

# 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/>

# Highlighted 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.

## 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](#)

## 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.

# Numerical List

- [AN001 Basic SoM Design](#)
- [AN002 Device Powerdown](#)
- [AN003 Interpreting Cloud Debug](#)
- [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.
- [AN005 Threading Explainer](#) provides detailed information on using execution threads on Particle devices.
- [AN006 Vehicle Power](#) provides sample designs for powering Particle devices in vehicles.
- [AN007 Tower Info](#) is a tool for location nearby cellular towers.
- [AN008 Using a Xenon with the Nordic SDK](#)