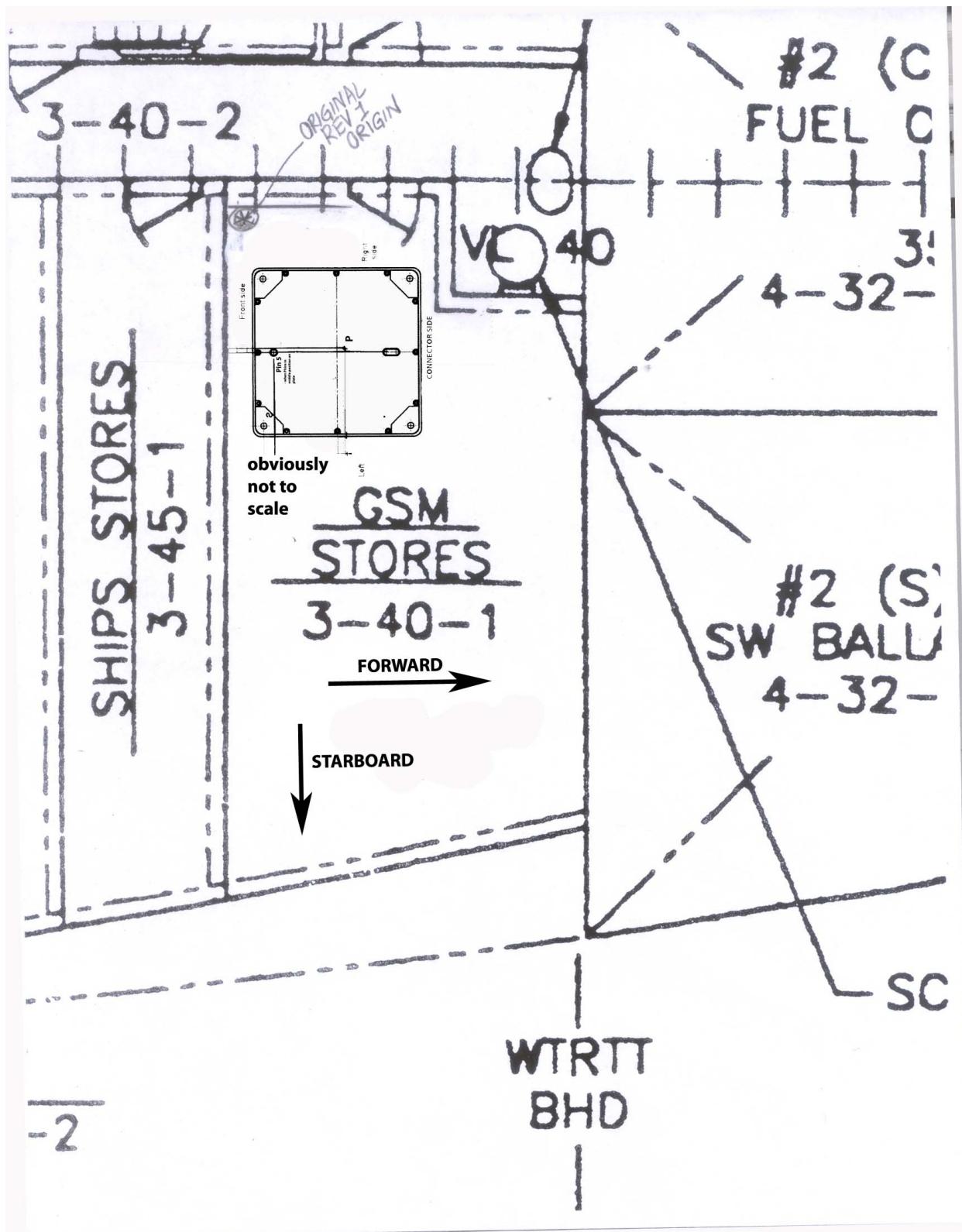


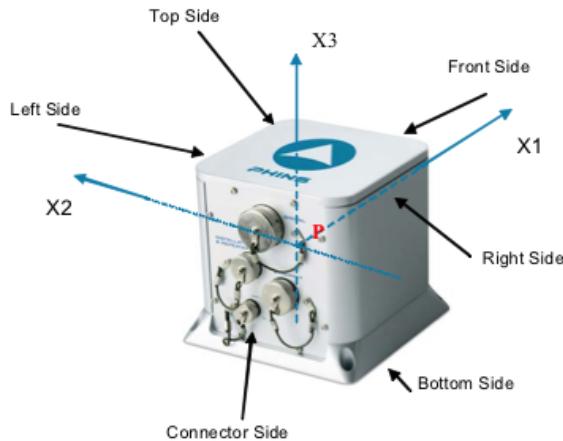
PHINS SETTINGS

to find Phins setting screen shots look for "****"

