempt to send a BBM MSG 8 string to the AIS Presentation Port.

The BBM string is populated with all the DEFAULT values from IMO SN.1/Circ.289 dated 2 June 2010 as follows.

1 Meteorological and Hydrographic data
1.1 This message allows the distribution of meteorological and hydrographic information.
1.2 This message should not be transmitted when positional information or time of measurement are not available. If there is no data available for that particular data field, it should be displayed as "not available".

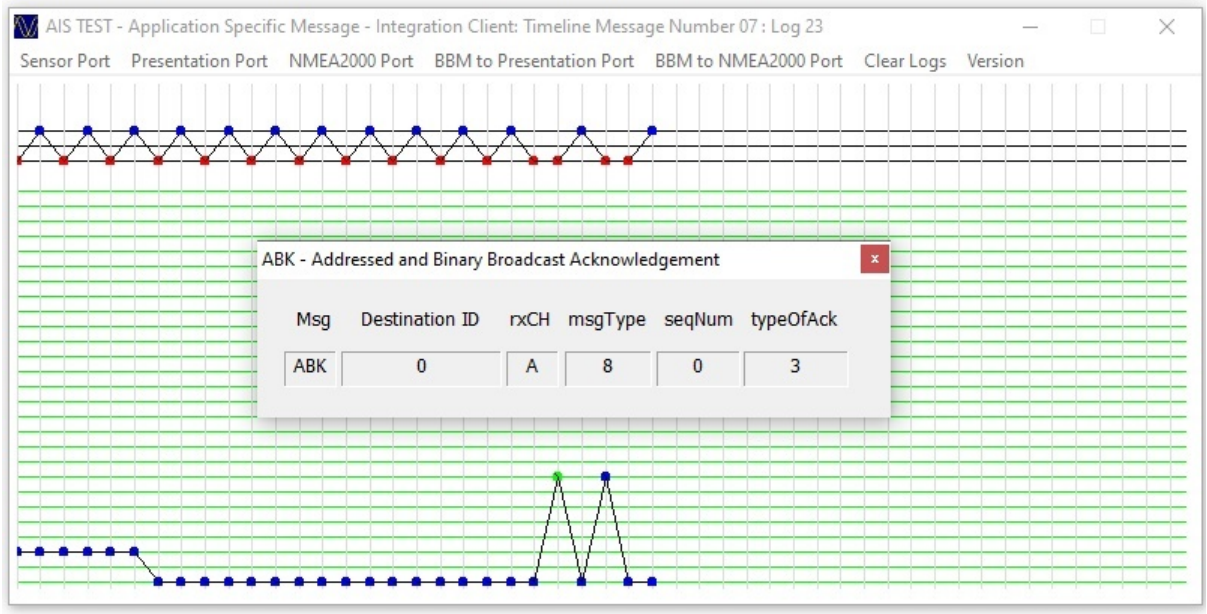
In order to meet the requirement of IMO SN.1/Circ.289 1.2, place a 50 ohm dummy load on the Class A /B device so that no ON AIR transmissions take place. We are only interested in interoperability.

10: Click on “BBM to Presentation Port” Menu Option.



Correct Operation: A Green and Blue dot will be displayed on the 8th horizontal line indicating:

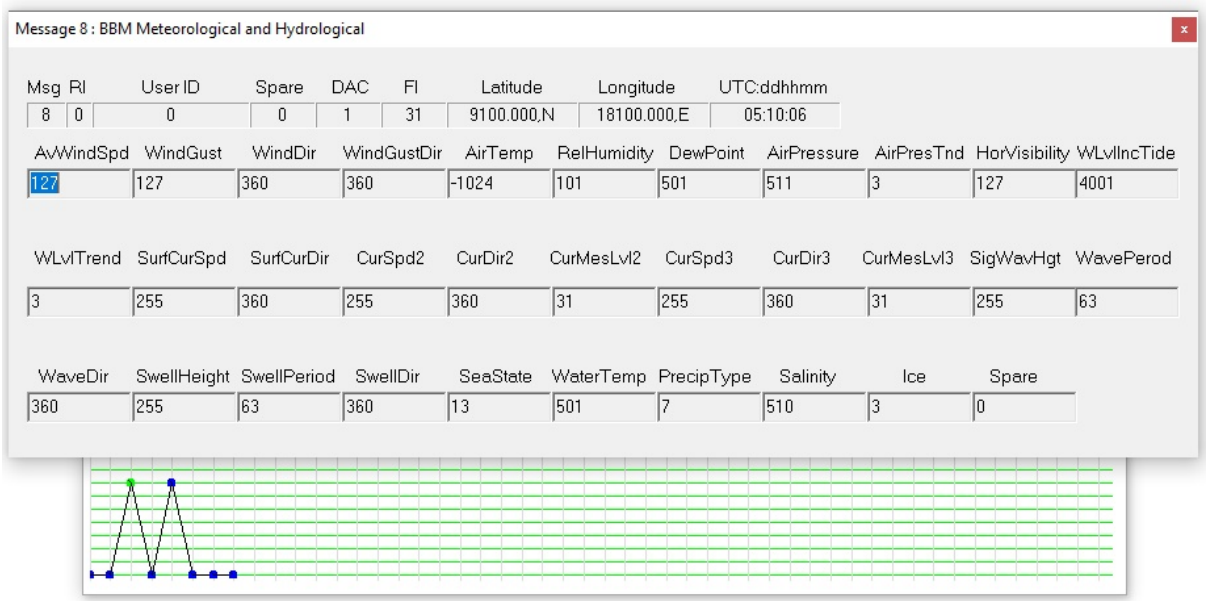
Green Dot:



AIS Transponder ACKS reception of BBM string.

