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**Autohelm<sup>®</sup>**

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**NMEA BRIDGE**

Operation and  
Installation

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# Chapter 1: Introduction

SeaTalk is the language used by all Autohelm products to share information. This is unique to Autohelm. The NMEA Bridge, by providing conversion between SeaTalk and NMEA 0183 data format, allows operation with other manufacturer's equipment .

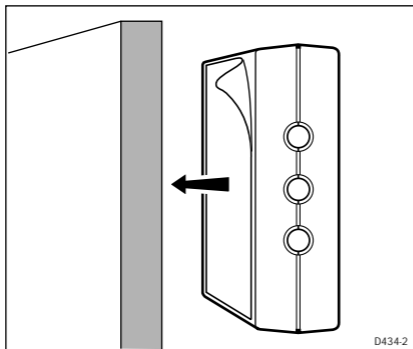
The NMEA Bridge provides:

- Conversion of NMEA 0183 data formats to SeaTalk
- Conversion of SeaTalk to NMEA 0183 format
- Operation of the Autohelm Main Alarm when an alarm condition exists on the SeaTalk bus
- RS232 terminals to send NMEA data to a personal computer (echoes NMEA out)

## Chapter 2: Mounting

Select a suitable location that is:

- away from direct contact with water
  - clean and grease-free
  - accessible for cabling
  - reasonably well protected from physical damage.
1. Once a suitable location has been found, thoroughly clean the surface with an alcohol based cleaner.
  2. Remove the protective backing from the NMEA Bridge and firmly press onto the mounting surface.



3. Alternatively, the NMEA Bridge may be attached using the 2 self tapping screws provided.
4. Remove the top of the Bridge by squeezing the lid at each end and pull away from the base.
5. Route all the necessary cables into the Bridge.
6. Connect the wires as described in section 3. Also, secure cables close to the unit.

## Chapter 3: Operation/Wiring

### 3.1 NMEA Output

Providing you have the appropriate SeaTalk instrumentation, the data listed below is transmitted in NMEA 0183 format for use with non-SeaTalk equipment.

**Note:** NMEA is also output in response to NMEA input.

<b>Data</b>	<b>Transmitted NMEA Header</b>
Apparent Wind Angle	MWV, VWR
Apparent Wind Speed	MWV, VWR
Autopilot Alarms	PNATD
Bearing to Waypoint	BWC
Course Over Ground (M)	VTG
Cross Track Error	APB, XTE
Date	ZDA
Depth	DBT
Distance (Log)	VLW
Distance (Trip)	VLW
GPS Fix/No Fix	GGA, GLL
GPS HDOP	GSA, GGA
GPS PDOP	GSA
Dead Reckoned XTE	XTR

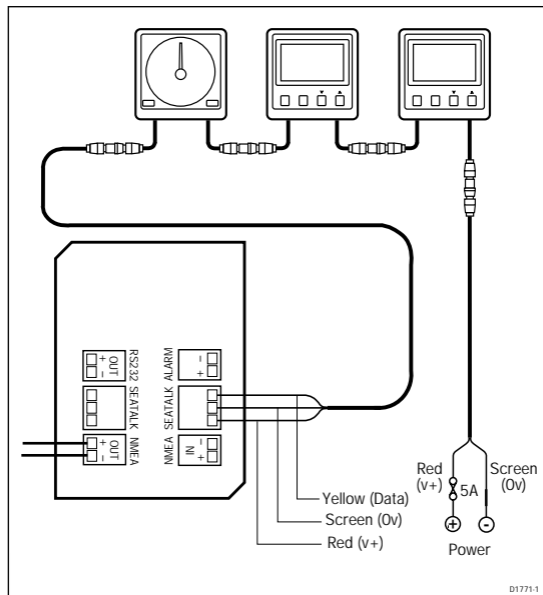


<b>Data</b>	<b>NMEA Header</b>
GPS Satellite Azimuth	GSV
GPS Satellite Elevation	GSV
GPS Satellite PR Number	GSV
GPS Satellite SNR	GSV
GPS Differential Station ID	GGA
GPS Differential AGE	GGA
GPS Number of Satellites	GGA
GPS Antenna Height	GGA
GPS Quality Indicator	GGA
Heading (Magnetic or True)	HDM, HDG, VHW, HDT
Latitude & Longitude	GGA, GLL*
Locked Heading	HSC
MOB (Cancel)	PNATA
Route	WPL
Speed Over Ground	VTG
Speed Through water	VHW
Temperature, Water	MTW
Time	ZDA
Time Offset	ZTG
True Wind Angle	MWV
Variation	HDG
Waypoint Destination No.	APB, BWC
Waypoint Arrival Alarm	APB, AAM
Waypoint Distance	BWC
Waypoint Time To Go	ZTG

\* GLL version 1.5 is transmitted if version 1.5 is received via NMEA. If GLL version 2.0 is received via NMEA, GLL version 2.0 will be transmitted.

