



C-Nav[®]

C-NavX1 & C-NavX3 Rinex Manual

CNAV-MAN-0063

Revision C

C-Nav[®] Positioning Solutions

oceaneering.com/cnav

DOCUMENT OWNER

Senior Manager, C-Nav

REVISION HISTORY

Revision	Prepared by	Checked by	Approved by	Date Approved
C	Ben Dean, Mayank Nijhara	Ben Dean	Ben Dean	15-Jul-2024
B	Ben Dean, Avanti Mairal	Ben Dean	Ben Dean	23-May-2024
A	Ben Dean	Ben Dean	Ben Dean	20-Jan-2023

REVISION DETAILS

Revision	Change Details
C	Revised to new Application
B	Revised to New Process
A	Initial Release

Disclaimers:

C-Nav, C-Nav3050, C-Tides and C-Monitor are trademarks of Oceaneering International, Inc.

"This document is the property of Oceaneering International and may not be used for any purpose unless authorized in writing by Oceaneering and which, upon demand, shall be returned. For any queries, related to Warranty and Limitation of liability, please contact your Accounts Manager for more information."

TABLE OF CONTENTS

1	INTRODUCTION	4
2	DOCUMENT CONVENTIONS	4
3	REFERENCES	4
3.1	Symbols.....	5
4	OVERVIEW	5
5	OBTAINING THE C-NAV X1 & C-NAV X3 IP ADDRESS.....	6
6	EXTRACTING DATA FROM THE C-NAV X1 & C-NAV X3.....	7
7	CREATING A RINEX FILE.....	8

1 INTRODUCTION

This is a short tutorial explaining the steps necessary to extract raw *.bin files from the C-NavX1 or C-NavX3 GNSS receivers internal memory for upload to C-Nav Support for conversion to RINEX.

[Section 1 - Overview](#) (Page 5) gives a brief overview of the purpose of this document.

[Section 2 – Obtaining the C-NavX1/C-NavX3 IP Address](#) (Page 6) outlines the procedure for obtaining a working IP address. If the receivers IP is known it can be skipped, as the IP address is a requirement for accessing the receivers internal file storage location.

[Section 3 – Extracting data from the C-NavX1/C-NavX3](#) (Page 7) lists the procedure to transfer the raw GNSS files from the C-NavX1 or C-NavX3's internal file storage location.

[Section 4 – Creating a RINEX file](#) (Page 8) lists the procedure to create a RINEX observables file.

2 DOCUMENT CONVENTIONS





Font Type	Used for
Arial	Plain Text
<i>Arial Italic</i>	Setting Names
'Arial Quoted '	Setting Values
Arial Bold	Button Names
<i>Arial Bold Italic</i>	Menu Items
Arial Blue	Cross Reference
Arial Blue Underline	Hyperlinks
<i>Arial Red Italic</i>	Typed Commands
Arial Bold Size 10	Captions
ARIAL BLACK ALL-CAPS	Port Connection Names

3 REFERENCES

Document Number	Document Title
CNAV-MAN-061-B	C-NavX1 GNSS Receiver User Guide Provides specifications and information about the C-NavX1 GNSS receiver.
CNAV-MAN-066-A	C-NavX3 GNSS Receiver User Guide Provides specifications and information about the C-NavX1 GNSS receiver.
CNAV-MAN-062.1	C-NavX1 Firmware Update Installation Procedure Provides instructions for updating C-NavX1 GNSS receiver firmware using C-NavX1 Firmware Updater Software Application.
CNAV-RN-0006-D	C-NavX1 Firmware Release Notice Provides details of the latest C-NavX1 GNSS receiver firmware release.

3.1 Symbols

The following words and symbols found throughout this manual, highlights special messages to alert the operator of specific information concerning **personnel**, **equipment**, **process** or **environmental impact**.

