

# OceanTRx7™

Maritime Stabilized VSAT System



## Technical Note

# OceanTrx CCU Installation and replacement

Document: TEC32-1664-014

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## Revision History and Control

### Revision History

Rev #	Modified by	Date	Comments
.	Albert	September 24, 2013	New Release
A	Albert/Tal.I	January 07 ,2016	Update according Changing CCU Software and Part numbers

## About this Manual

This manual is designed to guide you through the procedures required for maintaining the CENTRAL CONTROL UNIT (CCU) for the OceanTRx7™ Maritime Satellite Communication System.

## Text Conventions

Style	Indicates	Example
Text	Normal descriptive text	Contents
Text	Words or figures that appear on the screen or that should be typed The name of a file or directory	System Status
<Text>	A key to be pressed	<ESC>
TEXT	The name of a hardware component	ANTENNA
<b>Text</b>	The name of a GUI element	<b>Operation Screen</b>
➤	The description of a procedure	➤ <b>To configure...</b>

## Notations



Indicates important information that should be noted.



Indicates a potential hazard.



Indicates the safest method of installation or an operation that *must be adhered to*.



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## Effective Releases

This document is effective for both OrBand™ and OceanTRx™ Maritime Satellite Communication Systems.

For a description of the changes between OrBand™ and OceanTRx7™, refer to the *OceanTRx7™ Maritime Satellite Communication System Release Notes*.



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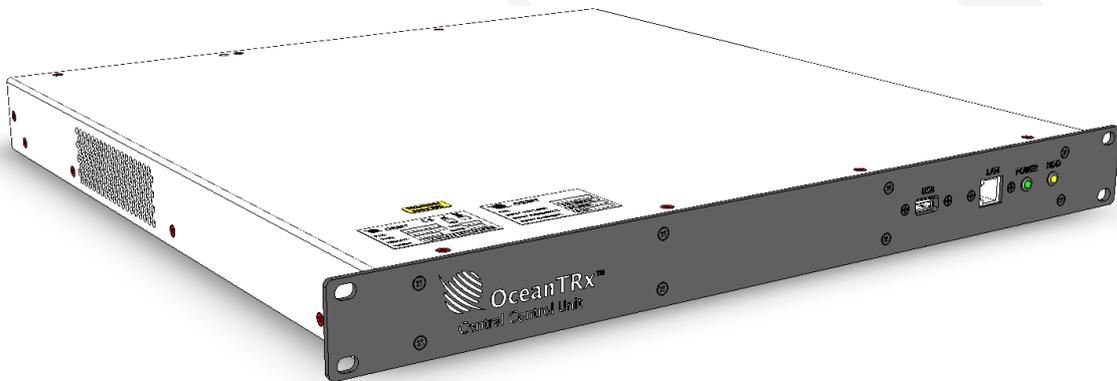
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## 1 Introduction

### 1.1 Purpose

The purpose of this Technical Note is to provide detailed instructions on how to replace and configure the CENTRAL CONTROL UNIT (CCU).

Figure 1-1: Central Control Unit



## 1.2 CCU Description

### 1.2.1 CCU Description

The CENTRAL CONTROL UNIT (CCU) is the interface between the system, the ship's equipment and the human operator.

The CCU provides the following functions:

- Modem interface.
- Conversion of compass readings.
- Integrated Receiver/Decoder (IRD) interface.
- Tx and Rx signal attenuation.
- De-muxing and muxing of Tx and Rx signals, LAN and 10MHz reference signal.
- Ethernet Hub
- Running platform for MtsVLink software.
- Transmission of system GPS data to the CFE modem.
- SNMP support for network management.

The CCU is 1U high and is typically installed on a dedicated 19-inch rack in the ship's radio room.

There are two versions of the CCU supported by the system:

- CCU – requires 10 MHz reference to be supplied by CFE modem And Nmea-0183 Compass Only .
- CCU WITH 10 MHZ – includes an internal 10 MHz reference source And Synchro step by step ,Nmea-0183



The CCU requires external VGA display and keyboard with touchpad.  
Orbit offers foldable 1U 17" LCD drawer P/N: KIT32-1664-082-SP

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The rear panel includes several connectors that connect to the ADE, the modem and the ship's gyrocompass (NMEA-0183, Synchro or Step-by-Step). An ATTENUATOR SWITCH allows adaptation to various ADE-BDE cable lengths.

