PDS2000 Configuration Manual

Odom Multibeam

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1 Introduction

1.1 Introduction

This document is made as an additional section for the Odom ES3, the Odom MB1 and the Odom MB2 Multibeam User Manuals. This manual explains the interface setup of PDS2000 for these Odom Multibeams.

The Odom sonar and the other sensors (navigation, motion, heading and sound velocity) are interfaced to the RTA (Real Time Appliance) box. The RTA box timestamps this data. Therefore in PDS2000 the setup of the clock synchronization and the interface to the different sensors is different from the standard interfacing in PDS2000.

This manual is also available as a HTML Help file. Press F1 or select *Help > Help Topics* to open the PDS2000 help files.

PDS2000 instruction movies are available at the PDS2000 YouTube channel. <u>Watch PDS2000 instruction movies</u>.



2 PDS2000 Configuration

2.1 Introduction

Below an example of a flow diagram with the setup between Sensors, PDS2000 and a RTA box. For this example an Odom MB1 is illustrated. The Odom ES3 and MB2 flow diagram is similar except there is an external time stamp signal (PPS and ZDA) required. The GPS and heading sensor could optional be installed in the RTA. The motion sensor could be optionally installed in the sonar. Refer to the Odom user manuals for details.



Figure 2-1 Flow diagram



2.2 ES3

This section summarizes the PDS2000 interfacing with the Odom ES3. Clock synchronization is used under certain conditions and in PDS2000 the RTA I/O interface must be defined.

2.2.1 Clock Synchronization

To avoid time related errors and alarms, and when sensors are connected to the PDS2000 computer it selves, clock synchronization is needed as described below.

For accurate clock synchronization a PPS signal must be used.

Select System > Clock Synchronization from the menu bar or click on in the toolbar to open the Clock Synchronization window.

Clock Synchronizati	on		×
Enable Clock Synd RESON 7k I/O mode	chronization ule I/O module for clock s	ynchronization	
PDS2000 ClockSyn Use PDS2000 C Clock device	c module lockSync module for c	lock synchronizat	ion
BORACIET Rijn new {50}[tim] Generic ZDA + Trimble cable[tii Generic ZDA + Ifremer PPS & Z LEICA PMVXG NMEA 2DA Pii NMEA ZDA Pii	ndetta	Select Selected clock o Generic ZDA +	levice: + 1PPS[tim]
Input			
Time message	RTA-GPS		Select
Pulse	COM2		Select Test
Output		1	
Enable	Set Output	J	
		ОК	Cancel

Figure 2-2 Clock Synchronization



Select the option *Use PDS2000 ClockSync module for clock synchronization*' and select as clock device driver the driver 'Generic ZDA + 1PPS[tim]' in the list. Click on <u>select</u> next the list to select the drivers as the selected clock device.

2.2.1.1 Input

In the input the port(s) for the time and pulse have to be selected. It is possible to have one or two ports selected; one port for both the time message and the pulse or one for the time message and one for the pulse.





If the time message is on a serial port then PDS2000 expect that the pulse is on the same serial port.

For the Odom Multibeam setup the clock synchronization takes the ZDA message from the network message which is send from the RTA box. The 1 PPS pulse will be split, one to the RTA box and one to the PDS2000 computer on a serial port. Using these two signals, ZDA and 1 PPS, the PDS2000 computer will be synchronized with the GPS time.

Click on the top <u>select</u> and click in the Interfacing dialog on <u>Add</u> to add a new port. Select as interface RTA in the Select Interface dialog.

Select Interface	—
Socket Serial RTA	OK Cancel

Figure 2-3 Select Interface dialog with RTA selected

Give in the New Network Port dialog the port a new name, f.i. RTA-GPS. Select in the Interfacing dialog as Sensor type the option *GPS* as displayed below. Do not change the Base Port number; this is already set on the right port number.

