SeaTalk ₁ <-> NMEA Bridge

Installation and Operation
Manual

Version : Bridge128SD
Software Version 3.01
June 2013

Credits / Warning / Disclaimer

<div align="center">

The protocol converter is a
RESEARCH PROJECT

</div>

It is used for research on data communication, computer communication and data conversion on computers used on board boats.

Hard- and Software are still under development and have NOT been fully tested. Malfunctions of the protocol converter and of any connected device are possible at any time.

The protocol converter could cause damage to connected devices.

Liability **cannot** be accepted for any damages, personal injuries or malfunctions caused by the converter.

There are no SeaTalk technical specifications available from the manufacturer. We have used the Technical Reference of the SeaTalk protocol, compiled by Thomas Knauf. See http://www.thomas-knauf.de/seatalk.htm .Thank you to Thomas Knauf for his work.

Do not use as primary navigation device

This device should be used only as an aid to navigation and should never replace commonsense and 'good seamanship' . Always maintain a permanent watch so that you can respond to any situations as they develop.

This device and the cables connected should be placed :
- At least 2 meters from any equipment transmitting radio signals.
  (e.g. VHF, Antennas,..)
- More than 2 meters from the path of a radar beam or SSB transmitting equipment

Always check the installation and function of the SeaTalk NMEA bridge and of any other navigation device on board before going to sea.

SeaTalk <-> NMEA Bridge

Contents

Overview

The converter interconnects two different data communication systems – SeaTalk[2] and NMEA 0183.

- Information from the SeaTalk network is transformed into NMEA Data and sent to the NMEA ports.
- Information from the NMEA ports is transformed into SeaTalk data and sent to the SeaTalk bus.
- SeaTalk and NMEA data are shown on a LCD display.

This converter has detachable terminals for :

    Power supply
    SeaTalk port   (SeaTalk IN (galvanic isolated) and OUT (galvanic isolated))
    NMEA port   (NMEA IN   (galvanic isolated) and OUT)
    RS232 port   (NMEA IN and OUT)
   USB computer port (NMEA IN and OUT)

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[2] SeaTalk is Reg. Trademark of Raymarine Inc.

Connections

Power Supply

The bridge takes it's power supply from +12V and GND.

12 Volt DC power supply (e.g. from battery) must be protected with a 1 amp circuit breaker or fuse. The bridge consumes approx 60 mA in idle mode, 50 mA when backlight is switched off and can consume temporarily up to 100 mA when sending data.
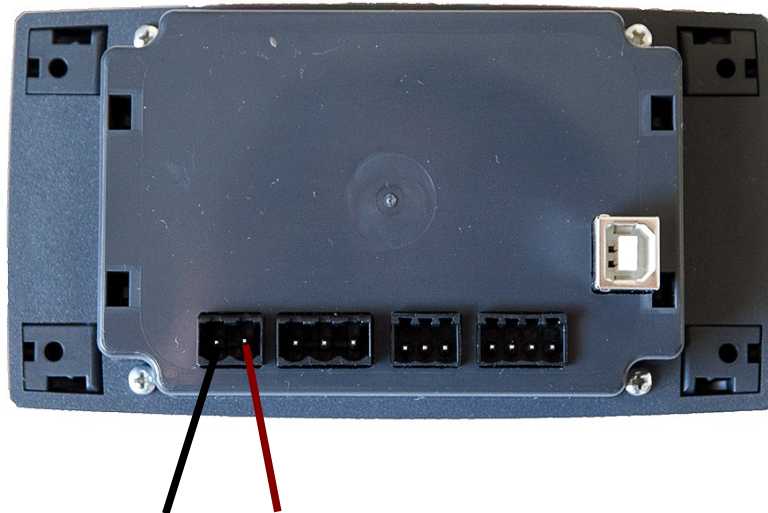
GND   +12 Volt

SeaTalk connection

+12 Volt   SeaTalk Data   GND

Red   Yellow   Silver
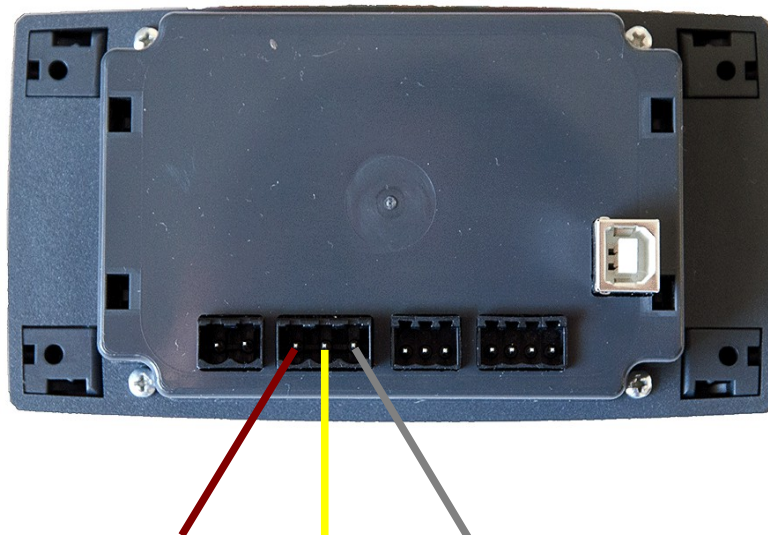
A 3-Pin terminal is used for the connection to the SeaTalk bus.
Please double check for correct connection. A wrong connection could damage the converter or other devices on the SeaTalk Bus.

