WASSP SENSOR BOX INSTALLATION MANUAL (WITH WSP-038)

wassp®
MULTIBEAM

SEE IT ALL

WASSP SENSOR BOX INSTALLATION MANUAL (WITH WSP-038)

The WASSP Sensor Box is an interfacing box to simplify installation of an integrated sensor system required by WASSP multibeam systems.

Sensor integration comprises:

- Position, Heading and PPS from a satellite compass
- Roll, Pitch and Heave from a motion sensor

> 👍 NOTE: This manual supports the WSP-400-280 product including an integrated WSP-038 sensor. On the side of the sensor box there will be a label to confirm this. Previous versions of the Sensor Box were shipped without a label and contain a Spatial sensor which requires a different configuration.
>
> If you are using a sensor from an external supplier, you need to get a copy of the appropriate manual to configure the unit correctly.

DOCUMENT REVISION HISTORY

REVISION DATE	REASON FOR CHANGE	VERSION
May 2016	Compilation	1.0
May 2016	Updated Screen Shots & info	1.1
May 2016	Updated Figure 2 and Section 5	1.2
June 2016	Update for Revision 2 of Sensor Box	2.0
July 2016	Update for Revision 3 of Sensor Box	3.0
November 2016	Update Appendix A.3	3.1
November 2016	Updates to Section 4 Sensor Configuration	3.2
November 2016	Corrected GNSS Offset instruction	3.3
June 2017	Update RS422 to RS422-A, Satellite Compass support updated	3.4
January 2019	Update to new motion sensor	4.0
November 2019	Update section 3.2.1, section 4.1 and Appendix A.4	4.1
December 2019	Updated model names to WASSP V123	4.2

RELATED DOCUMENTS

» WASSP V123 Reference Manual; https://hemispheregnss.com/Portals/0/TechnicalDocumentation/875-0287-000%20%28MNL,USER%20GUIDE,V103%29_B1.pdf
» WMB-X230 Installation Manual; Shipped with WMB-X230
» DRX Installation Manual; Shipped with DRX

RELATED TOOLS

» WASSP V123 PocketMax3 Application; https://hemispheregnss.com/Resources-Support/Software
» WSP-038 Configuration Software; https://wassp.sharepoint.com/:f:/g/EnzP81gUR-FCIpYbj3bUCTIBBn7XNsEnGIEh3QVpXqa-aA?e=J04LON

Further documentation can be found at wassp.com

General Notices

WASSP Ltd. reserves the right to change the contents of this manual and any system specifications without notice.

Contact WASSP Ltd. regarding copying or reproducing this manual.

Support information

If you require maintenance or repair, contact your local dealer. You can also contact WASSP Ltd. using the following address: wassp.com/support/.

If you need information about WASSP products, visit wassp.com.

On the website you will also find a list of WASSP dealers and distributors.

Warnings, Cautions, and Notes

Warnings, cautions, and notes are indicated by the following icons throughout this manual:

⚠️ CAUTION indicates that if the instruction is not heeded, the action may result in equipment damage or software corruption.

👍 NOTE indicates a TIP or additional information that could be helpful while performing a procedure.

CONTENTS

APPENDIX

FIGURES

Page 4 of 24   **wassp.com**   *Doc: Sensor Box Installation Manual*   *Doc: Sensor Box Installation Manual*   **wassp.com**   Page 5 of 24

