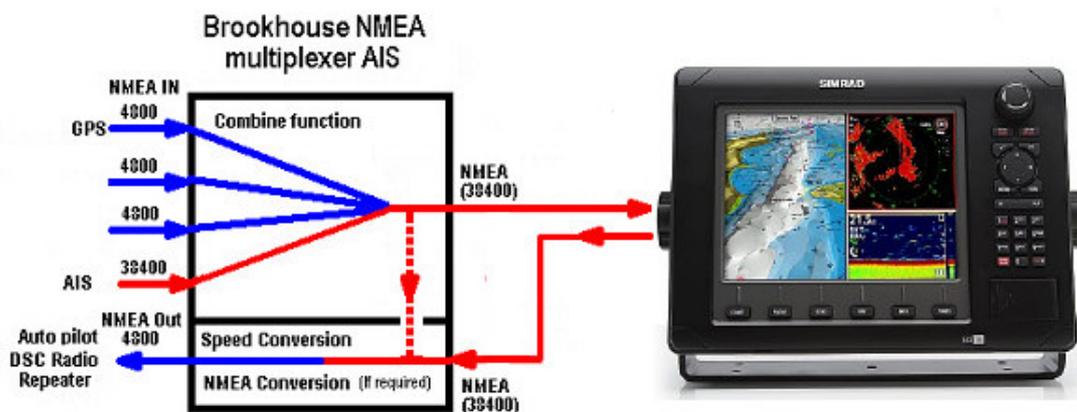


Simrad NSE system integration in an NMEA 0183 environment.



General

The new Simrad NSE series chartplotter/radar is a very attractive, high quality product with ultra bright daylight readable screen. For retrofit installations on vessels with existing equipment based on the NMEA 0183 standard, a single NMEA 0183 input and output port is available for communication.

This single serial port is often insufficient for complete system integration. In many cases there will be a number of NMEA 0183 talkers and listeners, such as sailing instruments, GPS, Auto Pilot and AIS receivers and transponders. Many of the latest, popular AIS receivers and affordable class B transponders are NMEA 0183-based.

To integrate this equipment with the Simrad NSE series plotters, it is often necessary to

use additional interface hardware for combining data streams and to perform conversion and switching tasks.

The Brookhouse NMEA 0183 multiplexer is the perfect device to achieve a seamless, full system integration with optimal use of all features of existing equipment and the new Simrad NSE series plotter/radar.

In addition, the Seataalk-NMEA conversion option of the Brookhouse multiplexer allows integration with Raymarine Seataalk instruments. This makes the Simrad NSE series a very attractive candidate for use in typical Raymarine installations as an alternative for C- and E-series plotters.

No other multiplexer or interface available today offers the same degree of NMEA 0183

and Seatalk integration of chart plotters, computers and marine instruments.

AIS

Many popular AIS receivers and affordable class B transponders are NMEA 0183 - based. The output baudrate is 38400 bps (bits per second), whilst standard NMEA talkers transmit at 4800 bps. The Brookhouse multiplexer model AIS accepts standard NMEA 0183 data at 4800 bps from 3 input ports while a fourth port is dedicated for connection of an AIS receiver at 38400 bps. If the Seatalk option has been installed, the multiplexer can also be connected to the Raymarine Seatalk bus for conversion of Seatalk to NMEA 0183, instead of one of the standard inputs.

The multiplexer transmits the combined data stream at 38400 bps to the Simrad NSE NMEA 0183 port. It is also possible to send the same data to a (laptop) computer via RS232 or an optional USB port.

NMEA baudrate conversion

Setting the baud rate of the Simrad NSE NMEA 0183 port to 38400 bps affects both input and output, i.e. NMEA output data is now also transmitted at this baudrate. Consequently, if the Simrad NSE has to feed an NMEA 0183 auto pilot or other standard NMEA 0183 listeners, such as a DSC radio, the output baudrate is incompatible.

Conversion of the baudrate to 4800 bps is necessary. This function is available in the Brookhouse multiplexer. The multiplexer converts the baudrate from 38400 to 4800 bps and outputs the NSE-generated data via a RS422 port (standard NMEA output), suitable to feed multiple NMEA listeners. The baudrate conversion is a separate, independent function of the multiplexer and does not affect the combined data stream in any way.

Data stream switching / re-direction

For sailing boats there is often the requirement that for parts of a longer voyage the boat can be navigated with minimal electronics, to save battery power. This means that the chart plotter or computer will be switched off. However, the auto pilot will often be required to steer the boat.

For optimal performance, auto pilots need speed data (SOG or SOW) or wind data if wind-steering mode is used. If the NMEA input port of the auto pilot is hard-wired to the chart plotter NMEA output, it is entirely dependent on the chart plotter for all data which presents a problem when the latter is switched off.

The same applies to DSC radios, if they are dependent on the NMEA 0183 feed of the chartplotter, no lat/lon data is available when the plotter is switched off.

The Brookhouse multiplexer resolves this problem by re-directing the input data stream. It can be configured in such a way, that if no output data from the chartplotter or computer is detected for conversion to 4800 bps, data received from the instruments and/or GPS, is sent directly to the NMEA listeners connected to the multiplexer's 4800 bps NMEA output port. To avoid redundant data, selective redirection is possible.

NMEA 0183 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 chartplotter is installed on a vessel with an older but high quality auto pilot which is working perfectly well. The auto pilot expects NMEA 0183 version 1.5 input, but the chart plotter only outputs version 3.01.

Consequently, new cannot “talk” to old and the only solution seems upgrading the old auto pilot at considerable cost.

A Brookhouse multiplexer makes this unnecessary. All Brookhouse multiplexers offer a unique feature that allows conversion of NMEA sentences to make them compatible with different versions. NMEA data flowing through the multiplexer can be modified, using simple instructions that can be entered by the user. A number of “conversions” are readily available from Brookhouse and can be installed prior to shipping.

Seatalk

As an option, multiplexer model AIS can support Raymarine Seatalk instrument and GPS input. A detailed description of the Seatalk to NMEA conversion by the multiplexer is available on the Brookhouse website. If Seatalk is enabled, input channel 1 cannot be used for NMEA input. The Seatalk 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 RS232 output port (typically for connection to the chart plotter or computer)
- 1 RS232 input 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 (hxwxd)
- 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.
 - Data pacing
- Options:
 - Raymarine Seatalk support.
 - USB for computer connection.

*All popular AIS receivers and transponders are supported.

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