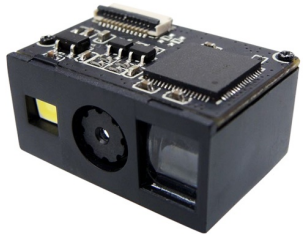


MARSON MT82Ag 2D Scan Engine User Guide

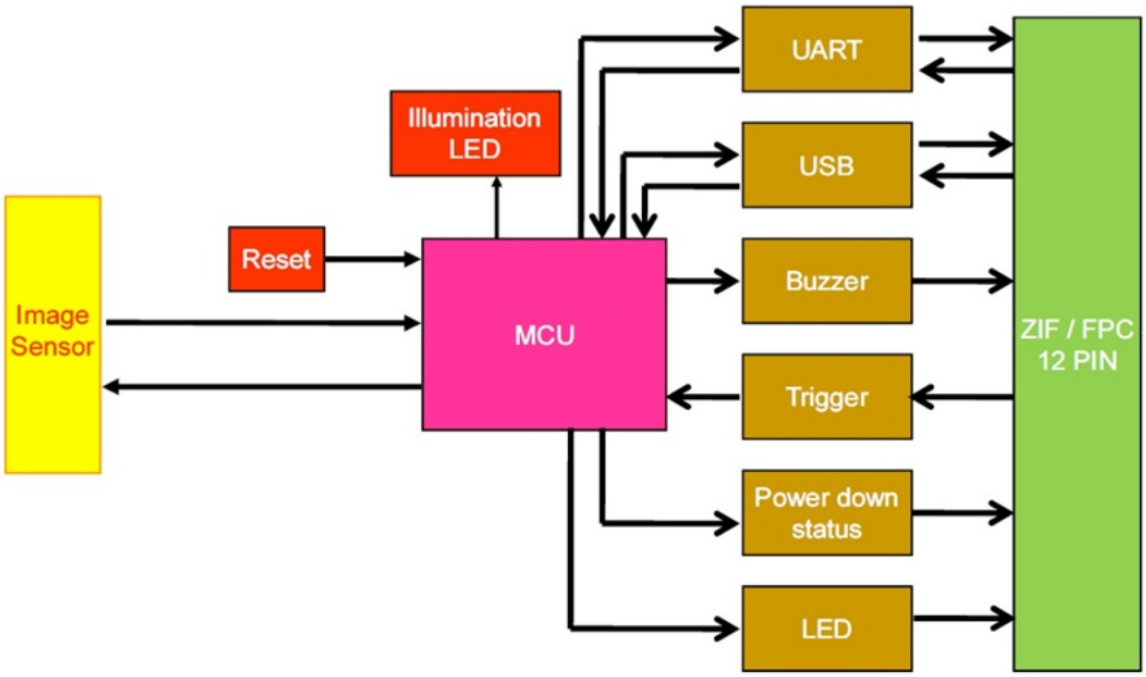
MT82Ag
(2D Scan Engine)
Integration Guide

Contents

INTRODUCTION

MT82Ag One-piece Compact 2D Scan Engine provides snappy scanning performance at a competitive cost and compact form factor. With its all-in-one design, the MT82Ag 2D scan engine can be easily integrated with specific applications such as access control, lottery kiosk, and consumer electronics.
The MT82Ag 2D Scan Engine consists of 1 illumination LED, 1 aimer LED, and a high-quality image sensor with a microprocessor that contains powerful firmware to control all aspects of operations and enable communication with the host system over the standard set of communication interfaces.
Two interfaces, UART & USB, are available. UART interface communicates with the host system over TTL-level RS232 communication; the USB interface emulates a USB HID Keyboard or Virtual COM port device and communicates with the host system over USB.

