

MDC-100A/MDC-200A CCD Linear



MDC-100A



MDC200A

Integration Guide – Rev 1.0

The information in this document is subject to change without notice.

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1 Abstract

This guide provides instructions for installing the MDC-100A and MDC-200A (hereafter called “scan engine”) and is intended for engineers who are responsible for integrating the scan engine into their product. In order to maximize the performance and to minimize problems, read this integration guide carefully and integrate the scan engine in accordance with it. The instructions described in this guide are recommendations. Following them will help to ensure that the scan engine can work properly.

This manual has three main chapters:

Exit Window Material and Placement	Recommendations on the material and the placement of the exit window, in order to prevent the LED illumination from reflecting off the exit window.
Exit Window Size	Recommendation on the size of the exit window and the clearance for the optical path of the scan engine.
Installation	Detailed installation instructions.

2 Exit Window Material and Placement

2.1 Exit Window Material

Below is a list of recommendations for constructing the exit window. These recommendations help to prevent reflection from the LED illumination off the exit window and help to prevent degradation of the scanned image by scratches and dirt.

- The material of the exit window should be transparent colorless PPMA.
- The thickness of the exit window should be less than 1 mm.
- The plate should have optical flatness and optical anti-reflective coating on both surfaces.

2.2 Exit Window Placement

Reflection from the LED light off the exit window can cause large overexposed areas in the images captured by the scan engine. Therefore, it is important to position the exit window in such a way that the reflection is minimal and not directed into the camera. Make sure that the distance and inclination of the exit window is within the range specified in the following diagram and associated table.

2.2.1 MDC-100A Recommended Installation Condition of Exit Window

To avoid direct reflection from the illumination LED by the exit window, the following precautions are recommended:

1. The exit window should be parallel to the tip surface of the imaging lens with a 1 mm distance.
2. The thickness of the exit window should be less than 1 mm.
3. The material of the exit window should be transparent colorless PMMA. The plate should have optical flatness and optical anti-reflective coating on both surfaces.

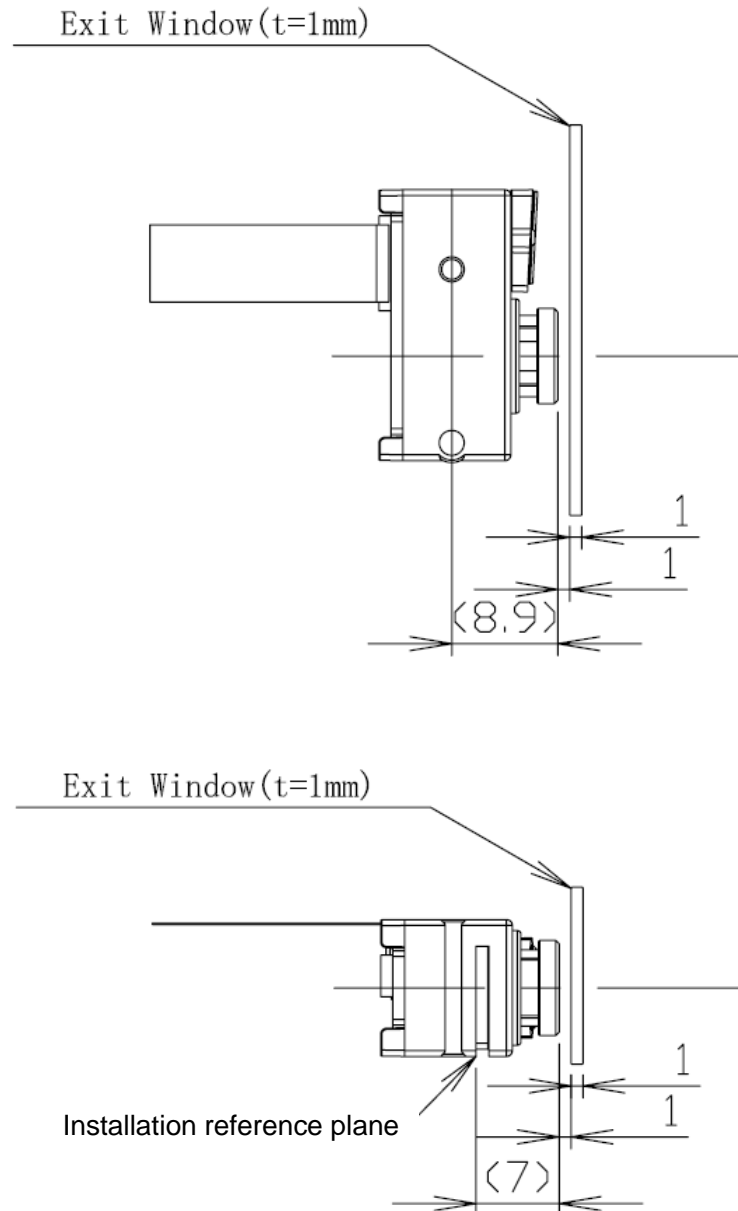
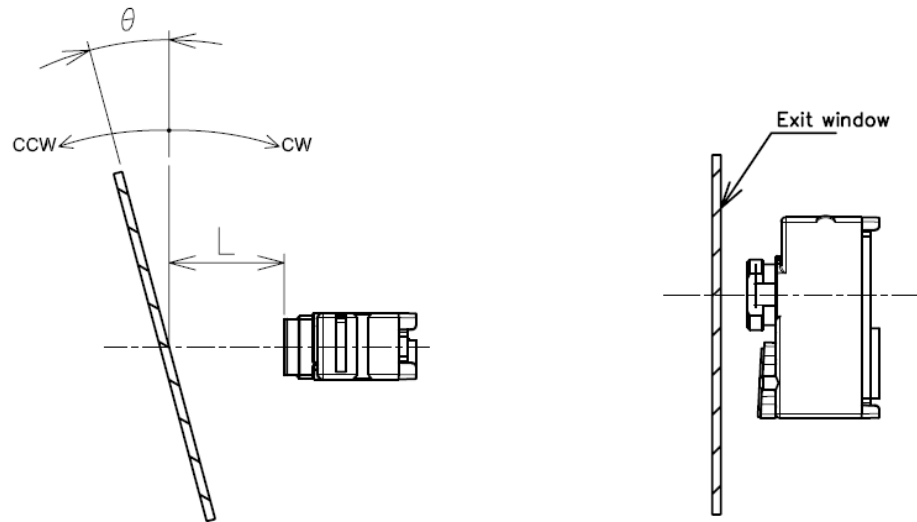