In	terfacing			X
In	terfacing Port COM13 COM15 COM15 COM16 COM2 COM3 COM4 COM5 COM6 COM8 COM9	Settings 9600 8-NONE-1 9600 8-NONE-1 9600 8-NONE-1 9600 8-NONE-1 115200 8-NONE-1 115200 8-NONE-1 115200 8-NONE-1 115200 8-NONE-1 9600 8-NONE-1 9600 8-NONE-1 115200 8-NONE-1	A	Local Base Port Number: 2020 Sensor type ES3 MRU @ GPS Heading ADCP Sound Velocity
	COM9 NET1	115200 8-NONE-1		
	NET1	UDP 5600		
	NET3	UDP 6500		
	RTA-GPS	RTA UDP 2020 GPS Add Remove	•	OK Cancel

Figure 2-4 Interfacing dialog with the new port for the ZDA message from the RTA box

Click on control to add the new port to the list of interface ports.

After the time message is set, click on the second select in the Interfacing dialog the right COM port for the 1 PPS pulse. Check if the settings for the serial port are set as displayed below.



Port	Settings		Serial port	
COM13	9600 8-NONE-1		Bits per second:	115200 ▼
COM14	9600 8-NONE-1		Data hits:	8
COM15	9600 8-NONE-1		5000 5101	
COM16	9600 8-NONE-1		Parity:	NONE
	9600 8-NONE-1		Stop bits	[•]
COM4	9600 8-NONE-1		Stop bits:	1
COM5	38400 8-NONE-1	=	📃 Use (CTS output flow control
COM6	115200 8-NONE-1		Rec	toro Dofaulta
COM7	9600 8-NONE-1		Kes	tore berduits
COM8	9600 8-NONE-1			
COM9	115200 8-NONE-1			
NET1	UDP 5600			
NET2	UDP 6000			
NET3	UDP 6500			
RTA-Dop	RTA UDP 2020 ADCP	-		

Figure 2-5 Interfacing dialog with the serial port for the 1 PPS pulse

Click on <u>confirm</u> the settings for the serial port.

When both ports are setup click on to test the incoming signals in the Device Test.

2.2.2 Equipment Setup

In the Equipment page of the vessel configuration the different sensors have to be setup. All data feed to PDS2000 from the RTA box is time stamped in the RTA box. For these sensors, PDS2000 will use the time stamp implemented in the messages from the RTA box instead of its own timestamp.

In order for PDS2000 to use the time stamp from the RTA box the 'Timestamp Mode' for the different sensors must be set on *Computer Clock* (this is the default setting). As noted, do not confuse this with the common PDS computer clock time stamping, with the RTA as interface selected PDS will use the RTA time tag. When sensors do not have a 'Timestamp Mode' in the Properties of their device driver, then the time stamp is always *Computer Clock*.

The only exception is the Positioning System; here the 'Timestamp Mode' should be *Time in Message*.



Properties	—	Properties	
Name	Value	Name	Value
Device Offset	(1)Zero Offset X: 0.00 Y: 0.00 Z: 0.00	Device Offset	(1)Zero Offset X: 0.00 Y: 0.00 Z: 0.00
🖬 Timestamp Mode	Time in Message	Timestamp Mode	Computer Clock
Time Delay [sec]	0	Time Delay [sec]	0
Time Computation Source	Data Source (1)Primary	Time Computation Source	Data Source (1)Primary
Datum Transformation	Use project coordinate system	Heading Correction	0
Processing Interpolation Gap Check	Enabled	Roll Correction	0 °PU+
Maximum Gap Time	5	Pitch Correction	-0 °BU+
Device Standard Deviations		Flat Rx Array Correction	Disabled
SDEV of xyz offset(m)	0.02	Surface Sv Profile Sv Diff Alarm	1
		Device Standard Deviations	
		SDEV of pitch stabilisation(deg)	0
		SDEV of water level(m)	0
Timestamp Mode Time in Mer	ssage	Timestamp Mode Compute	r Clock 🔹
ОК	Cancel Apply	ОК	Cancel Apply

Figure 2-6 Timestamp Mode is Time in Message for the Positioning System (left) and is Computer Clock for the other devices, here the Odom ES3 (right)

As mentioned above for the sensors received from the RTA box the interface port should always be RTA. Select for each different sensor the right sensor type in the Interfacing dialog (see below).