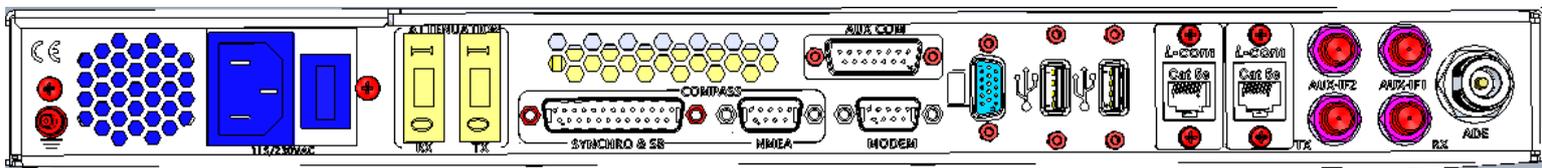
The CCU contains the BDMX module that connects to the ADMX via a single coaxial cable. The BDMX provides integral amplification/attenuation of the Tx and Rx paths.

System operation is fully controlled from the CCU. Using the HMI, the operator can select the desired satellite and channel from the CCU's Satellite database. The system automatically extracts the required data and deploys the ACU to acquire and track the selected satellite, while compensating for the platform's pitch, roll and yaw movements.

Figure 1-2: Front Panel Central Control Unit



Figure 1-3:Rear Panel Central Control Unit



### 1.3 Spare Kit Contents

The following table provides a list of the parts in the CCU spare kit.

Table 1-1: Spare Part Kit Contents (CCU regular)

KIT32-1664-031-SP		
P/N	Description	Quantity
L00720008	CENTRAL CONTROL UNIT 1U W/O 10MHz&SYNCHRO	1
USB33-0823	MARINE USB LOAD WITH I/O MAN&DCD	1

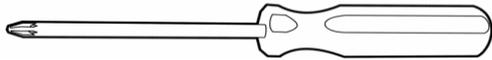
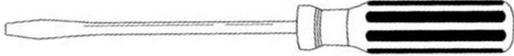
Table 1-2: Spare Part Kit Contents (CCU with 10MHz source)

KIT32-1664-032-SP		
P/N	Description	Quantity
L00720009	CENTRAL CONTROL.U W/10MHz&SYN	1
USB33-0823	MARINE USB LOAD WITH I/O MAN&DCD	1

### 1.4 Required Tools and Parts

The following table provides a list of tools and customer-supplied parts that are needed to perform the procedures in this Technical Note.

Table 1-3: Required Tools and Parts

Tool/Part Name	Figure
Medium Phillips screwdriver	
Small Flat screwdriver	
	
Open wrench 13mm	

## 2 Preliminary Procedures

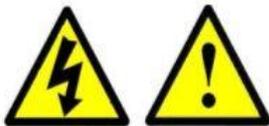
➤ **To Perform Preliminary Procedures:**

The following preliminary procedure must be performed before replacing the CCU:

1. Turn off the satellite modem.
2. Take note of the CCU IP address and host communication IP address
3. Write down compass input and GPS output. I.e. COM port, baud rate, Format



Use caution while handling the CCU connectors.