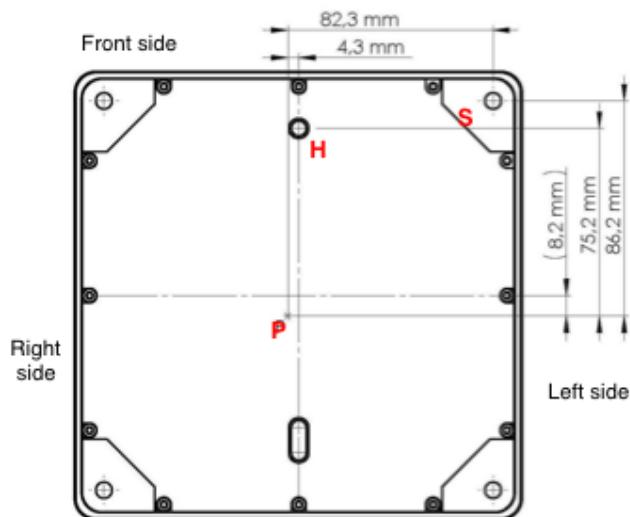
PHINS location and orientation in GSM Stores – tank top



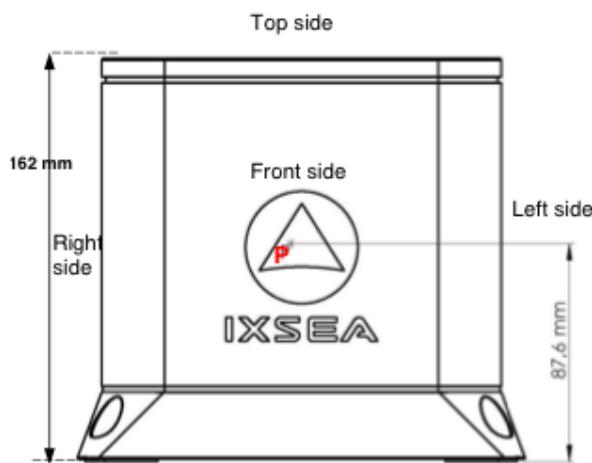
PHINS offsets to reference, and conventions



5.2.2. Center of measurement position



*NOTE – this drawing is in a very “odd” view orientation. It is like a mirror image of the orientation in the GSM Stores.



Angular and linear orientation

Roll, Pitch and Heading angular offsets were entered based on survey data from the Atlantis survey of Spring 2011.

Plane FINAL DATA 3-16-2011::HIPPIE_PLATE_FINAL			
A	B	C	D
0.0025	-0.0072	1.0000	0.0000
Proj. Ang. (deg.)	Rx from Y 90.4122	Ry from Z 0.1424	Rz from X -70.9433

HIPPIE PLATE PLANE:
BOW DOWN
PORT UP

Plane FINAL DATA 3-16-2011::TX_SET_SHIFTED 4"			
A	B	C	D
0.0010	0.0026	1.0000	-125.5342
Proj. Ang. (deg.)	Rx from Y 89.8531	Ry from Z 0.0581	Rz from X 68.4003

TX PLANE-
BOW UP
PORT DOWN

Plane FINAL DATA 3-16-2011::RX_SET_SHIFTED 4"			
A	B	C	D
-0.0005	0.0015	1.0000	-128.8518
Proj. Ang. (deg.)	Rx from Y 89.9120	Ry from Z -0.0277	Rz from X 107.4839

RX PLANE -
BOW LEVEL
PORT DOWN

TX-AZ .00568 Degrees to Stbd
RX-AZ .13801 Degrees to Port

*Chuck Hohing gave me a copy of this survey page during at18-06.

The values used here in reference to the Phins are the ones for the Hippie Plane. These were explained as:

Roll: 0.4122 port up (coming from column B)
Pitch: 0.1424 bow down (coming from column C)

The heading misalignment was given verbally as 0. Further clarification is needed as to the notations in the table (i.e. the described outcome is not made "obvious" in the table we have so far).

From the PHINS – Part 2: Definitions, Conventions & Specifications Manual page II-10:

Roll misalignment bias

The roll misalignment bias is the angle of the rotation around PHINS axis X1 which brings PHINS axis X2 into the vessel horizontal plane (XV1, XV2). In the Figure II.8, the value of the roll misalignment bias to be entered in the Web-Based User Interface to configure PHINS is negative.