Symbol	Description
	This symbol means Danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical and RF circuitry and be familiar with standard practices for preventing accidents.
	CAUTION: Failure to follow these directions can result in damage to equipment.
	CAUTION: Failure to follow these directions can result in environmental hazard.
IMPORTANT NOTES: Such note boxes display important information that should not be ignored.	
	This symbol means Reader Be Careful. It indicates a caution, care, and/or safety situation. The user might do something that could result in equipment damage or loss of data

4 OVERVIEW

Introduction

The C-NavX1 and C-NavX3 GNSS receivers have an internal memory which records zipped binary *.binin files of 5 minute duration. These files can be extracted from the receiver and converted to RINEX format using the Binin to RINEX application.

The C-NavX1/C-NavX3 should have a known IP address which will be used to access the required logging directories.

Warning:

Use only the latest version of C-NavX1/C-NavX3 firmware to perform the outlined procedure(s). The latest firmware is available for download from the C-Nav [Customer Support](#) Webpage.

The following software will be required to perform this procedure:

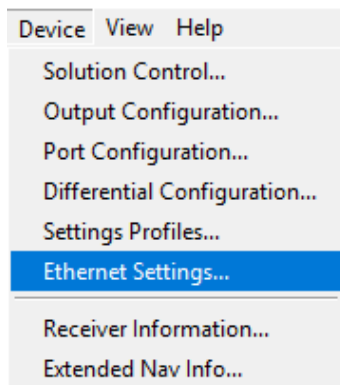
Binin to RINEX tool available to download from the C-Nav Customer Support Webpage.

FTP transfer tool e.g. FileZilla which is freely available on the internet and facilitates anonymous FTP transfer of data from the C-NavX1/C-NavX3.

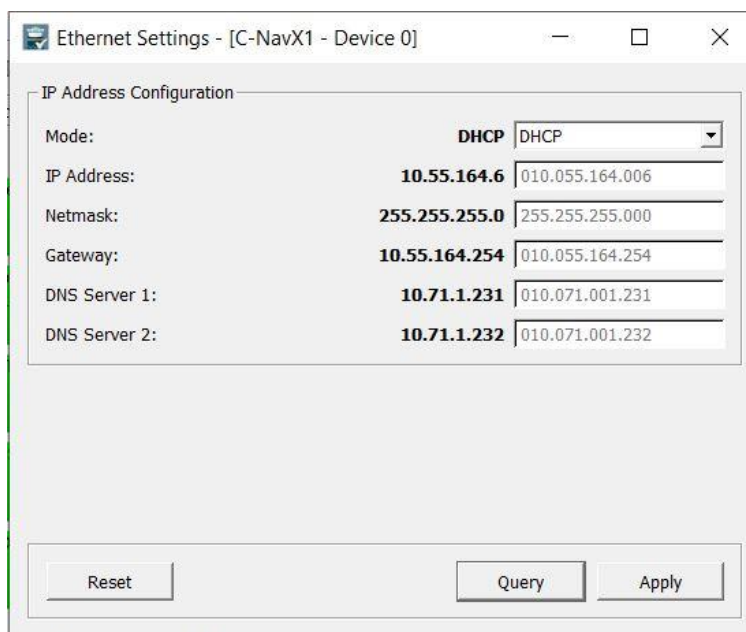
5 OBTAINING THE C-NAV X1 & C-NAV X3 IP ADDRESS

The C-NavX1/C-NavX3 IP Address

1. Connect the receiver and the PC or laptop being used to the same network switch with DHCP capabilities.
2. Using C-Setup / C-Monitor® QA/QC software / C-Scape connect to the C-NavX1/C-NavX3 using one of the receiver's Serial or USB port.
3. Once the C-Nav® control software establishes communication with the receiver, access the **Ethernet Settings** page from the **Device** menu.