2.2.2.1 Multibeam – ES3

The Multibeam – ES3 data will go from the RTA box to the ES3 Controller computer and from the ES3 Controller computer back to the network switch in the RTA box. Therefor the interface port for the Multibeam – ES3 should be Socket and <u>not</u> RTA.

Select as interface Socket in the Select Interface dialog.



Figure 2-7 Select Interface dialog with Socket selected



Interfa	ting	
Port	Settings	Port: 4040
	12 9600 8-NONE-3 13 9600 8-NONE-1 14 9600 8-NONE-1 15 9600 8-NONE-1 16 38400 8-NONE-1 12 9600 8-NONE-1 14 9600 8-NONE-1	Host Address: Port: 0
	3 9600 8-NONE-1 14 9600 8-NONE-1 15 9600 8-NONE-1 16 9600 8-NONE-1 17 9600 8-NONE-1 18 9600 8-NONE-1 19 9600 8-NONE-1	Protocol © UDP/IP © TCP/IP IP Multicast Group:
MB-E	I UDP 5600	Remove OK Cancel

Figure 2-8 Interfacing with Socket port for the ES3

The local port is 4040. To be sure what the local port is, please check in the ES3.ini file what the host port setting should be. Look for the item 'RemotePort_Output1'.

IPAddress_Sonar1=192.168.0.2 IPAddress_Output1=192.168.0.255 RemotePort_Output1=4040 ProfileTiltAngle=0.000000 ProfilePointDotSize=0 Figure 2-9 Part of the ES3.ini file with the RemotePort_Output1

2.2.2.2 VRU

Select as sensor type 'MRU' for the VRU sensor.



Figure 2-10 Interfacing with RTA port for the VRU



2.2.2.3 Positioning System

Select as sensor type 'GPS' for the Positioning System.



Figure 2-11 Interfacing with RTA port for the positioning system

2.2.2.4 Compass

Select as sensor type 'Heading' for the Compass sensor.

Interfacing			
Port	Settings	•	Local Base Port Number: 2020
COM14 COM15 COM2 COM3 COM4 COM5 COM6 COM7 COM8 COM9 NET1 NET2 NET3 RTA-GPS	9600 8-NONE-1 9600 8-NONE-1 115200 8-NONE-1 115200 8-NONE-1 9600 8-NONE-1 115200 8-NONE-1 115200 8-NONE-1 115200 8-NONE-1 9600 8-NONE-1 9600 8-NONE-1 115200 8-NONE-1 UDP 5600 UDP 6000 UDP 6500 RTA UDP 2020 GPS	Ш	Sensor type ES3 MRU GPS Heading ADCP Sound Velocity
RTAHDG	Add Remo	ve	OK Cancel

Figure 2-12 Ir

Interfacing with RTA port for the compass



2.2.2.5 Doppler

Select as sensor type 'ADCP' for the Doppler sensor.

Interfacing				X
Port	Settings	•	Local Base Port Number:	2020
COM2 COM3 COM4 COM5 COM6 COM7 COM8 COM9 NET1 NET2 NET3	115200 8-NONE-1 115200 8-NONE-1 9600 8-NONE-1 115200 8-NONE-1 115200 8-NONE-1 9600 8-NONE-1 115200 8-NONE-1 115200 8-NONE-1 UDP 5600 UDP 6000 UDP 6500	Ш	Sensor type © ES3 © MRU © GPS © Heading @ ADCP © Sound Velocity	
RTA-Dop RTA-ES3 RTA-GPS RTA-HDG RTA-VRU	RTA UDP 2020 ADCP RTA UDP 2020 ES3 RTA UDP 2020 GPS RTA UDP 2020 Heading RTA UDP 2020 MRU Add Remo	ve		DK Cancel

Figure 2-13 Interfacing with RTA port for the doppler

2.2.2.6 Sound Velocity

Select as sensor type 'Sound Velocity' for the Sound Velocity sensor.



