

Autonomous wireless multi-sensor node powered by TEG and based on SPV1050 (SPIDeR™)

Product summary

STDES-IDS003V1: SPIDeR™ Autonomous wireless multi-sensor node powered by TEG and based on SPV1050

STDES-ERH001D: Power monitoring board of the kits STDES-IDS003V1 and STDES-IDS002V1

STDES-ERH001V1: TEG harvester (based on SPV1050) and wireless transmission board of the kit STDES-IDS003V1

STDES-ERH002V1: Wireless receiver board of the kits STDES-IDS003V1 and STDES-IDS002V1

SPV1050: Ultra low power energy harvester and battery charger with embedded MPPT and LDOs

STTS751: 2.25 V low-voltage local digital temperature sensor

LPS25H: MEMS pressure sensor: 260-1260 hPa absolute digital output barometer

LIS3DH: 3-axis MEMS accelerometer, ultra-low-power, $\pm 2g/\pm 4g/\pm 8g/\pm 16g$ full scale, high-speed I2C/SPI digital output, embedded FIFO, high-performance acceleration sensor, LLGA 16 3x3x1.0 package

STSW-IDS002V1: GUI for STEVAL-ISV021V1, STDES-IDS002V1 and STDES-IDS003V1

Features

- Autonomous wireless sensor node based on SPV1050 ULP energy harvester and battery charger
- Embedded 3-axis accelerometer, temperature sensor and air pressure sensor to emulate typical use case scenario
- TEG module (mounted on bottom) with heat sink (mounted on top) and magnet
- Lithium coin-cell battery
- User-friendly software GUI for system configuration
- Can be used with STDES-ERH001D power monitoring board to measure and monitor efficiency and other fundamental electrical parameters
- RF receiver board powered by USB

Description

The **STDES-IDS003V1** kit is a complete, fully configurable energy reference design for a wireless sensor node powered by a TEG module mounted on the bottom side. It consists of a fully integrated **STDES-ERH001V1** transmitter board with a temperature sensor (**STTS751**), an air pressure sensor (**LPS25H**) and a 3-axis accelerometer MEMS sensor (**LIS3DH**) powered by the **SPV1050** device. An ST microcontroller and a Sub-1 GHz RF transmitter are also mounted.

The system includes a receiver companion (**STDES-ERH002V1** board based on the **STM32L151**) powered through a USB cable from the PC.

The reference design kit is supported by a user-friendly software GUI (**STSW-IDS002V1**) that is able to display PV module and battery electrical characteristics, conversion efficiency, MPPT accuracy and sensor readings.

Revision history

Table 1. Document revision history

Date	Version	Changes
04-Oct-2018	1	Initial release.
12-Feb-2019	2	Fixed link in Section Description

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