Product Document

Published by
ams OSRAM Group

User Guide

UG001048

TMF8828

Arduino Demo Kit User Guide

Demo Hardware and Software

v1-00 • 2023-May-22

Content Guide

1 Introduction

This document describes the TMF8828 Arduino Demo kit. It explains how to set up the hardware and how to install and use the provided software.

1.1 Kit Content

Arduino Uno Shield Evaluation Kit for TMF8828.

1.2 Ordering Information

Ordering Code	Description
TMF882X-SHIELD	Arduino Uno Shield Evaluation Kit for TMF8828

2 Getting Started

- Attach the shield board to the Arduino Uno R3.
- Connect the Arduino Uno R3 to your laptop (running Windows 10 or Windows 11) with an USB 2.0 Type-A to USB Type-B cable (not included).
- Open the TMF8828 Arduino firmware / sketch (available on the ams OSRAM website) with the Arduino IDE.
- Compile the TMF8828 Arduino firmware / sketch and upload it to the Arduino Uno R3.
- Close the Arduino IDE.
- Install the TMF8828 Arduino Demo GUI (available on the ams OSRAM website).
- Start the TMF8828 Arduino Demo GUI.
- The GUI should automatically select the correct COM port to connect the Arduino Uno R3.

Information

This demo works with TMF8828 Arduino firmware / sketch version 7 onwards.

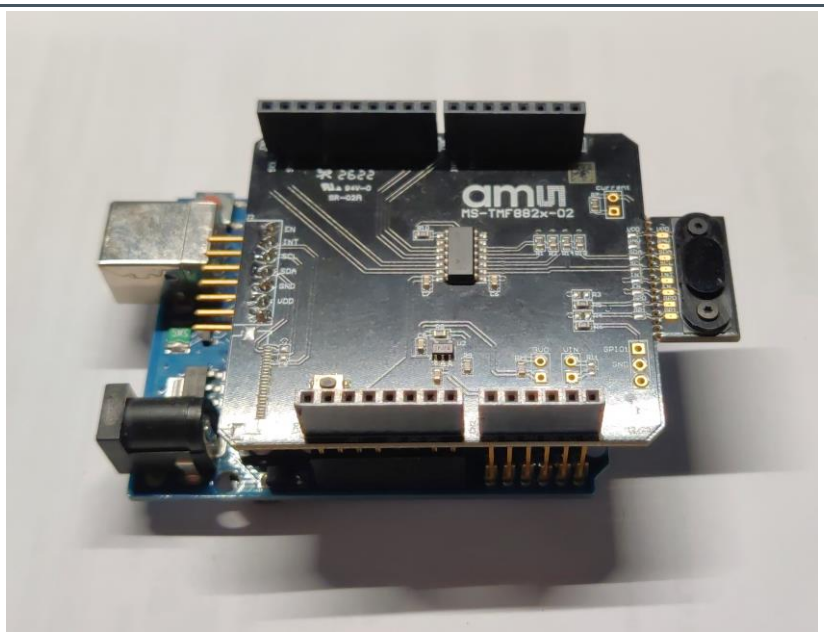
Information

Please also read the “TMF882X-SHIELD Quick Start Guide” and the “TMF882X Shield Board Crosstalk” application note. Both are available on the ams OSRAM website.

3 Hardware Description

Figure 1:
Arduino Uno Shield Evaluation Kit for TMF8828 (TMF882X-SHIELD)

Figure 2:
Assembled TMF8828 Arduino Demo with Arduino Uno R3



4 Software Description

4.1 Graphical User Interface

4.1.1 Main Window / 2D Tab

Figure 3:
Main Window / 2D Tab Color Mode

The “Control” box allows the user to select the number of measurement iterations for each distance measurement in three discrete steps. The higher the number of iterations the lower the update rate of the measurement visualization in the 2D tab or the 3D tab. Please see the FPS indicator in the lower right corner.

The GUI also features a de-scattering filter that removes “ghost images” caused by the optical setup of the TMF8828. The user can enable or disable the filter and adjust the filter coefficient.

The 2D tab shows the measurement data for up to two objects per zone in the sensor field-of-view. The user can select if only one object should be shown with the corresponding check box.