NMEA Connection

The board has

1 * NMEA-IN[3]
1 * NMEA-OUT port.

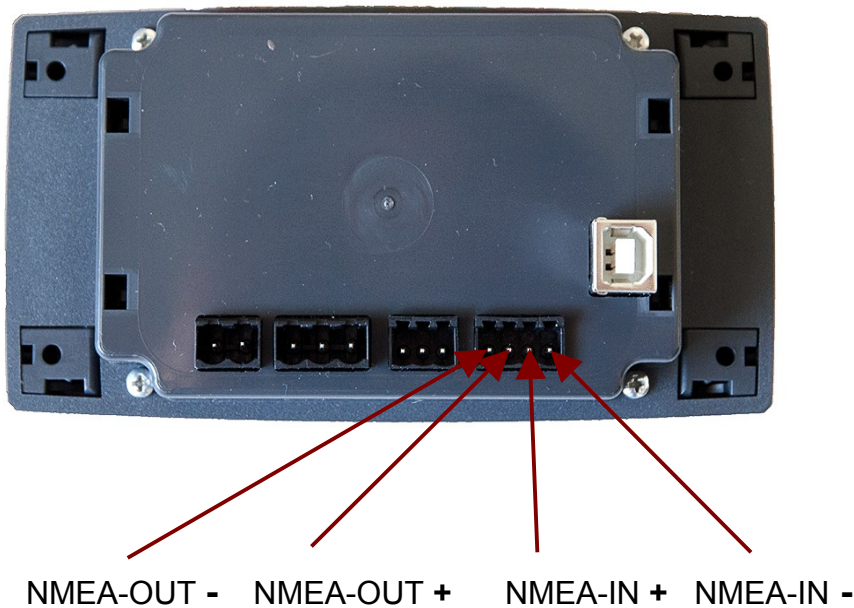The NMEA-**IN** port is used to **receive data** from standard NMEA devices like GPS etc.
This standard NMEA devices usually have terminals marked with NMEA OUT+, NMEA OUT**-**. (On some devices the ports are marked NMEA-OUT-A, NMEA-OUT-B)

NMEA-OUT **-**   NMEA-OUT **+**   NMEA-IN **+**   NMEA-IN **-**

The NMEA-**OUT** port is used to **send data** to standard NMEA devices like GPS, VHF etc.
This standard NMEA devices usually have terminals marked with NMEA IN+, NMEA IN**-**
(On some devices the ports are marked NMEA-IN-A, NMEA-IN-B)

When connecting the NMEA devices, please double check wiring.
It is indeed possible to damage the device or devices attached if IN and OUT are reversed.
Some devices have NMEA-OUT – or NMEA-IN – wired to GND internally. If, for example, NMEA-IN+ should accidentally be connected to GND, the Bridge could be damaged.

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[3] IN-Port can be switched between NMEA-IN and RS232 RxD. See page 13 - NMEA Input- and Output Port selection

RS232 Connection

The board has

1 * RS232 port for reading[4] and writing NMEA data

The RS232 port is used to send and receive data to/from a standard NMEA device that has an RS232 port instead of a NMEA port. Many GPS devices, i.e. hand-held GPS, have RS232 ports instead of NMEA ports.

The RS232 port can also be used to connect the bridge to a computer that only has a serial port but no USB port.
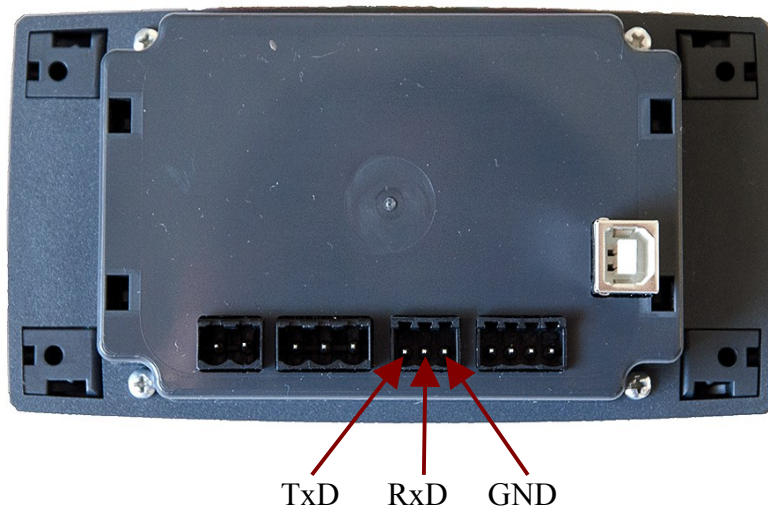
TxD   RxD   GND

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[4] IN-port can be switched between NMEA-IN and RS232 RxD. See page 13 - NMEA Input- and Output Port selection

USB PC Port

The board has
1 * USB port for PC connection.
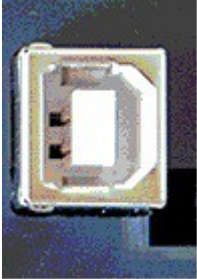
The USB Port speed is currently fixed to 4800 Baud.