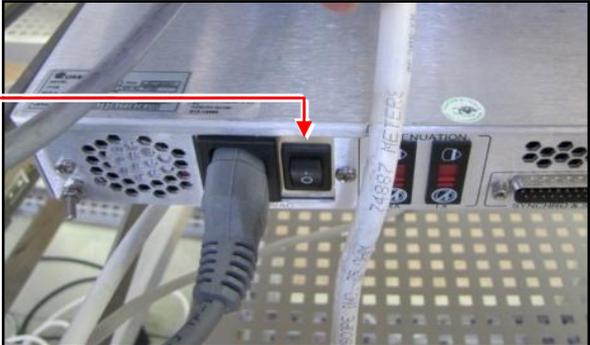
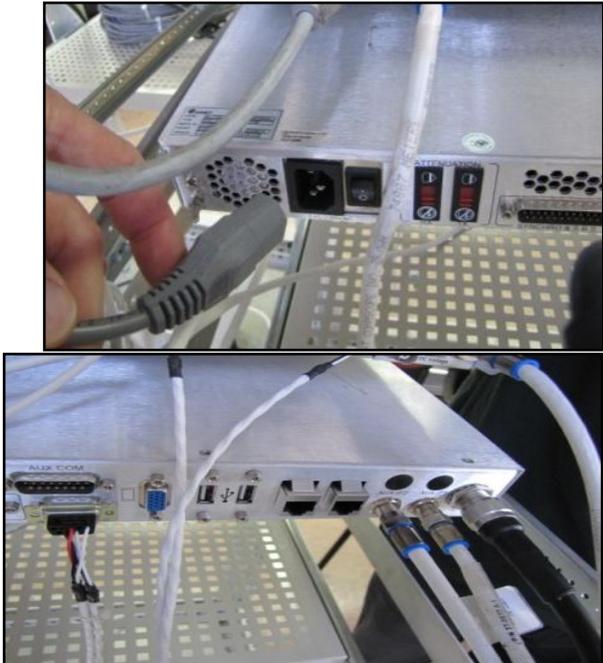
**WARNING!**

Use extra caution while handling Syncro/SBS compass connector.  
Danger high voltage exist even if the system power is switched off

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### 3 Replacing the CCU

#### 3.1 Removing the CCU

<p><b>Step 1</b></p> <p>Turn off the CCU</p>	
<p><b>Step 2</b></p> <p>Disconnect all cables from the CCU interfaces. Label each cable as you disconnect it. This will make installation of the new unit easier.</p>	
<p><b>Step 3</b></p> <p>Use a screwdriver to remove the screws securing the CCU to the rack.</p>  <p>Support the CCU while removing the bolts</p>	

## 3.2 Installing a CCU

### Step 1

Install the CCU in a 19-inch rack. It is recommended to use the supplied rails to install the CCU in the rack.



### Step 2

Connect all the cables that were disconnected from the old CCU. Ensure that each cable is connected to the appropriate connector.



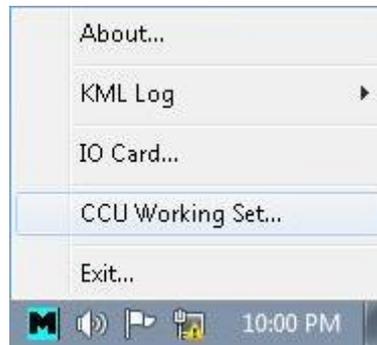
## 4 SETUP

This chapter describes the following procedures:

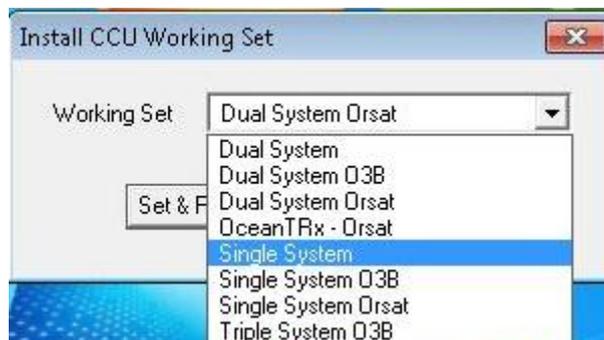
- Select CCU mode (working set)
- Configuring the CCU IP and host communication IP address
- Configuring the compass input
- Updating the system with General Software update module (GSU)

### 4.1 Select CCU mode (working set)

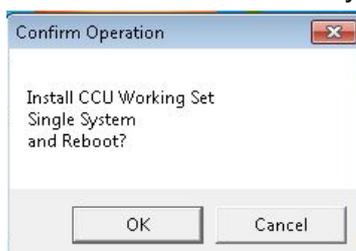
1. On the Windows 7 Embedded right click on the CCU manager.



