Demo Kit Quick Start Guide

Introduction

This document outlines how to get started with your SpacePoint VR Demo Kit. You will need the SpacePoint VR Demo Kit, the included cable, and an Android phone.

Note: SpacePoint VR includes a coprocessor called SENtral, so you will see references to SENtral throughout this document.

Note: The SpacePoint VR Demo Kit is for evaluation and testing only. It is not appropriate for use in final product builds. Please explore our other SpacePoint products when your evaluation is completed.

Minimum phone specifications

- OS: Android KitKat or later
- 1GB or higher of RAM
- Multicore processor with >1GHz clock speeds.
- The phone must be capable of acting as an OTG host

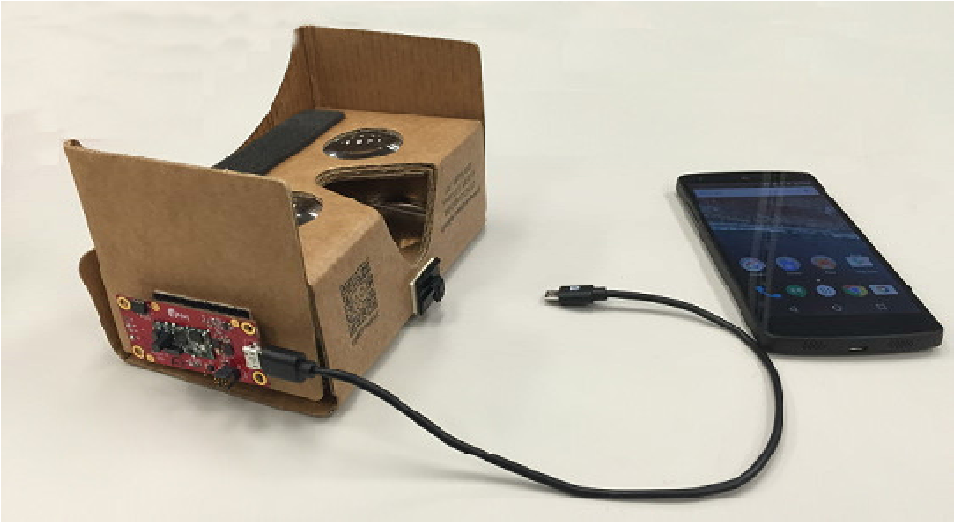
Phone setup

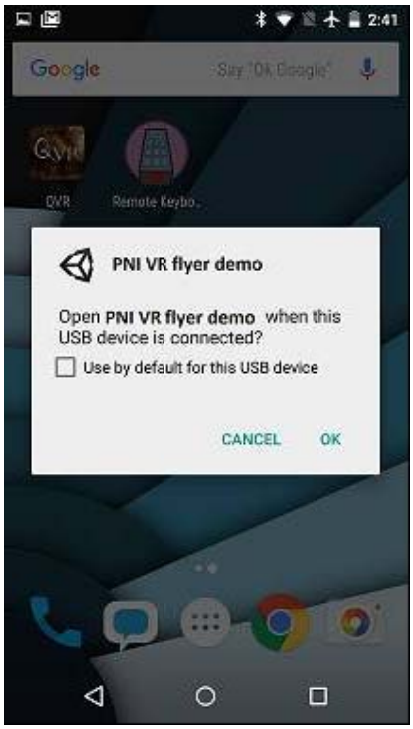
- Install the VR Demo apk using ADB
- Enable airplane mode
- Disable power saving mode
- Disable auto brightness

Procedure

Step 1

Insert the end of the OTG micro-USB cable labeled “HOST” into the phone and the other end into the VR demo unit.





Step 2

The first time you connect the phone to the device, Android will ask you for permission to allow the app to be launched whenever the device is connected. Click the “Use by default for this USB device” check box, and then click OK; this will also give the app permission to access data from the device.

Step 3

If the LED on the VR board is green on startup, this indicates that the system was booted up without warm start parameters. A “cold startup” will require performing steps 4 and 5 to calibrate the system. Otherwise, if the LED is blue, proceed to step 6.

Step 4

When the app launches, place the phone in the Google Cardboard headset. Leave the headset on a table for several seconds before picking it up so that SENtral can learn the gyro bias and gyro noise levels.

Step 5

Pick up the headset and wave it slowly around in figure-8 motions around each axis to get as much coverage as possible so that SENtral can perform a magnetometer auto-calibration, and can compensate for the sources of magnetic distortions in the phone. When the system has calibrated itself, the LED will turn a teal color indicating that the warm-start parameters have been saved in flash.

Step 6

For optimal results with warm start the next time the board is powered on, ensure that the phone is placed in the headset and secured, with the screen on, before plugging in the USB OTG cable. Otherwise, you may have to perform a quick re-cal by doing a few figure-8 motions to obtain an accurate heading.

***Note**: The VR demo APK is a graphics and computationally intensive application that requires a lot of CPU and GPU resources. Try to limit any VR demonstration to less than five minutes because eventually the CPU will start to overheat, and Android will begin to dynamically throttle the CPU clock speeds (thermal protection) which will result in noticeable frame rate jumps in the app.*

Troubleshooting Matrix

Symptom	Probable Cause	Corrective action
LED is not turned on	The board is not powered or programmed	Make sure the correct end of the cable is plugged in to the phone.
LED is Red	Communication problem with SENtral, or no SENtral firmware image found	Visually inspect and perform a continuity check on each of the M&M module's solder pads, and re-solder any bad connections if necessary. Boards are programmed at the factory. In case of communication problems with SENtral, update the SENtral firmware by following the firmware update procedure.
LED is Green	Board did not boot up with warm start parameters	Perform the system calibration steps above.
LED is Yellow	Programmed EEPROM detected on the master bus	This problem should not occur with shipped units.
LED is White	Multiple issues encountered on startup	Try a reboot; if the problem persists, return the board to PNI.
LED is Blue	Everything is OK	Try not to have too much fun.
Observable pitch roll errors	VR frames misalignment	Move your head slowly and laterally so that the system can attempt to autocorrect.

Revision Control Block

Revision	Description of Change	Effective Date	Approval
01	Initial Release	July 18, 2016	J. Back
02	Include PDF; Print Revision Control Block	September 8, 2016	B. Thomlinson