The bridge has one USB port. It can be used to connect it to a computer or notebook.
After connection the bridge, a new serial port will be available on your computer
(See Page 12 – Com Port assignment)
With this serial port, the computer can act as a NMEA sender and as a NMEA receiver.
It can receive data from the devices attached to the bridge, and it can send data to this
devices.
In every navigation software, an option can be found to select the serial port to be used.

SeaTalk <-> NMEA Bridge

Display and Keys

The SeaTalk NMEA bridge has a 4 * 20 character display and 7 push buttons.

Display

The display shows SeaTalk and NMEA data. It has 4 pages, selectable by Key-1 to Key-4 or by Key-Up and Key-Down

Page 1 Speed t. water over ground Depth Temperature Position Course true Position Course magnetic	Stw:------ Sog: 10.0 Dpt:------- Tmp: ---- N 48-45.53 Trk:123.0 E010-02.67 Mag: ---
Page 2 Wind speed Wind direction Course magnetic Course true Trip mileage Total mileage UTC Time	WSpd:----- WDeg:------ Cmag:--- Trk:123.0 Trip:------- Tot :-------20:04:01
Page 3 Waypoint data From WP Name To Wp Name XTE Bearing to Wp Distance Course Speed t. water Speed o. ground	From: To:1 XTE:----- Brg:177.0 Dst:999.90 Trk:123.0 Stw:----- Sog: 10.0
Page 4 Speed over ground	Sog **100** kts

Key functions :
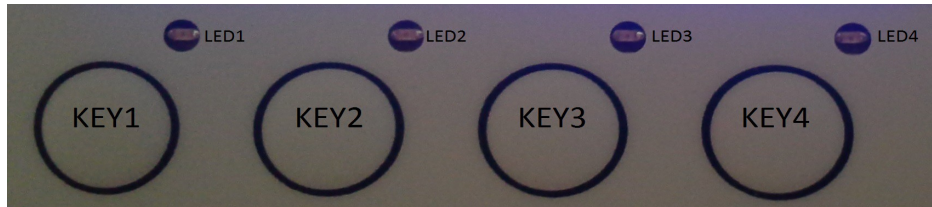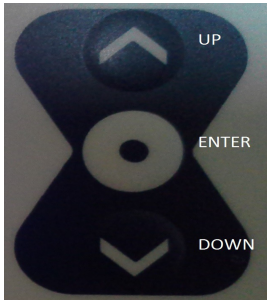
Key	Function
Key 1 Key 2 Key 3 Key 4	Select display page 1 Select display page 2 Select display page 3 Select display page 4
Key Down	Select next display page
Key Up	Select previous display page
Key Enter	Display illumination on/off
Key Enter pressed for 5 seconds	Configuration menu
Key Down pressed for 5 seconds	NMEA & RS232 loopback test

Installation and commissioning

Mounting

Before starting the installation, you should take some time to find the best
position for the instrument.
Of course it should be placed so that the display is easily readable and the push buttons
are easily accessible. It must be placed in a dry and ventilated place.
Make sure that there is enough space behind the instrument to accommodate the
instrument connectors and cables.

The instrument and it's cables must be placed at least 1 meter (3 ft) from any equipment
transmitting or cables carrying radio signals. In case of SSB radio, the distance should be
at least 2 meters (6 ft).

- Apply the drill template (supplied at the rear of this
  handbook).
- Drill out the four 3mm holes.
- Cut out the clearance hole.
- Remove the template.
- Remove the cover for the screws by gently sliding it
  sidewards.
- Mount the instrument into the panel.
- Fix the instrument with 4 * 3mm screws.
- Put back on the cover on both sides.
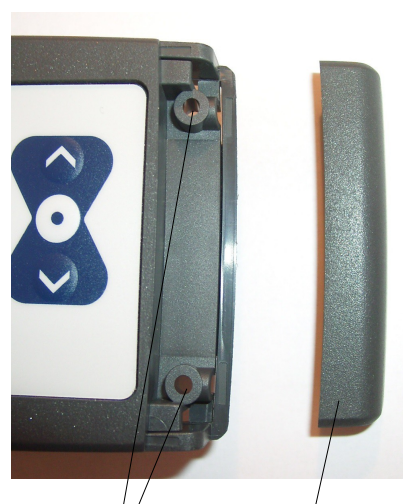
3mm holes   cover

USB Driver installation

Depending on the operating system of the computer, it might be necessary to install a
driver software. The bridge is using a standard FTDI USB serial converter chip.
Drivers for this chip can be found on the CD and on the FTDI webpages.
(http://www.ftdichip.com/FTDrivers.htm)

Linux
A reasonable modern LINUX system does not need a special driver installation.
The FTDI chip will be recognized and the system will provide a new serial port.
Usually this is /dev/ttyUSB**0**. If there is already another USB-serial converter attached to
your system, the new port will be /dev/ttyUSB**1** or /dev/ttyUSB**2** etc. .

Windows
On a MS-Windows system, it might be necessary to install the driver software. If there is
already some other devices using FTDI chips, this driver will be available already.
Otherwise the driver has to be installed. You'll find the driver software on the CD in the
subdirectory /DRIVERS.
The bridge has a standard FTDI USB chip. There are drivers for every version of MS-
Windows available on the FTDI website.

USB Com Port assignment

MS-Windows assign a COM port automatically.
In order to find out which port has been assigned, please check the MS-Windows device
manager.
In the device manager you'll find "Ports – COM & LPT ".
In this example, windows has put the SeaTalk NMEA bridge on COM4

NMEA Input- and Output Port selection

All OUT-ports are always enabled :

The Out-ports - NMEA-OUT, RS232 TxD and USB - are always enabled.
The SeaTalk NMEA bridge always sends data to the NMEA-OUT port, the RS232 TxD pin and to the USB port.

