

NXP Smartphone Quick-Jack solution

Turn the audio jack into a multi-purpose, self-powered data port

This hardware/software platform, designed for use with iPhone® and Android® smartphones, is the simplest way to design compact sensor peripherals that use the phone's audio jack for data and power.

KEY FEATURES

- ▶ Complete hardware and software design, ready to customize
 - 32-bit NXP LPC812 microcontroller
 - Battery-free operation
 - Expansion connector for attaching external sensor, switch, or input device
 - Male/audio jack
 - Temperature sensor
 - LEDs
 - Joystick
- ▶ Free, downloadable iPhone and Android apps, with source code

APPLICATIONS

- ▶ Cloud-based tracking of sensor data
- ▶ External input devices to smartphone
- ▶ Wearable health monitors
- ▶ Personal exercise trackers
- ▶ Handheld weather stations
- ▶ Handheld inventory monitors
- ▶ Handheld/portable POS devices
- ▶ Universal remote controls

The NXP Smartphone Quick-Jack solution enables a new generation of peripherals that support data collection and control. Compatible with iPhone and Android platforms, the Quick-Jack solution uses the smartphone's audio jack as the data channel and to provide power to the board. It supports simple, plug-and-play operation, yields a small design, and requires no licensing for development.

Peripherals based on the Quick-Jack solution make it possible for the phone to read sensor data which can then be stored, displayed, and quickly transmitted to the cloud. In a wearable health monitor, for example, the Quick-Jack solution can be used to track a patient's heart rate, blood pressure, and body temperature. Sensor data can be displayed on the phone, for use by the patient, and can also be transmitted to the cloud for use by caregivers.



HOW IT WORKS

A power-efficient LPC812 microcontroller is programmed to transmit and receive data to/from the phone using the audio jack. Transmission uses the familiar Manchester Coding format to ensure convenient, reliable operation. The microcontroller automatically identifies microphone (MIC) and ground (GND), for quick and easy operation. The energy-harvesting block uses the right channel of the audio jack to output a 21.3 kHz sine waveform. The block rectifies the signal and generates a DC output. The Quick-Jack board can also use a button battery for power when the phone isn't available.

QUICK-JACK APPLICATIONS

In a portable weather station, the Quick-Jack solution can record temperature and humidity readings and report them to the cloud. Similar functions can be used for inventory management, when transporting or storing items that need controlled levels of humidity or temperature.

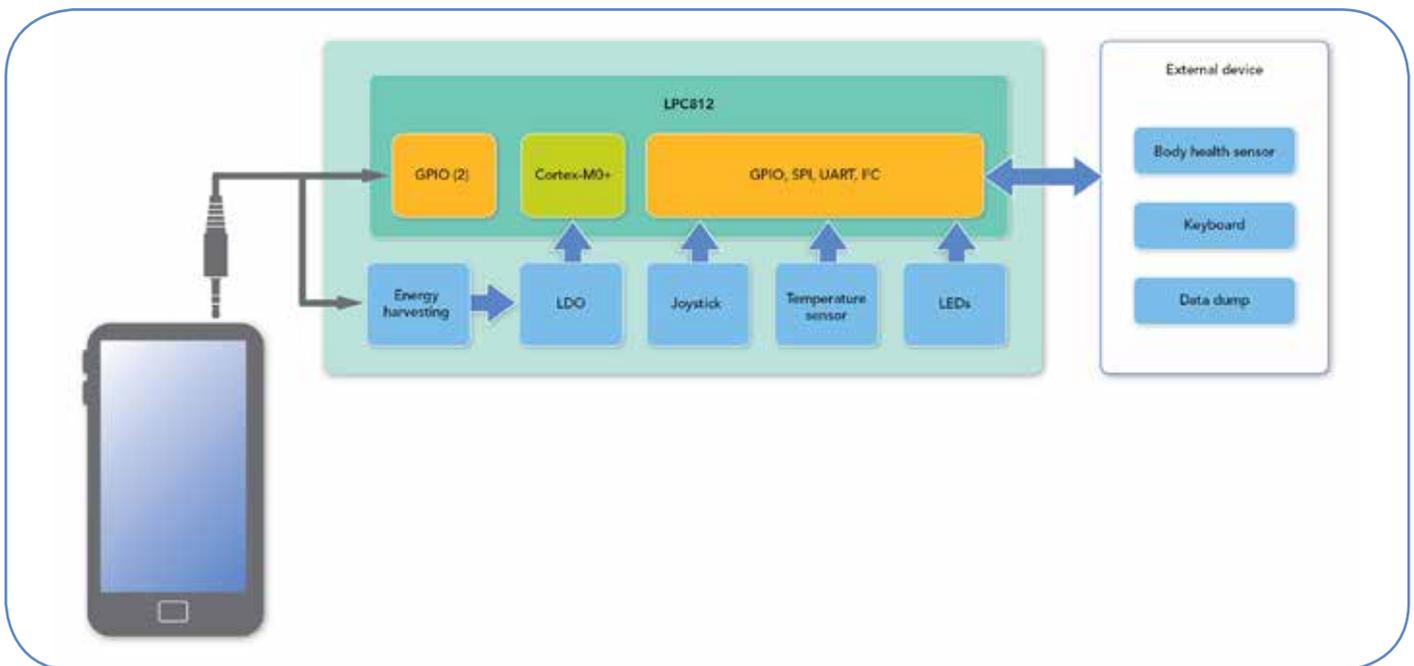
Adding an IR transmitter to the Quick-Jack solution can turn the phone into a universal remote control for use with TVs, DVDs, and stereo amplifiers. The Quick-Jack solution can also be used to connect keyboards, mice, joysticks, and other input devices to the phone.

The free-to-download Quick-Jack app is a simple GUI that provides a starting point for design. It turns external devices on and off, displays the position of the joystick, and displays sensor readings.

WHAT'S INCLUDED

- ▶ Pre-programmed Quick-Jack board
- ▶ Source code for LPC812 MCU
- ▶ Application note and quick-start guide
- ▶ iPhone app and source code
- ▶ Android app and source code
- ▶ Design files

Order number **OM13069**: www.nxp.com/demoboard/om13069



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