OceanTRx7™

Maritime Stabilized VSAT System

Technical Note

Axis Encoder

Document: TEC32-1664-016,

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COMMUNICATION WITHOUT BOUNDARIES

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Revision History and Control

Revision History

Rev #	Modified by	Date	Comments
.	Albert	September 24, 2013	New Release

About this Manual

This manual is designed to guide you through the procedures required for maintaining the `AXIS ENCODER` 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`
Text	The name of a GUI element	**Operation Screen**
➢	The description of a procedure	➢ **To configure…**

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.*

Effective Releases

This document is effective for both OrBand™ and OceanTRx7™ Maritime Satellite Communication Systems.

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

Table of Contents

1 Introduction

1.1 Purpose

The purpose of this Technical Note is to provide detailed instructions on how to replace and configure an AXIS ENCODER.

1.2 Axis Encoder Description

Each axis is equipped with incremental encoder that report the axis angle to the SERVO DRIVER and perfoming by the ACU. Separate incremental encoders are attached to both the motor and the axis itself – the former for driver commutation and the latter for dynamic axis-position feedback. The POLARIZATION SKEW AXIS contains a single encoder on its motor.

The ACU sends positioning coordinates to the SERVO DRIVERS which convert them into positioning commands. These commands are sent to the SERVO MOTORS. As the motors move the ANTENNA into position, the AXIS ENCODERS on each of the PEDESTAL axes return actual ANTENNA location in a closed position loop.

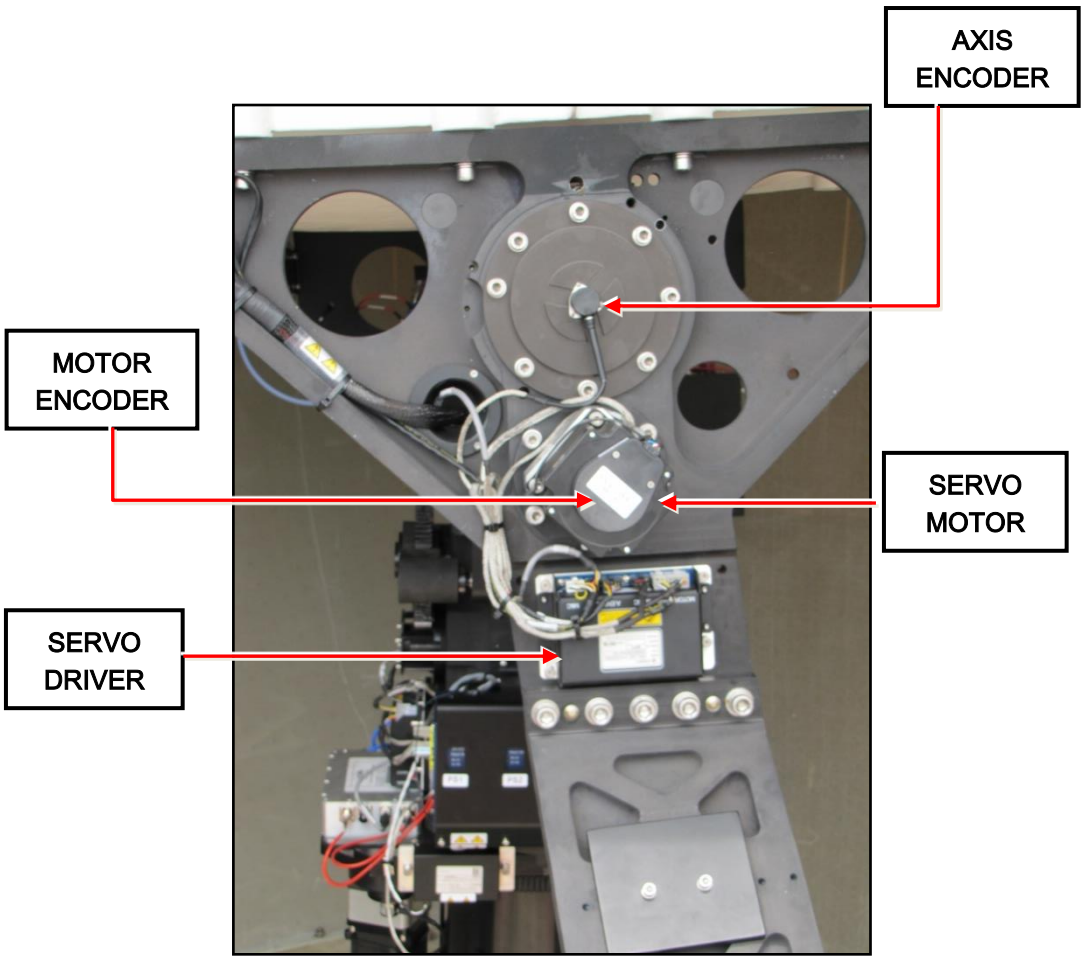

Figure 1-1: Servo Subsystem (Elevation Axis)