You can - for example - send data from the SeaTalk NMEA bridge to a Computer (USB) **and** a GMDSS radio (NMEA-OUT) at the same time.

The IN-port is selectable :

The bridge can **receive** NMEA data from **either NMEA-IN or** from **RS232** RxD pin.
It can not receive data from NMEA-IN and RS232 RxD at the same time.
The user has to select, which IN-port is used for receiving NMEA data.

Input port is selected in the configuration screen or with special command $SNBSE
See chapter "Special functions and configurations"

| 34 | 0 = Input is RS232 port |
| | 1 = Input is NMEA port |

Connection examples

Hand-held GPS to bridge   Bridge to PC
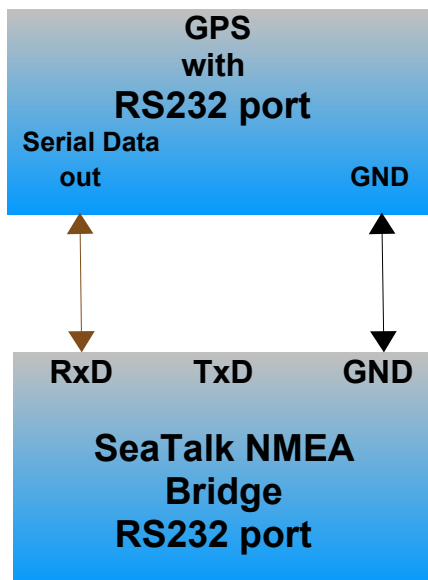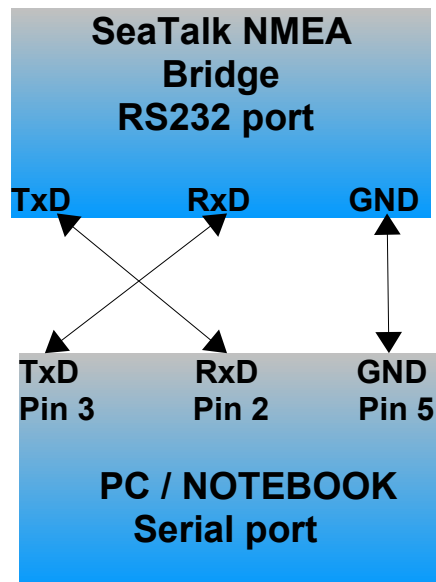
SeaTalk <-> NMEA Bridge

Data Flow
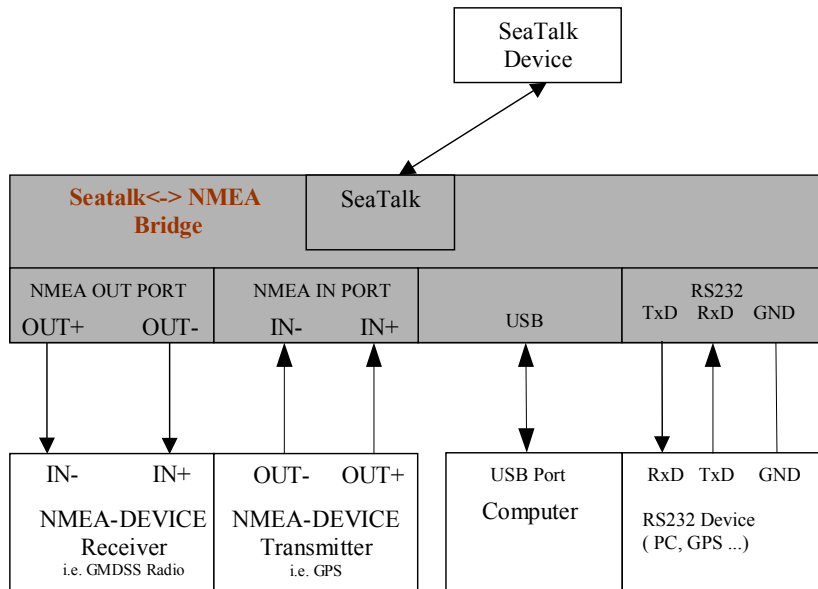
- **Received SeaTalk** data are translated into NMEA and sent to NMEA-OUT port **and** to the RS232 TxD pin **and** to the USB port.

- **Received NMEA** data from the **NMEA-IN** port are sent to NMEA-OUT **and** to the RS232 TxD pin **and** USB port.
  They are also translated into SeaTalk data and send to the SeaTalk port.

- **Received NMEA** data from the **RS232** RxD pin are sent to NMEA-OUT **and** to the RS232 TxD pin **and** USB port.
  They are also translated into SeaTalk and send to the SeaTalk port.

- **Received NMEA** data from the **USB** Port are sent to NMEA-OUT port **and** to the RS232 TxD pin.
  They are also translated into SeaTalk and send to the SeaTalk port.

SeaTalk <-> NMEA Bridge

NMEA Input

NMEA sentences can be received from the NMEA-IN or RS232 port and from the USB port.
Processing of NMEA data starts, when a complete NMEA sentence has been received.

