INSTALLATION AND OPERATION

QUICK GUIDE

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UM621 EVK

Integrated Navigation and Positioning Module Evaluation Kit

Revision History

Version	Revision History	Date
R1.0	First release.	June, 2025

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Foreword

This document provides information about Unicore's UM621 Evaluation Kit (EVK). It can be used together with *UPrecise_User Manual*.

Target Readers

This manual is written for technicians who are familiar with GNSS modules. It is not for general readers.

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1 Overview

UM621 Evaluation Kit (hereinafter referred to as EVK) is mainly used to test and evaluate the function and performance of Unicore UM621 module for user convenience.

The delivered package contains:

Table 1-1 UM621 EVK Package

Type	Contents	Number
Main device	UM621 EVK	1
Accessory	GNSS dual-frequency antenna - JCA236S	1
Accessory	USB Type-C cable	1
Accessory	FC2.54 flat cable	1

2 EVK Introduction

Figure 2-1 UM621 Evaluation Box is the appearance of the UM621 evaluation box.

Figure 2-1 UM621 Evaluation Box

3 Interfaces

The connectors, buttons and indicators on the UM621 evaluation box are shown in **Figure 3-1 Interfaces of the UM621 Evaluation Box**. For detailed information, see **Table 3-1 Interfaces of the UM621 Evaluation Box**.

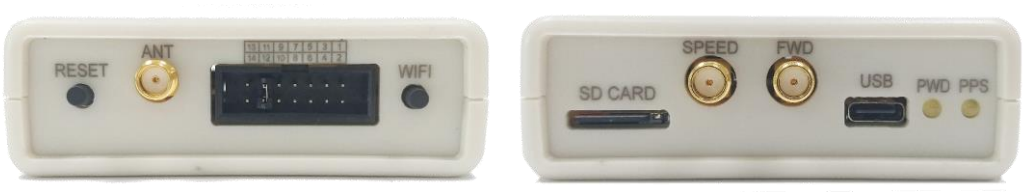

Figure 3-1 Interfaces of the UM621 Evaluation Box

Table 3-1 Interfaces of the UM621 Evaluation Box

Interface	Function	Description
RESET	Reset	Press the button to reset the module
ANT	RF signal input	Antenna RF signal input
RSV	Reserved	See **Table 3-2** for more details
WIFI	Reserved	——
SD CARD	SD card slot	Insert an SD card
SPEED	Odometer speed signal input	Odometer speed signal input
FWD	Odometer direction signal input	Odometer direction signal input
USB	USB Type-C connector	Power supply (+5V) and data communication
PWD	Power indicator	Upon power on, the PWD indicator stays constantly on. When calibration and positioning are not achieved, the PWD indicator flashes at 1Hz. If a file storage error occurs or data reception times out, the PWD indicator will flash at 5 Hz.

Interface	Function	Description
PPS	PPS signal indicator	Upon power on, the PPS indicator stays constantly on. Once calibration and positioning are achieved, the PPS indicator starts flashing.

Table 3-2 Description of the Reserved Interfaces

PIN Number	Interface	Description
1	PPS	PPS signal
2	UM_RXD2	UART2 input (TTL level)
3	RSV	Reserved
4	UM_TXD2	UART2 output (TTL level)
5	BOOT0_High	BOOT0 of MCU on the board
6	GND	Ground
7	RSV	Reserved
8	RXD_F_PC	Serial port input of MCU on the board (RS232)
9	GND	Ground
10	TXD_T_PC	Serial port output of MCU on the board (RS232)
11	V_BCKP	Backup power input to the module (connected to V_BAT via a jumper)
12	V_BAT	+3 V battery output from the board (connected to V_BCKP via a jumper)
13	RSV	Reserved
14	GND	Ground

4 Instructions

4.1 Hardware Installation

Step 1: Make sure to take adequate anti-static measures, such as wearing an anti-static wrist strap and grounding the workbench.

Step 2: Open the package box and take out the UM621 EVK.

Step 3: Use the GNSS antenna in the kit or another antenna with appropriate gain (the GNSS frequencies supported by the antenna should be consistent with that of the module) and fix it in a non-blocking area; connect the antenna to the ANT port on the UM621 evaluation box.

Step 4: Connect the evaluation box to a PC through the USB Type-C cable.

Step 5: Open the UPrecise software on the PC.

Step 6: Control the receiver through UPrecise to display constellations view, log messages, receiver status, etc. For more information, refer to *UPrecise_User Manual*.