When system power is shut off, a dynamic braking relay arrests movement of the PEDESTAL is locking the axes in their current position. In cases when it is necessary to rotate a given axis for maintenance purposes, a MAINT/OPER switch on the servo driver of each axis can overrides the lock and allows free movement of that axis.

Set the MAINT/OPER switch to its OPER position before powering up.

The SERVO DRIVER connects to the other SERVO SUBSYTEM components via its connectors.

The following table describes each connector.

Table 1-1: Servo Driver Connectors

Connector	Type	Function
MOTOR	8-pin	Connects to the SERVO MOTOR phases
PWR	4-pin	Connects to the POWER SUPPLY to receive DC power
M. ENC	8-pin	Connects to the MOTOR ENCODER
A. ENC	10-pin	Connects to the AXIS ENCODER
L. SW	4-pin	Connects to the HALL SENSOR
M&C	8-pin	Connects to the ACU

High Voltage is powering the Servo driver module. Never disconnect any connector while the system is switched on

1.3 Spare Kit Contents

The following table provides a list of the parts in the `AXIS ENCODER` spare kit.

Table 1-2: Spare Part Kit Contents

Part Name	Part No.	Figure
`AXIS ENCODER`	30-0719-9-1	
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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	Notes	Figure
Small Phillips screwdriver		
Tie cutter		
Allen keys: 1.5mm		

2 Preliminary Procedures

➢ **To Perform Preliminary Procedures:**

The following preliminary procedure must be performed before replacing the AXIS ENCODER:

1. Open the RADOME hatch.
2. Switch off the ADE POWER BOX at the ANTENNA PEDESTAL base (located inside the RADOME).
3. Toggle the SERVO DRIVER MAINT/OPER switch on the servo driver to MAINT position to release the brake and allows smooth movement of the axis .
4. Manually rotate the PEDESTAL AXES to gain convenient access to the serviced unit.

In the following procedures, be very careful when tightening and loosening the screws with which the parts are assembled and attached to the system. Some of these screws are delicate and can be damaged by excess force. When using an Allen key make sure to insert the key all the way into the screw head to avoid thread stripping.

WARNING!

The Utility Outlet is connected directly to the vessel's AC voltage input terminals (125 VAC / 250 VAC). Therefore, there still exists live voltage at the Utility Outlet after disconnecting the power supply to the ADE using the Mains Power On/Off Switch.

Only qualified and authorized personnel are allowed to carry out system service/maintenance procedures.