If the received sentence contains a checksum, this checksum is used to check for communication errors. If the checksum does not match the sentence, the received NMEA sentence is discarded.
If the sentence does not contain a checksum, the sentence is always regarded as valid.

After complete reception and checksum verification the sentence is sent to the NMEA-OUT port, to the RS232 port and to the USB port.
(This function can be switched off by control setting – see page 22 Configuration ID #4)

If the received sentence is known to the system, the sentence information is extracted and processed. Processed data are shown on the display and sent to the SeaTalk port.
At this time the following NMEA sentences can be received:

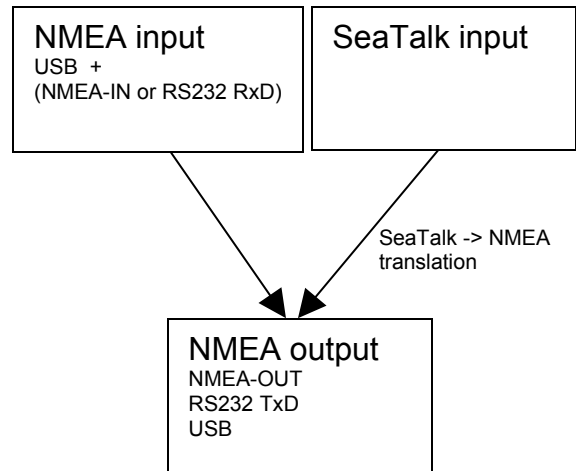| NMEA ID	Description
$xxAPB	Autopilot sentence "B"
$xxBWC	Bearing and distance to waypoint
$xxDBT	Depth below transducer
$xxDPT	Depth below keel
$xxGLL	Position
$xxGGA	# of satellites
$xxHDM	Heading magnetic
$xxHDG	" "
$xxMWV	Wind angle wind speed
$xxMTW	Water temperature
$xxRMC	Speed over ground, course over ground, Latitude, longitude, time, date
$xxRMB	Route & waypoint Information
$xxVHW	Speed through water
$xxVLW	Total / Trip mileage
$xxVTG	Velocity / Course made good
$xxVWR	Relative wind speed and angle
$xxZDA	Date & time

Special NMEA-like sentences

$STALK	Special SeaTalk datagram
$SNBSE	Board configuration
$SWVERSION	Display board software version
$SWUPDATE	Update board software

NMEA Output

All valid NMEA sentences – whether processed by the converter or not – are forwarded to the NMEA-OUT port and to the USB Port. If the NMEA-OUT port is busy, the sentence is temporarily stored in memory and transmitted as soon as the NMEA-OUT port becomes free.

The converter also continuously checks for new incoming SeaTalk data.
Incoming SeaTalk data is converted to NMEA Data and transferred to the NMEA-OUT and the USB port.

NMEA input USB + (NMEA-IN or RS232 RxD)	SeaTalk input

SeaTalk -> NMEA translation

NMEA output
NMEA-OUT
RS232 TxD
USB

The following NMEA sentences can be sent :

$IIDBT	Depth below transducer
$IIDPT	Optional $IIDPT can be sent instead of $IIDBT
$IIVHW	Speed t. water
$IIMTW	Water temperature
$IIVLW	Total / Trip mileage
$IIMWV	Wind angle & wind speed (true and apparent)
$IIHDM	Heading compass
$IIRMC	Speed over ground, course over ground, latitude, longitude, UTC time, date
$IIGLL	Optional an additional $IIGLL sentence can be sent for position information
$IIRSA	Rudder angle
$STALK	special SeaTalk datagram
$SNBSE	special system configuration datagram

SeaTalk <-> NMEA Bridge

SeaTalk Input

When a SeaTalk datagram was received, the system checks if this datagram is known and should be processed. When the datagram is known, the datagram parameters are extracted, stored and converted to an NMEA sentence.
Any unknown datagram is ignored.
(Exception: $STALK is sent even for unknown datagrams)

At this time the following SeaTalk datagrams can be received.

- 00 Depth
- 10 Wind angle
- 11 Wind speed
- 20 Speed through water
- 21 Trip mileage
- 22 Total mileage
- 23 Water temperature
- 25 Total & trip mileage
- 26 Speed through water
- 27 Water temperature
- 30 Lamp intensity
- 50 Latitude
- 51 Longitude
- 52 Speed over ground
- 53 Course over ground
- 54 UTC time
- 56 Date
- 58 Latitude & Longitude
- 84 Compass heading
- 89 Compass ST40 heading
- 9C Compass heading & rudder position

```
+----------------+
|  SeaTalk Input |
+----------------+
        |
        |  SeaTalk -> NMEA
        |  translation
        v
+----------------+
|  NMEA Output   |
+----------------+
```
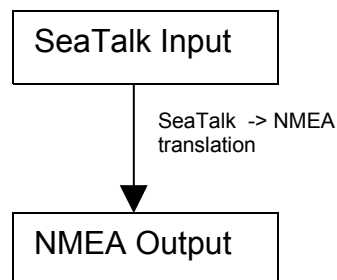
SeaTalk Output

The converter periodically checks if any new data has arrived from one of the NMEA- or the USB port. Newly arrived data are converted to SeaTalk and written to the SeaTalk. The bridge checks if the SeaTalk bus is free, or it is currently used by any other instrument. If the bus is in use, the converter waits for a while, and tries again.

