PAT9136KS: Sensor Kit User Guide

General Description

This User Guide provides information for the PAT9136KS Sensor Kit. With this guide, together with the hardware, user will be able to evaluate and operate the PAT9136E1-TXQT.

Kit Content

Kit	No.	Item	Version	Quantity
PAT9136KS Sensor Kit Kit Version: 1.1.0	1	PAT9136KS Sensor Kit	Rev1.0	1

Ordering Information

Part Number	Description
PAT9136KS	PAT9136E1-TXQT's Sensor Kit
PAT9136E1-TXQT	Optical Tracking Chip

RoHS compliant

For any additional inquiries, please contact us at https://www.pixart.com

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1.0 Introduction

1.1 System Overview

The PAT9136KS Sensor Kit contains a PAT9136E1-TXQT sensor that is soldered onto a small-sized PCB. The PAT9136KS Sensor Kit also includes a 3D printed fixture with 1.10mm thick cover glass affixed over the PAT9136 sensor. Refer to sensor's datasheet section 4.5, Recommended Protective Cover Characteristic, for details.

Figure 1. Sensor Kit Top and Bottom view

1.2 System Block Diagram

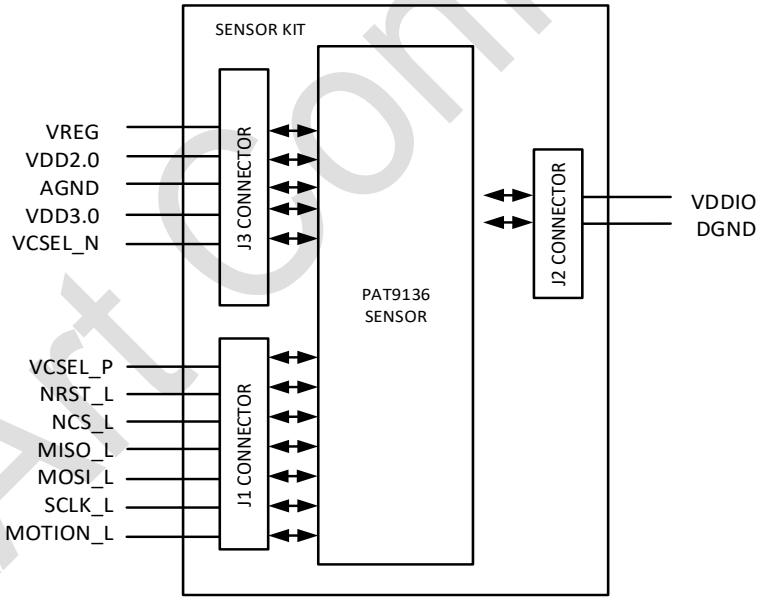

Figure 2. System Block

1.3 Relevant Information

No.	Item	Version
1	PAT9136E1-TXQT: Optical Tracking Chip Datasheet	0.83
2	PAT9136KD-C: Design Kit User Guide	1.3