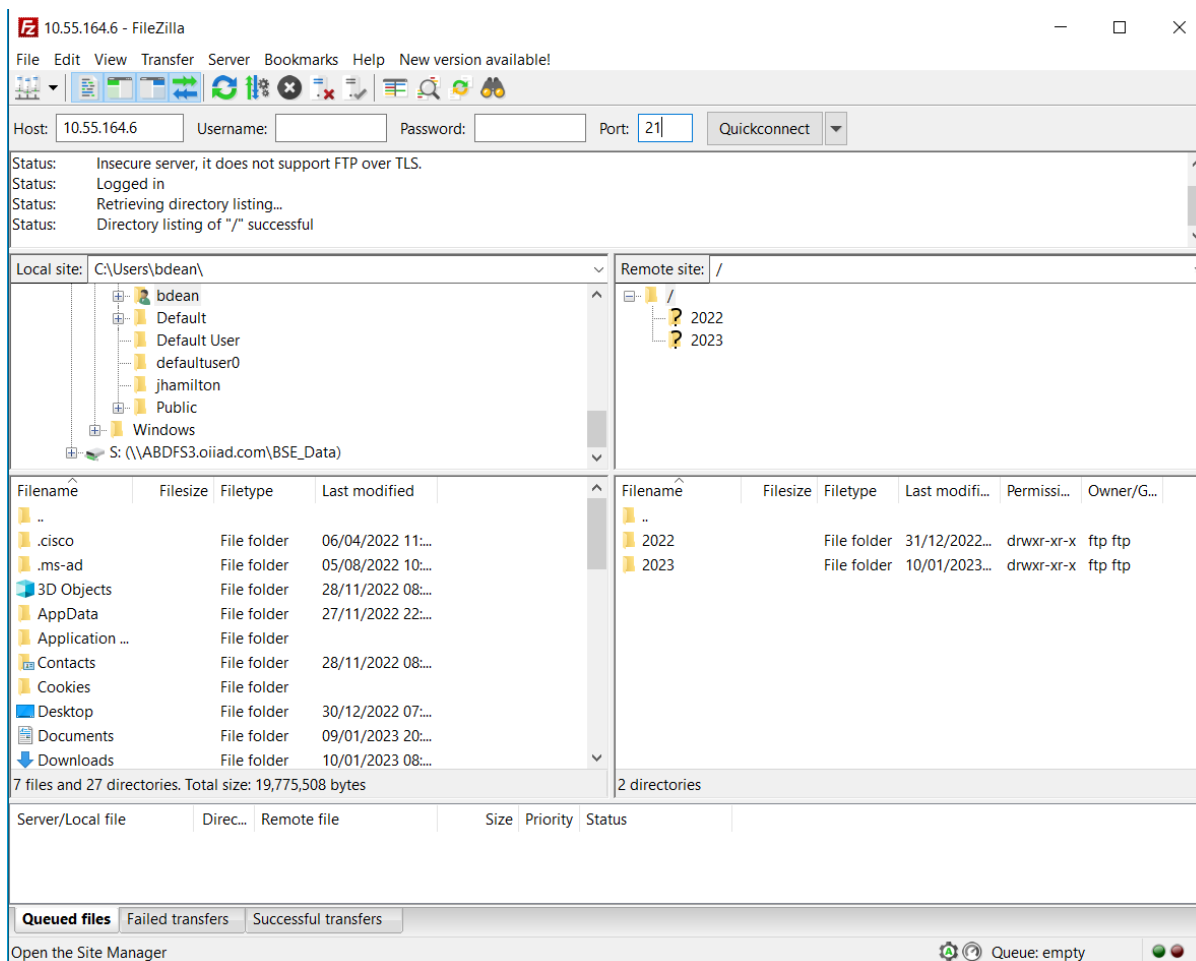
4. If there is no IP address, set the mode to 'DHCP', if it was 'Manual' before after changing to 'DHCP' make sure to press Apply.
5. Use the Query button to update the items on the menu window, if an IP address isn't shown, give it some time and press Query again, else check the network hardware and cabling.
6. Take note of the IP address shown for the receiver, this will be the IP address used to access the logging directories.