Collision detection
Every single bit sent out to the SeaTalk bus is read back again and checked for successful transmission. If the transmission was corrupted, the transmission is stopped immediately. When the bus becomes free, the transmission will be started again.

At this time the following SeaTalk data can be sent

00	Depth
10	Wind angle
11	Wind speed
20	Speed through water
25	Total & Trip mileage
27	Water temperature
30	Lamp intensity
50	Latitude
51	Longitude
52	Speed over ground
53	Course over ground
54	Time
56	Date
57	Number of sats, DD horiz. dilution of position
85	Navigation to waypoint info
82	Target waypoint name
89	Compass ST40 heading
9E	Waypoint definition
A2	Arrival info

NMEA Input

NMEA -> SeaTalk translation

SeaTalk Output
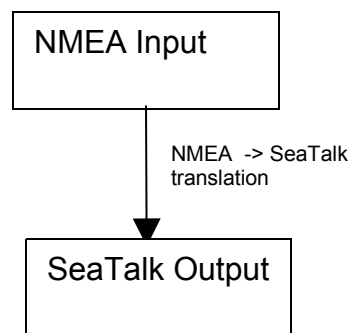
Same type of Data on NMEA & SeaTalk

Information available from like instruments on both buses (SeaTalk & NMEA) are not converted. As soon as information is not updated on one bus within 30 seconds, conversion is stated again

Example:

We have a depth sounder on the SeaTalk bus and another depth sounder on the NMEA bus. So, on both sides depth information is available.
In this case no depth information in transferred from one bus to the other.
If depth information is not updated within 30 sec. on one bus, sending to the other bus is activated again.

Special functions and configuration

Configuration screen

The SeaTalk NMEA converter can be configured to meet the users requirements.
- – The configuration can be set in a special configuration screen.
- – Configuration settings are stored in an internal eeprom.

→ To enter the configuration screen, press key ENTER for 5 seconds.

Settings are changed by using Key-1 to Key-4,Key-UP, Key-DOWN and Key-ENTER
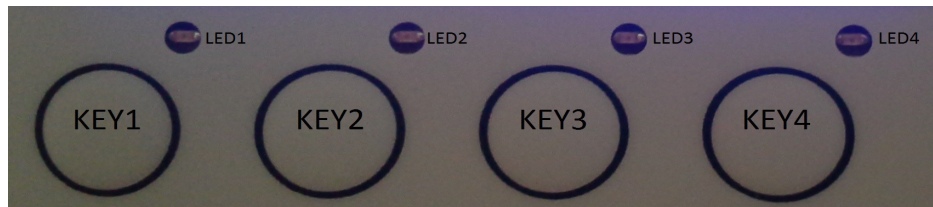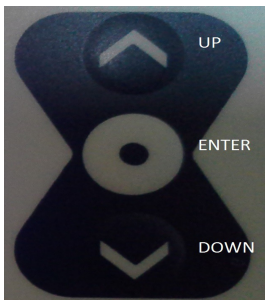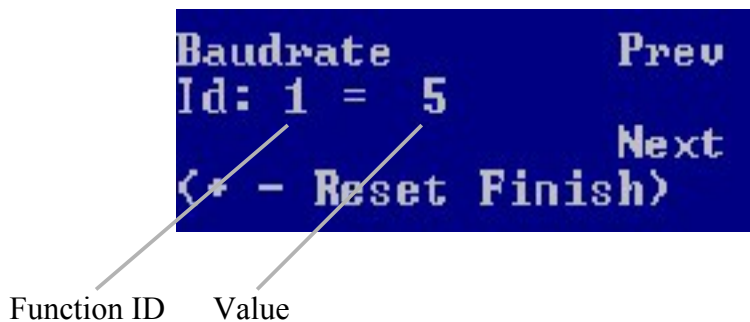
Function ID   Value

Select Function ID

Key-UP   = previous ID
Key-DOWN   = next ID

Change Value

Key-1 = value plus
Key-2 = value minus
Key-3 = reset value to factory default

Key-4 = configuration is finished

Select ID you would like to change using Key-UP / Key-DOWN
Change value for this ID with Key-1 / Key-2
Finish configuration with Key-4

→ For a list of function ID's and values – see page 22.

Configuration example

Example 1:

In this example we configure the bridge, so that the NMEA baudrate is changed to 38400 baud.

–   Find function ID for baudrate in table on page 22.
–   Function ID for baudrate is   **1**
–   Find value for 38400 baud in table on page 22.
–   Value for 38400 baud is **8**

1	Set NMEA port baudrate 1 = 300 baud 2 = 600 baud 3 = 1200 baud 4 = 2400 baud 5 = 4800 baud (Default) 6 = 9600 baud 7 = 19200 baud **8 = 38400 baud**

–   Enter Configuration menu by pressing Key-ENTER for 5 seconds.
–   Press Key-DOWN. You will see   ID: 1 = 5
–   Press Key-1 until you see   ID:1 = 8
–   Press Key-4 to leave configuration menu.

After power off/on, the NMEA baudrate will be set to 38400.

Example 2 :

In this example we configure the bridge, so that it will read NMEA data from it's RS232-RxD port instead of it's NMEA-IN port.

–   Find function ID for NMEA-IN port in table on page 22.
–   Function ID for baudrate is   **34**
–   Find value for RS232 port in table on page 22.
–   Value for RS232 port is **0**

34	0 = Input is RS232 port 1 = Input is NMEA port

-       Enter Configuration menu by pressing Key-ENTER for 5 seconds.
–   Press Key-DOWN until you will see   ID: 34 = 1
–   Press Key-2 until you see   ID: 34 = 0
–   Press Key-4 to leave configuration menu.