2.0 Board Design

2.1 Schematic

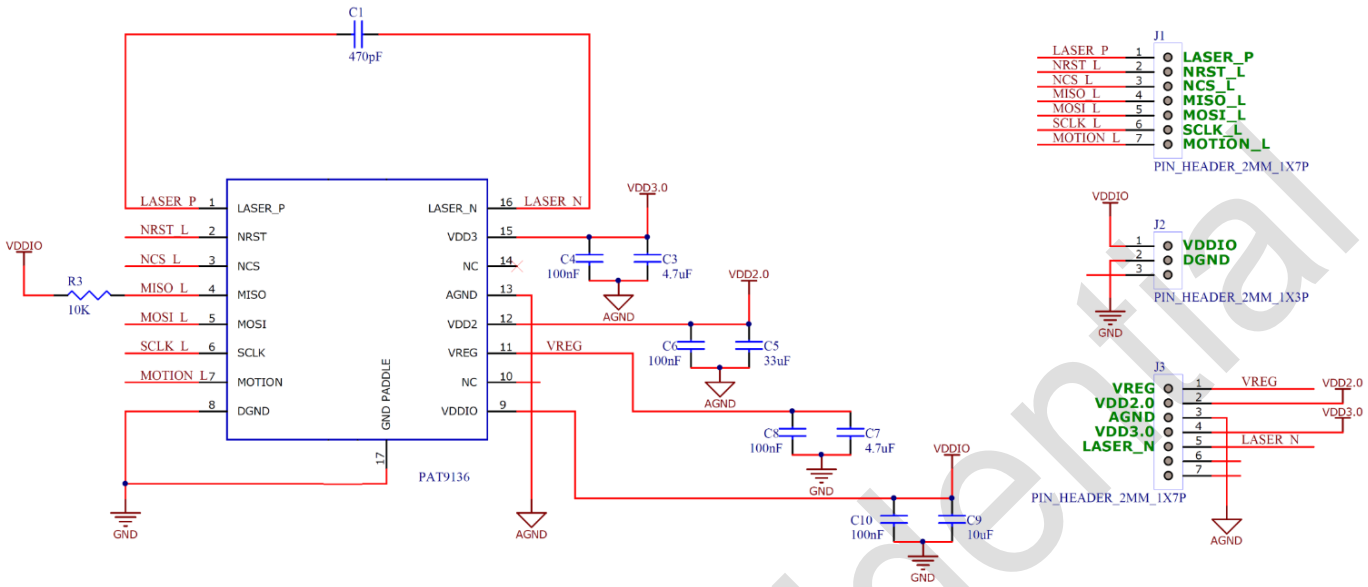

Figure 3. Sensor Kit Schematic

2.2 PCB Layout

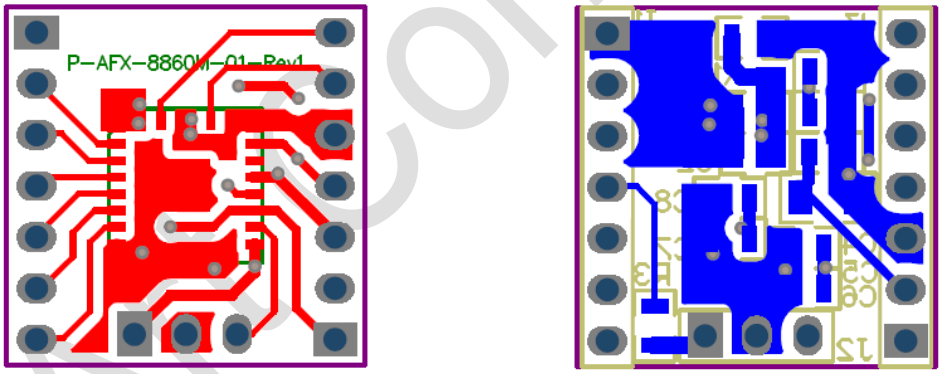

Figure 4. Sensor Kit PCB Top and Bottom View

3.0 Board Setup

3.1 Basic Requirement

The Sensor Kit has 3 rows of standard 16pins header J1, J2 and J3. The pin labels are as shown in Figure 5. Sensor Kit with Header Pin Label.

Table 1. Header Pin Label Description

Function	Pin No.	Signal Name	IC Signal Name	Type	Description
J1	1	VCSEL_P*	VCSEL_P	Input	Laser Anode
	2	NRST_L	NRST	Input	Hardware reset (Active low)
	3	NCS_L	NCS	Input	Chip select (Active low)
	4	MISO_L	MISO	Output	Serial data output
	5	MOSI_L	MOSI	Input	Serial data input
	6	SCLK_L	SCLK	Input	Serial data clock
	7	MOTION_L	MOTION	Output	Motion interrupt (Active low)
J2	1	VDDIO	VDDIO	Power	I/O reference voltage
	2	DGND	DGND	Ground	Digital Ground
	3	NC	NC	-	No connection
J3	1	VREG	VREG	Power	Internal voltage output
	2	VDD2.0	VDD	Power	Input power supply
	3	AGND	AGND	Ground	Analog Ground
	4	VDD3.0	VDD_VCSEL	Power	Input power supply
	5	VCSEL_N*	VCSEL_N	Ground	Laser Cathode
	6	NC	NC	-	No connection
	7	NC	NC	-	No connection

Note*: VCSEL_P and VCSEL_N should not be connected to any other signals.

