

### Evaluation Kit ATA8520-EK1-E and Extension Boards ATA8520-EK2-E and ATA8520-EK3-E

ATAN0054

#### ATA8520-EK1-E Standalone Kit

The Atmel® ATA8520-EK1-E evaluation kit is for demonstrating Atmel's RF SIGFOX compliant ATA8520D device and includes a

- Single PCBTAB0101A-V3.0 (S8S8520) with
  - Atmel ATA8520D SIGFOX transceiver device
  - Atmel ATmega328P AVR® microcontroller at 8MHz
  - Atmel AT30TS75A temperature sensor with TWI
- 868MHz monopole antenna to be connected to the SMA connector

Figure 1. ATA8520-EK1-E



The devices are preprogrammed, i.e.

- The Atmel® ATA8520D device is preprogrammed with the SIGFOX ID and PAC registration code (see label attached on the PCB) to register the kit within the user's SIGFOX back-end account. (The user has to open an account for the SIGFOX cloud to have access to the back end. For more information, see <http://www.sigfox.com>.)
- The Atmel ATmega328P includes a Flash application to read out the temperature sensor and to control transmission within the SIGFOX network. This requires a SIGFOX base station to be in range to capture the RF telegram.

Not included in the kit is a battery or external power supply for 3.0V to 3.3V at 50mA. This power supply has to be connected to connector X1. (Please observe correct polarity! There is no protection against incorrect polarity!)

The SIGFOX data transmission is repeated at one-hour intervals with the temperature and battery voltage value transmitted as long as the kit is powered. In addition a transmission can be triggered by pressing the SW1 button. The red LED flashes for about 7-8s during transmission of the SIGFOX telegram.

A tool pack for this kit is available for download from <http://www.atmel.com/devices/ATA8520.aspx> and includes

- The ATAN0054 kit quick start guide and ATAN0104 user guide
- The schematic, layout and Gerber data for the ATAB0101A PCB
- The source code for the ATmega328P as an Atmel Studio 6 project

An AVR® debugger (JTAGICE3 or Atmel ICE) and Atmel Studio 6 are required for application development.

The kit is preprogrammed and temperature calibrated to operate at room temperature (24°C). For operation with a wider temperature range a temperature calibration as described in "ATAN0142 - ATA8520D Crystal Calibration" has to be applied. This is mandatory to comply with the CE certification for this kit and is valid for a temperature range of -20°C to +55°C.

## 1. ATA8520-EK2-E and -EK3-E

The Atmel® ATA8520-EK2-E and -EK3-E extension boards are intended for Flash application development for Atmel's RF SIGFOX compliant ATA8520D device and are available in two versions

1. An ATA8520-EK2-E Xplained Mini extension board for Atmel's Xplained Mini or Arduino UNO kit
2. An ATA8520-EK3-E Xplained Pro extension board for the Atmel's Xplained Pro kits

Both extension boards do not include the development kits. This has to be ordered separately.

The boards are preprogrammed and temperature calibrated to operate at room temperature (24°C). For operation with a wider temperature range a temperature calibration as described in "ATAN0142 - ATA8520D Crystal Calibration" has to be applied. This is mandatory to comply with the CE certification for these boards and is valid for a temperature range of -20°C to +55°C.

### 1.1 ATA8520-EK2-E Xplained Mini Extension Board

The ATA8520-EK2-E Xplained Mini extension board is a board for Atmel's Xplained Mini or the Arduino UNO development kit. This kit includes

- A single PCB ATAB0101A-V3.0 (U8S8520) with
  - ATA8520D SIGFOX transceiver device
  - AT30TS75A temperature sensor with TWI
  - Four shield connectors and SMA connector
- 868MHz monopole antenna to be connected to the SMA connector
- 4 connectors for Xplained Mini kit

The kit does not include the Xplained Mini or Arduino UNO development kit and the four connectors for the Xplained Mini to connect to the ATAB0101A PCB. These must be ordered separately. [Figure 1-1](#) shows the ATAB0101A PCB with attached external antenna.

**Figure 1-1. ATA8520-EK2-E Xplained Mini Shield**



The Atmel ATA8520D device is preprogrammed with the SIGFOX ID and PAC registration code (see label attached on the PCB) to register the kit within the user's SIGFOX back-end account. (The user has to open an account for the SIGFOX cloud to access the back end. For more information, see <http://www.sigfox.com>.)

A sample application is supplied with the tool pack zip folder for the Xplained Mini and Arduino UNO. This application reads the temperature sensor and controls transmission within the SIGFOX network. This requires a SIGFOX base station to be in range to capture the RF telegram.

A tool pack zip folder for this kit is available for download from <http://www.atmel.com/devices/ATA8520.aspx> and includes

- The ATAN0054 kit quick start guide and ATAN0104 user guide
- The schematic, layout and Gerber data for the ATAB0101A PCB
- The source code for the Xplained Mini with ATmega328P as an Atmel Studio6 project
- An Arduino UNO sketch with ATA8520D library for the Arduino IDE

Atmel Studio 6 must be installed before connecting the Xplained Mini kit. See additional instructions provided with the Xplained Mini kit. No additional debugger is required because this is integrated on the Xplained Mini. The Xplained Mini also provides a virtual COM port which is used by the Flash application together with a PC terminal application (TeraTerm, HTerm, etc.) to print or read ASCII messages. Use the following COM port settings for communication: 38.4kBaud, 8bit, 1 stop, no parity.