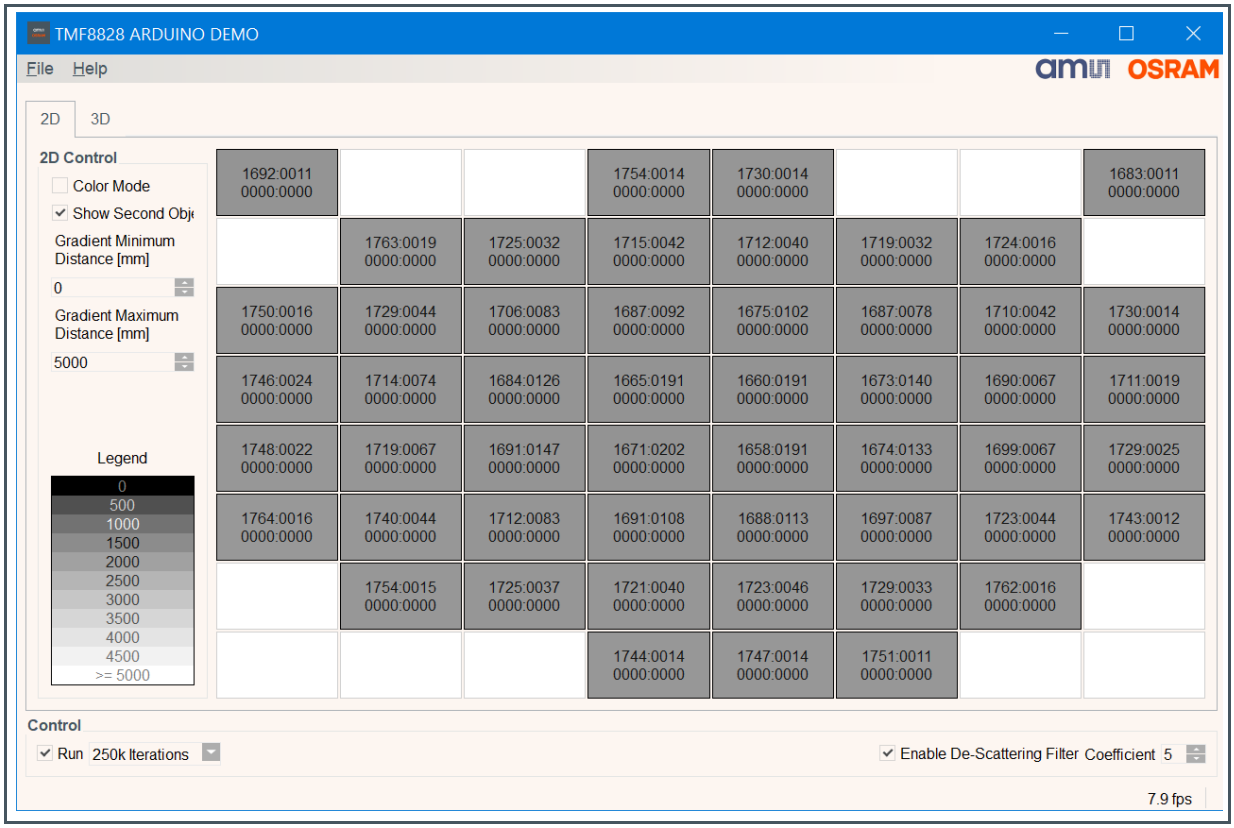
In color mode, only the distance is visible. In grayscale mode, each object is represented by a tuple of distance and confidence.

The GUI also uses the distance of the first object (the one closer to the sensor) to color the background of each zone. Please see the legend to find out which color / shade of gray represents which distance.

Use the spin boxes “Gradient Minimum Distance” and “Gradient Maximum Distance” to adjust the color / grayscale representation to your needs.