Figure 1: Recommended Installation Condition of Exit Window

2.2.2 MDC-200A Recommended Installation Condition of Exit Window

The material of exit window is recommended to be transparent colorless PMMA plate with its thickness is less than 1.0mm. The plate is recommended with optical flatness and with optical anti-reflective coating on both surfaces. To remove the reflected LED illumination rays from the exit window, the following condition should be satisfied.



L(mm)	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	6.0	7.0	8.0	9.0	≥10
θ_{cw} (deg)	0.0	0.0	0.0	≥15 ≤25	≥15 ≤30	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35
θ_{ccw} (deg)	0.0	0.0	0.0	≥15 ≤25	≥15 ≤30	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35	≥15 ≤35

Figure 2: Recommended Installation Condition

<Test condition>

Exit window : 1.0mm thickness PMMA plate without anti-reflect coat

Ambient light : 300lux, neutral white fluorescent lamp, no other light source and no other reflective object in the test environment

Recommending conditions: L < 1.0 mm, θ = 0.0 deg.

3 Exit Window Size

3.1 MDC-100A Optical Clear Area of Exit Window

From front view of the scan engine, the non-shaded area indicates the optical clear area. It is recommended to coat the shaded area matt-black. The dimension of the shaded area is based on the condition where the exit window is parallel located at 1 mm distance to the tip surface of the imaging lens and that there is a reasonable installation precision.