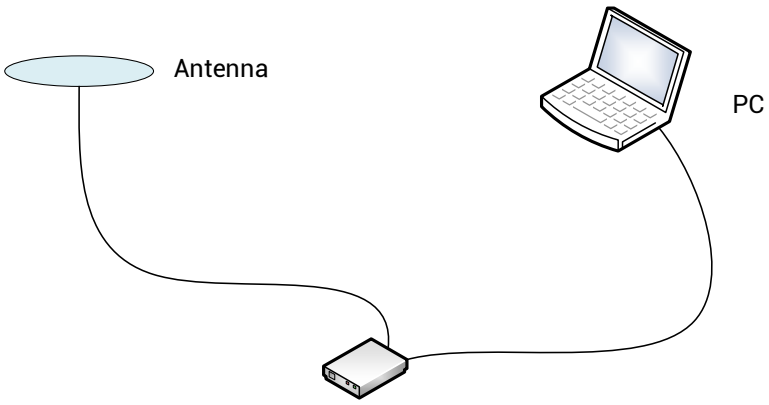

Figure 4-1 Installation of the EVK

4.2 Installation and Calibration

1. Installation

UM621 module must be firmly connected to the vehicle to prevent any offsets or vibrations between the module and the vehicle. The module should not be installed in the suspension part (or elastic part) of the vehicle. When the vehicle is moving, any change relative to the vehicle's coordinate system will seriously affect the performance of the module.

2. Calibration

By default, the module is in free installation mode and can be placed freely, provided that the above installation conditions are met. For more information, refer to *UM621 Series Modules_User Manual*.

If the manual installation mode is used, the module should be placed according to the following coordinate system, and the installation angle should be manually configured into the module. For more information, refer to *UM621 Series Modules_User Manual*.

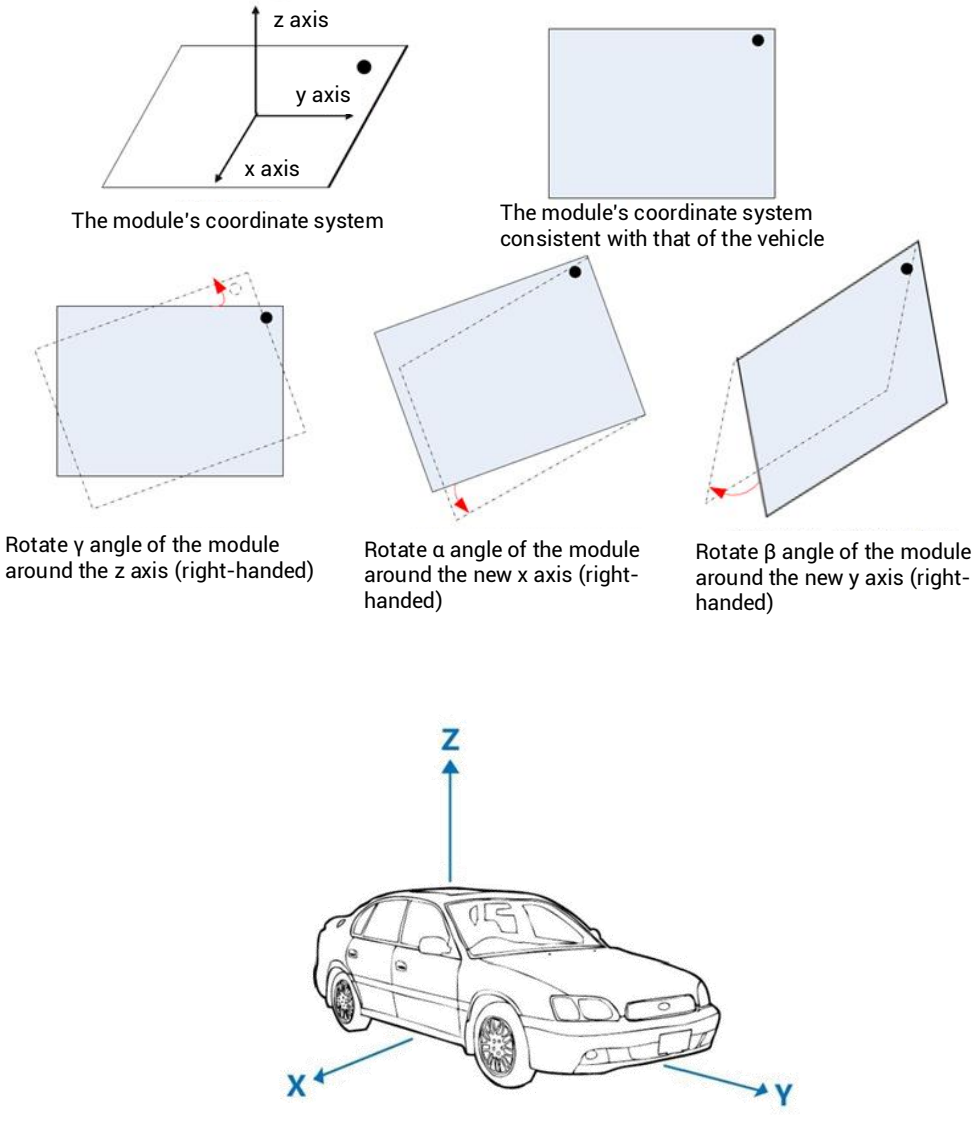

Figure 4-2 Coordinate System of the Module and the Vehicle

4.3 SD Card Instructions

An SD card slot is provided on the UM621 evaluation box, which is used for data storage

and firmware upgrade.