After power off/on, the NMEA-IN port will be RS232 port.

Configuration commands

The SeaTalk NMEA converter can be configured to meet the users requirements.

The configuration is made by sending a NMEA-like sentence. The settings are stored in an EEProm.

The configuration sentence is :

$SNBSE,address,data<CR><LF>

(Optionally a checksum can be appended $SNBSE,address,data*XX<CR><LF>)
(SNBSE = **SeaTalk NMEA B**ridge **S**et **E**eprom)
Configuration settings a read, when the bridge gets switched on. So when you change the configuration, you need to switch it off/on to activate the changes.

How to set the configuration

Connect the bridge to a PC using the USB port.
Open a terminal program (i.e. hyperterm) and set it to 4800 baud, 8 bit, no parity, no handshake.
Type " $xxx " and press ENTER

Bridge responds with " $xxx ". When you receive the $xxx, connection to your bridge is established and working properly. If $xxx does not appear after you pressed ENTER, check connection, setting of com-port, baudrate etc.

Example :

> In this example, we configure the bridge, so that every incoming SeaTalk sentence will be sent to the PC as $STALK,xx,yy   sentence.

> In your terminal program enter

> $SNBSE,0,1

> The bridge will respond with

> $SNBSE,0,1

> Next time you switch the bridge on, it will send every incoming SeaTalk sentence to the PC as a $STALK,xx,yy,zz …   sentence.

How to read current setting

In your terminal program, enter $SNBSE,*Function-Id*
The bridge will respond with $SNBSE,*Function-Id,data*

→ *For a list of function ID's and values – see page 22.*

Configuration Id's

Function ID	Value
0	1 = Send out every incoming SeaTalk datagram as "$STALK....." to NMEA 0 = Do not generate $STALK,xx,yy sentence for each incoming SeaTalk datagram If you don't really need this function – better switch if OFF. It causes additional load on the NMEA Bus.
1	Set NMEA port baudrate 1 = 300 baud 2= 600 baud 3= 1200 baud 4 = 2400 baud 5 = 4800 baud (Default) 6 = 9600 baud 7 = 19200 baud 8 = 38400 baud any other value defaults to 4800 baud Baud rate is changed at next start of the converter Baud rate of the USB port is currently set fixed to 4800 Baud.
2+3	Prefix for generated NMEA sentence - Character 1+2 Every NMEA sentence generated from the system begins with this two letters Default = "II" (Integrated Instrumentation) WARNING: You have to enter the ASCII value of the character, not the character itself. Example : To set character 1 to "I" and character 2 to "A" $SNBSE,2,73 (Character "I" is a 73 in ASCII) $SNBSE,3,65 (Character "A" is a 65 in ASCII) See ASCII table
4	1= Echo every incoming NMEA sentence to NMEA Out port 2= Echo every incoming NMEA sentence to USB port 3= Echo every incoming NMEA sentence to USB port and NMEA port 0 = Do not echo incoming NMEA sentences
5	N.A:
6	1 = Send $IIVHW sentence when new data from SeaTalk arrives 0 = Do not send $IIVHW sentence
7	1 = Send $IIHDM sentence when new data from SeaTalk arrives 0 = Do not send $IIHDM sentence
8	1 = Send $IIMWV sentence when new data from SeaTalk arrives 0 = Do not send $IIMWV sentence
9	1 = Send $IIDBT sentence when new data from SeaTalk arrives 0 = Do not send $IIDBT sentence
10	1 = Send $IIMTW sentence when new data from SeaTalk arrives 0 = Do not send $IIMTW sentence
11	1 = Send $IIVLW sentence when new data from SeaTalk arrives 0 = Do not send $IIVLW sentence
12	1 = LCD light on/off is sent to SeaTalk? 0 = Do not send light on/off to SeaTalk

SeaTalk <-> NMEA
Bridge

13	1 = Send welcome message after power up 0 = Do not send welcome message
14	0 = **S**peed **o**ver **g**round from NMEA input is sent to SeaTalk as speed over Ground **and** as **s**peed **t**hrough **w**ater (Needed for ST60 Wind instrument, that does not recognize speed over ground) 1 = Normal operation. No special SOG => STW handling) (default) (See Webpage www.gadgetPool.de for more on this special ST60 Wind function.
15	0 = Every incoming SeaTalk datagram is sent to NMEA as "$STALK,xxx,yyy – no matter if the system can interpret the SeaTalk data or not. 1 = Normal operation. Only SeaTalk sentences known to the system are echoed as $STALK,xxx,yyy Only valid if function id "0" is switched on.
16	0 = Don't send any data to the SeaTalk port. SeaTalk port is READ-ONLY 1 = Send data to SeaTalk
17	0 = Display wind speed in knots. 1= Display wind speed in m/s
18	0 = Don't send SOG to SeaTalk 1 = Send SOG to SeaTalk
19	0 = Don't send position to SeaTalk 1= Send position to SeaTalk
20	0 = Display depth on SeaTalk instrument in feed, 1 = display in meters
21	1=set time only with NMEA ZDA sentence 0=set time also via RMC sentence ... (time of last position fix)
22	0=send only RMC sentence for position to NMEA 1=send GLL and RMC sentence for position to NMEA
23+24	23+24 Offset of depth transducer. In mm (+- 1000th Meter) If this value is set to -1, the bridge will send DBT NMEA sentence and no offset will be used. If this values is set to something between -32000 to 32000, the bridge will produce DPT sentences including the offset.
25	Reserved (used for SeaTalk-NMEA-Link)
26	1 = send NMEA RSA sentence for rudder angle data 0 = don't send RSA sentence
27	0 = no bit set = Start display normal 1 = bit 1 set = Start after boot-up with display page 3
28	Not used
29	1 = send waypoint data to SeaTalk 0 = don't send waypoint data to SeaTalk
30	0 = Send NMEA Cog as COG and CMAG to SeaTalk. 1 = 1 = don't combine
31	Not used
32	Not used
33	Calculate TRUE Wind data and send as $IIMWV Sentence 0 = No True wind calculation 1 = True wind calculation from water speed 2 = True wind calculation from SOG
34	0 = Input is RS232 port 1 = Input is NMEA port
35	0 = Display SOG as BigDigits in km/h on display page 4 1 = Display SOG as BigDigits in knots on display page 4