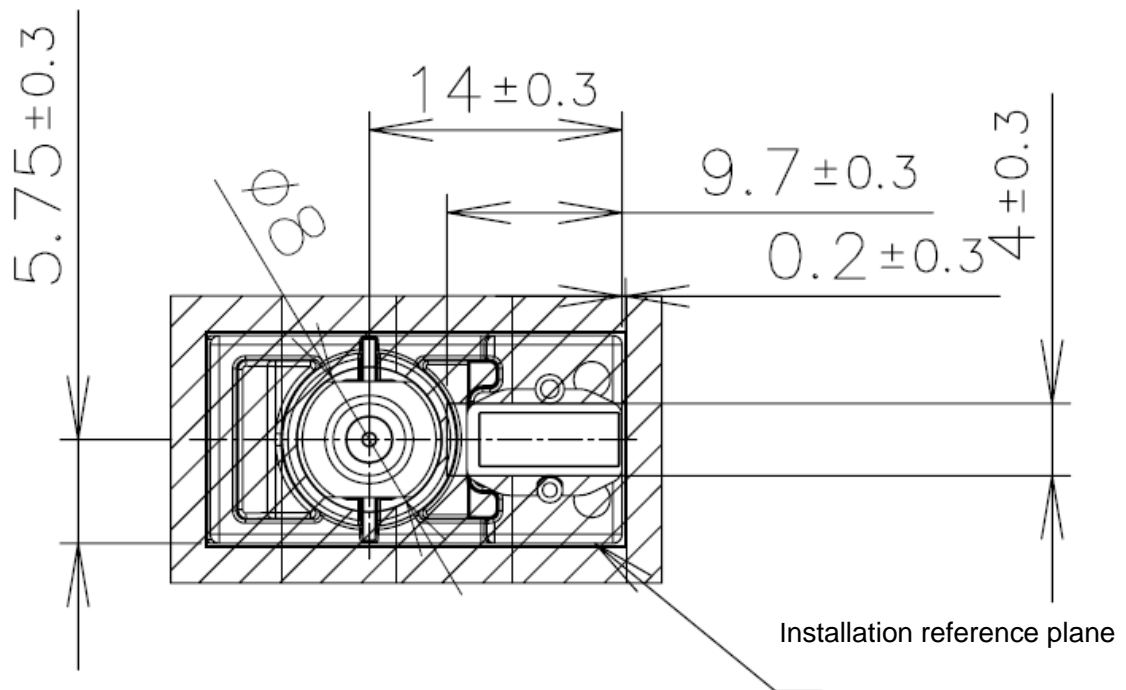


Figure 3: Optical Clear Area of Exit Window

3.2 MDC-200A Optical Clear Area of Exit Window

From front view of the scan engine, the non-shaded area indicates the optical clear area. It is recommended to coat the shaded area matt-black. The dimension of the shaded area is based on the condition where the exit window is parallel located at 1 mm distance to the tip surface of the imaging lens and that there is a reasonable installation precision.

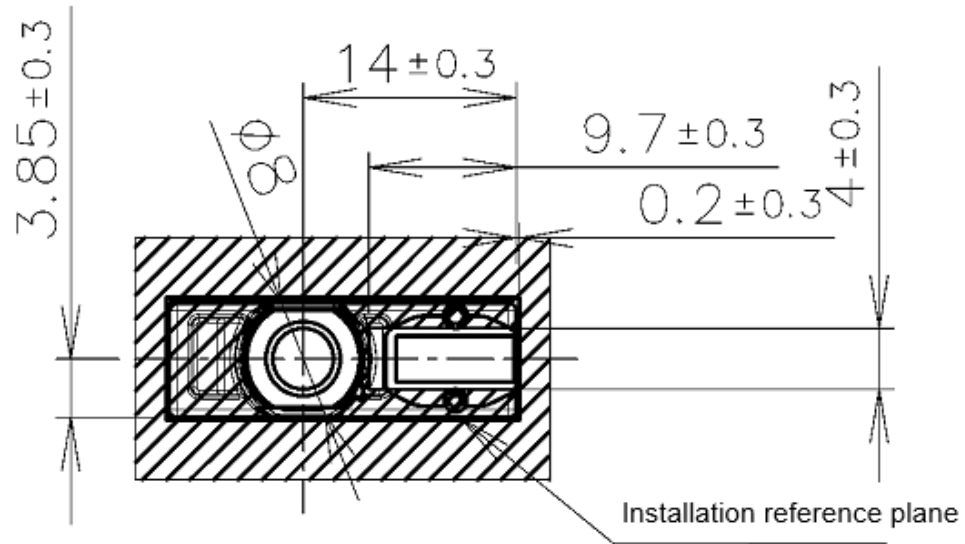


Figure 4: Optical Clear Area of Exit Window

3.3 Optical Clear Zone for Decoding

Install the Exit Window with sufficient clearance for the field of view and LED illumination. Provide the Exit Window with sufficient clearance with respect to the optical path, as depicted below.