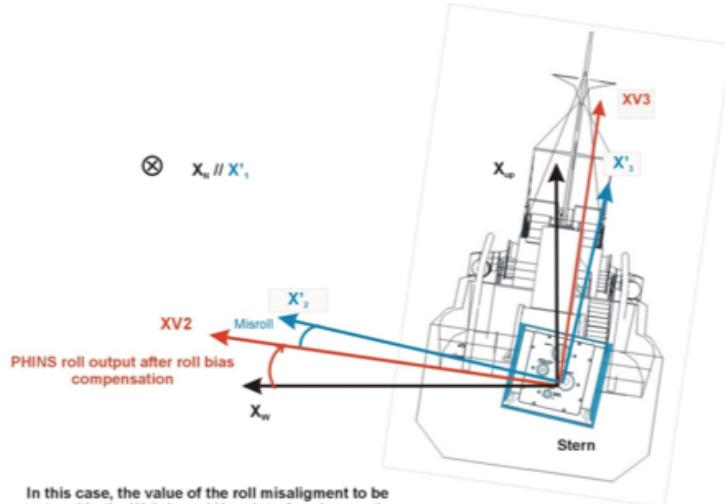


Figure II.8 - Roll misalignment bias [in case of null pitch and heading]

Roll: As the port edge of the hippy plate is “up” base on the surveyor’s description, it matches the example, and the sign should be negative.

Pitch misalignment bias

Pitch misalignment bias is the angle between PHINS axis X1 and its projection in the vessel horizontal plane (XV1, XV2). On Figure II.9, the value of the pitch misalignment bias to be entered in the Web-based User Interface to configure PHINS is negative.

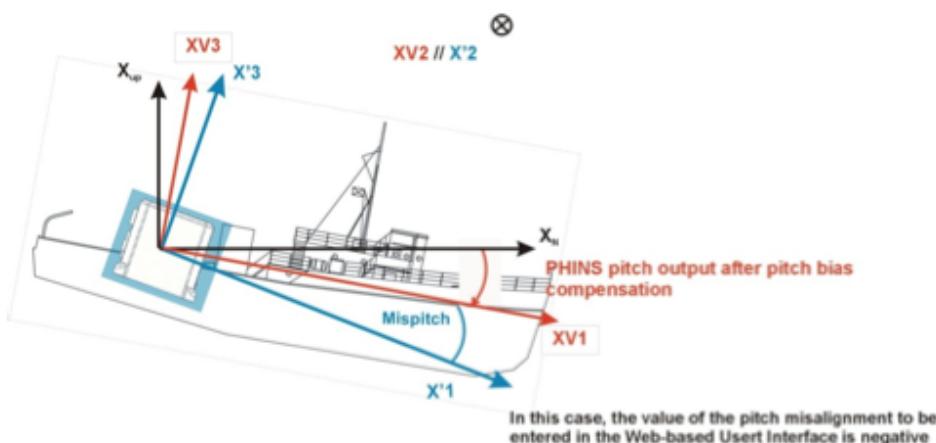


Figure II.9 - Pitch misalignment bias in case of null roll and heading

PITCH: As the hippy plate orientation was described as “bow down” it’s orientation also matches the example from the Phins manual, and it’s sign should also be negative.

*****ENTRY IN PHINS:**

Lever arm settings

Angular and linear orientation

Vessel misalignment

Heading (°)	0.000
Roll (°)	-0.412
Pitch (°)	-0.142

Primary lever arm

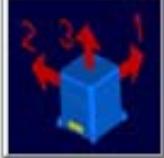
Length XV1 (m)	0.000
Length XV2 (m)	0.000
Length XV3 (m)	0.000

Secondary lever arm

A	B	C
Length XV1 (m)	0.000	0.000
Length XV2 (m)	0.000	0.000
Length XV3 (m)	0.000	0.000

Orientation

Vessel XV1 (Prow)	Connectors side
Vessel XV2 (Port)	Right side
Vessel XV3 (Up)	Top side



COG lever arm

GPS lever arm

GPS2 lever arm

Manual GPS lever arm

DVL lever arm and misalignment

LogEM lever arm

Depth lever arm

USBL lever arm

LBL lever arm

Send Cancel

LEVER ARMS: (From survey results and Phins manual)

LOCATION	X(meters)	Y(meters)	Z(meters)	
PHIN_PIN_LOC_5	-27.345	0.458	-2.768	
	move forward	move Port	move up	
	0.075	-0.004	-0.088	
P (Phins Reference Point in Unit)	-27.270	0.454	-2.855	*Cnav & Phins:
Phins Reference Point	-27.270	0.454	-2.855	both CNAV & Phins Ref are aft of the survey origin (CNAV is further aft)
to get from Phins reference to PRIMARY CNAV antenna	move aft	move port	Move up	CNAV is port of survey origin, Phins reference is Stbd
Primary CNAV antenna (position relative to survey as of March 2013)	-37.420	-3.166	-30.323	both CNAV & Phins Ref are above the survey origin (CNAV is further above)
PRIMARY CNAV (this is the far port end of the antenna catwalk) to PHINS Reference Point (mm)	-10.150	-3.620	-27.468	
P (Phins Reference Point in unit)	-27.270	0.454	-2.855	both 1850 & Phins Ref are aft of the survey origin (1850 is further aft)
to get from Phins reference to BRIDGE/AFT/GPS#1 1850	move aft	Move port	move up	1850 is port of survey origin, Phins reference is Stbd
1850 antenna (survey results FURUNO GPS 1) - BRIDGE / AFT 1850	-37.974	-2.365	-29.852	both 1850 & Phins Ref are above the survey origin (1850 is further above)
1850 (GPS1) to PHINS Reference Point	-10.705	-2.819	-26.997	