INTEGRATION TEST 3: PASS / FAIL

Blue Dot:

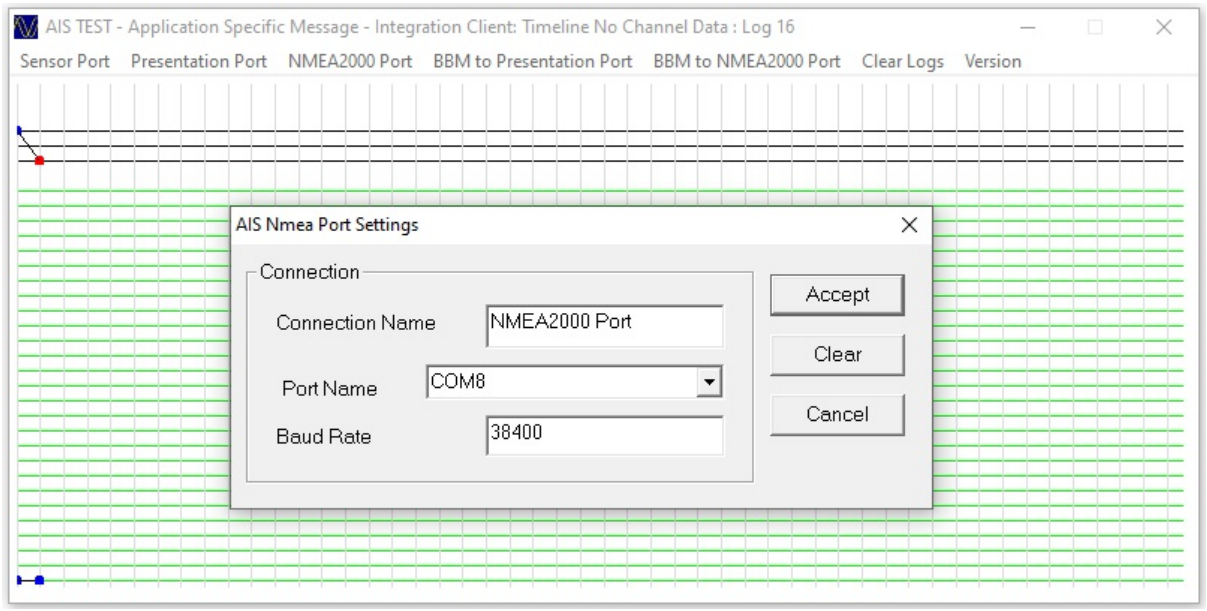


AIS Transponder VDO string is created received and decoded indicating correct BBM operation.

INTEGRATION TEST 4: PASS / FAIL

If NO MSG 8 AIS VDO strings are displayed then this indicates a problem with the connection and or AIS Transponder interoperability ie… PC Hardware (Virtual) and or wiring to the AIS Presentation Port and or no conformity of AIS Presentation port.

NMEA2000 Port Selection: Additional notes if used.



11: Enter AIS NMEA2000 Port Connection Name

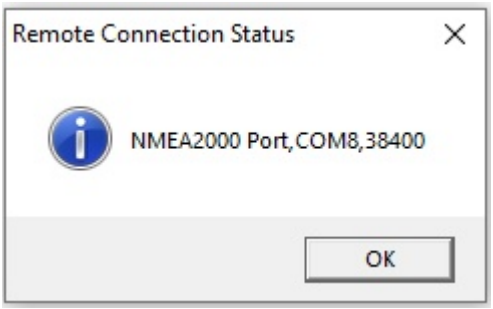
12: Select AIS NMEA2000 Port Output COM port number you have verified with WINDOWS Device Manager.

13: Enter AIS NMEA2000 Port Output Baud Rate.

This will depend on your hardware or (USB-VCP- RS232/422) (USB-VCP-NMEA2000) that you have connected to your PC.

14: Click Accept Button.

Status: Result of process. PASS / FAIL



15: Click on “BBM to NMEA2000 Port” Menu Option.

The resultant VDO string must be received and displayed in the timeline.
Depending on configuration this could be Presentation Port / NMEA2000 Port.

INTEGRATION TEST 5: PASS / FAIL

Restore AIS Transponder VDL Capability.

If all Integration Tests PASS then this will allow Plug and Play of the USER Client application.

There is a lot of INTEGRATION information contained in this document. If you still have questions please email.

Reference Documents

List of standards and specifications

Document Number	Title
IEC 61162-1	Maritime Navigation and Radio Communication Equipment and Systems - Digital Interfaces: Part 1 - Single Talker and Multiple Listeners.
IEC 61162-2	Maritime Navigation and Radio Communication Equipment and Systems - Digital Interfaces: Part 2 - Single Talker and Multiple Listeners High Speed Transmission.
IEC61162-100-80_330E_PAS	This document provides information on the necessary interface standards for use with the UAIS, which are not available in the current issue of IEC 61162-1 Ed 2. The information in this PAS supersedes that in annex B (informative) of IEC 61993-2, the Standard for UAIS
IMO_SN1_Circ289_Guidance_on_use_of_AIS_ASM	This document provides an overview of the purpose and scope of AIS Application-Specific Messages, and provides guidance on their use. AIS Application-Specific Messages described in this document are recommended for broad international use
ITU-R M.1371-5	Technical characteristics for a universal ship-borne automatic identification system using time division multiple access in the maritime mobile band.
INSTRUCTION MANUAL	MA-510TR CLASS B AIS TRANSPONDER

List of Related Software and Manuals

Module	Description	Part number
AIS Developer Studio Software for Windows. Verified to run on WINXP - WIN10	Integration Version	08092024draft2

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