3 Replacing the Axis Encoder

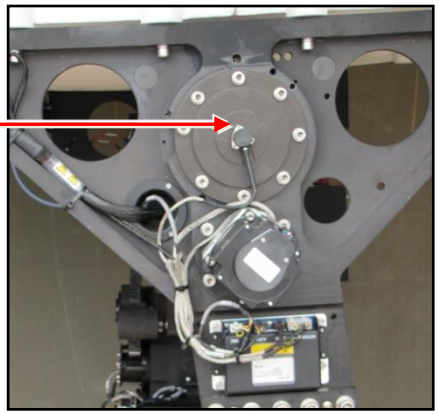
3.1 Removing the Axis Encoder

➢ **To Remove the Axis Encoder:**

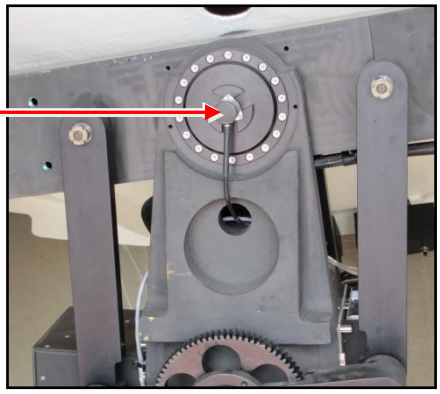
Step 1

The system has 3 identical AXIS ENCODER'S. Locate the relevant encoder

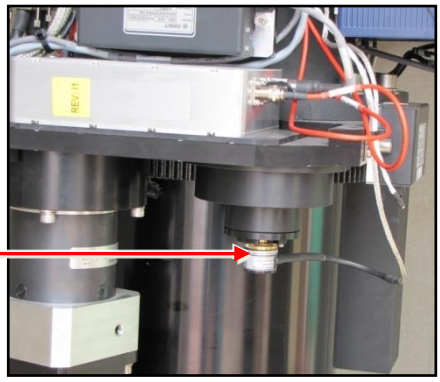
The elevation AXIS ENCODER.



The tilt AXIS ENCODER.

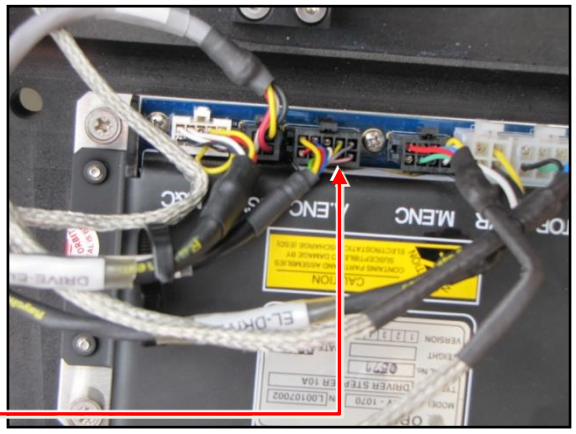


The azimuth AXIS ENCODER.



Step 2

Cut carefully tie wrap securing AXIS ENCODER cable.



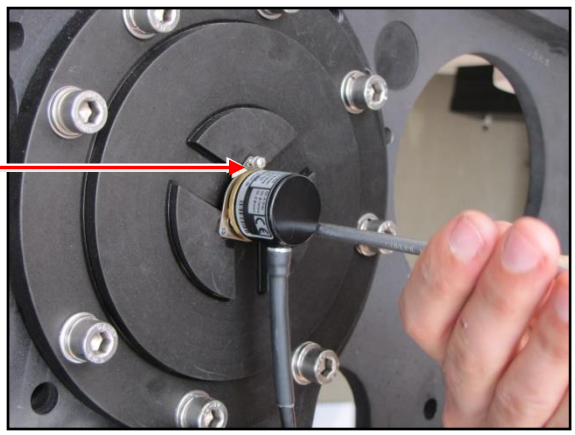
Step 3

Remove the encoder connector by holding the body while pressing locking pin

The encoder wires are thin. Never pull the wires

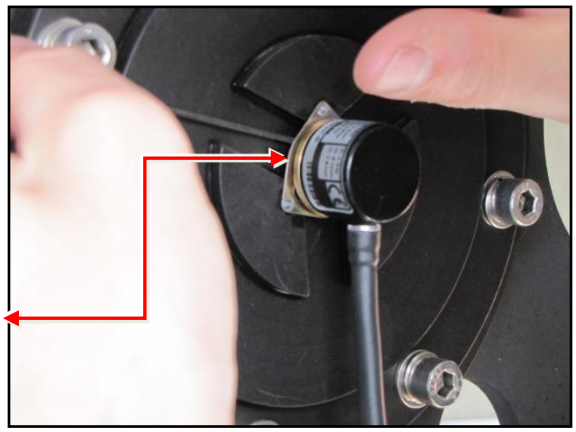
Step 4

Use a philips screwdriver to remove the three philips screws securing the AXIS ENCODER.



Step 5

Rotate the axis to get acces to the coupler locking bolt use Allen key (2.5mm) to release it.



you may need to to. Do not remove the bolt

Step 6

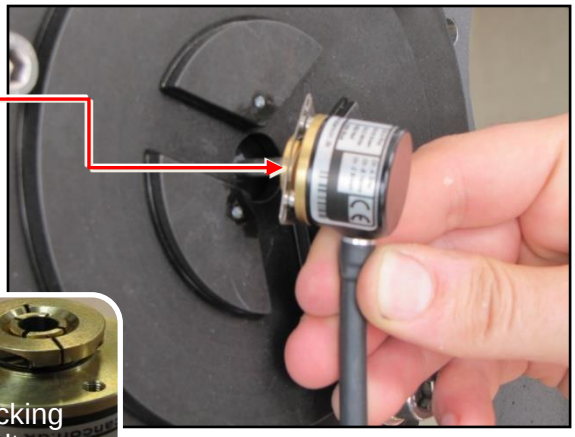
Pull out the AXIS ENCODER from the axis shaft

