# Installation Guide
## 2D Image Scan Module

## Revision History

Changes to the original manual are listed below:

| Version | Date | Description of Version |
|---------|------|------------------------|
| 1.0 | 2020/08/20 | Initial release |

# Important Notice

No warranty of any kind is made in regard to this material, including, but not limited to, implied warranties of merchantability or fitness for a particular purpose. We are not liable for any errors contained herein or incidental or consequential damages in connection with furnishing, performance or use of this material.

No part of this document may be reproduced, transmitted, stored in a retrieval system, transcribed, or translated into any language or computer language in any form or by any means electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without express written consent and authorization.

We reserve the right to make changes in product design without reservation and without notification. The material in this guide is for information only and is subject to change without notice.

All trademarks mentioned herein, registered or otherwise, are the properties of their various respective owners.

**For CE-countries**
This scanner is in conformity with CE standards. Please note that an approved, CE-marked power supply unit should be used in order to maintain CE conformance.

**Guidance for Printing**
1. This manual is in A5 size. Please double check your printer setting before printing it out.
2. When printing barcodes for programming, the use of a high-resolution laser printer is strongly suggested for the best scan result.

# Table of Contents

# Introduction

High scanning speed without compromising performance, the device is a powerful 2D image scan engine that easily decodes most 1D and 2D barcodes with intuitive aiming accuracy. It also supports standard serial, USB interface that can be easily integrated with most hardware platform. The compact dimension makes installation effortless even in the most space-constrained products, including mobile computers, kiosks, lottery machine and more. The device is the perfect solution for many industries.

• Ultra small size
• No separate decoder board required
• Flexible interface communications
• Outstanding 1D and 2D scanning performance
• Captures barcodes on mobile phone, tablet, or computer screens

# Scan Angles

See the following illustrations for the effective barcode reading angles.

38.6°

24.9°
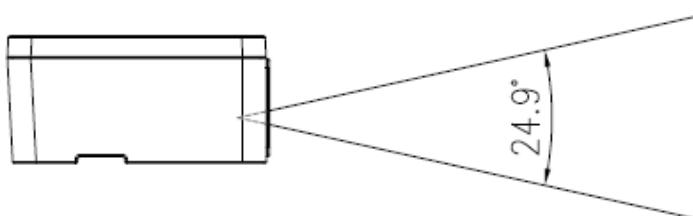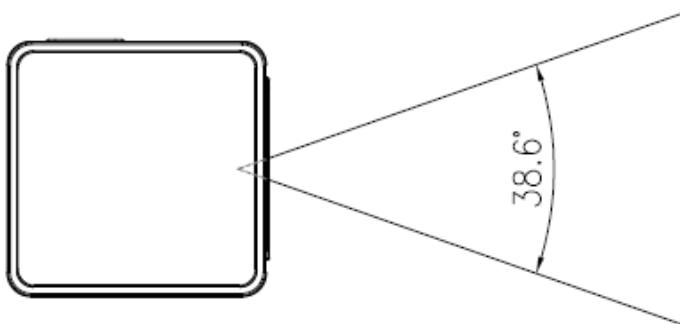
# Scan Zone

The effective reading distance for the scanner is illustrated as below.



| | | Code 39 (5mil) | |
|---|---|---|---|
| | 16.0 | | 6.0 |
| | | UPC/EAN (13mil) | |
| | 28.0 | | 4.0 |
| | | PDF417 (6.7mil) | |
| | 20.0 | | 6.0 |
| | | DataMatrix (10mil) | |
| | 20.0 | | 5.0 |
| | | QR Code (20mil) | |
| | 30.0 | | 4.0 |