The sign convention for the survey was different from what the phins wants:

SURVEY CONVENTION: (X) forward +
(Y) STBD +
(Z) Down +

Multibeam Convention: (X) forward +
(Y) STBD +
(Z) Down +

Phins Conventions: XV1 vessel horizontal plane, pointing forward to bow forward +
XV2 vessel horizontal plane, pointing from Stbd to Port port +
XV3 is perpendicular to the vessel horizontal plane, pointing upward up +

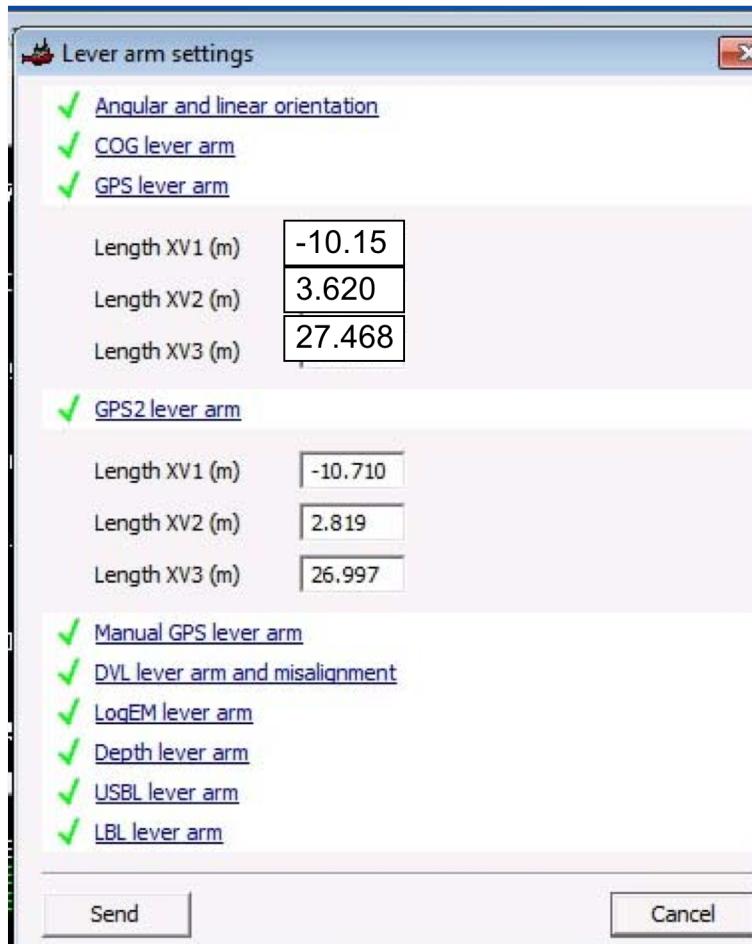
The PHINS manual – Part II – Definitions, Conventions & Specifications page 12 defines the lever arm as:

- External sensor lever arm is the distance from PHINS center of measurement P to the center of measurement of the external sensor.

So the offsets are entered as follows:

	CNAV		1850	
XV1	-10.15 meters	negative since moving aft to get to antenna	-10.70 meters	negative since moving aft to get to antenna
XV2	3.620 meters	positive since moving port to get to antenna	2.819 meters	positive since moving port to get to antenna
XV3	27.468 meters	positive since moving up to get to antenna	26.997 meters	positive since moving up to get to antenna