Version: 4.2 December 2019   *Version: 4.2 December 2019*

1 INTERCONNECTION DIAGRAM

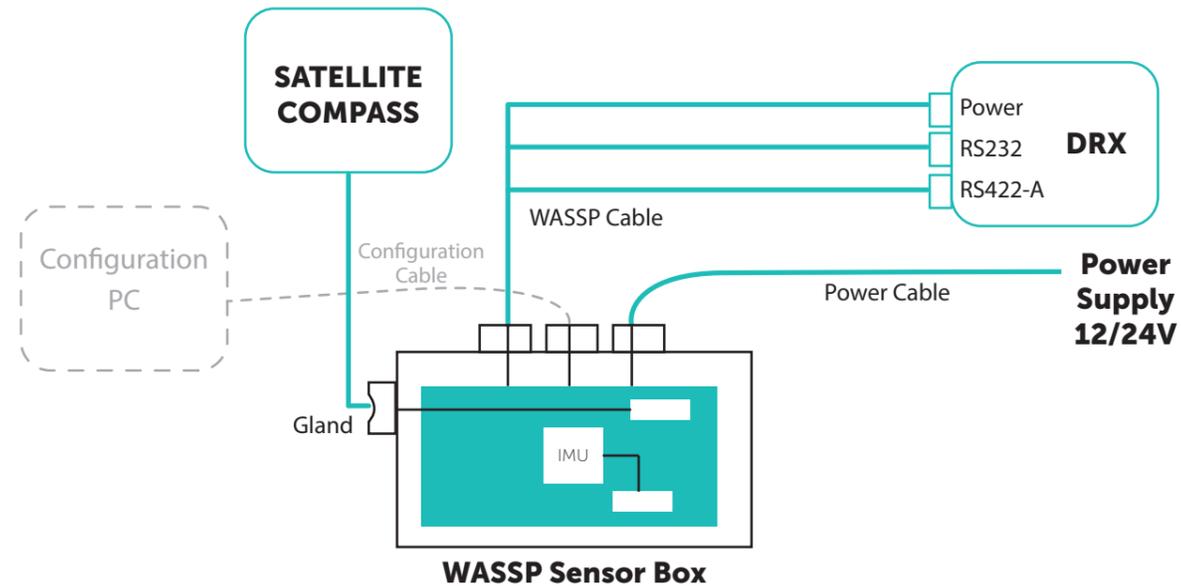## 1.1. INTERCONNECTION DIAGRAM WIDESCAN OPTION – S3/F3

Figure 1.   Interconnection Diagram Widescan Option - S3/F3

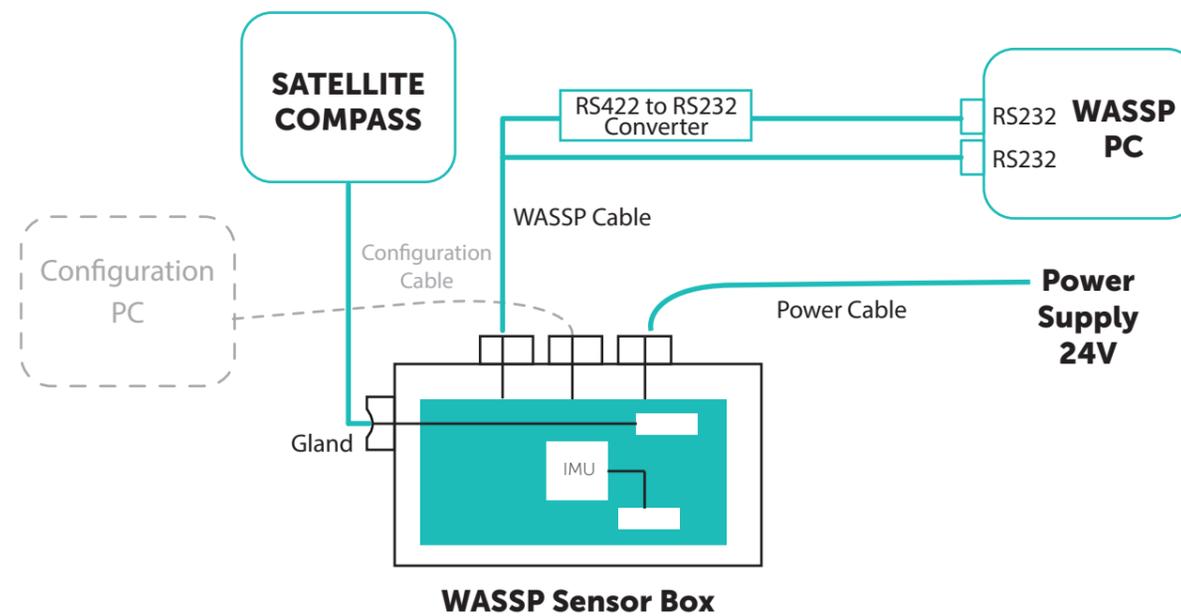## 1.2. INTERCONNECTION DIAGRAM WMB-X230 / WMB-3250 OPTION

Figure 2.   Interconnection Diagram WMB-X230/WMB-3250 Option

2 COMPONENTS

2.1. WASSP SENSOR BOX

Central box for sensor interconnectivity with the WASSP system. Incorporates internal IMU.