| cm. | 40 | 35 | 30 | 25 | 20 | 15 | 10 | 5 | 0 |
|---|---|---|---|---|---|---|---|---|---|
| In. | 15.75 | 13.78 | 11.81 | 9.84 | 7.87 | 5.91 | 3.94 | 1.97 | 0 |
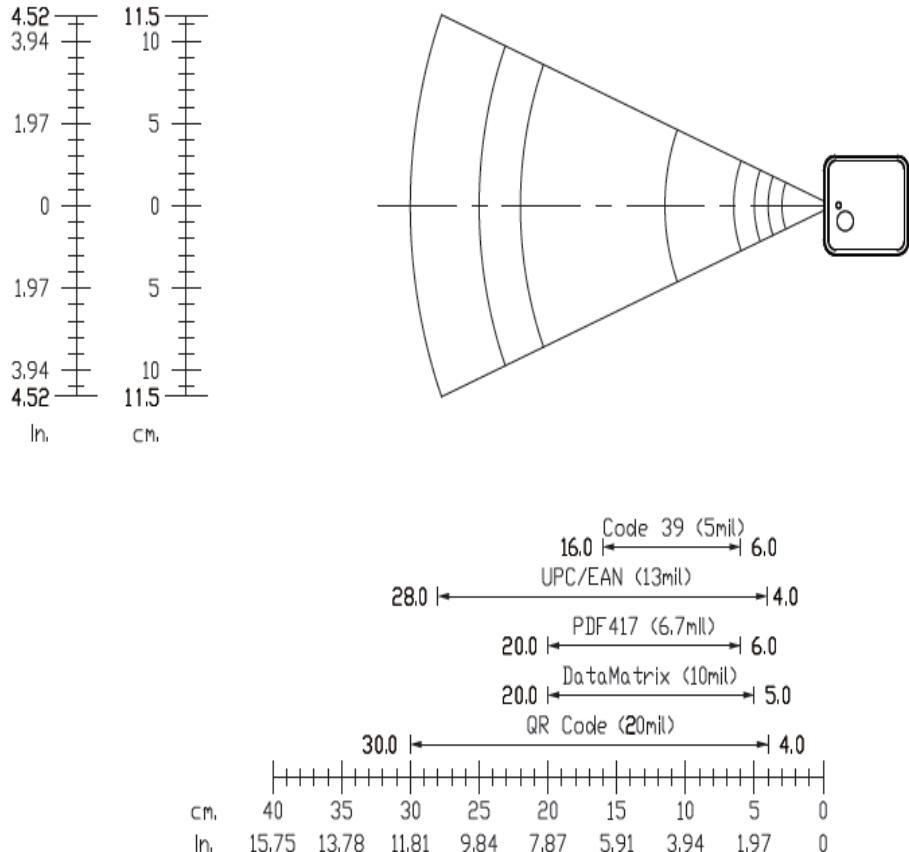
> Different quality and density of a barcode could effect it's decode depth of field. Usually when a barcode has poor printing quality or high density, the depth of field would be shorter. It is highly suggested not place the barcode label at the extremes of depth of field as it is often easy to move out from the reading range.

---

Z-5132 Image Scan Module

# Installation

## Mounting

In this section, we will introduce how to mount the scan engine into your design.

At the back of scan engine, there are two screw holes reserved for mounting, the scan engine can be fixed in any position and any angle without any degradation in performance. And to ensure the scanner reaches its best performance, the following points need to be noticed when mounting the scanner:

To avoid direct sunlight or any other bright light source illuminating.

When placing the barcode label, one must be careful not to over tilt, skew and/or pitch the barcode.

To avoid putting the scanner in specula reflection position, the CMOS sensor will not sense the reading of any barcodes if the LED light reflects straight back.

The barcode must be placed within the effective depth of field (D.O.F.) area, the effective reading distance for the barcode from the scanner. Its theory is like a camera, if the object is placed within the focal range, and the image appears clearly.    But if the object is outside the focal range, the image then is blurred.    And different quality and density of barcodes could affect its D.O.F.; usually a lower piece or high density of barcode, its depth of field is shorter.    It is suggested to avoid using depth of field extremes range, barcode is easily moved away from the reading range.

For best placing position, please refer to the Decode Depth of Field drawing.

Thermal Considerations

Electronic components in the Z-5132 will generate heat during the course of their operation. Operating the Z-5132 in continuous mode for an extended period may cause temperatures to rise on MPU and decoder chip. Overheating can degrade image quality and affect scanning performance. Given that, the following precautions should be taken into consideration when integrating the Z-5132.

1. Reserve sufficient space for good air circulation in the design.
2. Avoid wrapping the Z-5132 with thermal insulation materials such as rubber.
3. Increase the thermal strategy to reduce the scanning engine continuous operating temperature.