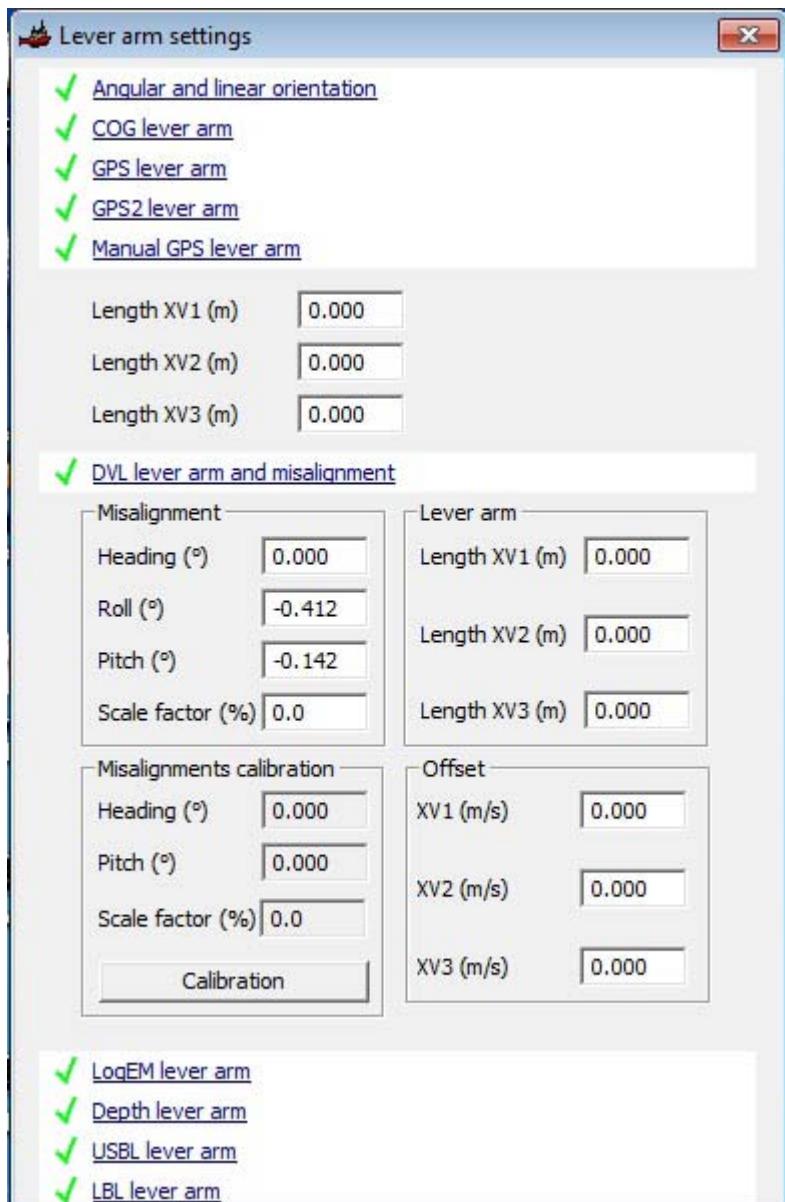
***ENTRY IN PHINS



The 1850 antenna is hooked up to PHINS via port D, and the lever arm has been entered in preparation for its use as necessary. The feed from the 1850 is in the Chartroom (ComET j-box). The Phins configuration can be changed to reflect that the position input on port D is from GPS2 (in Phins above) when desired (we have run both the CNAV and the 1850 as GPS sources to the Phins at the same time, but usually we use just the CNAV unless there is an issue).

No COG lever arm values entered. We decided to compute values at the present PHINS location and allow other equipment to correct this as needed rather than move the PHINS to the COG location.

***ENTRY IN PHINS

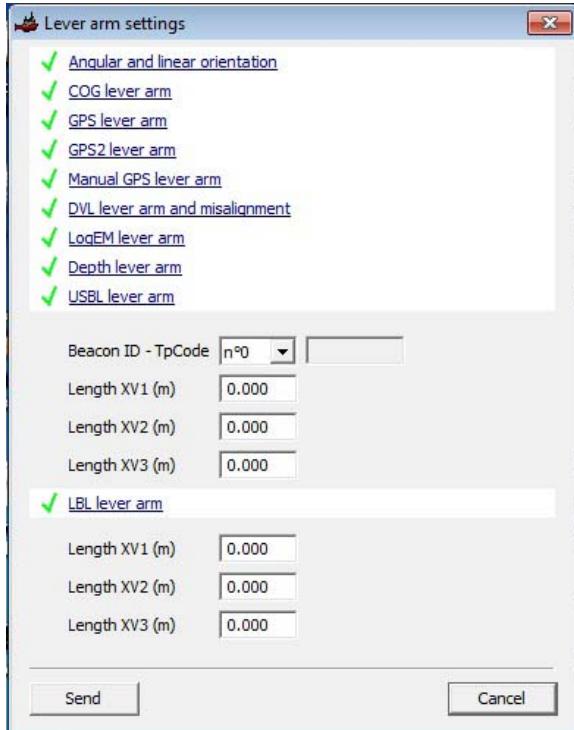
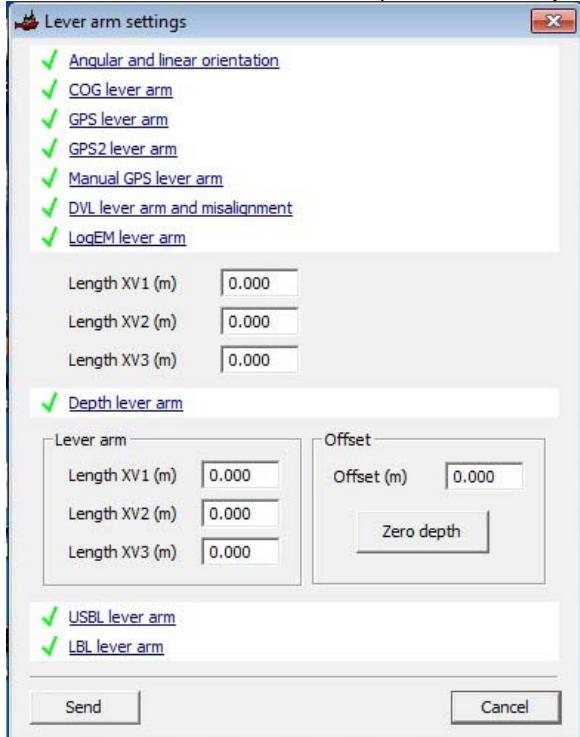


No manual GPS lever arm entered.