Figure 3.   WASSP Sensor Box

2.2. POWER CABLE

Power Supply to POWER connector on WASSP Sensor Box

Powers the WASSP Sensor Box. All sensors are directly powered from the WASSP Sensor Box.

Figure 4.   Power Cable

2.3. WASSP CABLE

DRX or WASSP PC To DRX connector on WASSP Sensor Box.

Option 1: Widescan Option; Connects WASSP Sensor Box to DRX

Figure 5.   WASSP Cable: Widescan Option; Connects WASSP Sensor Box to DRX

Option 2: WMB-X230/WMB-3250 Option; Connects WASSP Sensor Box to WASSP PC

Figure 6.   WASSP Cable: WMB-X230/WMB-3250 Option; Connects WASSP Sensor Box to WASSP PC

2.4. SATELLITE COMPASS PLUS CABLE

Satellite Compass to SATELLITE COMPASS terminal block in the WASSP Sensor Box.

Option 1: Sensor Package Option; WASSP V123 plus Cable

Figure 7.   Sensor Package Option; WASSP V123 plus Cable

Option 2: Motion Package Option; Owner supply supported Satellite Compass

NOTE: For Currently Supported Satellite Compasses please visit the WASSP Support portal.

2.5. CONFIGURATION CABLE

Configuration PC to CONFIG connector on WASSP Sensor Box.

Connects WASSP Sensor Box to PC for IMU configuration and for WASSP V123 configuration.

Figure 8.   Motion Sensor and Satellite Compass Configuration cables

3 WASSP SENSOR BOX INSTALLATION

3.1. WASSP SENSOR BOX MOUNTING

The WASSP Sensor Box should be installed taking the following into consideration:

» WASSP Sensor Box should be as close to the vessels centre of motion as possible (usually very close to the vessel centre of gravity). This will give optimum motion sensor performance which is essential to achieve acceptable WASSP performance

» Cabling from the GPS Compass and WASSP system needs to be accessible.

» Flat rigid mounting location is required for optimum motion sensor performance. Pitch accuracy should be +/- 2 degrees.

» WASSP Sensor Box needs to be mounted accurately in fore/aft vessel orientation as per the arrow on the box. Angular accuracy should be +/- 1 degree.

» Area needs to have space for connectors.

Once a suitable location and fixing plate is identified the WASSP Sensor Box should be mounted using the supplied mounting pieces and instructions supplied with the box.

👍 NOTE: WASSP Sensor Box needs to be mounted aligned fore/aft as per the arrow on the box. Tolerances are +/- 1 degree fore/aft and +/- 2 degrees pitch.

Figure 9.   WASSP Sensor Box Alignment

3.2. WASSP SENSOR BOX CONNECTION

Refer to *"1 Interconnection diagram" on page 6* for system configuration.

For sensor configuration, the following connections are required:

» Power

» Configuration cable to a PC, for IMU configuration *(See "4 Sensor Configuration" on page 12).*

» IMU - Internal to WASSP Sensor Box

👍 NOTE: If WASSP V123 Satellite Compass requires configuration this can also be connected

For operation, the following connections are required:

» Power

» WASSP Cable to DRX or WASSP PC

» Satellite Compass

» IMU - Internal to WASSP Sensor Box

3.2.1. Satellite Compass

To connect the Satellite Compass Connection connect the cable to the internal terminal block as per the instructions below.

1. Strip 50mm of the outer insulation from the WASSP V123 cable exposing the coloured cables.

2. Cut off unused cables, see *"Appendix A.3 Satellite Compass Terminal Block" on page 20* for required cable.

3. Strip back 5mm of insulation from all the remaining wires and twist them (tin them if practical).

4. Open the connection box by unlatching the 4 screws on top of the box.
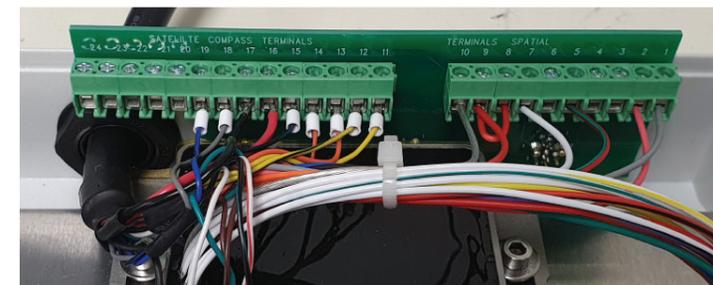
To open the connection box, twist all 4 screws half a rotation anti-clockwise.

