

# MandalBot BLE – Monitor+ & Wi-Fi Functions



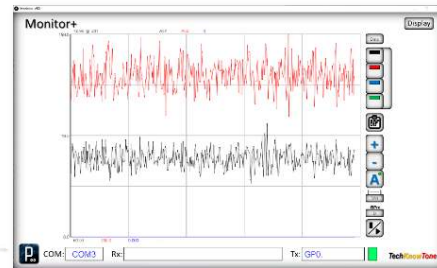
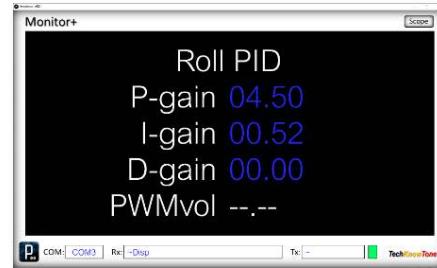
2.4GHz  
Transceiver



Wii  
Nunchuk



Magicsee R1



## Tech:

- ESP32 microcontroller, 2-core @80MHz
- 2 x NEMA14 stepper motors
- 2 x DRV8825 stepper drivers
- MPU6050 3-axis motion sensor
- 10 x RGB LEDs
- 2.4GHz ESP-NOW wireless control
- 3 x 3.7v 18650 3000mAh batteries
- 3-D printed construction

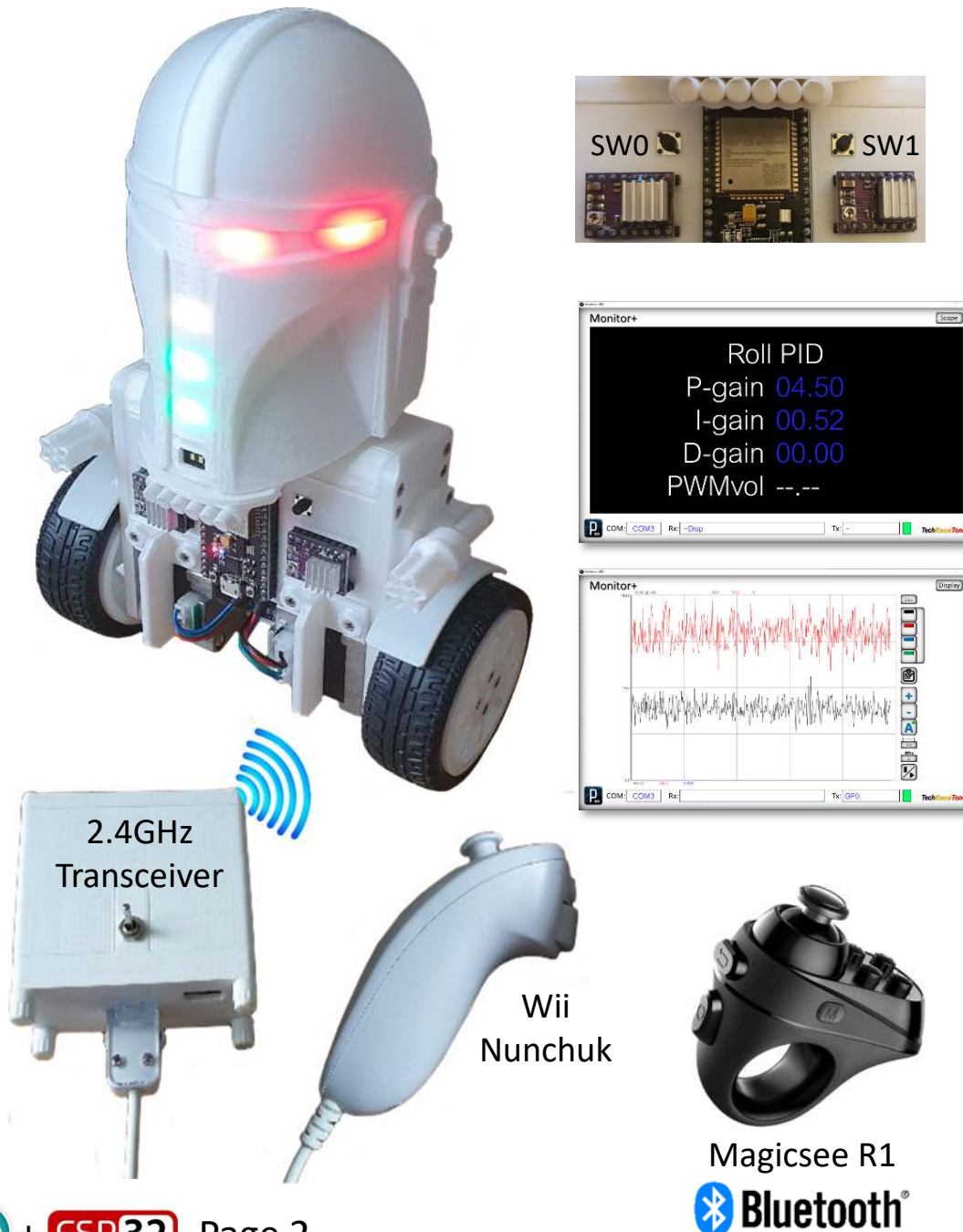
## Features:

- Safe start, with LED indicators
- Links to Monitor+ Windows application
- Battery status and data displayed on PC screen
- Monitor+ enables variables to be tuned in real time
- Monitor+ displays waveforms from sensor data
- Controlled via Wii Nunchuk over Wi-Fi
- Bluetooth BLE enabled for Magicsee R1 controller

## Enhancements:

- TBD.

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## MandalBot Functions:

- Default reset mode is set to TEST.
- Lay the robot down on its back to initiate self-balancing sequence. Move to vertical position to trigger.
- Hold either SW0 or SW1 on reset to invoke BLE mode.
- SW0 click once enables range finder.
- SW0 clicked twice enables back-away mode.
- SW1 forces SAFE mode at any time.

## Monitor+ Functions:

- Connects to remote micro using USB serial port.
- Default mode is displaying text and graphics.
  - Clicking on the window changes the display mode.
  - Clicking on blue text changes digits and code values.
  - Variable values can be observed. I.e. battery voltage
- Scope mode displays data as waveforms.
  - Up to four traces can be displayed at once.
  - The pre-defined type of data can be selected.
  - Title data explains what the coloured traces are.
  - You can pause and inspect data values using the mouse.
  - Data can also be listed, like the Serial Monitor.
  - Traces can be switched ON/OFF independently.
  - Sample rate is up to 30 fps.
- The range of displays and scope traces can easily be extended within the micro code. So it could be used in other projects. And it's open source, FREE!