Figure 2-14 Interfacing with RTA port for the sound velocity

2.3 MB1

This section summarizes the PDS2000 interfacing with the Odom MB1.

The MB1 use the Odom '*Image*' software to control the MB1 and sends data to PDS2000. The minimum requirements for the MB1 controller computer are an Intel i7 quad core or better processor, minimum of 8 GB RAM and windows 7 as operate system. Refer to the Odom manual for details.



2.3.1 Clock synchronization

When all the signals are received into PDS2000 by means of the Ethernet UDP connection from the MB1, than there is no PDS clock synchronization needed. The RTA time stamped its internal or external connected devices. (E.g. GPS, heading etc.)

When additional devices are connected to the PDS2000 computer, clock synchronization is needed. This is the same method as for the ES3. Refer to section 'Clock synchronization' of the ES3 on page 4

When 'time in the future' alerts occur in PDS2000 it is better to clock synchronize PDS2000 although this alert does not affect the data quality. The clock synchronization does not need to be very accurate for this purpose. For example a GPS only timestamp could be used. This message is supplied by the RTA-Image software. (The 'Time in the future' alarms should not occur in PDS2000 version 3.8.2.5 or higher as this was fixed.)

The table below summarizes the procedure.





-	Action
2	 Tick the 'Enabled clock synchronization' checkbox Tick the 'Use PDS2000 clocksync module for clock synchronization' radio button. click 'Select' and select the RTA interface. Select the RTA interface as also used for the GPS. See section 'GPS' on page 16
	4: Click 'OK'
	Clock Synchronization RESON 7k I/O module Use RESON 7k I/O module for dock synchronization PDS2000 Clocksync with Remote RESON 7k I/O module Use PDS2000 ClockSync module with remote RESON 7k IO module. Remote 7K I/O module address: 10.4.1.62 (ROT-DT-0063) PDS200 2 nc module PDS200 2 nc module PDS2000 ClockSync module for clock synchronization Clock device LEICA PMVXG 830[tim] NMEA GGA [tim] NMEA GGA [tim] Novatel OEMA TIMESYNC [tim] Novatel OEMA TIMESYNC [tim] Novatel OEMA TIMESYNC [tim] PosMV ethemet 7 + 1PPS[tim] RESON SeaBat[tim]
	Input Time message Image Select Pulse Select Test Output Enable Set Output OK Cancel

2.3.2 Equipment Setup

As also for the ES3 the connected sensors as a GPS, heading sensor etc. have to setup. With the MB1 a RTA box is used. This RTA box could optionally contain sensors as for example a GPS receiver. Refer to the MB1 user manual for more details.

2.3.2.1 Multibeam – MB1

The MB1 outputs TDY messages for the multibeam data. The messages are time stamped in the Odom RTA box and passed through PDS2000 by the ODOM Image software.

In PDS2000 as interface type 'RTA' must be used, and as time stamp method 'Time in message'.

The table below summarizes the procedure to setup the MB1 in PDS2000.



Step	Action
1	Select the 'Odom TDY' Device Driver in the Multibeam Group of the configuration's equipment page.
	Groups:
	Multibeam
	Positioning system Geogs
	300 Range Receiver 300 Range-Bearing Receiver
	print Remote Sealevel
	Device drivers:
	Elac-Hydrostar sb 1000
	Naginex 881
	Odom TDY R2Sonic
	RESON Hydro Bat
	RESON-SeaBat
	RESON-SeaBat /k X1F
	Click ' Add' Add > to add it to the device list.
2	Click 'I/O port' <u>I/O Port</u> followed by 'Add' <u>Add</u> to add the 'RTA' interface.
3	Click 'RTA' and press 'OK'.
	Select Interface 🔯
	Socket OK RTA Cancel
4	Give a name and press 'OK'
	New Network Port
	Network port name: OK
	Image Cancel