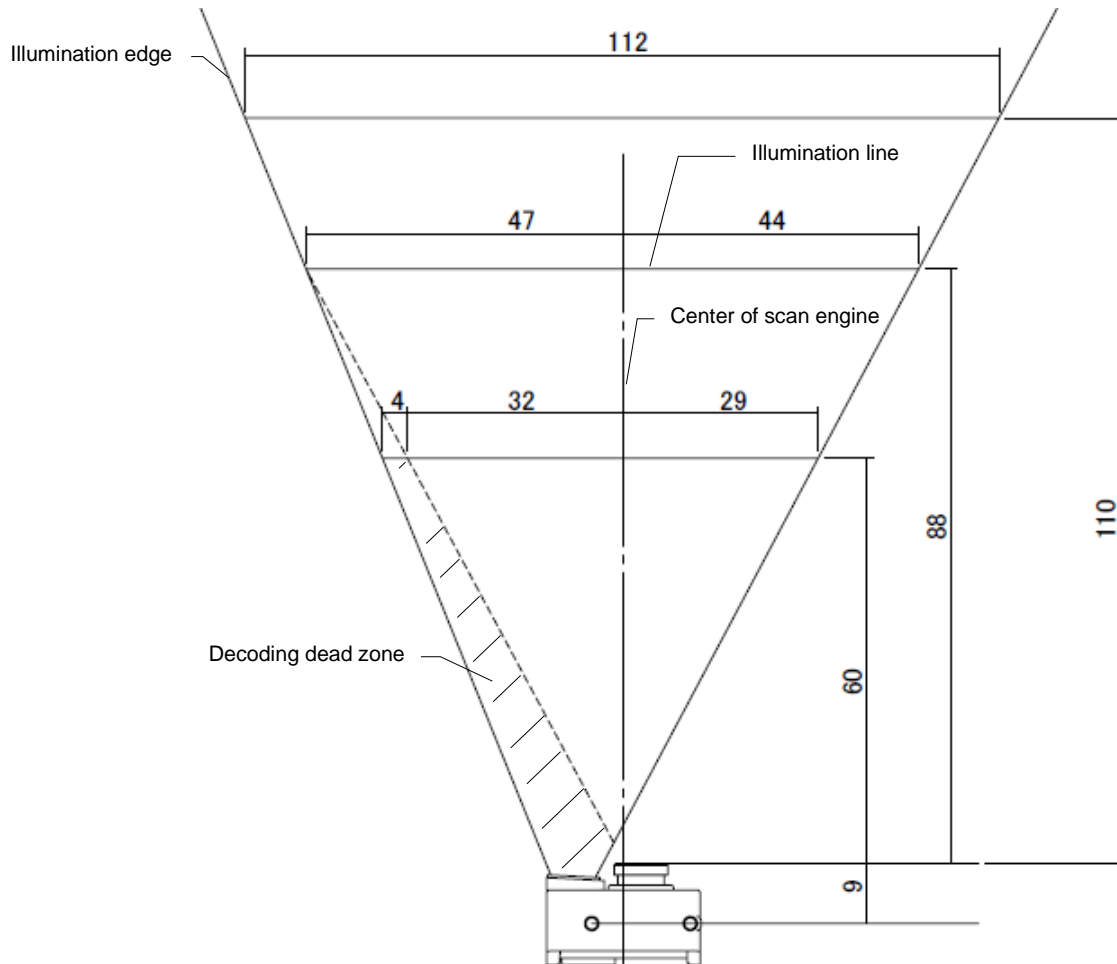


Figure 5: Optical Clear Zone for Decoding

- 1: Illumination line except the dead zone (out of the FOV of imaging lens) is defined as optical clear path, where the MDCx 00A is able to decode.
- 2: Illumination edge is defined by 90% peak luminance of illumination line

4 Installation

This chapter describes practical guidelines for the mechanical installation

4.1 Installation Recommendation for the MDC-x00A

The installation recommendations for the scan engine are listed below.

- Do not insert screws further than the maximum specified depth.
- Keep enough clearance to avoid damage to the scan engine in case the host device is dropped.