Special NMEA like commands

The $STALK sentence

The converter can process a special NMEA-like sentence.
With this special sentence any SeaTalk command can be sent to SeaTalk.

$STALK,cc,p1,p2..,pn*xx

cc = SeaTalk command
p1 = Parameter 1
p2 = Parameter 2
..
*xx = NMEA checksum (optional) .

Example :

Switch on display illumination on all devices on the SeaTalk network.

Enter $STALK,30,00,0C   ⏎

Switch off display illumination on all devices on the SeaTalk network.

Enter $STALK,30,00,00   ⏎

This special sentence will be sent to the NMEA bus for every received SeaTalk datagram
– regardless as to whether it was recognized and processed or not.
(This function can be switch off by control setting – see below)

The $SWVERSION command

$SWVERSION<ENTER>

Display software version.

Software update

The board software can be updated by using the built in Bootstrap-Loader function.

If you find anything missing in the software, if you should find any software errors or if you have new ideas – just sent a mail to FWallenwein@tklinux.de

New / revised software can be sent by E-Mail and the SeaTalk NMEA bridge owner can update the controller software him/herself.

Bootstrap method advantages :
No hardware programmer needed.
Just a USB connection to PC and a PC software is needed.
Fuses and bootstrap software can not be erased accidentally.

Latest software versions can be found at http://www.gadgetPool.de

Bootstrap Loader Method

Connect the SeaTalk NMEA bridge to your PC (using USB Port)
Open a terminal program (i.e. hypertern) and set it to 4800 baud, 8 bit, no parity, no handshake.
Type " $xxx " and press ENTER 　⏎
Bridge responds with " $xxx ". When you receive the $xxx, connection to your bridge is established and working propperly. If $xxx does not appear after you pressed ENTER, check connection, setting of com-port, baudrate etc.

Enter $SWUPDATE 　⏎

The bridge will respond with
　　Software Update Function will start in 40 sec.
　　...

Close the terminal program.
Start the supplied bootstrap software (Megaload) on the PC.
Open the image file you would like to program into the bridge.
Select your serial port in bootstrap software
Select **9600 baud**
After the 40 sec timeout, the bootstrap software finds the SeaTalk NMEA bridge and flashes the new software.

The default timeout of 40 seconds can be adjusted.
Just enter $SWUPDATE,xxx 　⏎ , where xxx is the timeout in seconds.

SeaTalk <-> NMEA Bridge

SeaTalk & NMEA conversion Table

Function	SeaTalk ID	NMEA	Stalk -> NMEA	NMEA->Stalk
Depth	0	DBT	X	X
Speed t. water	20	VHW	X	X (See SNBSE,14)
Speed t. water	26	VHW	X	
Trip mileage	21	VLW	X	
Total mileage	22	VLW	X	
Water temperature	23	MTW	X	
Water temperature	27	MTW	X	X
Total / Trip mileage	25	VLW	X	X
Wind angle	10	MWV	X	X
Wind speed	11	MWV	X	X
Compass	84	HDM (VHW)	X	
Compass ST40	89	HDM	X	X
Speed over ground	52	RMC	X	X
Course over ground	53	RMC	X	X
Lamp intensity	30		X	Push button
Latitude	51	RMC	X	X
Latitude	51	GLL		X
Longitude	50	RMC	X	X
Longitude	50	GLL		X
UTC time	54	RMC	X	X
UTC time	54	ZDA		X
# of sats	57	GGA		X
Date	56	RMC	X	X
Date	56	ZDA		X
Special NMEA->ST	any	$STALK	X	X
Special config.	-	$SNBSE		

Technical data

Instrument
Width	:	141.5 mm
Height	:	75.0 mm
Depth	:	37.5 mm
Weight	:	165.0 grams

Clearance hole
Width	:	104 mm
Height	:	66 mm

Minimum cable clearance behind panel : 40 mm

Supply voltage   : 8 to 30 Volt DC
Current consumption   : 60 mA idle, 50 mA backlighting off, 100 mA peak (12 Volt)

News and Info on the web

If you have any question or suggestions – there is a SeaTalk NMEA bridge user forum on our web page.   http://www.gadgetPool.de

The software will be improved constantly. Please check http://www.gadgetpool.de for the latest software version.