5	Select the correct Port number. By default this is 56002 but could be changed in the Odom Image software Network settings. Refer to the MB1 manual. Tick the 'TDY data from Image' checkbox. Click 'OK'.
	Port Settings Local 10.4.1.48 UDP 1000 10.4.1.48 Base Port Number: 56002 2222 UDP 2222 10.4.1.6:2222 Hanna Lange
	3333 UDP 3333 10.4.1.48:3333 5600 UDP 5600 localhost:5600 5605 UDP 127.0.0.1:7000 5610 UDP 5610 127.0.0.1 AHC_KA UDP 8001 10.4.3.255:8001 broadcast UDP dd RTA UDP 2020 ES3 Image RTA UDP 5600 NET1 UDP 5600 NET1 UDP 5600 net2 UDP 6500
	Net6000 UDP 6000 Nov3000 UDP POS-MV UDP Add Remove OK Cancel
6	Double click in the device list at 'Multibeam Odom TDY'.



	Properties	×,
	Name	Value
	Device Offset	(1)Zero Offset X: 0.00 Y: 0.00 Z: 0.00
	Timestamp Mode	External Clock
	Time Delay [sec]	0
	Time Computation Source	Data Source (1)Primary
	Heading Correction	0
	Roll Correction	0 °PU+
	Pitch Correction	0 °BU+
	Flat Rx Array Correction	Disabled
	Surface Sv Profile Sv Diff Alarm	1
	Device Standard Deviations	
	SDEV of pitch stabilisation(deg)	0
	SDEV of water level(m)	0
	OK	Cancel Apply
	Note in this property display offset for the Multibeam.	you could also select the correc
	Note in this property display offset for the Multibeam.	you could also select the correct
3	Note in this property display	you could also select the

2.3.2.2 VRU

As the VRU data is time stamped in the RTA box and implemented in the TDY message, use the same RTA interface setup as for the MB1.



Notice for the ES3 this is not the case.

The table below summarizes the steps to select the VRU with the RTA interface. When the RTA interface must be created refer to step 2 in the MB1 setup above.





2.3.2.3 GPS

As the GPS data is time stamped in the RTA box and implemented in the TDY message, use the same RTA interface setup as for the MB1.



Notice for the ES3 this is not the case.

The table below summarizes the steps to select the GPS with the RTA interface. When the RTA interface must be created refer to step 2 in the MB1 setup above.







Step	Action	
4	Click in the properties dialog and select 'Time in Message	box at the 'Timestamp Mode' field '.
	Properties	
	Name Device Offset Imestamp Mode Ime Delay [sec] Ime Computation Source Datum Transformation Reject GPS Mode "None" Processing Interpolation Gap Check Ime Maximum Gap Time Device Standard Deviations SDEV of xyz offset(m) Timestamp Mode Timestamp Mode OK	Value (1)Zero Offset X 0.00 Y: 0.00 Z: 0.00 Time in Message 0 Data Source (1)Primary Use project coordinate system Disabled Enabled 5 0.02
	Click 'OK'	
5	Notice in this properties dialo be selected.	og box also the device offset could
	Properties	X
	Name Device Offset	Value (1)Zero Offset X: 0.00 Y: 0.00 Z: 0.00

2.3.2.4 Compass

As the compass data is time stamped in the RTA box and implemented in the TDY message, use the same RTA interface setup as for the MB1.

Notice for the ES3 this is not the case.

The table below summarizes the steps to select the compass with the RTA interface. When the RTA interface must be created refer to step 2 in the MB1 setup above.