4.1.1 FFC Cable and Connector

Connector used is a IRISO Eelectronics Co.,LTD."IMSA-9681S-12",

Recommended is a 12-pin, 0.5 mm pitch, FFC connector, bottom contact type (gold-plated)

4.2 Handling Requirements

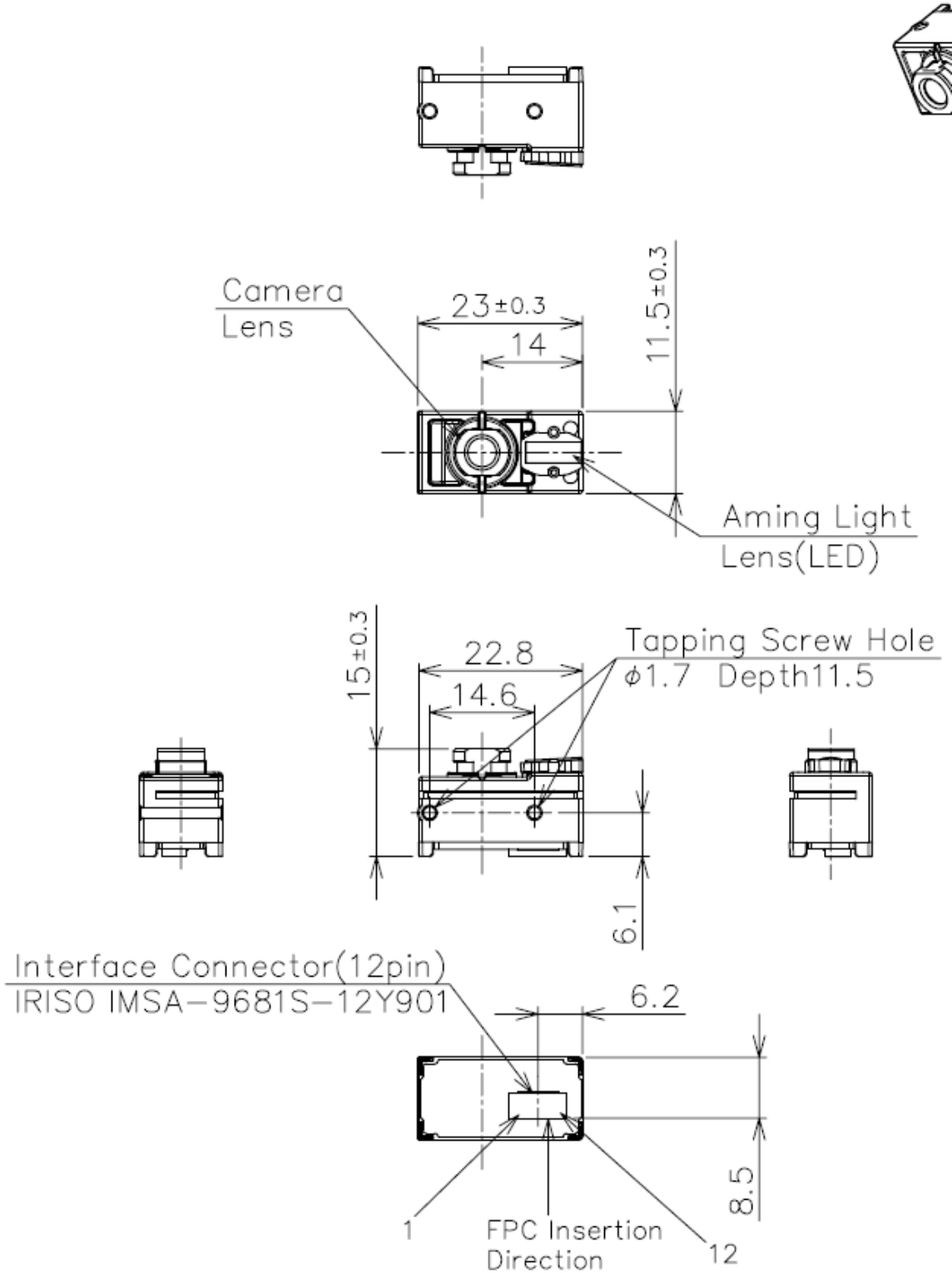
The recommended handling conditions for incorporating the scan engine into your device are shown below.

- Use anti-static measures such as wearing a grounded hand strap before handling the scan engine in order to avoid damage to the electronic components from electrostatic discharge.
- Hold the scan engine only by the case. Do not touch the circuit board or the front side of the scan engine.
- Do not touch the electronic components or the terminals on the circuit board.
- Installation in a clean environment is recommended in order to protect the imaging lens from dust.
- Operators should wear gloves to avoid contaminating the optical elements.
- Do not drop the MDC-x00A.

5 Mechanical Drawings

This chapter describes mechanical drawing for the scan engine.

5.1 Drawing of the MDC-100A



5.2 Drawing of the MDC-200A