## Cabling

The NMEA Bridge should be connected to SeaTalk and the other manufacturer's equipment as follows:



## 3.2 NMEA Input

The NMEA Bridge can also be used to convert NMEA 0183 data to SeaTalk. NMEA 0183 data is also re-transmitted on NMEA "OUT" in response to NMEA "IN". This allows non-SeaTalk equipment to be connected directly to the SeaTalk bus.

**Note:** Data will not be transmitted to SeaTalk if it is already on present on the SeaTalk bus.

<b>Data</b>	<b>Received NMEA Header</b>
Apparent Wind Angle	MWV, VWR
Apparent Wind Speed	MWV, VWR
Bearing to Waypoint	APB, BWR, BWC, RMB, BER, BEC
Course Over Ground (M)	VTG, VTA, RMC, RMA
Cross Track Error RMB, XTR	APB, XTE, APA,
Date	ZDA, RMC
Depth	DBT, DPT
Distance (Log)	VLW
Distance (Trip)	VLW
GPS Fix/No Fix	GGA, GSA
GPS HDOP	GGA, GSA
GPS PDOP	GSA
GPS Satellite Azimuth	GSV
GPS Satellite Elevation	GSV
GPS Satellite PR Number	GSV
GPS Satellite SNR	GSV
GPS Differential Station ID	GGA
GPS Differential AGE	GGA

<b>Data</b>	<b>NMEA Header</b>
GPS Number of Satellites	GGA
GPS Antenna Height	GGA
GPS Quality Indicator	GGA
Heading (Magnetic or True) HDT	HDM, HDG, VHW,
Latitude & Longitude	GGA, GLL (inc. Version 1.5) RMC, RMA, IMA, GLP, GOP, GXP,
GDP	
MOB (Cancel)	PNATA
Route	WPL
Speed Over Ground	VTG, VTA, RMC, RMA
Speed Through water	VHW
Temperature, Water	MTW
Time	ZDA, GLL, ZFO, ZTG
True Wind Angle Variation	MWV HDG, HVM, RMC,
RMA, HVD	
Waypoint Destination No.	APB, BWR, BWC, RMB, BOD, WCV, BER, BEC
Waypoint Arrival Alarm	APB, APA, AAM
Waypoint Distance	BWC, BWR RMB, BER, BEC
Waypoint Lat & Lon	BWC, BWR, BEC, BER

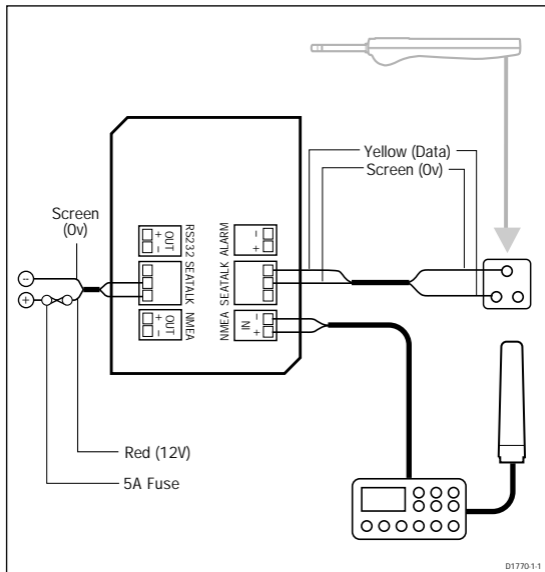
Waypoint Capture

WPL

Waypoints, last one & next 4

PNATA

## **Cabling (ST1,2,3000 autopilots)**



### 3.3 Main Alarm

The NMEA Bridge can be used to drive the Autohelm Main Alarm (Cat No Z035). This alarm will sound as soon as one of