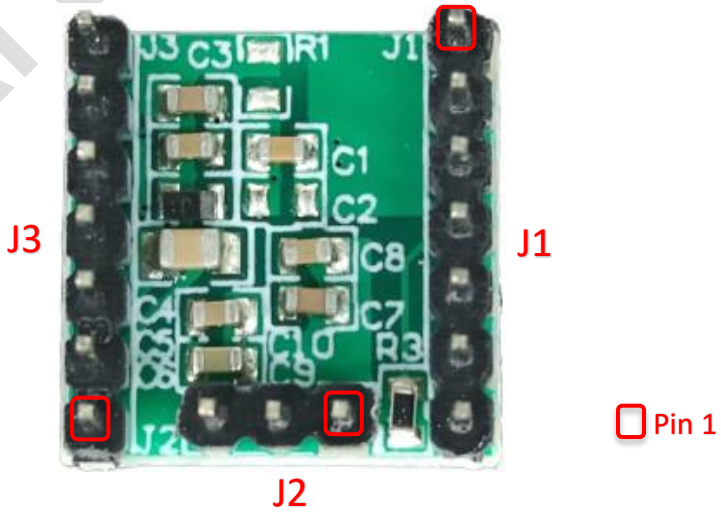

Figure 5. Sensor Kit with Header Pin Label

Attachment

No.	File Name	Description	Version
1.	P-AFX-8860M-01-Rev1.DXF	Drawing Exchange Format of the Sensor Kit	1.0

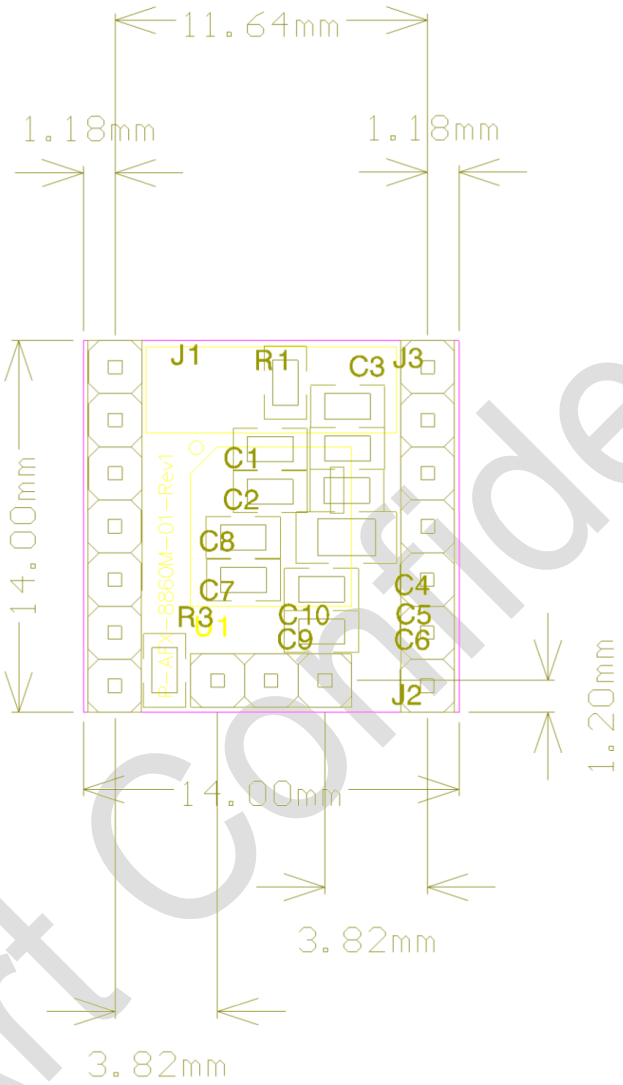

Figure 6. Attachment 1 thumbnail

Revision History

Revision Number	Date	Description
1.0	4 Aug 2021	Initial release
1.1	18 Mar 2022	Change photo of sensor board with 3D fixture and cover glass. Added description of 3D fixture and cover glass in section 1.1
1.2	30 Jan 2023	Added Attachment of DXF drawing for Sensor Kit
1.3	27 June 2024	Section 1.1: Revised the protective cover reference to chip's datasheet. Figure 2: Revised sensor kit's pin names. Table 1. Header Pin Label Description: Revised the table to include IC signal name and added note for VCSEL_P and VCSEL_N not to be connected to any other signals