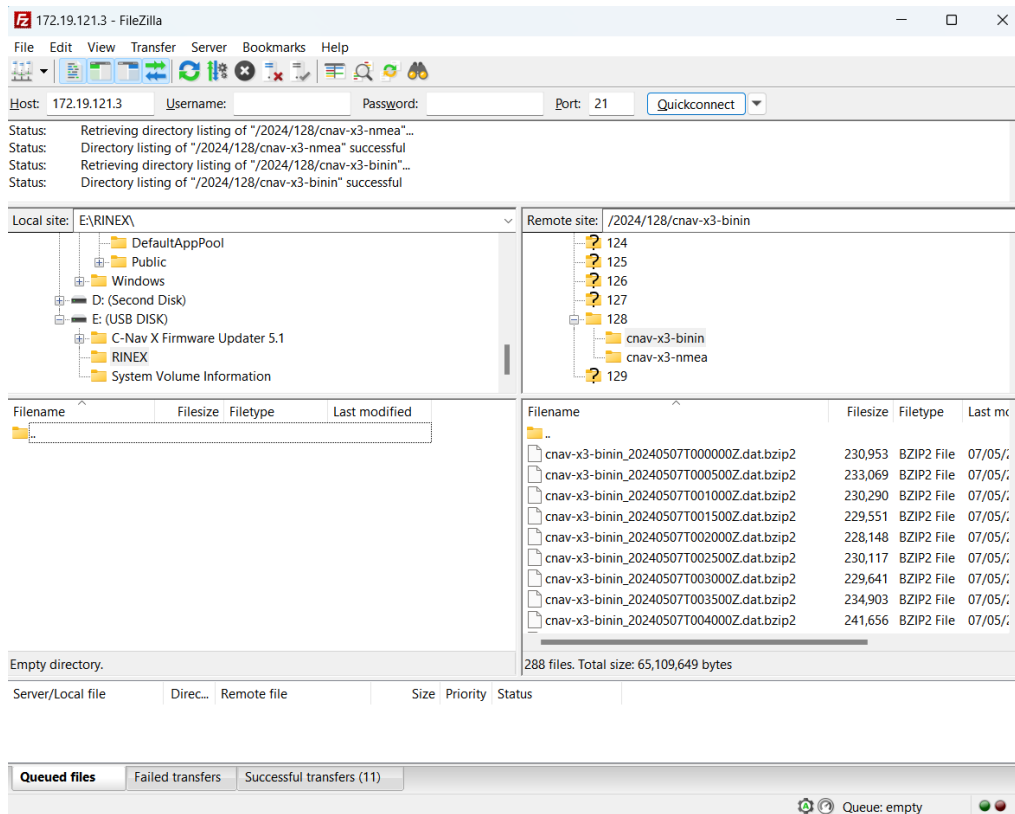
6 EXTRACTING DATA FROM THE C-NAV X1 & C-NAV X3

FTP File Transfer

1. Run your preferred FTP software tool. In this example we will use the FileZilla application.
2. Enter the receivers IP address as determined in the previous step port 21 and establish the connection.

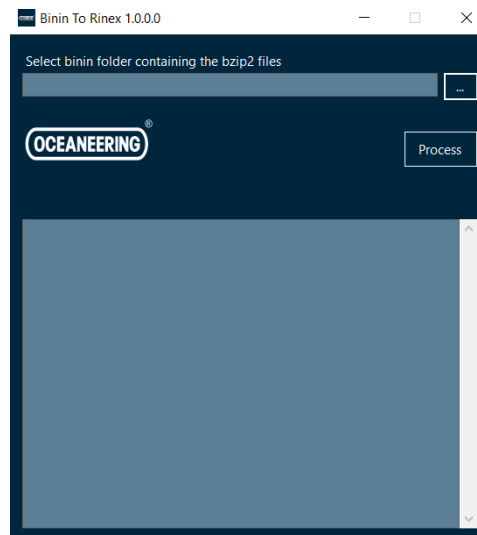


3. You will be presented with the root log folder on the C-NavX1/C-NavX3 containing top level year directories. Clicking on the year directory will present you with folders identified by the day count within the year.
4. Each day folder contains both a BININ and NMEA data folder which contain compressed files of 5 minute duration. To retrieve the binary *.binin files for RINEX processing, enter the GNSS folder, select the files for the time interval of interest and drag-and-drop them across to the chosen local folder location on your local machine.