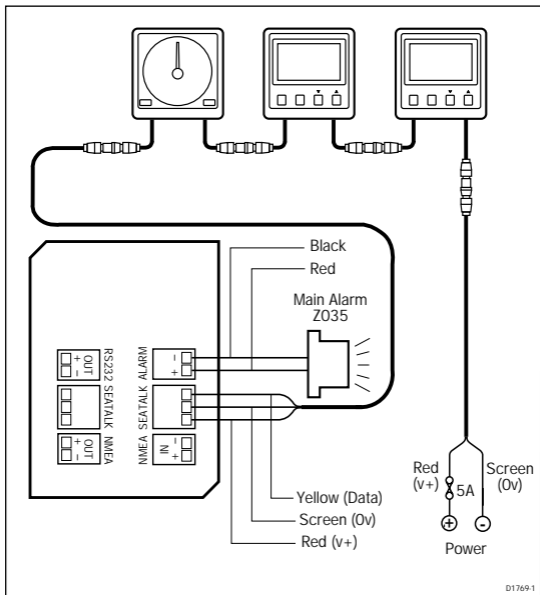
the following alarms is present on the SeaTalk bus:

- Deep Depth
- Shallow Depth
- Autopilot off course
- Watch alarm\*
- Wind shift\*
- Low battery\*
- Large Cross Track Error\*
- No NMEA data\*
- NMEA Data error\*
- No autopilot Main power
- No autopilot actuator (Drive stopped)\*
- Stern drive auto release
- Waypoint advance\*

\*The Main Alarm will sound 30 seconds after the instrument alarm. This allows the alarm condition to be cancelled and, therefore, avoiding sounding of the main alarm.

## Cabling

The Main Alarm should be wired to the NMEA Bridge as follows:

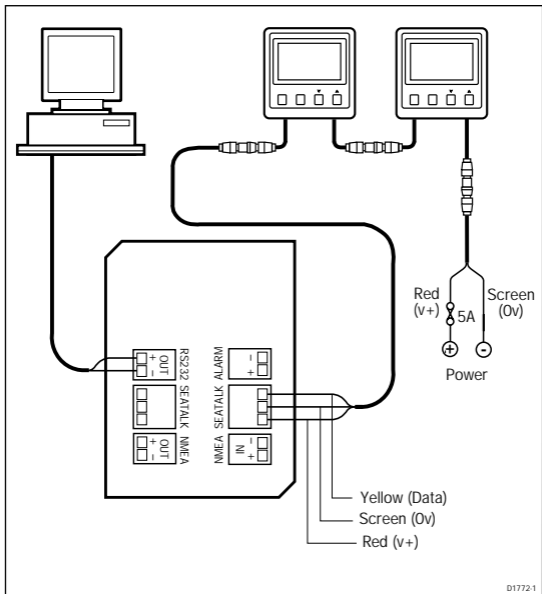


### 3.4 Connecting a Personal Computer

The NMEA Bridge can be used to send or receive NMEA data to or from a personal computer via the "RS232 OUT and NMEA

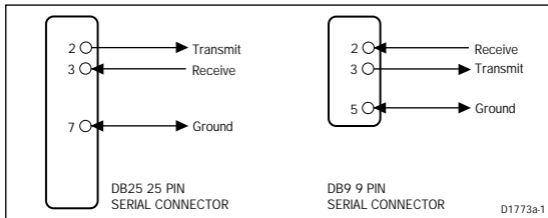


IN" terminals, as shown in the following illustrations.



## PC Serial Port Connections to NMEA

The following diagram shows the pin connections for 25 and 9 pin PC serial ports to NMEA.



## Chapter 4: Fault Finding

All Autohelm products are comprehensively tested procedure prior to packing and shipment. In the unlikely event that a fault does occur, the following check list should help cure the problem.

<b>Fault</b>	<b>Cause</b>	<b>Action</b>
No operation.	No power supply.	Check the SeaTalk bus connectors are correct between the Bridge and the power supply.  Check the fuse/circuit breaker.
NMEA data not converted and transmitted onto the SeaTalk bus.	Equipment not setup to transmit correct NMEA sentences.  NMEA Bridge incorrectly wired.  Variable information such as XTE, bearing to waypoint, Lat/Lon already on SeaTalk bus.	Refer to the manufacturers operating handbook.  Check connections.