5. Insert the Satellite Compass cable into the box through the gland. Insert the wires into the terminal block seen below and then tighten the terminal screws. See *"Appendix A.3 Satellite Compass Terminal Block"* for Satellite Compass pin out.

Or

When the cable connection is made, tighten the gland and make sure the cable is secured.

4 SENSOR CONFIGURATION

4.1. SATELLITE COMPASS CONFIGURATION

WASSP V123 will be supplied preconfigured.

» Mount fore/aft for true heading

» Port B (RS-422A): 38400 Baud
- GGA 25Hz
- HDT 25Hz
- VTG 5Hz
- ZDA 1Hz

» Port A (RS-232): 38400 Baud
- GGA 25Hz
- HDT 25Hz
- VTG 5Hz
- ZDA 1Hz

» PPS Out

4.2. IMU CONFIGURATION

IMU will be supplied preconfigured.

» Auxiliary baud rate; 38400 Baud
- Aux Tx Function: TSS1
- TSS Auxiliary output rate 100Hz
- Aux RX Function: WASSP V123 GNSS Input

» Filter 1 = 50

» Filter 2 = 0.01

5 WASSP CONFIGURATION

5.1. WIDESCAN - S3/F3; DRX CONFIGURATION

For sensor configuration on DRX refer to the DRX Installation Manual.

Connect the WASSP Cable from the DRX connector on the WASSP Sensor Box to the DRX as per *"Figure 1. Interconnection Diagram Widescan Option - S3/F3" on page 6.*
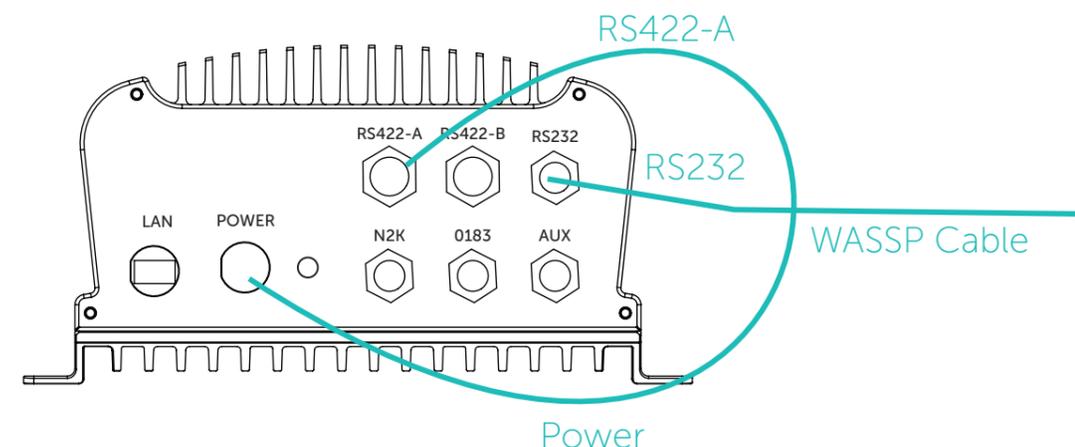