2. Select working sets. List of available CCU modes will show

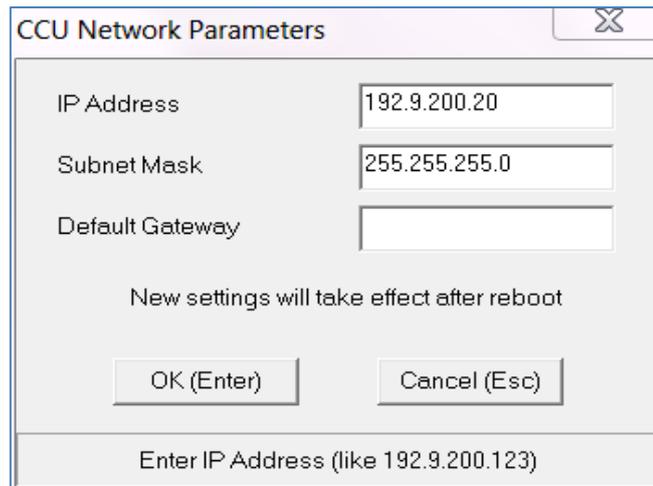


3. Select the relevant working set according the system type
4. Press Set &reboot. The system will issue confirmation prompt



## 4.2 Configuring the CCU IP and host communication IP address

1. Power on the CCU. Verify normal boot sequence
2. Launch the `MTSDOCK` application (start → programs)
3. Access remote CCU → connect → 192.9.200.22
4. Go → Remote CCU → edit network parameters
5. Enter the new CCU IP address.



6. Configure the required network parameters and click OK.
7. Select the RemoteCCU menu (again) and click Reboot. The CCU will reboot
8. In the `MTSDOCK` application open the **ACU** menu and select **Edit Network Parameters** chose **Detect ACU**. The **Detected ACU** dialog box opens.

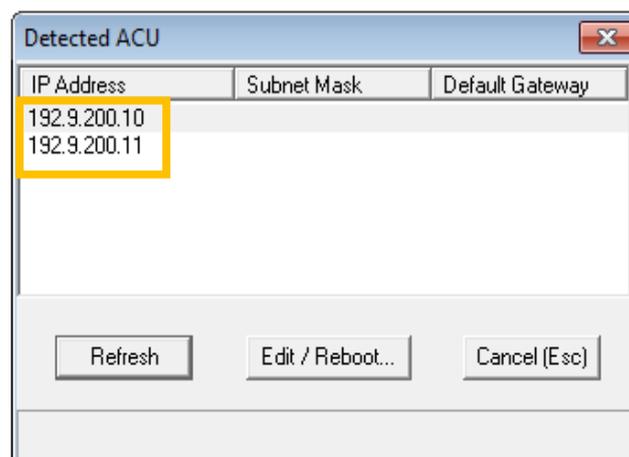


Figure 4-1: Detected ACU Dialog Box

9. The ACU IP address and subnet mask appears. Take note of it.
10. Switch to the `MTSVLINK` application. On the **Host** menu select **Communication**.

11. Enter the ACU IP address obtained during the preliminary procedure

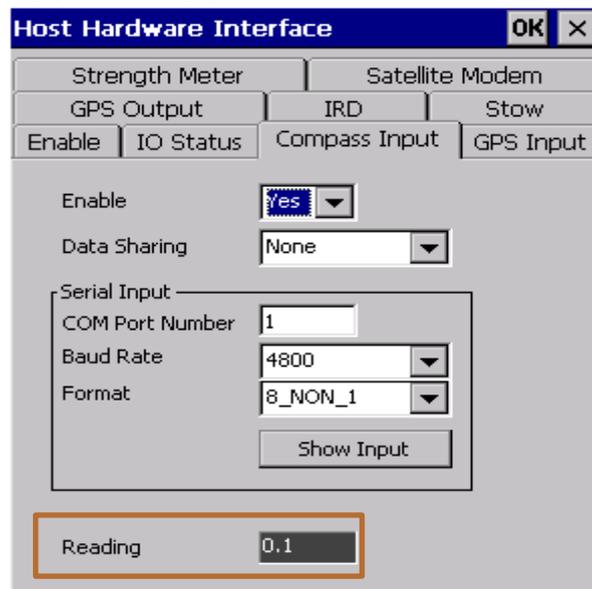


For Dual or Triple System topology, the above procedure should be repeated for each antenna MTSVLINK instance

### 4.3 Configuring the compass input.

➤ To configure the compass input:

1. Open MTSVLINK application
2. Open the **Host** menu and select **Host Hardware Interface**.
3. [general] tab enable set to yes
4. [Compass input] tab. Enable set yes. For NMEA only configure the parameters according values retrieved during preliminary procedure.
5. Verify the reading value is displaying the ship heading
6. [GPS output] tab (optional). Enable set yes. Configure the parameters according values retrieved during preliminary procedure.