> ☞ You can also use UPrecise to store data and upgrade the firmware. For more information, see *UPrecise_User Manual*.

4.3.1 Contents of the SD Card Folder

Before using the SD card, you need to copy the zipped folder **UM621_EVK_V2.0_sdcard** to the card. The folder contains the following items:

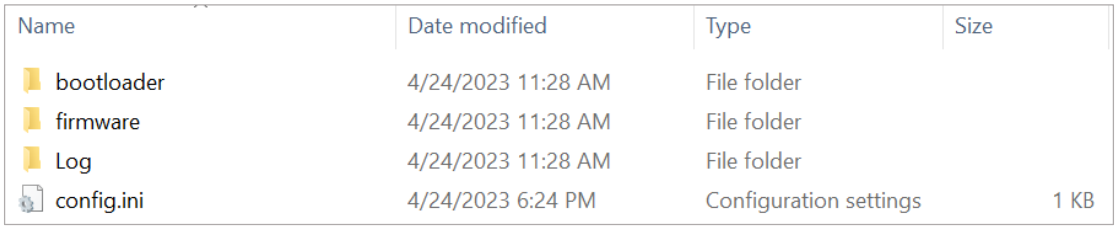

Figure 4-3 Contents of the SD Card Folder

1. The “bootloader” folder contains the loader file for firmware upgrade.

> ☞ Unicore has already provided the loader file, which can be used directly.

2. The “firmware” folder is used to store the firmware file.
3. The “Log” folder is used for data storage.
4. The “config.ini” is the configuration file. For details, see **Table 4-1 Description of the config.ini File.**

Table 4-1 Description of the config.ini File

Contents	Description
[config]	/
update = 0	1 = Upgrade the firmware 0 = Do not upgrade the firmware (by default)
WorkBaudrate = 115200	The working baud rate of UM621 module[1]. 115200 by default. The value needs to be the same as that of the module.
LogFileName = log	The name of the log file (English only)

[1] The baud rate may be different for different firmware versions.

Contents	Description
SingleFileSize = 512000000	Max single file size (bytes): If a log file reaches the size limit, logging continues in a new file. (Note: Use decimal values only - hexadecimal is not supported.)
StartRecordStyle = new	The recording style after starting up (new or append): Append = log data in the existing file; New = log data in a new file
BoardVersion = v2	EVK Version Default: v2 Options: v1 or v2
ReceiveTimeOut = 30	Data Receive Timeout Threshold (in seconds) Default value: 30 The system will trigger a timeout error if no data is received continuously for more than the specified duration.

4.3.2 Data Storage Instructions

Step 1: Insert an SD card into the PC, and copy the zipped folder **UM621_EVK_V2.0_sdcard** to the card.

Step 2: Unzip the folder and open the "config.ini" file. Set the "update" value to 0, set the "WorkBaudrate" value to align with that of UM621 module and set other parameters as needed. For details, see **Table 4-1 Description of the config.ini File**.

Step 3: Remove the SD card from the PC, insert it into the evaluation box, and power on the box[2].

Step 4: Waiting for a while and you can get the logged data in the SD card. During the process, you may use the USB Type-C cable to connect the evaluation box to PC in order to check the status of data transmission with a port monitor tool.

[2] If the antenna is not connected, the evaluation box will only output debug information; if you need the positioning information, please connect the antenna before powering on.

4.3.3 Firmware Upgrade Instructions

Step 1: Insert an SD card into the PC, and copy the zipped folder **UM621_EVK_V2.0_sdcard** to the card.

Step 2: Unzip the folder and open "bootloader" to make sure that it contains the loader file. Then, put the firmware file[3] in the "firmware" folder.

☞ For the bootloader and firmware folders, only one file can be stored in each folder.

Step 3: Open the "config.ini" file, set the "update" value to 1 and set the "WorkBaudrate" value to align with that of the new firmware.

Step 4: Remove the SD card from the PC, insert it into the evaluation box, and power on the box.

Step 5: Use the USB Type-C cable to connect the evaluation box to PC in order to check the status of upgrade with a port monitor tool.

[3] Please contact Unicore to get the latest firmware.

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