**Dimensions**:

## Structure Outline:

Trigger
Button

LED Indicator
(Blue LED)

Interface connector:

Micro USB

IR detect
Sensor

Illumination
Element

Optical
Sensor

Aiming
Element

Buzzer

Mounting Hole

(same as Z-5652)
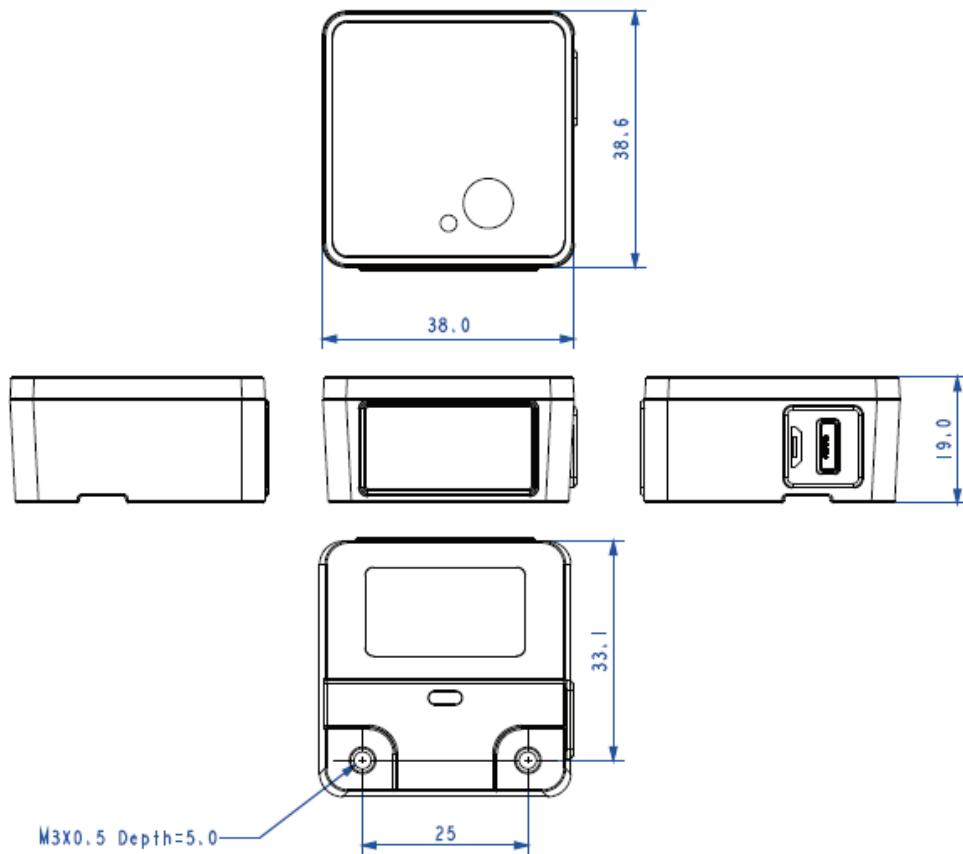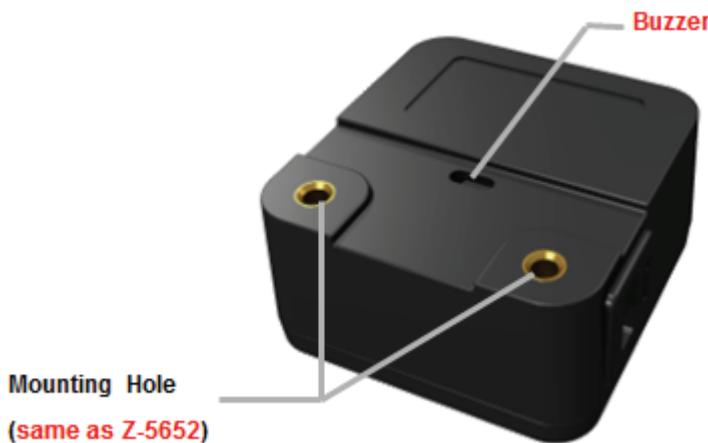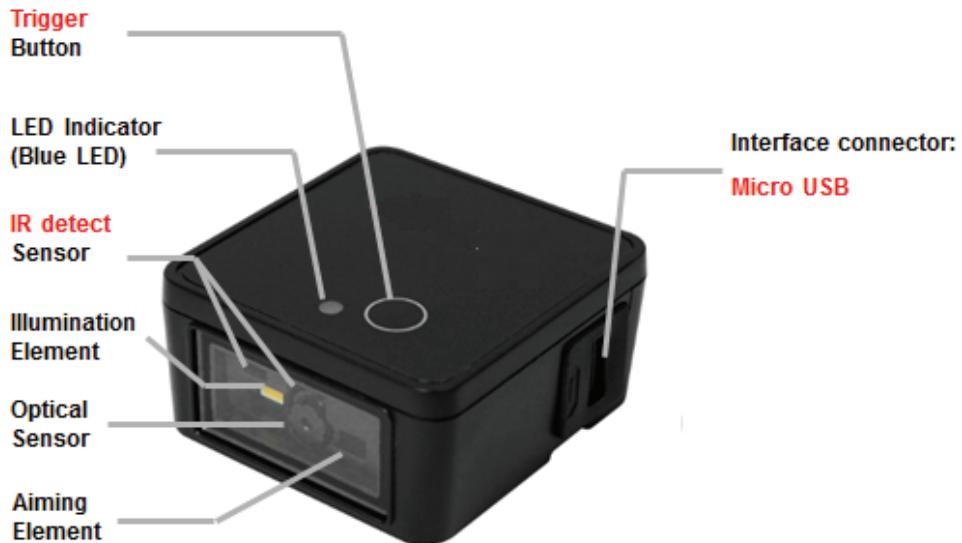
# External Front Window Angle and Distance