If the parameters of the Compass and GPS output are not available during the preliminary procedure contact the ship electrician /air time provider (NOC) to obtain it.

## 4.4 Updating the system with General Software update module (GSU)

1. Obtain the latest software package GSU (*GSUpdate.zip*) from Orbit's support team.
2. Copy the files to a USB flash drive. Connect it to the USB port in the CCU front panel.
4. Launch the MTSDOCK utility from start→programs
5. Select **ThisHost** menu and chose **General Software Update**.
6. The **Select ZIP Archive with Software Updates** dialog box appears.

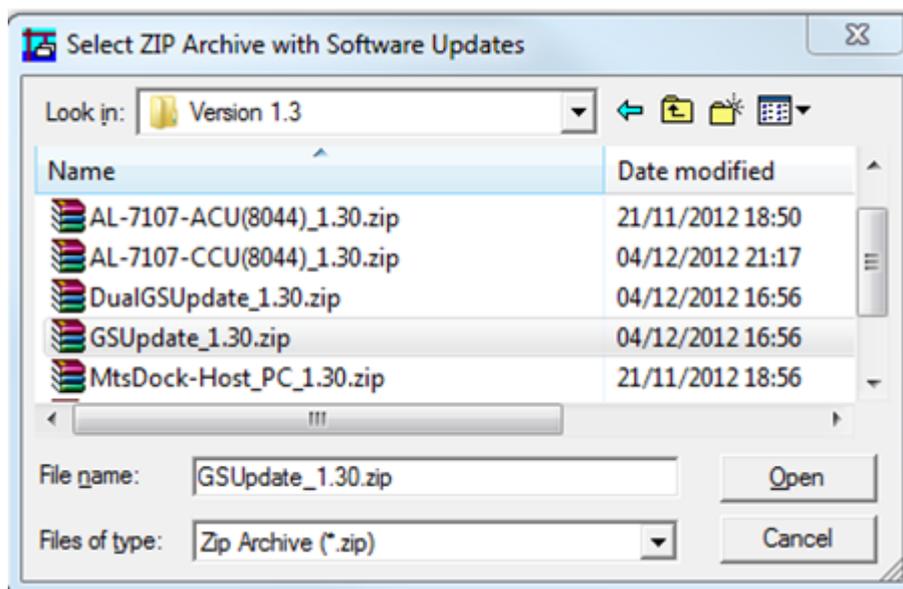


Figure 4-2: Select ZIP Archive with Software Updates Dialog Box

7. Select the GSU file from the USB Flash drive.
8. Click **Open (Enter)**. New dialog box will pop up ask to enter the ACU and the CCU IP address, Enter the address previous found.

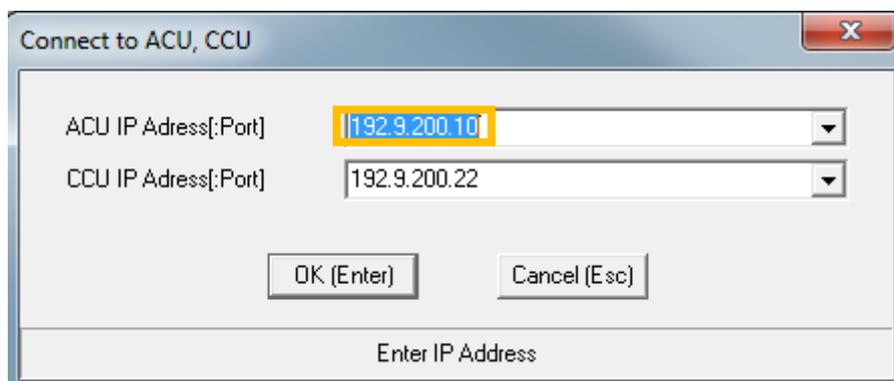


Figure 4-3: Connect ACU, CCU Message Box

9. Click **Open (Enter)**. The automated upgrade process will start. It will update the ACU (VSATWORKS) executable, CCUS MTSVLINK and also the Servo Drives FIRMWARE
10. Reboot prompt will be issued at end of the process. Reboot by pressing **OK**.
11. When communication is reestablished between the ACU and the CCU,
12. Click the **Version** command on the MTSLINK Menu Bar and verify that the new version was successfully installed and matches the software version used by the ACU

