

# UM11542

## Pedometer component user manual

Rev. 1 — 27 January 2021

User manual

### Document information

Information	Content
Keywords	Component Library, Pedometer
Abstract	Getting started with pedometer component



## 1 Prerequisites

Prior to using this platform agnostic pedometer component library to integrate the pedometer component, this document assumes user familiarity with the:

- User-specific microcontroller unit (MCU).
- Corresponding software development kit (SDK).
- Cross-compilation tool chain.

## 2 Overview

The goal of a pedometer is to track the number of steps taken. Pedometers also measure the distance a person travels by walking. The pedometer component library provides platform independent and low-power utilities for step count and distance traveled features. This module integrates seamlessly to any MCU platform and SDK.

### 2.1 Pedometer design

The pedometer component is designed for and caters to the platform independent design philosophy. The component has two main two entities, the interface and core components. The interface abstracts the core feature from the application and provides the platform independent abstraction for counting steps and measuring distance traveled. The core component implements the pedometer algorithm based on the accelerometer signature and provides the algorithm-specific configuration, and execution logic. The execution logic runs on the frequency of the accelerometer input and extracts the pedometer signature. The core feature is included in the library or source form whereas the interface modules are available as source files. It runs as a standalone application in the application space or runs in a multi-threaded environment. The user application is responsible for the multi-threading synchronization and resource handling. It is designed to work seamlessly in any SDK environment and application resource handlers.

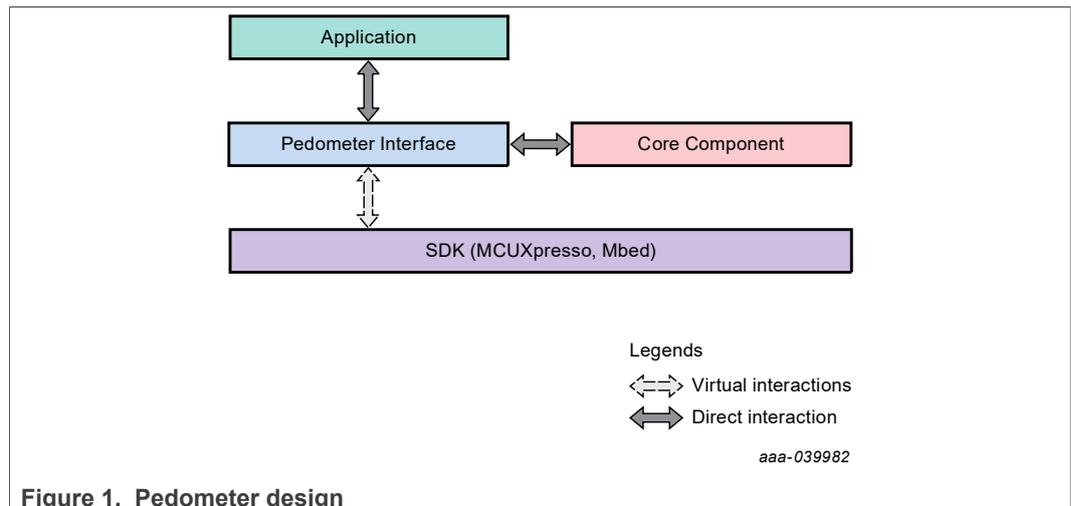


Figure 1. Pedometer design

## 3 Pedometer component integration

The pedometer component design is microcontroller agnostic. This section describes the development steps to integrate the pedometer component into any microcontroller

software development kit (SDK). The interface functions are distributed as sources files. The user can simply take the source files and compile into any platform. All the source files are agnostic to SDK's, RTOS and MCU. It can be built along with the target application software stack and tool chain. The core component in the pedometer is in the form of library. However, it must be built for a specific, targeted platform to integrate into application. NXP has built the core for ARM M4 and it is available along with the pedometer package. ARM M4 support can be extended to any platform based upon request.

### 3.1 Pedometer component content overview

This section provides a brief overview of the angle calculation component source file contents and file descriptions.

```
Algorithms/
  Pedometer/
    |-- src1
    |   |-- pedometer_interface.c2
    |   |-- pedometer_interface.h3
    |   |-- pedometer_config.h4
    |   |-- pedometer_defines.h5
    |   |-- KeynetikPedometer6
    |-- Lib
    |   |-- libpedometerm4.a7
    |-- example8
    |   |-- MCUXpresso9
    |       <project_name>10
    |-- docs11
    |   |-- CompLib_Pedometer_UG.docx12
    |   |-- Pedometer_API_Reference_Manual.zip13
```

<sup>1</sup>Folder containing pedometer component source files.

<sup>2</sup>Files containing pedometer interface implementation.

<sup>3</sup>Files containing pedometer interface definitions.

<sup>4</sup>Files containing pedometer configuration definitions.

<sup>5</sup>Files containing pedometer common definitions.

<sup>6</sup>Files containing pedometer core component definitions.

<sup>7</sup>Pedometer library for ARM M4 core.

<sup>8</sup>Folder containing angle calc integration example with MCUXpresso SDK.

<sup>9</sup>Components libraries are provided with the NXP MCUXpresso SDK integration example application. The integration test example applications demonstrate how to integrate platform agnostic component libraries with underlying microcontroller SDK communication interfaces using virtual interface abstraction provided by component libraries.

<sup>10</sup>Folder containing pedometer integration example for with MCUX.

<sup>11</sup>Folder containing release documentation for Pedometer component.

<sup>12</sup>Pedometer Component user manual.

<sup>13</sup>Pedometer Component API RM.

**Note:** Before importing component library example projects for the standalone MCUXpresso IDE, the MCUXpresso IDE requires the corresponding microcontroller SDK package to be downloaded and installed on the IDE.

## 4 Revision history

Table 1. Revision history

Revision number	Date	Description
1	20210127	Initial release

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