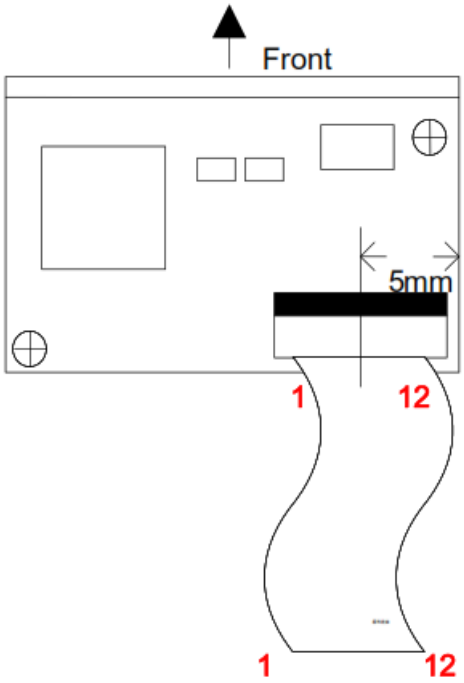
1-1. Block Diagram

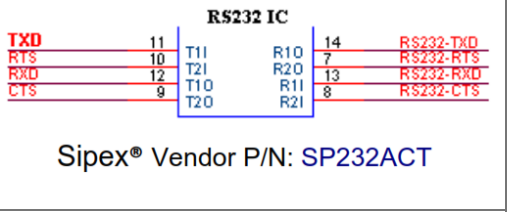


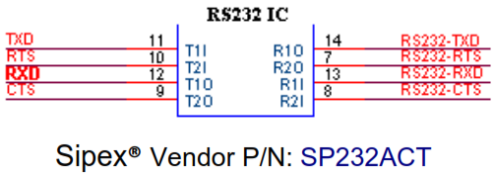
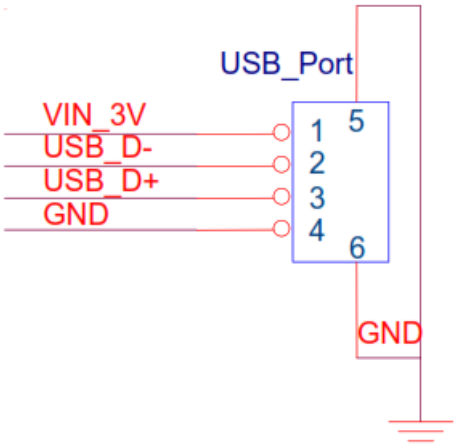
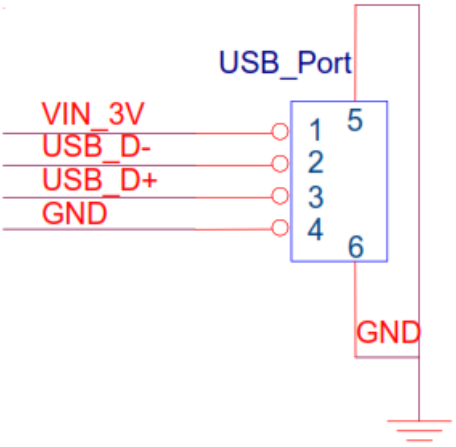
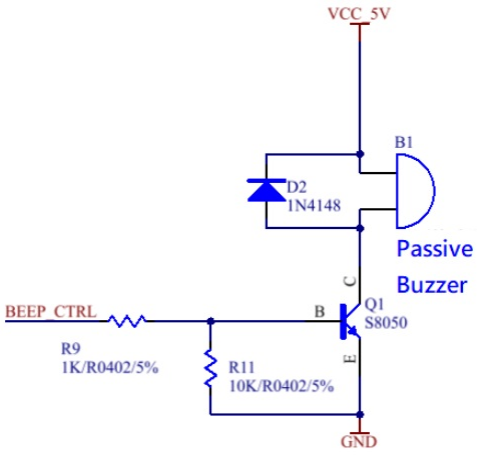
1-2. Electric Interface