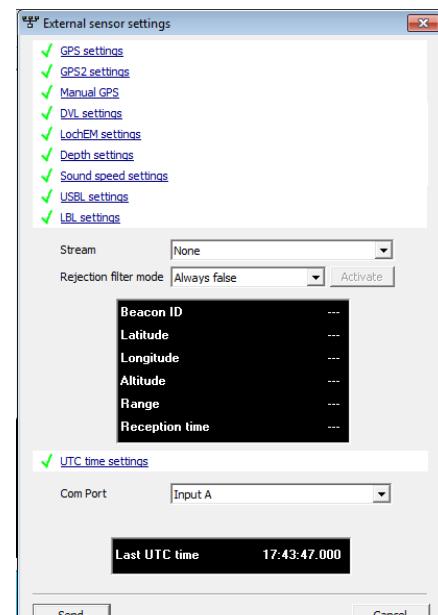
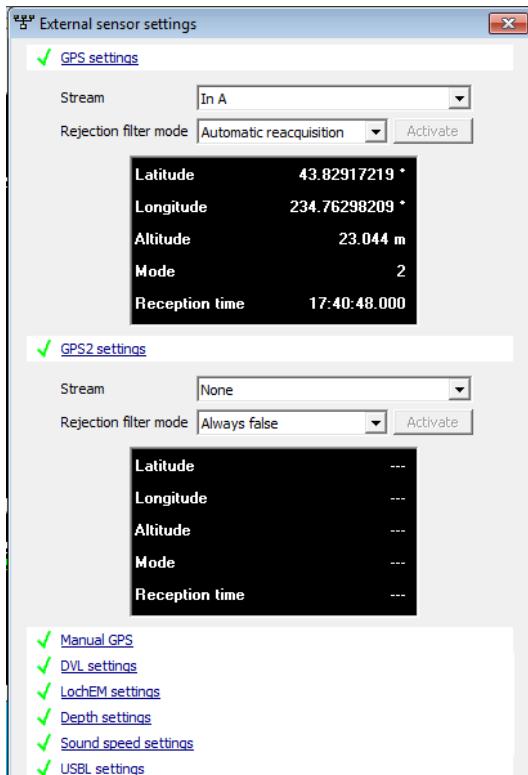
Under DVL lever arm and misalignment (these values updated automatically based on the angular orientation, etc.

*****ENTRY IN PHINS**

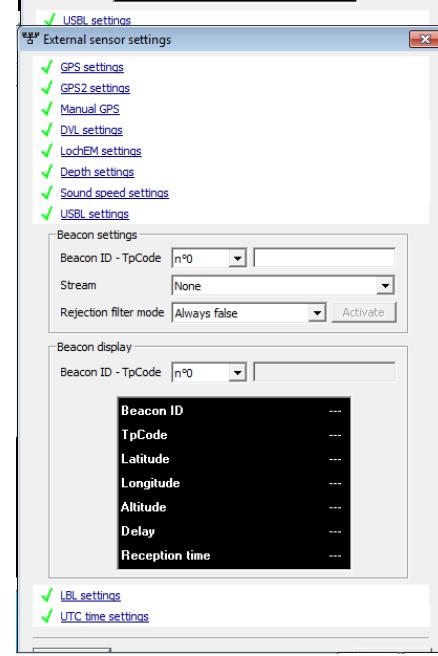
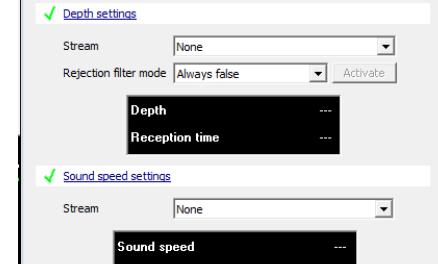
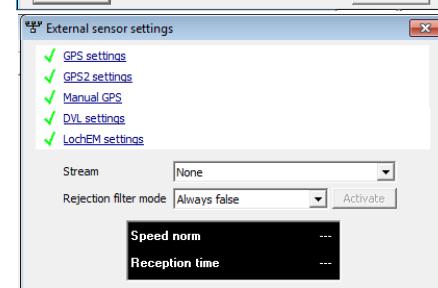
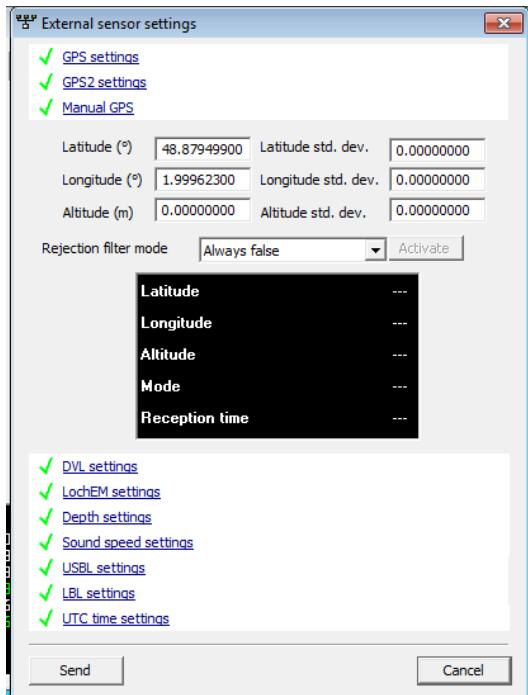
No other lever arms used (screen dumps illustrate this).