Step	Action
1	Select the NMEA HDT device driver in the compass group of the vessel configuration's equipment page.
	Vessel - vessel avv[Multibeam Survey]
	Geometry Equipment Computations Data Sources Guidance Tools
	Groups:
	ADT Configuration
	KT Peny Tritech ROV Lehmkuhl-bin Manual-Input Navigat 2100 NMEA PRDID NMEA PSAT HPR NMEA-HDT NMEA-HEDT NMEA-HEDT Novatel SPAN OceanModules ROV Octans Octopus MCom OCtopus MCom OPC Heading PosMV ethemet 102 RESON-7k RobertsonSkr Sagem Sigma 40 heading Scantron-Interface Seapath 200 NMEA SilmRAD-EM1000-EM3000 format Skyfix-MPC1 Skyfix-Tac92
	Click 'Add' $Add >$ to add it to the device list.
2	Click 'I/O port' <u>I/O Port</u> and select the created RTA port. (in this example Image') with message type 'TDY data from Image'. It is important to select for all devices <u>the same</u> RTA interface! (In our example 'Image')
	Interfacing
	Port Settings Image RTA UDP 56002 ES3 net1 UDP 5600 NET1 UDP 5600 net2 UDP 6500 Click 'OK'
3	There is no timestamp mode selection for a compass. PDS2000
	uses automatically the time in the YTD message.

2.3.2.5 Sound velocity

As the sound velocity data is time stamped in the RTA box and implemented in the TDY message, use the same RTA interface setup as for the MB1.





.

Notice for the ES3 this is not the case.

The table below summarizes the steps to select the sound velocity with the RTA interface. When the RTA interface must be created refer to step 2 in the MB1 setup above.

Step	Action
1	Select the Generic device driver in the sound velocity group of the vessel configuration's equipment page.
2	Click 'I/O port' I/O Port and select the created RTA port. (In this example Image') with message type 'TDY data from Image'. It is important to select for all devices the same RTA interface! (In our example 'Image') Interfacing Port Settings NET1 UDP 5600 NET1 UDP 5600 Click 'OK'
3	There is no timestamp mode selection for a sound velocity probe. PDS2000 uses automatically the time in the YTD message.



2.4 MB2



Schematically a setup of an Odom MB2 can be illustrated as.

Figure 2-15 Overview MB2 Sonar system

The GPS and heading sensor could be built in the RTA or connected externally to the RTA. The motion sensor could be built in the sonar or connected externally to the RTA. The SV sensor could be connected externally to the RTA or to the sonar. The MBCenter is the primary interface to the RTA and provides auxiliary sensor support. The SUI connects to the MBCenter and when this is established the user is able to setup and operate the sonar. With the included MBCenter's RRIO functionality PDS2000 is able to retrieve MB2 auxiliary sensor data streams.



Only the auxiliary sensors (GPS, Heading, attitude and Sound Velocity) are retrieved by RRIO. Sonar data is retrieved by the RESON 7k protocol.





The sonar head and the RTA have fixed IP address numbers. For the sonar head this is 192.168.1.100 and for the RTA this is 192.168.1.101 This means the MB controller computer and a connected acquisition computer should have an IP address within this range.

The following sections describe the RRIO setup as used for the MB2.

2.4.1 RRIO setup in the SUI

The raw data messages are always sent to the SUI by the MBCenter. Additionally in the Sonar User Interface (SUI) Hardware pane it is possible to define one or more computer IP address and port number to which the RRIO could also be sent.

In the Hardware pane it is defined as IP address:Port number.



Figure 2-16 SUI Hardware pane - RRIO

The Port number can be any number and becomes the Base port number. The raw data messages are sent to this Base port with an offset dependent of the source device.

The table below summarizes the device sources and its Base port offset as used by the MB2.

Device source	Base port + offset	Example
Attitude - HPR	Base port number	7100
Position system - GGA	Base port number + 2	7102
Heading - HDT	Base port number + 4	7104
Sound Velocity	Base port number + 6	7106
Clock - ZDA	Base port number + 8	7108

Table 2-1 Device sources with Base port offset



The Device source formats are fixed for an Odom MB2 but the baud rates could be different and should be set accordingly to the connected device in the SUI Hardware pane.



Figure 2-17 SUI Hardware pane – Port Settings

When the sound velocity and/or attitude sensor is connected to the sonar instead of the RTA box, the associated Hardware pane sensor checkbox should be checked.