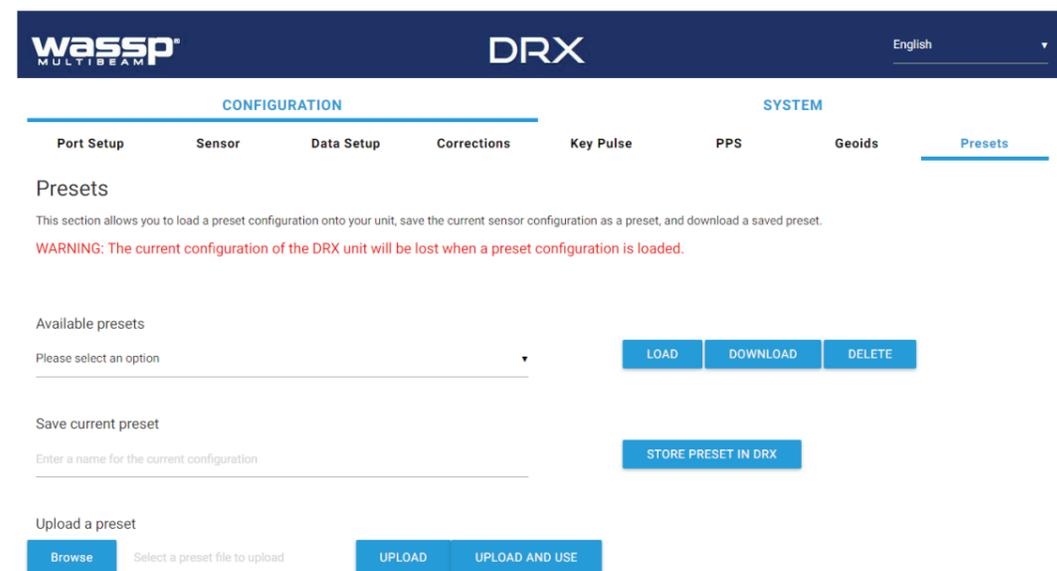Figure 10. Widescan - S3/F3; DRX Configuration

⚠ CAUTION: Noise due to poor grounding will have direct impact on DRX performance and signal integrity (RS-232 is particularly susceptible).

Configure the DRX using the DRX SETUP WEBPAGES. If the DRX version supports PRESETS the sensor setup can be automated for Port Setup, Data Setup, Corrections and PPS using the Configuration Presets.

Sensor offsets will need to be input manually.

Refer to the DRX Installation Manual for more details.

Page 12 of 24   wassp.com   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   wassp.com   Page 13 of 24

For manual configuration, follow these steps:

1.   Configure Port Setup

»   RS422-A; Enable, Baud 38400
»   RS232; Enable, Baud 38400

2.   Configure Sensor

»   Sensor 1; WSP-038, Port RS232
»   Sensor 2; GPS, Port RS422-A
»   Configure the Offsets as per the DRX Installation Manual

3.   Configure Data Setup

»   Position; Sensor GPS, Sentence GGA
»   Heading; Sensor GPS, Sentence HDT
»   Roll; Sensor WSP-038, Sentence TSS1, Lag 0.01
»   Pitch; Sensor WSP-038, Sentence TSS1, Lag 0.01
»   Heave; Sensor WSP-038, Sentence TSS1, Lag 0.01
»   Time, Sensor GPS, Sentence ZDA

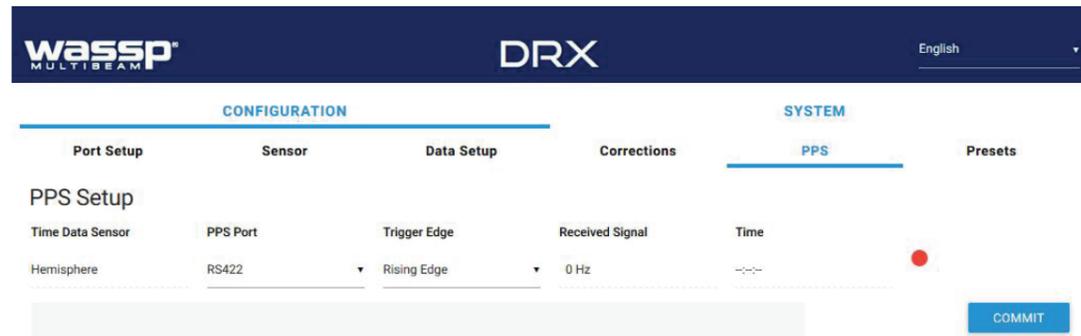NOTE: Any Bias will need to be calculated for Heading, Roll and Pitch.

NOTE: Lag for WASSP V123 is not required for position if PPS is used, other Satellite Compass Lags will need to be calculated and applied.

Page 14 of 24   wassp.com   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   wassp.com   Page 15 of 24

4.   Configure PPS

»   PPS Port; RS422-A

»   Trigger Edge; Rising Edge

NOTE: If PPS is not supported configure POSITION LAG as per CONFIGURE DATA SETUP above.

5.2. WMB-X230/WMB-3250; WASSP PC CONFIGURATION

For sensor configuration on WASSP PC refer to the WMB-X230/WMB-3250 Installation Manual.