Suggest as below:
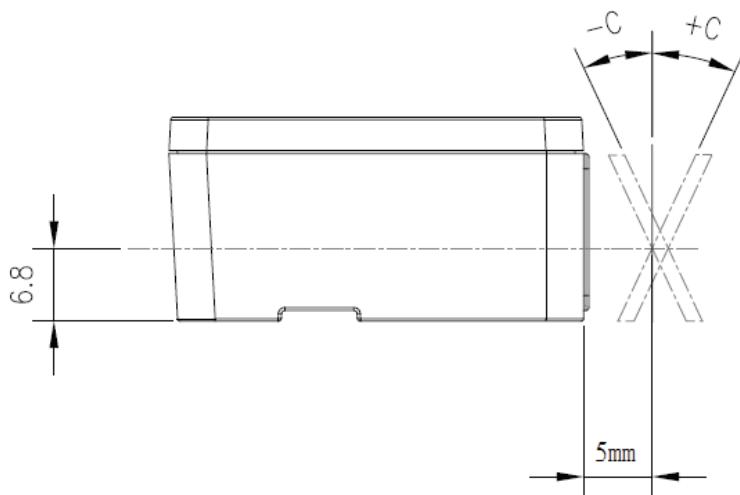
| External Window Spec | | | Min Angle (+C) (-C) |
|---|---|---|---|
| **Material** | **Thickness (mm)** | **Coating** | |
| Acrylic | 3mm | N | 27 |
| Acrylic | 5mm | N | 25 |
| Acrylic | 10mm | N | 15 |
| Glass | 3mm | N | 27 |
| Acrylic | 3mm | 2 side | 7 |

---

# Design Reference

## Case 1: Reading QR code on Phone Screen

To read QR code on the mobile phone, place the module downward for scanning.

Suggest distance as below:



125.0

Unit:mm
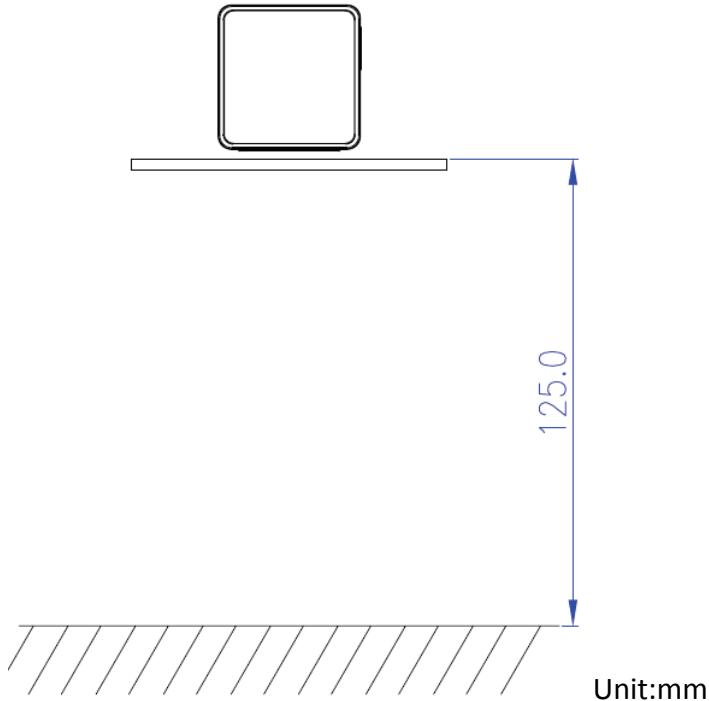
Suggest Parameter: change to Phone mode for optimised results

Phone Mode

# Case 2: Large Window for ID cards Reading

A reflective mirror can be used to achieve a good reading of the QR code on the ID card and mobile phone.