Figure 2-18 SUI Hardware pane - Sensors

2.4.2 RRIO setup in PDS2000



Only the auxiliary sensors (GPS, Heading, attitude and Sound Velocity) are retrieved by RRIO. Sonar data is retrieved by the RESON 7k protocol.

In PDS2000 the used sensors needs to be added in the equipment page and the RRIO interface needs to be defined and selected for the associated devices. Perform the steps as described in the following sections.

2.4.2.1 Device selection

In the PDS2000 Vessel configuration, device drivers could be added from the associated PDS2000 device groups.

The table below summarizes the PDS2000 device group and the device to be selected for an Odom MB2.

Function	PDS2000 Device Group	Device driver
Attitude	VRU	TSS1
Heading	Compass	NMEA - HDT
Position	Positioning systems Geogs	NMEA - 2.30 GGA
Sound Velocity	Sound Velocity	Generic
Multibeam	Multibeam	RESON SeaBat 7k

Table 2-2PDS2000 device groups and drivers for the Odom MB2

The table below summarizes the procedure to add a device driver to the Vessel configuration Equipment list.









2.4.2.2 IO port

When the devices are added to the equipment list the correct IO port should selected for the associated device.



Only the auxiliary sensors (GPS, Heading, Attitude and Sound Velocity) are retrieved by RRIO. Sonar data is retrieved by the RESON 7k protocol.

The table below summarizes the procedure for the RRIO IO port setup.

Action		
Select the Device. (Selected of	device	is colored blue.)
Device	Port	7
Positioning system Geogs(1) - NMEA	COM1	
Antenna Position from Geogs		_
	COM1	-
Yeading computation		
· · · · · · · · · · · · · · · · · · ·	COM1	-
	Action Select the Device. (Selected of Device Select the Device. (Selected of Selected	Action Select the Device. (Selected device Device Port 230 GGA [pos] Z** Antenna Position from Geogs X** Reference Point Computation COM1 X** Heading computation COM1 X** Heading computation COM1 X** Heading computation COM1



Step	Action
2	Select 'I/O Port'.
3	A list with available ports is listed. Click 'Add' to add a new port.
4	Select 'RESON Remote IO' and click 'OK'.



Step	Action
5	Give the port a name.
6	Enter the Base Port Number with the number as defined in the SUI. Select the Sensor type corresponding with the selected PDS2000 device.
	Port Settings COM11 9600 8-NONE-1 COM12 9600 8-NONE-3 COM13 9600 8-NONE-1 COM14 9600 8-NONE-1 COM15 9600 8-NONE-1 COM15 9600 8-NONE-1 COM16 38400 8-NONE-1 COM2 9600 8-NONE-1 COM4 9600 8-NONE-1 COM3 9600 8-NONE-1 COM5 9600 8-NONE-1 COM5 9600 8-NONE-1 COM5 9600 8-NONE-1 COM6 9600 8-NONE-1 COM6 9600 8-NONE-1 COM6 9600 8-NONE-1 COM6 9600 8-NONE-1 COM7 9600 8-NONE-1 COM9 9600 8-NONE-1 Image RTA LUP 56002 ES3 Ias1-5701 UDP 5701 V Add Remove OK
7	Repeat Step 1-6 to define a RRIO port for the Position sensor, a RRIO port for the Motion sensor, a RRIO port for the Heading sensor and a RRIO port for the Sound Velocity Sensor.
	All RRIO ports using the same Base port number as defined in the SUI.
	Select for each device the correct sensor type.

The table below summarizes the procedure for the Multibeam IO port setup.

Step	Action
1	Select the Multibeam device.
	Attitude computation Multibeam(1) - RESON SeaBat 7k[mbs] COM1 Multibeam xyz computation Sr Multibeam area computation



Step	Action
2	Click I/O Port.
3	Available Network ports are listed. Click 'Add' to add a new Network port.
4	Give the Network port a name and click 'OK'.