Connect the WASSP Cable from the DRX connector on the WASSP Sensor Box to the WASSP PC serial ports as per *"Figure 2. Interconnection Diagram WMB-X230/WMB-3250 Option" on page 6.*

Below shows configuration using the WASSP V123 Satellite Compass.

1.   Configure the COM ports using the Serial Transfer Task.
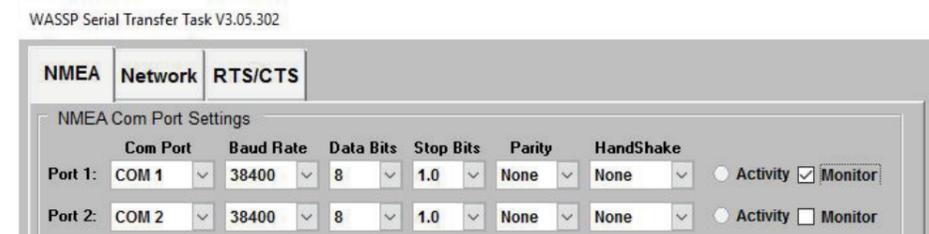
2.   Verify the data using the monitor option above.

3.   Setup the sensors on the WMB-X230/WMB-3250 application. Example below is for the WMB-3250.

Motion;
Sentence TSS,
Port Number 2,
Time Lag 0.001
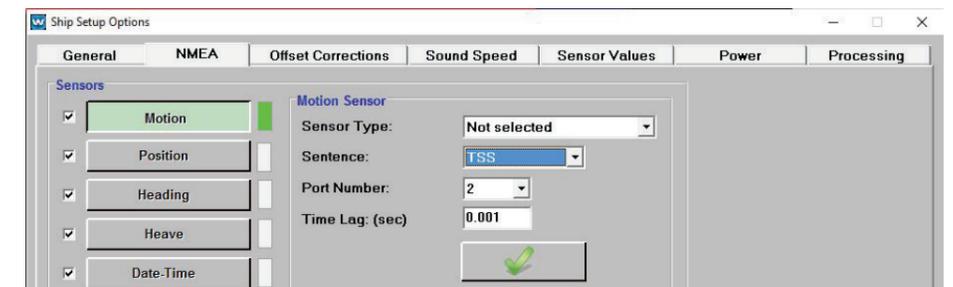
Position;
Sentence GGA,
Port Number 1,
Time Lag as calculated