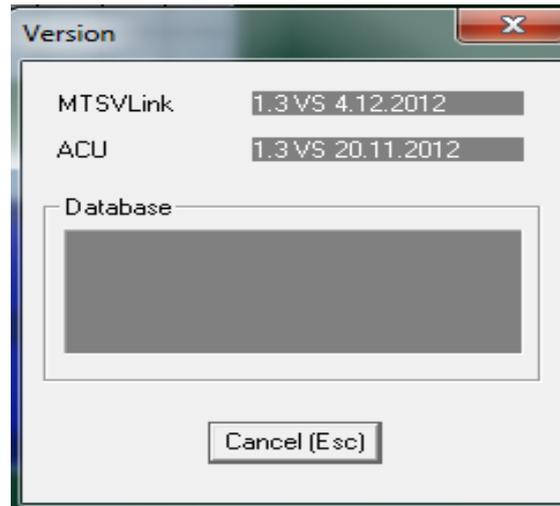
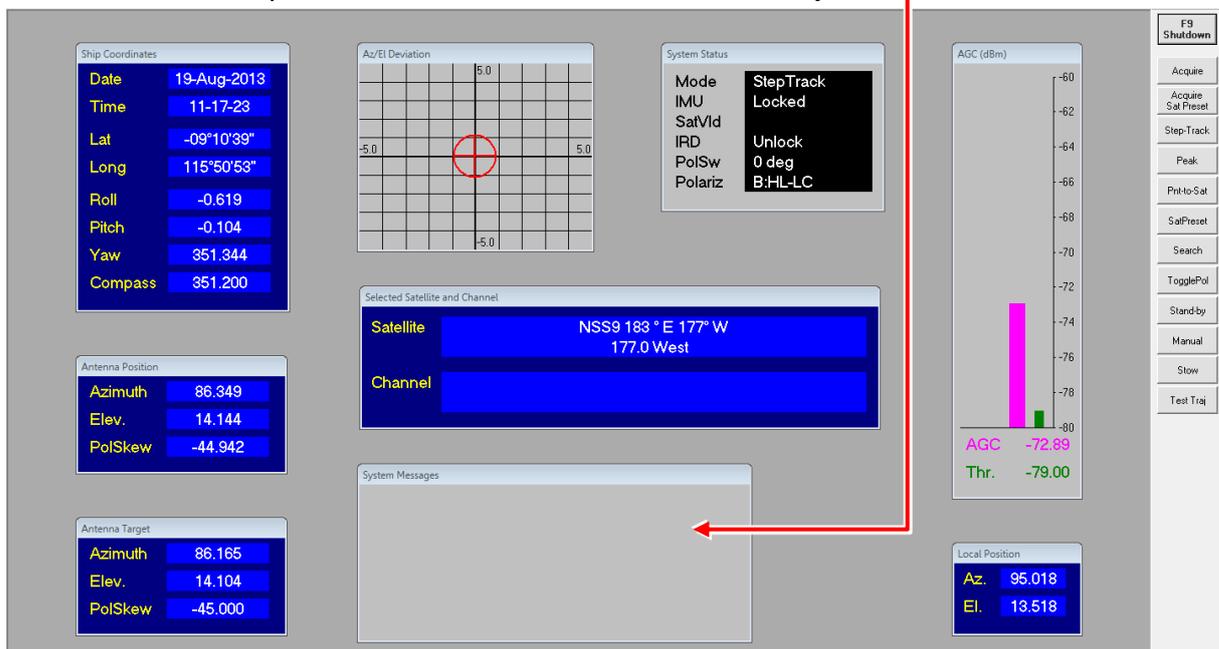


Figure 4-5: Version Message Box

## 5 Perform Verification Test

➤ To Perform Verification Test:

1. Power up the CCU/DSS (see the *OceanTRx7™ Installation and Operation Manual* for instructions).
2. Verify that there is communication between the ACU and CCU and there are no ERR/WRN system messages.
3. Verify heading is available.
4. Make sure compatible modems receive GPS from the system



5. Verify Modem Rx EdNo and TX power within limits, using NOC assistance

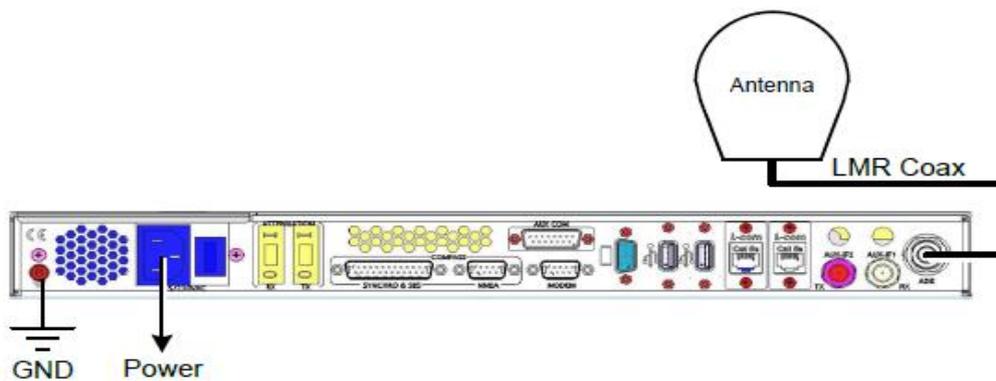
## 6 Appendix

### 6.1 Appendix A: Routing and Wiring

#### Basic connections

➤ **To Connect the ADE-BDE LMR Coaxial Cable to the CCU:**

1. Connect the 3P power cable to the CCU power plug.
2. Connect Grounding to the unit
2. Connect the cable coming from the antenna to the ADE connector on the CCU.



#### Modem Tx and Rx Connection

➤ **To Connect the Modem Tx and Rx Ports to a CCU without 10MHz:**

1. Connect a cable from the modem's Rx port to the RX connector on the CCU.
2. Connect a cable from the modem's Tx port to the TX connector on the CCU. The modem supplies the 10MHz reference signal with the Tx signal.

The following figure shows the connections.

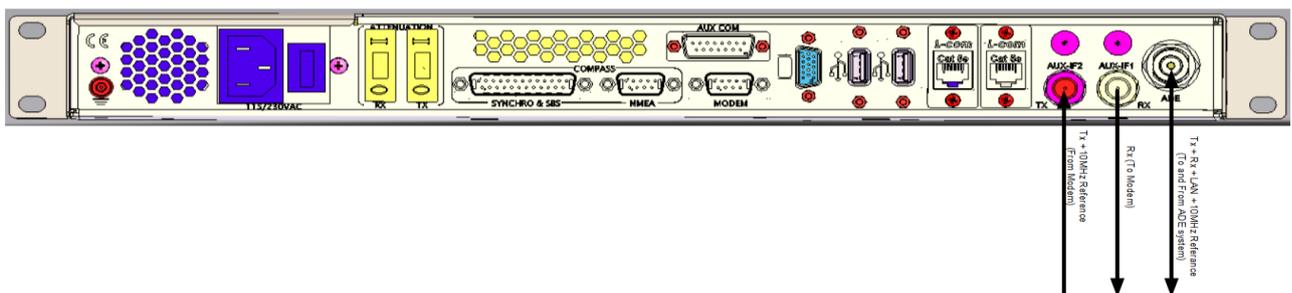


Figure 6-1: CCU without 10 MHz Tx/Rx Modem Connections

➤ **To Connect the Modem Tx and Rx ports to a CCU with 10MHz:**

1. Connect a cable from the modem's Rx port to the Rx connector on the CCU.
2. Connect a cable from the modem's Tx port to the AUX-IF1 connector on the CCU. The CCU adds the 10 MHz reference signal to the Tx signal. The combined signal is output via the AUX-IF2 port.
3. Using the provided cable, connect the AUX-IF2 connector on the CCU to the Tx connector on the CCU.

The following figure shows the Tx connections.