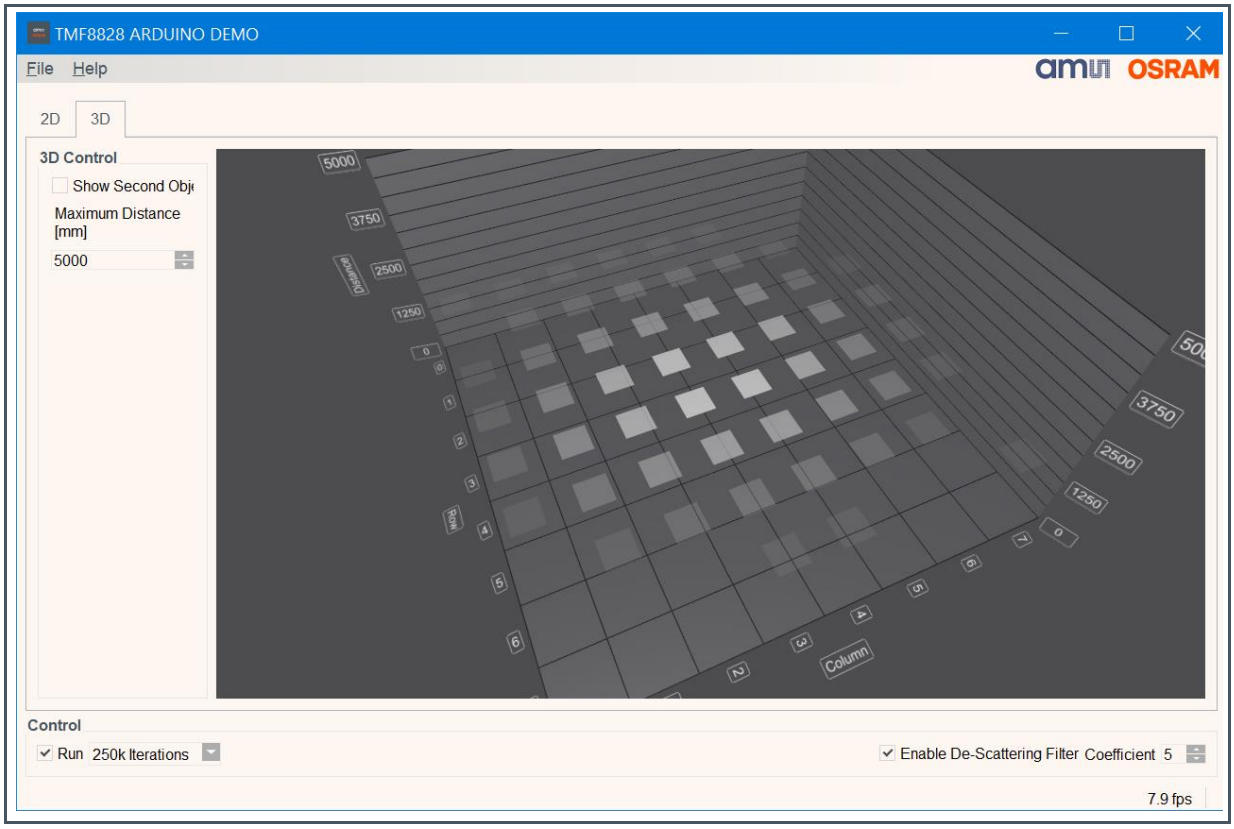
In color mode, the confidence level for the object detection also effects the zone background color. The higher the confidence the higher the color saturation. Objects with low confidence cause paler zone backgrounds. The GUI only shows the confidence as number in grayscale mode. It does not affect the cell background.

Figure 4:
Main Window / 2D Tab Grayscale Mode



4.1.2 3D Tab

Figure 5:
3D Tab



This graph shows all the zones in the field-of-view of the TMF8828 sensor in pseudo-3D space.

The rectangles show the distance of the objects (one or two as selected by the user). The rectangle transparency visualizes the object detection confidence.