Instead of the Xplained Mini kit, an Arduino UNO kit can be used together with the Arduino IDE for application development. The ATA8520D library is included together with a sample sketch application for this environment.

## 1.2 ATA8520-EK3-E Xplained Pro Extension Board

The ATA8520-EK3-E Xplained Pro extension is an extension board for Atmel®'s Xplained Pro development kits. Included in this kit are a

- Single PCB ATAB0101A-V3.0 (P8S8520) with
  - ATA8520D SIGFOX transceiver device
  - AT30TS75A temperature sensor with TWI
  - Xplained Pro and SMA connector
- 868MHz monopole antenna to be connected to the SMA connector

The Xplained Pro development kit is not included and must be ordered separately. [Figure 1-2](#) shows the ATAB0101A PCB attached to a SAMD21 Xplained Pro kit.

**Figure 1-2. ATA8520-EK3-E Xplained Pro Extension**



The Atmel ATA8520D device is preprogrammed with the SIGFOX ID and PAC registration code (see label attached on the PCB) to register the kit within the user's SIGFOX back-end account.

A sample application is supplied with the tool pack zip folder for the SAMD21 Xplained Pro. This application reads the temperature sensor and controls transmission within the SIGFOX network. This requires a SIGFOX base station to be in range to capture the RF telegram.

A tool pack zip folder for this kit is available for download from <http://www.atmel.com/devices/ATA8520.aspx> and includes

- The ATAN0054 kit quick start guide and ATAN0104 user guide
- The schematic, layout and Gerber data for the ATAB0101A PCB
- The source code for the Xplained Pro with SAMD21 as an Atmel Studio6 project

Atmel Studio 6 must be installed before connecting the Xplained Pro kit. See additional instructions provided with the Xplained Pro kit. No additional debugger is required because this is integrated on the Xplained Pro. The Xplained Pro also provides a virtual COM port which is used by the Flash application together with a PC terminal application (TeraTerm, HTerm, etc.) to print or read ASCII messages. Use the following COM port settings for communication: 38.4kBaud, 8bit, 1 stop, no parity.

## 2. SIGFOX Kit Activation

The evaluation kit and extension boards include a one year SIGFOX platinum level subscription fee with

- support for the ETSI version of the kit (for Europe)
- up to 140 up-link messages per day and device
- up to 4 down-link messages per day and device (not supported with this kit)

To activate the device and the kit send an email with the device ID no. to [subscribe@sigfox.com](mailto:subscribe@sigfox.com) to get the access information for the SIGFOX backend server. Within the SIGFOX backend server the kit can be registered using the ID and PAC code printed on the PCB (leave the certification no. empty). In addition the device data send to the SIGFOX cloud can be retrieved following the help information which is available after login.

### 3. Revision History

Please note that the following page numbers referred to in this section refer to the specific revision mentioned, not to this document.

| Revision No.      | History                                                                                                                                                                                                                                                                             |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9371F-INDCO-11/15 | <ul style="list-style-type: none"><li>• Section “ATA8520-EK1-E Standalone Kit” on page 2 updated</li><li>• Section 1 “ATA8520-EK2-E and -EK3-E” on page 3 updated</li></ul>                                                                                                         |
| 9371E-INDCO-10/15 | <ul style="list-style-type: none"><li>• ATAK55002-V1 to ATA8520-EK1-E renamed</li><li>• ATAK55002-V2 to ATA8520-EK2-E renamed</li><li>• ATAK55002-V3 to ATA8520-EK3-E renamed</li></ul>                                                                                             |
| 9371D-INDCO-09/15 | <ul style="list-style-type: none"><li>• Section 1.1 “ATA8520D-EK2 Xplained Mini Extension Board” on page 3 updated</li><li>• Section 1.2 “ATA8520D-EK3 Xplained PRO Extension Board” on page 4 updated</li></ul>                                                                    |
| 9371C-INDCO-07/15 | <ul style="list-style-type: none"><li>• Section 1.1 “ATAK55002-V2 Xplained Mini Extension Board” on page 3 updated</li><li>• Section 1.2 “ATAK55002-V3 Xplained PRO Extension Board” on pages 4 to 5 updated</li><li>• Section 2 “SIGFOX Kit Activation” on pages 6 added</li></ul> |
| 9371B-INDCO-02/15 | <ul style="list-style-type: none"><li>• Title on page 1 updated</li><li>• Figure 1 “ATAK55002-V1” on page 1 updated</li><li>• Section 1 “ATAK55002-V2 and -V3” on pages 3 to 4 updated</li></ul>                                                                                    |



Atmel Corporation 1600 Technology Drive, San Jose, CA 95110 USA T: (+1)(408) 441.0311 F: (+1)(408) 436.4200 | [www.atmel.com](http://www.atmel.com)

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