Application Notes

Technical application notes for hardware and software designs and best-practices are stored in the app-notes Github repository:

https://github.com/particle-iot/app-notes/

HARDWARE DESIGNS

- AN001 Basic SoM Design is a simple SoM base board. Like a Boron it can be powered by LiPo battery, USB, or an external DC supply. It includes: RGB LED, bq24195 PMIC, MAX17043 Fuel Gauge, USB Connector, LiPo Connector (JST-PH), and M.2 SoM Connector.
- AN006 Vehicle Power provides sample designs for powering Particle devices in vehicles.
- AN012 Tracker 1-Wire shows how you can add DS18B20 temperature sensors to your Tracker One and interface with 5V I2C devices.
- AN013 Tracker GPIO shows how you can add additional GPIO to your Tracker One using the external M8 connector. It includes both 3.3V and 5V design options, as well.
- AN015 Tracker Breakout is a simple breakout board to help prototype using the Tracker One M8 connector.
- AN016 Tracker Keypad LCD demonstrates adding a keypad, LCD character display, DAC, and cloud configuration to the Tracker One using the M8 connector.
- AN018 Tracker Tank Level Sensor shows how to expand the Tracker One via the M8 connector including additional GPIO, ADC, a 240-33 ohm tank level sensor input, and a 12 VDC boost converter.
- AN019 Tracker Prototype to Board shows how start prototyping with off-the-shelf I2C sensors and the Tracker SoM Evaluation and migrate to using a custom board for the Tracker One M8 Connector.
- AN020 Tracker 4-20mA Sensor Single shows how connect 4-20mA sensors to the Tracker One. Includes a 24V boost converter that can power from the LiPo battery and overcurrent protection.
- AN021 Tracker 4-20mA Sensor Quad shows how connect up to four 4-20mA sensors to the Tracker One. Requires an external 12VDC power supply, but includes a boost converter to 24V and an I2C ADC (ADC1015).

PROGRAMMING TECHNIQUES

- AN002-Device-Powerdown shows how to have an Electron, E Series, or Boron gracefully power down under battery power when the power supply is disconnected then automatically power up when restored. This can be useful in automotive applications or devices powered by a switch in mains power applications.
- AN005 Threading Explainer provides detailed information on using execution threads on Particle devices.
- AN008 Using a Xenon with the Nordic SDK
- AN009 Firmware Examples provides some annotated code examples, including how to effective use sleep modes.
- AN010 Finite State Machines shows some of the ways to effectively structure your code using finite state machines.
- AN011 Publish to Google Sheets shows how you can publish directly to Google G Suite spreadsheets using webhooks.
- AN017 Tracker CAN shows how to use the CAN bus for OBD-II to retrieve engine RPM and other useful techniques you may want to use in your own projects.

TROUBLESHOOTING

- AN003 Interpreting Cloud Debug shows how to interpret cloud debugging logs to troubleshoot various common issues.
- AN004 Interpreting Cloud Debug-2 is a deep dive into interpreting cloud debug logs and cross-referencing the AT command guide for the u-blox modem.
- AN007 Tower Info is a tool for location nearby cellular towers.
- AN014 Tracker I2C Scanner is a version of the I2C scanner application for scanning the I2C bus looking for devices designed to work with the Tracker One M8 connector I2C.

ASSET TRACKING

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Numerical List

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