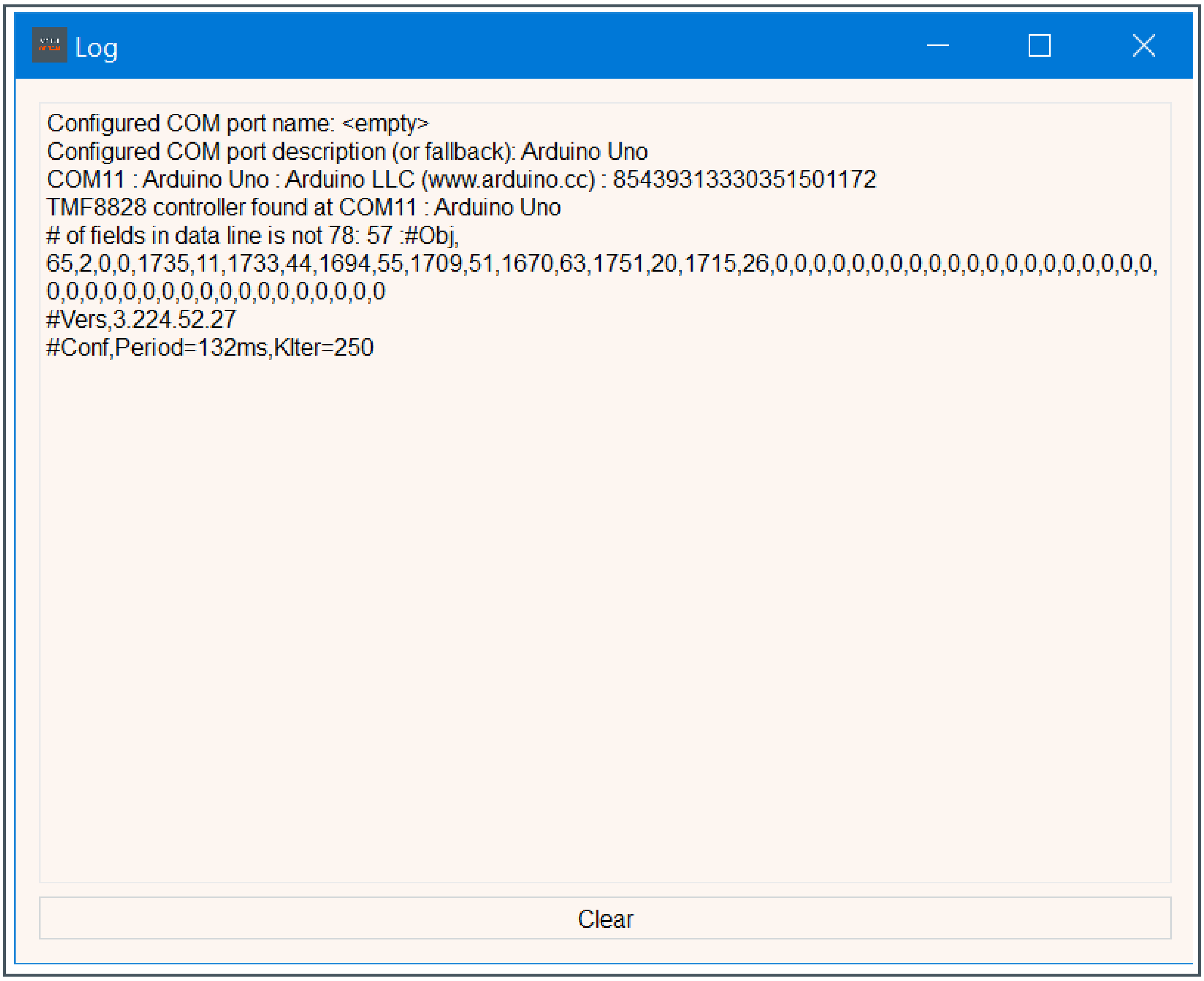
Restrict the range of the displayed distances with the control “Maximum Distance [mm]”.

You can freely rotate and zoom this graph with your mouse:

- Click and hold the right mouse button when the mouse pointer hovers above the graph.
- Now move the mouse around and observe how the graph rotates.
- Use the mouse scroll well to zoom in and out.

4.1.3 Log Window

Figure 6:
Log Window



Use the main menu to open the log window. It displays all found COM ports and where the GUI was able to find the TMF8828 controller (Arduino Uno).

The log window also shows error messages when parts of the data sent from the Arduino via UART were corrupt. The GUI usually skips the faulty data and continues to decode the data of the following measurements.

Information

It is possible that the UART communication between Arduino and GUI locks up completely. In that case, please close and re-open the GUI.

4.1.4 Manual COM Port Configuration

The demo GUI keeps its settings in the file %APPDATA%\ams AG\TMF8828 ARDUINO DEMO.ini

This file usually looks like this:

```
[General]
COM_PORT_DESCRIPTION=Arduino Uno
COM_PORT_NAME=
CONFIGURATION=0
```

The GUI looks for a COM port with the description configured in the first line. The description defaults to “Arduino Uno” to work out of the box with an Arduino Uno R3. You can replace this description to work with other Arduino boards.

You can override the automatic COM port selection and directly specify the correct port with the second line. This will for e.g. look like this for port COM11.

```
[General]
COM_PORT_DESCRIPTION=
COM_PORT_NAME=COM11
CONFIGURATION=0
```

Information

Do not modify the 3rd line for the currently used configuration.

Information

If the configuration file is broken, you can safely delete it. The GUI will create a default configuration file at the next startup.

4.2 Arduino Firmware

The TMF8828 Arduino firmware / sketch is available on the ams OSRAM website. Please follow the instructions included with the firmware in the file readme.md.

5 Revision Information

Changes from previous version to current revision v1-00	Page
Initial production version	

- Page and figure numbers for the previous version may differ from page and figure numbers in the current revision.
- Correction of typographical errors is not explicitly mentioned.

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