Heading;
Sentence HDT,
Port Number 1

Heave;
Sentence TSS,
Port Number 2,
Time Lag 0.001

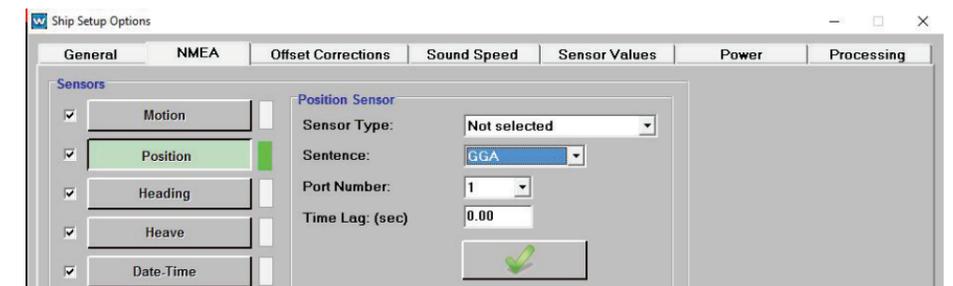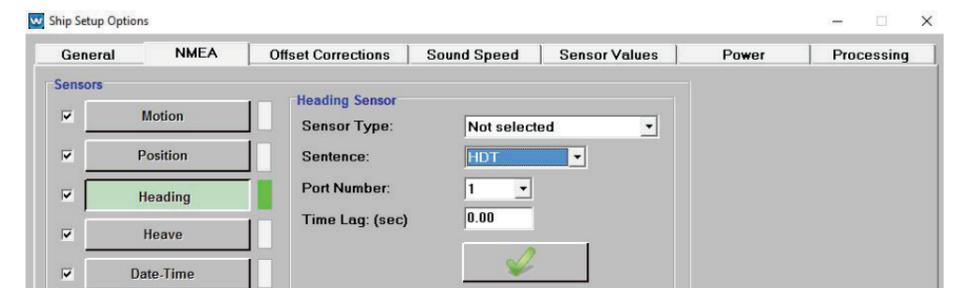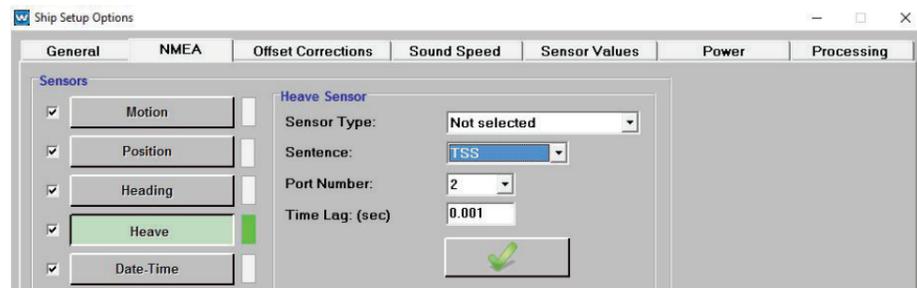Date/Time;
Sentence ZDA,
Port Number 1
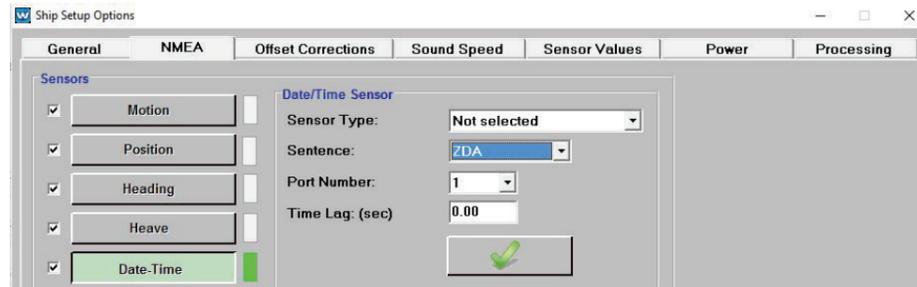
NOTE: Any Bias will need to be calculated for Heading, Roll and Pitch and input under SENSOR VALUES tab.

NOTE: Lag is for WASSP V123 without PPS being used should be set at 0.005s, other Satellite Compass Lags will need to be calculated and applied.

6 APPENDIX

APPENDIX A - CONNECTOR PIN-OUTS

APPENDIX A.1 POWER CONNECTOR

Labeled; POWER

PIN	Colour
1	Main Power +
2	Main Power -

APPENDIX A.2 CONFIG CONNECTOR

Labeled; CONFIG

PIN	Function
1	IMU Primary RS-232 Tx
2	IMU Primary RS-232 Rx
3	Signal Ground
4	WASSP V123 Port A Tx RS-232
5	WASSP V123 Port A Rx RS-232
6	Signal Ground

Page 18 of 24   wassp.com   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   wassp.com   Page 19 of 24
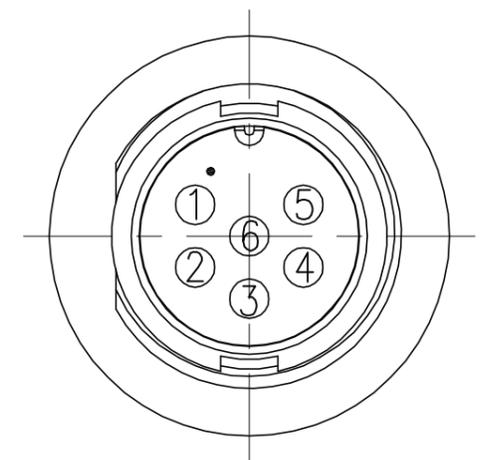
APPENDIX A.3 SATELLITE COMPASS TERMINAL BLOCK

Labeled; SATELLITE COMPASS

24	23	22	21	20	19	18	17	16	15	14	13	12	11

For WASSP V123 Satellite Compass

PIN	Function	Colour / Stripe
24	Spare	
23	Spare	
22	Spare	
21	Spare	
20	Spare	
19	Port A Tx RS-232	Blue
18	Signal Ground	Grey
17	Power -	Black
16	Power +	Red
15	Port A Rx RS-232	Black / Blue
14	PPS (-)	Orange / Black
13	PPS (+)	Orange
12	Port B Tx RS-422 (-)	Yellow / Black
11	Port B Tx RS-422 (+)	Yellow