The reference design is as follows and attached files:
Z-5132_refract_module .stp
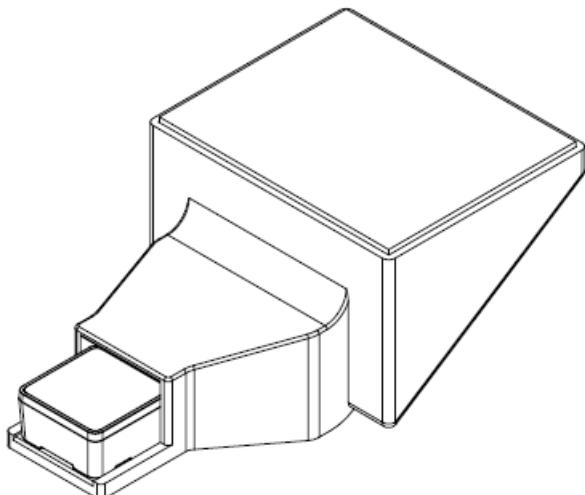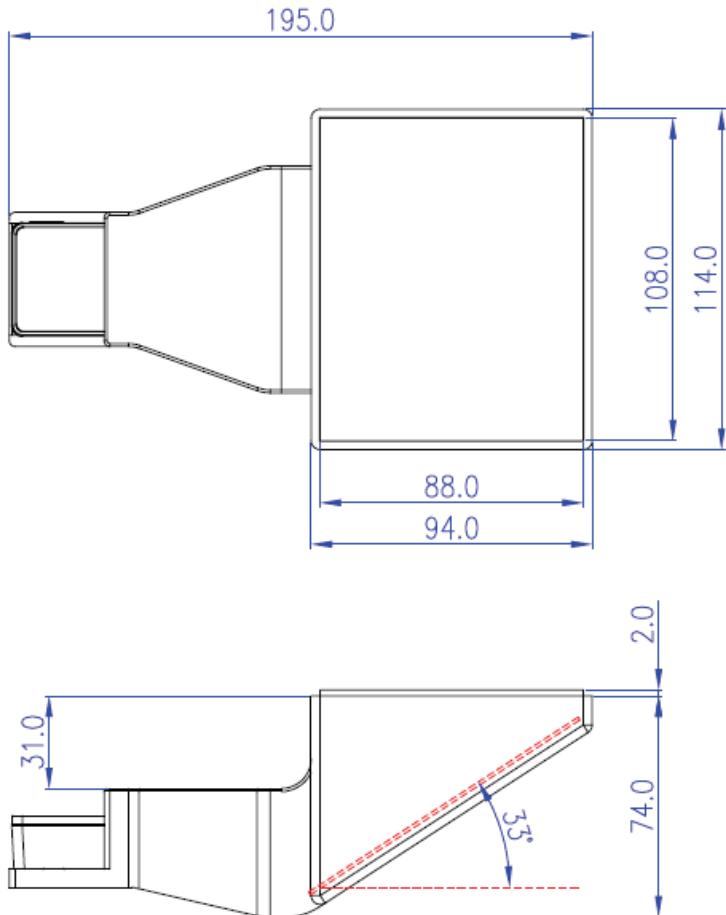
Suggest angle of the reflective mirror:
The angle of the reflective mirror of about 33 degrees is recommended, which can reduce the reflection of some lights.

After using reflective mirror, it is recommended to change the parameters as follows:

Image: switch to Mirror Mode Enable.

| Mirror Mode Enable. | Mirror Mode Disable |
|---|---|
|  | <br>(Default) |
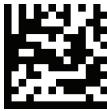
Illumination & Aiming Light control:
If reflections exist after using the reflector and the reading performance is poor, it is recommended to change the parameters according to the following steps:

| Illumination: | | |
|---|---|---|
| ILLUM: Disable | | ILLUM: Enable |
|  | |  |
| ILLUM: Low | ILLUM: Middle | ILLUM: High |
| <br>(Default) |  |  |
| Aiming: | | |
| AIM: Disable | | AIM: Enable |
|  | | <br>(Default) |