3.2 Installing an Axis Encoder

➢ **To Install an Axis Encoder:**

Step 1

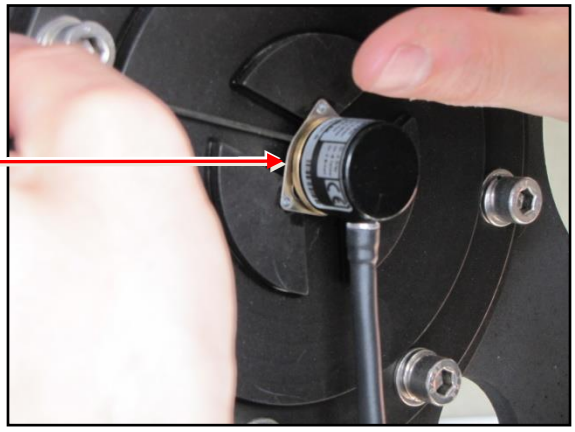
Mount the new AXIS ENCODER on the axis shaft.



adjust coupler position in order to have convenient access to the locking screw

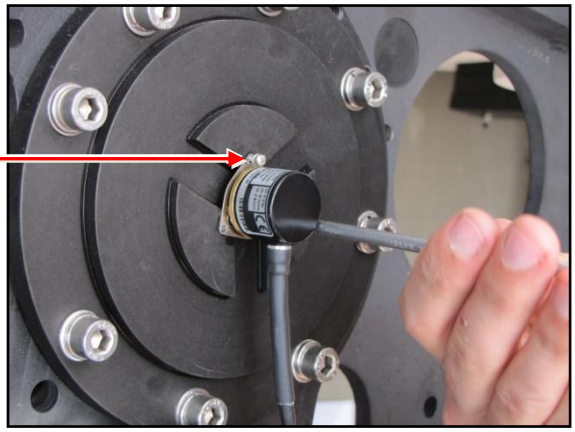
Step 2

Use an Allen key and very gently, tighten the internal Allen screw.



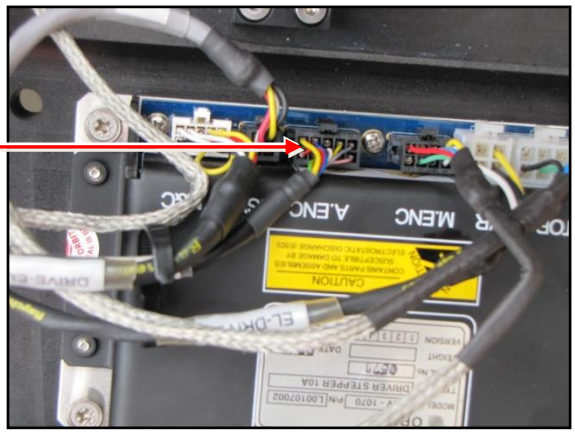
Step 3

Use a philips screwdriver and tighten the three philips screws securing the AXIS ENCODER.



Step 4

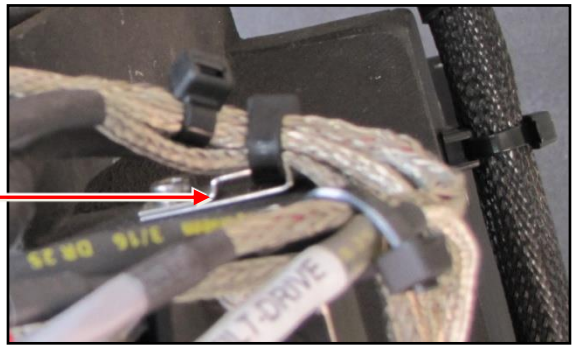
Gently connect the new AXIS ENCODER'S plug to its DRIVER.



Make sure plug locked.

Step 5

Use tie wraps to secure AXIS ENCODER'S cable.



Ensure tight connectivity between cables shield and tie wrap holder.

4 Perform Verification Test

➢ **To Perform Verification Test:**

1. Power up the system and confirm system initializes properly.
2. Make sure no error messages appear in the **System messages** window.
3. To make sure the technical process completed successfully click on **Test Traj.**