PHINS SETTINGS FOR EXTERNAL SENSORS COMING IN (GPS)



**CNAV GPS coming in port A
1850 coming in port D so can be added/substituted if desired**



**all others set to always false
PHINS PORT SETTINGS
PORT A**

Input/output settings

Select IO settings
Input Data

In A | In B | In C | In D | In E |

Protocol

Protocol: GPS
Device: Serial only

Serial Port

Baudrate: 4.8 kbauds
Parity: None
Stopbit: 1.0 bitstop
Level: RS422

Ethernet

Send | Cancel

Input/output settings

Select IO settings
Output Data

Out A | Out B | Out C | Out D | Out E |

Protocol

Protocol: SEAPATH
Rate (ms): 10ms - 100Hz
Device: Ethernet only
GPS Altitude: Geoid (MSL)
Lever arm: Main Lever arm

Serial Port

Baudrate: 4.8 kbauds
Level: RS422
Parity: None
Stopbit: 1.0 bitstop

Ethernet

Transport: UDP
IP Address: 192 . 168 . 36 . 102
Port: 8120

Send | Cancel

Input/output settings

Select IO settings
Input Pulse

Input Pulse A | Input Pulse B | Input Pulse C | Input Pulse D |

Input

Protocol: PPS Rising +Time
Parameter: 0.00

Send | Cancel

Input/output settings

Select IO settings
Output Pulse

Output Pulse A | Output Pulse B |

Output

Protocol: None
Parameter: 0.00

Send | Cancel

PORT B

Input/output settings

Select IO settings
Input Data

In A In B In C In D In E

Protocol

Protocol: NONE
Device: None

Serial Port

Ethernet

Send **Cancel**

Input/output settings

Select IO settings
Output Data

Out A Out B Out C Out D Out E

Protocol

Protocol: SIMRAD EM
Rate (ms): 10ms - 100Hz
Device: Serial only
GPS Altitude: Geoid (MSL)
Lever arm: Main Lever arm

Serial Port

Baudrate: 19.2 kbauds
Level: RS232
Parity: None
Stopbit: 1.0 bitstop

Ethernet

Send **Cancel**

Input/output settings

Select IO settings
Input Pulse

Input Pulse A Input Pulse B Input Pulse C Input Pulse D

Input

Protocol: None
Parameter: 0.00

Send **Cancel**

Input/output settings

Select IO settings
Input Pulse

Input Pulse A Input Pulse B Input Pulse C Input Pulse D

Input

Protocol: None
Parameter: 0.00

Serial Port

Baudrate: 19.2 kbauds
Level: RS232
Parity: None
Stopbit: 1.0 bitstop

Ethernet

Send **Cancel**

Input/output settings

Select IO settings
Output Pulse

Output Pulse A Output Pulse B

Output

Protocol: None
Parameter: 0.00

Send **Cancel**

PORt C

Input/output settings

Select IO settings: Input Data

In A | In B | In C | In D | In E

Protocol

Protocol: NONE

Device: None

Serial Port

Ethernet

Input/output settings

Select IO settings: Input Pulse

Input Pulse A | Input Pulse B | Input Pulse C | Input Pulse D

Input

Protocol: None

Parameter: 0.00

Input/output settings

Select IO settings: Output Data

Out A | Out B | Out C | Out D | Out E

Protocol

Protocol: OCTANS STANDARD

Rate (ms): 1000ms - 1Hz

Device: Serial only

GPS Altitude: Geoid (MSL)