APPENDIX A.4 IMU TERMINAL BLOCK

Labeled; IMU

10	9	8	7	6	5	4	3	2	1

PIN	Function	Colour / Stripe
10	Auxiliary RS-232 Rx	White / Grey
9	Auxiliary RS-232 Tx	Blue / Red
8	Config RS-232 Tx	Blue / Red
7	Config RS-232 Rx	Red / Blue
6	Ground	
5	Ground	Grey / White
4	PPS (+)	
3	PPS (-)	
2	Power +	Brown / White
1	Power -	White / Brown

Or

PIN	Function	Colour / Stripe
10	Auxiliary RS-232 Rx	Transparent
9	Auxiliary RS-232 Tx	Red
8	Config RS-232 Tx	Red
7	Config RS-232 Rx	White
6	Ground	
5	Ground	Green / Red
4	PPS (+)	
3	PPS (-)	
2	Power +	Pink
1	Power -	Grey

Page 20 of 24   wassp.com   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   wassp.com   Page 21 of 24

APPENDIX A.5 WASSP CONNECTOR

Labeled; DRX
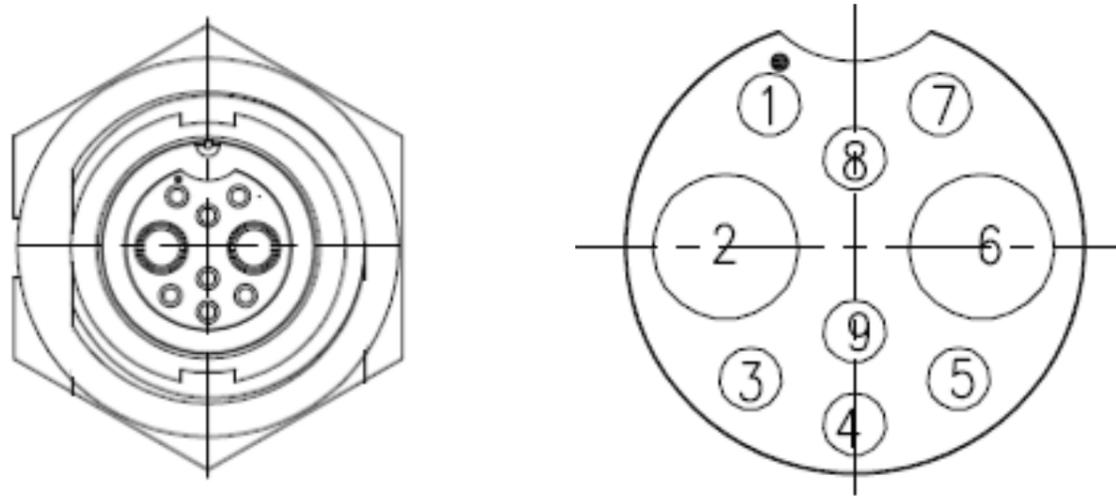
For DRX - Referenced to DRX. See DRX Manual.

PIN	Function
1	RS-232, Rx
2	Power +
3	RS-422, RD B (IN)
4	RS-422, PPS (AUX)
5	RS-422, RD A (IN)
6	Power -
7	RS-422, GND (Isolated)
8	RS-232, GND
9	RS-232, GND

For WASSP PC - Referenced to PC COM Ports.

Convertor connected to COM 1.

PIN	Function
1	COM2 (Pin 2), RS-232 Rx
2	NC
3	RS-422 to RS-232 Converter (Pin 4), Rx-
4	COM2 (Pin 8), RS-232 CTS
5	RS-422 to RS-232 Converter (Pin 3), Rx+
6	NC
7	COM2 (Pin 5), RS-232 GND
8	COM2 (Pin 5), RS-232 GND
9	COM2 (Pin 5), RS-232 GND

APPENDIX B - WASSP SENSOR BOX DIMENSIONS

Page 22 of 24   wassp.com   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   Doc: Sensor Box Installation Manual
Version: 4.2 December 2019   wassp.com   Page 23 of 24