Step	Action
5	Click the arrow at the address field and the available IP address or computer name is listed of the computer running the MBCenter. When more computers run a MBCenter these IP addresses also appear.
	Interfacing X Port Settings 7125 TCP 127.0.0.1 Odom-MB2 TCP T20-P TCP 10.11.10.1 Protocol UDP/IP OUDP/IP TCP/IP
6	Select the correct IP address or computer name and select 'CP/IP' as protocol.

2.4.2.3 Timing

It is essential to select the correct timestamp modes of the devices. For correct functionality the RTA box should be connected to a ZDA message and PPS pulse device. (Normally the GPS receiver provides this message and pulse.)

When a time is included in the sensor raw data message the timestamp mode 'Time in message' should be used. Otherwise the timestamp mode 'Computer clock' should be used. For some devices it is not possible to select a timestamp mode as PDS2000 will automatically use the correct timestamp mode.



The table below summarizes the timestamp modes for the devices connected to the RTA.



These timestamp modes may differ when the devices are connected straight to the computer running PDS2000.

Device	Timestamp mode
Attitude	Not selectable
Position	Time in message
Heading	Not selectable
Sound Velocity	Not selectable
Multibeam	Not selectable

The table below summarizes the procedure for selecting a timestamp mode in PDS2000.

Step	Action
1	Double click at the device in the Equipment list. For example the Positioning system. Device Port Postioning system Geogs(1) - NMEA RRIO-pc 2.30 GGA [pos] Strenge Point Computation
	Compass(1) - NMEA-HDT[hdg] RRIO-mi Sector A
2	The device Properties dialog box opens. Click in the 'Timestamp mode' field and select from the drop down box the correct timestamp mode. Properties Value Device Offset (1)Zero Offse
	Timestamp Mode Time in Message Computer Clock External Clock Time in Message OK Cancel Apply



Step	Action
3	In the Properties dialog other settings as the 'Device offset' and 'Correction settings' should also be set (when apply). Refer to the PDS2000 user manual for more details.
	Correction settings should also be set (when apply). Relet to the PDS2000 user manual for more details.Important to the PDS2000 user man
	OK Cancel Apply
4	Repeat step 1-3 for the other devices.

2.4.2.4 PDS2000 Clock synchronization

When the sensors are interfaced by the RTA, it is not necessary to set the clock synchronization into PDS2000 as all the sensors are time stamped by the RTA. However it is possible to synchronize the computer clock by the PDS2000 clock synchronization. The PDS log files will in this case have the same time as the position source.

As the computer time synchronization does not need to be accurate since the RTA takes care for accurate time stamping for the sensors, the PDS2000 clock synchronization can use ZDA messages without PPS for time synchronization. (A PPS signal can only be used when the computer is provided with a serial COM port.) This ZDA message can be retrieved from the RTA box by the RRIO protocol.



The table below summarizes the procedure to clock synchronize the computer with the RRIO ZDA message.

Step	Action
1	Click the PDS2000 Control Center - Clock synchronization icon.
	Project: Application type:
2	The Clock synchronization dialog opens.
	a. Enable the 'Clock synchronization' checkbox.
	 Enable 'Use PDS2000 Clocksync module for clock synchronization'.
	c. Select the 'NMEA ZDA' clock device.
	d. Click 'Select'.
	Clock Synchronization
	Image: Construction Image: Constructin Image: Constructin
	Output Enable Set Output
	OK Cancel
	The NMEA ZDA message is also retrieved from the RRIO. e. Click 'Select' to define the RRIO



Step	Action
3	The Interface dialog opens with existing defined ports.
	The procedure is the same as also described in section 'IO port' at page 26.
	Click 'Add' to add a new port, select RESON Remote IO as interface, give the port a name and define the RRIO.
	The Base port number is the same as selected earlier for the other sensors. (As also set in the SUI.)
	The Sensor type should be 'Clock'.
4	Note: It is only possible to start PDS2000 Realtime when the time messages are received by PDS2000.



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