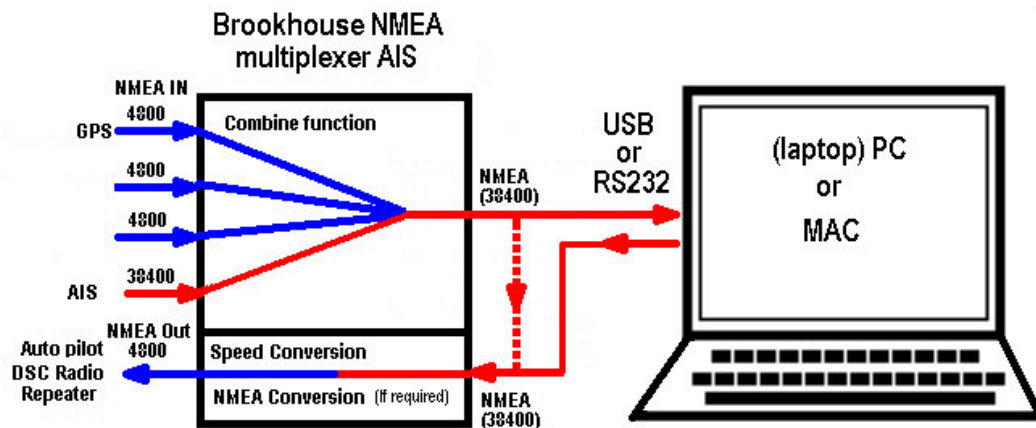


Brookhouse NMEA Multiplexer model AIS



General

This Brookhouse multiplexer model has been designed specifically to combine data from an AIS receiver with data from standard low-speed NMEA sources, such as marine instruments and a GPS, to a single data-stream. This single data stream can be fed into a computer via USB, a serial RS232 port or via an external blue tooth transmitter.

AIS receivers produce NMEA data with a baudrate of 38400 bps (bits per second), whilst standard NMEA talkers transmit at 4800 bps. The Brookhouse multiplexer model AIS accepts standard NMEA input at 4800 bps from 3 input ports and a fourth port is dedicated for connection of an AIS receiver at 38400 bps.

The multiplexer transmits the combined data at 38400 bps via RS232 or an optional USB port and has a 4800 bps output port for connection of an auto-pilot, a DSC radio or other NMEA compatible devices that require

input at 4800 bps. A maximum of 4 NMEA listeners can be connected to this port.

No other multiplexer or interface available today offers the same degree of integration of computers and marine instruments.

Please note that there is a special model Brookhouse NMEA multiplexer **AIS-C**, which has been specifically designed for use with Raymarine C-series and E-series chart plotters. The functionality is almost identical to model AIS, with the exception that model AIS-C has an extra NMEA output port for connection of a Raymarine chart plotter.

The Brookhouse AIS multiplexer has opto-isolated NMEA input ports, one 4800 bps NMEA (RS422) output port, one 38400 bps RS232 output, one 38400 bps RS232 input, optional USB.

For some time Brookhouse NMEA multiplexers have been the popular choice for connecting multiple NMEA compatible instruments, including AIS, to computers.

The HS-port option (5th port), offered on the standard Brookhouse multiplexer has been used for this purpose successfully in many installations. Based on the experience with typical configurations, this new model NMEA multiplexer was developed to take seamless integration a step further.

NMEA speed conversion

Setting the baud rate of a computer port (RS232 or USB) to 38400 bps for AIS or AIS combined with other instrument data, affects both the transmitted and received data. If the navigation software running on the computer is set up to control an auto-pilot (track mode) to steer to a waypoint or along a route, the same 38400 bps port as used for input cannot be used for this purpose, because auto pilots do not accept this high baudrate. This problem has been overcome with multiplexer model AIS. The NMEA auto pilot control data and/or other NMEA data produced by the navigation software can be sent back to the multiplexer via the same USB or RS232 port at 38400 bps. The multiplexer converts the baudrate from 38400 to 4800 bps and outputs the computer-generated data via a RS422 port (standard NMEA output), suitable to feed multiple NMEA listeners.

The speed conversion is a separate, independent function of the multiplexer and does not affect the combined data stream in any way.