Lever arm: Main Lever arm

Serial Port

Baudrate: 9.6 kbauds

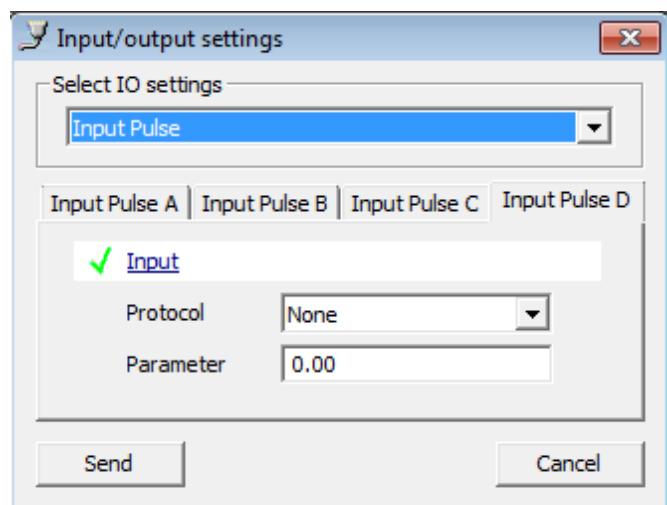
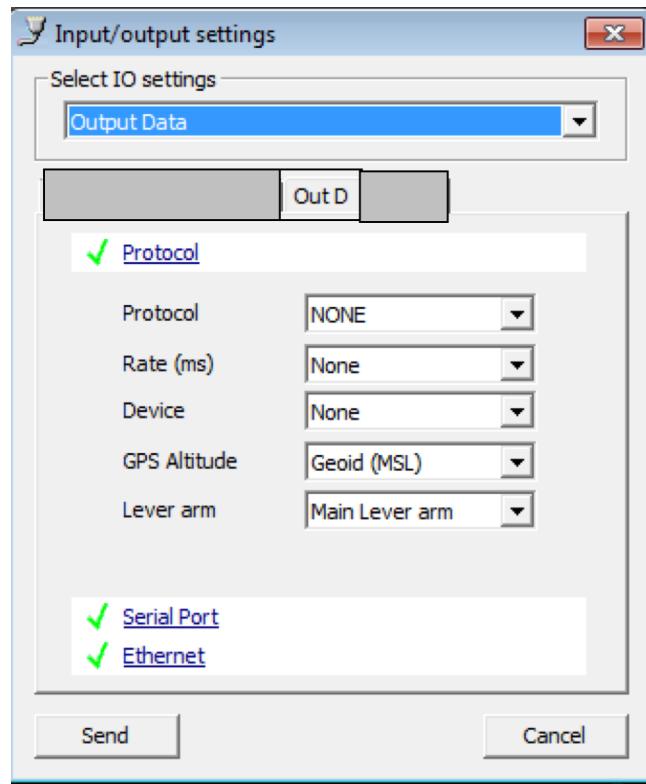
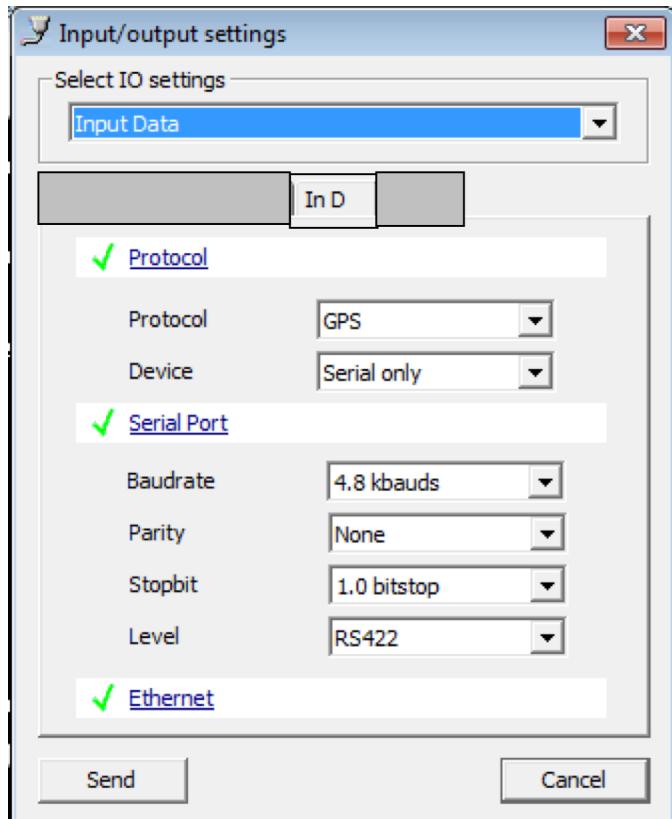
Level: RS232

Parity: None

Stopbit: 1.0 bitstop

Ethernet

PORT D



PORT E

Input/output settings

Select IO settings

Input Data

In A | In B | In C | In D | In E |

Protocol

Protocol: **NONE**

Device: **None**

Serial Port

Ethernet

Send **Cancel**

Input/output settings

Select IO settings

Output Data

In | **Out E** |

Protocol

Protocol: **OCTANS STANDARD**

Rate (ms): **100ms - 10Hz**

Device: **Serial only**

GPS Altitude: **Geoid (MSL)**

Lever arm: **Main Lever arm**

Serial Port

Baudrate: **19.2 kbauds**

Level: **RS422**

Parity: **None**

Stopbit: **1.0 bitstop**

Ethernet

Send **Cancel**