蓝牙BLE空中鼠标方案需求

需求描述

- 低功耗BLE蓝牙方式连接，标准HID接口。无须驱动支持windows 7/10 操作系统，surface 3/pro3，surface4/pro4平板电脑。
- 包含功能按键：空中鼠标模式开关，PageUp/PageDown，鼠标左键，windows快捷键组合。
- Windows系统的语音输入，用于语音指令操作。（可选）
- 给定尺寸（CAD文件）的PCB设计，和原理图设计。

交付件

- 硬件：
  - 样品原型
  - PCB layout设计文件
  - 原理图
  - BOM list
  - 生产 Gerber文件
- 软件
  - 源代码
  - 软件编译环境配置说明
  - 应用算法原理描述

参考一：某模块供应商方案

- Module: Bosch BM160 Inertial Measurement Unit + SMT32F031x6

- The main MCU is ARM 32-bit Cortex-M0 CPU.
  - Maximum operating frequency is 48MHz.
  - SPI : 1 ports
  - I2C : 1 ports
  - UART : 1 ports

- 3-axis gyroscope and 3-axis acceleration sensor.
  - 125dps ~ 2000dps selectable full-scale.
  - $\pm$2g / $\pm$4g / $\pm$8g / $\pm$16g selectable full-scale.
  - I2C serial interface.
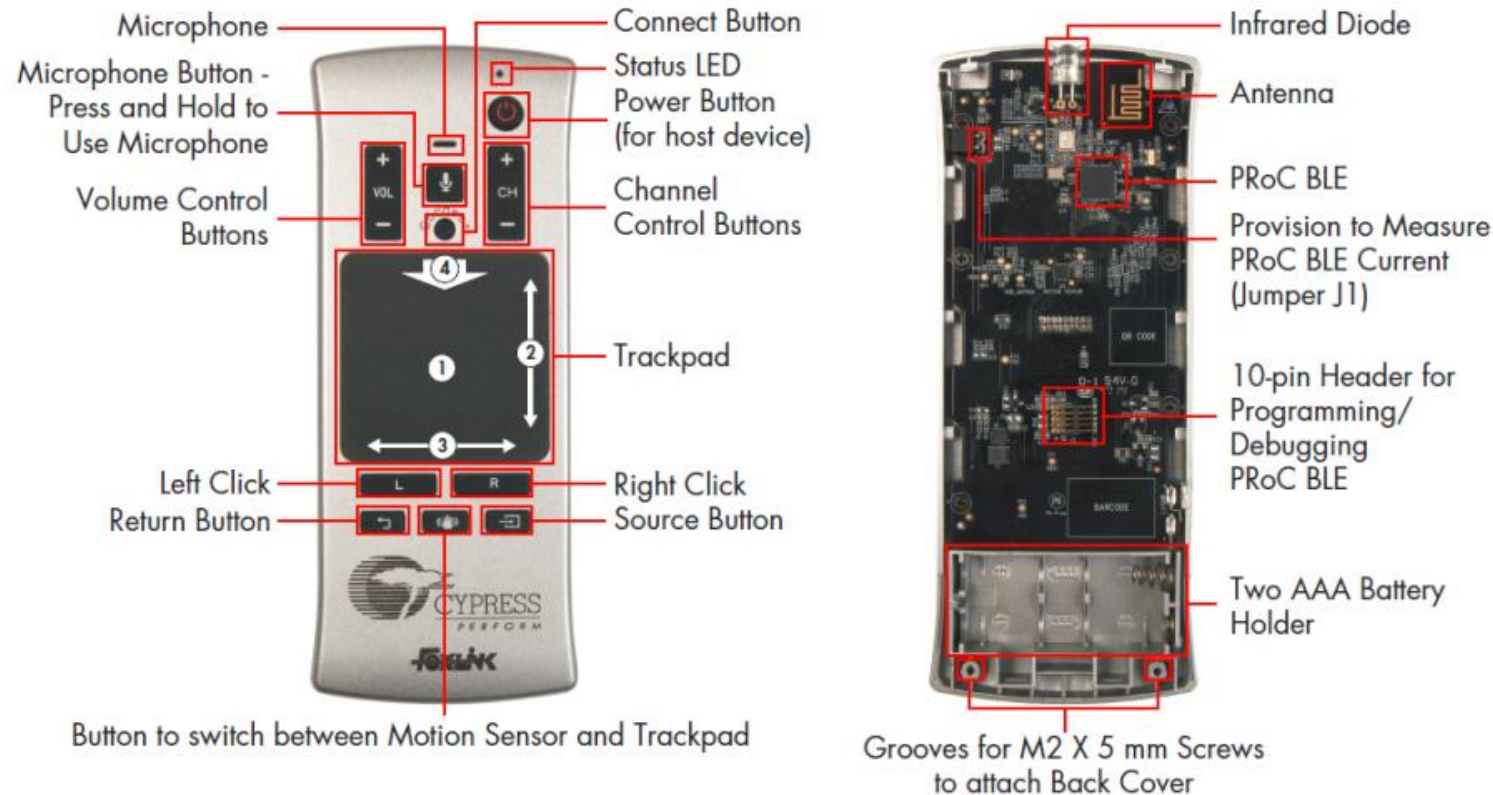
参考二：Nordic SmartRemote3 dev kit (nRF6932)

Sensor: Invensense ICM-20608-G
MCU: nRF51822

Multi-touch trackpad, remote control keyboard, sensor(gyro),accelerometer, etc
1 microphone input, 2 digital MEMs microphones

HID with audio: Linux with Bluetooth 4.0 support(HID over GATT), using Nordic Voice system(NVS)

参考三：Cypress CY5672 dev kit

Figure 1-2. PRoC BLE Remote Control Features

Microphone

Microphone Button - Press and Hold to Use Microphone

Volume Control Buttons

Connect Button

Status LED

Power Button (for host device)

Channel Control Buttons

Trackpad

Left Click

Return Button

Right Click

Source Button

Button to switch between Motion Sensor and Trackpad

Infrared Diode

Antenna

PRoC BLE

Provision to Measure PRoC BLE Current (Jumper J1)

10-pin Header for Programming/ Debugging PRoC BLE

Two AAA Battery Holder

Grooves for M2 X 5 mm Screws to attach Back Cover

Sensor: InvenSense MPU-6500
MCU: PRoC BLE

Voice input: a MEMS sensor–based single-chip – InvenSense INMP441

Voice input OS support issue

- The CySmart USB dongle enumerates as a USB microphone. A tool like a sound recorder can be used on the PC to record the voice data coming from the remote. This feature cannot be used when directly connected to a Bluetooth Smart Ready device since Bluetooth 4.0/4.1 does not specify standard audio profiles. The audio data is transmitted from the remote to the dongle using the HID Over GATT Profile (HOGP).

- Note: When using the CySmart USB dongle, these features are dependent upon the operating system supporting the generic desktop and consumer usage pages of the human interface device (HID) class as well as the audio device class, over USB. When the PRoC BLE remote control is directly connected to a Bluetooth Smart Ready device, these features depend on the support available for the HOGP over Bluetooth Smart.