Other use of speed conversion

If there are NMEA listeners that require data from the combined output data stream produced by the multiplexer, the speed conversion feature can be used in a different way from the method described above. Instead of the computer output, the multiplexer's own 38400 bps output can be directly connected to the speed conversion input. The AIS component of the data is automatically filtered out, so that only data

from NMEA talkers on the three standard 4800 inputs is now available as a combined 4800 NMEA output.

The question may arise what the setup should be if both speed converted NMEA auto pilot data from the computer **and** data from the combined data stream are required at 4800 bps.

There are several possible ways to achieve this, depending on how the navigation system is normally used. If the computer is normally switched on, with navigation software running, selected input data (NMEA sentences) can be transmitted (passed through) to the output port, together with auto pilot control data. As a result, the multiplexer's speed conversion output can feed both the autopilot and other listeners. Most good navigation programmes have this selective "pass-through" feature available.

If the computer is not always switched on, and multiple data-elements (sentences) from the combined multiplexer output data stream are always required at 4800 bps, for example as input to a repeater instrument, a simple change-over switch mechanism can be employed. With the computer operational and navigation software running, the speed conversion input is switched to computer output, whereby non-auto pilot data is obtained via computer pass-through. With the computer unavailable, the speed conversion input is switched to the multiplexer's own combined output data stream (AIS data is automatically suppressed). Combinations of the described mechanisms are possible. Ask Brookhouse support for details and wiring.

For supplying GPS data to a DSC VHF radio, the best method is to feed the GPS data directly into the NMEA IN port of the radio. This way there is no dependency on computer or other equipment, which is an

important consideration for a safety feature such as DSC distress calling. The GPS should be able to supply signal to both the multiplexer plus the DSC radio directly and the screw-terminals on the NMEA IN ports of the multiplexer provide a convenient way to make the parallel connections.

NMEA compatibility

On vessels with equipment installed over longer periods of time or after (partial) refits, often the problem of NMEA compatibility is encountered.

A practical example: A new repeater instrument is added to an installation with older, but still perfectly well working instruments. The new repeater expects input of NMEA version 3.01, but the instruments only produce NMEA v 2.1. Consequently, old cannot “talk” to new and the only solution seems upgrading the old instruments at considerable cost.

A Brookhouse multiplexer makes this unnecessary. All Brookhouse NMEA multiplexers offer a unique feature that allows conversion of NMEA data to adapt different versions to be made compatible with each other. NMEA data flowing through the multiplexer can be modified, using simple instructions that can be entered by the user. Redundant NMEA data can be filtered out, if necessary, to create a clean, efficient data-stream. It is even possible to apply offsets to certain NMEA data (e.g. wind instr. or depth sounder). Details are available in the Brookhouse document **”NMEA data manipulation and filtering”** A number of scripts for often required NMEA conversions and adaptations are available from Brookhouse at no charge.

Seatalk

As an option, multiplexer model AIS can support Raymarine Seataalk instrument and GPS input. A detailed description of the Seataalk to NMEA conversion by the multiplexer is available on the Brookhouse website. If Seataalk is enabled, input channel 1 cannot be used for NMEA input. The Seataalk conversion can be enabled/disabled by the user from the multiplexer setup menu.

Specifications

- 4 opto-isolated “NMEA Listener” (Input) ports, 3 at 4800 bps, 1 at 38400 bps for AIS.
- 1 Output RS232 port (typically for connection to computer)
- 1 Input RS232 port.
- 1 Output RS422 port (differential NMEA talker port) 4800bps
- Baud rates: 3 Input ports @ 4800bps (standard NMEA speed), 1 input port @ 38400 bps, RS232 Output port: 4800/9600/19200/38400 bps selectable in setup mode, default 38400 bps.
- Speed conversion 38400bps-4800bps.
- Indicators: red LED for power, green LED for data-transmission.
- Supply Voltage: DC 9-35 Volts.
- Reversed polarity protection.
- Power Consumption: 45 mAmps. @ 12V (with all ports active)
- Physical size: 110x65x37mm (hwxwd)
- Weight: 120 grams
- Mounting: bulkhead mounting with screws.
- NMEA management and control:
 - NMEA Sentence Filtering
 - NMEA Sentence editing “on the fly” for NMEA protocol conversion.
 - Automatic port switching (mainly for GPS backup)
 - Data pacing
- Options:
 - Raymarine Seataalk support.
 - USB for computer connection.

*All popular AIS receivers are supported, including NASA.