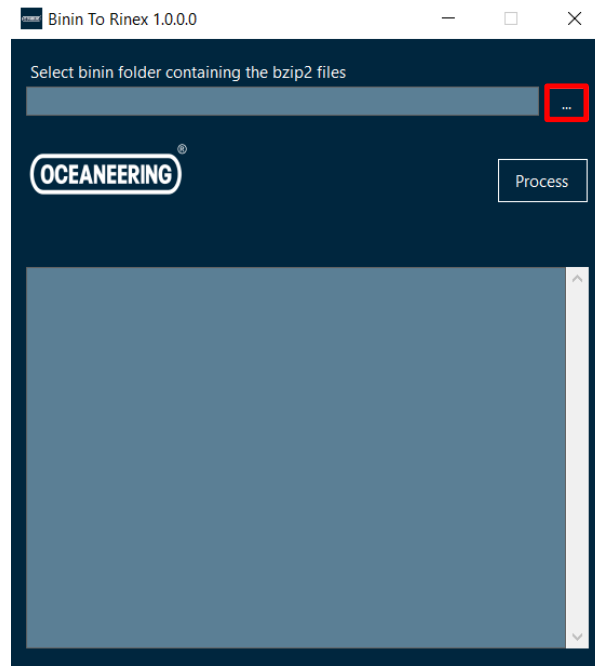


7 CREATING A RINEX FILE

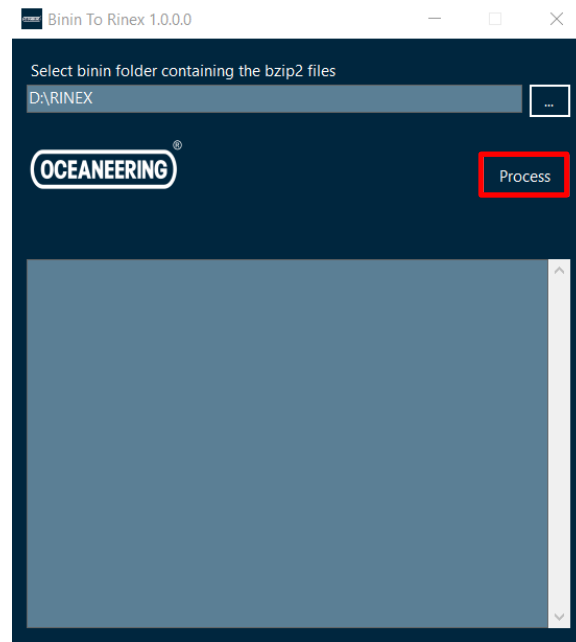
1. Download the Binin to RINEX application from the C-Nav [Customer Support](#) Webpage. Extract the contents of the Zip file and run the “Setup” executable.
2. Once installed, open the Binin to RINEX application from the PC’s Start menu.



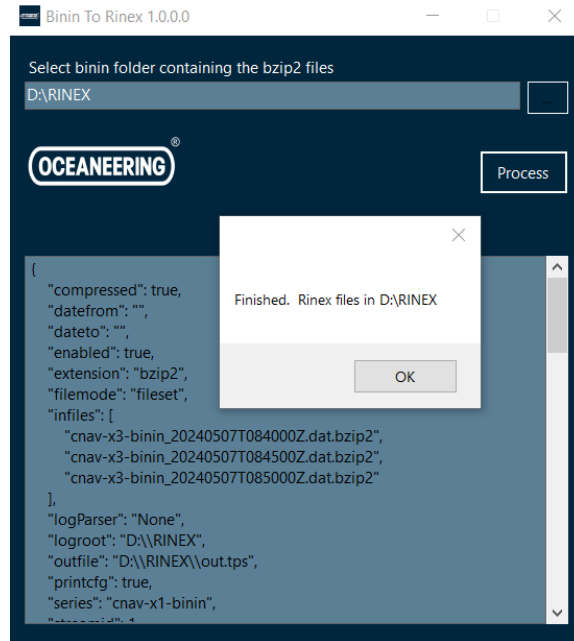
3. Select the folder location containing the Binin files that are to be converted to RINEX.



4. Select **Process**.



5. A new dialogue window will open to confirm when the conversion has finished.



6. Navigate to the appropriate folder containing the RINEX files. The folder will contain a ".tps" file which is the raw GNSS observations in binary format, ".O" RINEX file containing the GNSS observations and a ".P" RINEX file containing the navigation data.