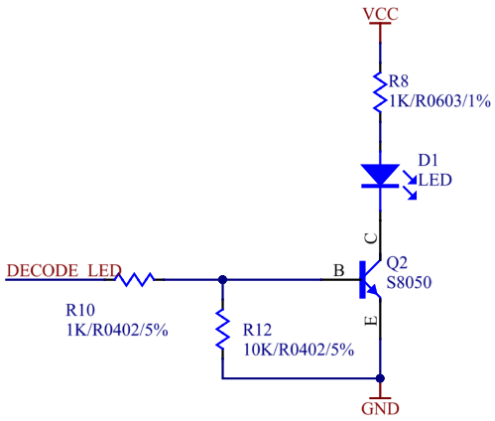
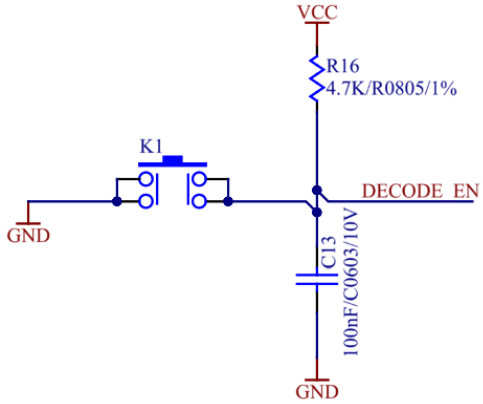
1-2-1. Pin Assignment

(Top View of MT82Ag)



Pin#	CART	USB	I/O	Description	Schematic Example
1	NC	NC	————	Floating	
2	VCC	VCC	————	Supply voltage input. Must always be connected to a 3.3V power supply.	
3	GND	GND	————	Power and signal ground.	
4	RDX	RDX	Input	UART TTL data input.	

Pin#	CART	USB	I/O	Description	Schematic Example
5	TXD	————	Output	UART TTL data output .	
6	————	USB_D-	Bidirectional	USB Differential Signal Transmission (USB D-)	
7	————	USB_D+	Bidirectional	USB Differential Signal Transmission (USB D+)	
8	NC	NC	————	Floating	
9	Buzzer PWM	Buzzer PWM	Output	Active High: it indicates the status of Power-Up or a successful bar code decoded. The PWM-controlled signal can be used to drive an external buzzer for a successful barcode decoded (Good Read).	

Pin#	CART	USB	I/O	Description	Schematic Example
10	Good Read LED	Good Read LED	Output	When scanning is successful (Good Read), it outputs a high-level pulse, whose load capacity is limited and not enough to drive LED directly. A supporting LED drive for the circuit is required.	
11	Reset	Reset	Input	Keeping a low level for at least 100us and returning to a high level or floating state, the scan engine restarts.	
12	Trigger Input	Trigger Input	Input	High: Stop Scanning Low: Start Scanning ***Warning:** 1. Pull low at power-up will prompt the scan engine into firmware update mode.	 Once the trigger is pressed (pull low), the scanning operation continues until a barcode is successfully decoded or the trigger is released (pull high). To proceed to the next scanning operation, release (pull high) first and press (pull low) the trigger again. A minimum of 50ms interval is recommended between two trigger signals.

1-2-2. Electric Characteristics

Operating Voltage
Ta=25°C

Symbol	Ratings	Min	Typical	Max	Unit
VDD	Power supply	3.0	3.3	3.6	V
VIL	Input low level	—	—	0.8	
VIA	Input high level	2	—	—	
VOL	Output low level	—	—	0.4	
VEOH	Output high level	VDD-0.4	—	—	

Operating Current
Ta=25°C, VDD=3.3V

Ratings	Max	Unit
Standby Current	60	mA
Working Current	110	

SPECIFICATIONS

2-1. Introduction
This chapter provides technical specifications of the MT82Ag. The operating method, scanning range, and scan angle are also presented.
2-2. Technical Specifications

Optic & Performance	
Light Source	white LED
Aiming	visible red LED linear aimer
Sensor	640 x 480 pixels
Scan Rate	30 frames/ sec
Resolution	5mil/ 0.125mm (Code 39)
Field of View	Horizontal 35° Vertical 27°
Scan Angle	Pitch Angle ±55° Skew Angle ±55° Roll Angle 360°
Print Contrast Ratio	10%
Width of Field	156mm (13Mil Code39)
Typical Depth Of Field (Environment: 800 lux)	5 Mil Code39: 40 ~ 121mm
	13 Mil UPC/EAN: 44 ~ 324mm
	15 Mil QR Code: 28 ~ 209mm
	6.67 Mil PDF417: 36 ~ 116mm
	10 Mil Data Matrix: 22 ~ 121mm
Physical Characteristics	
Dimension	W21.5 x L14.3 x H11 mm
Weight	2.6g
Color	Black
Material	Plastic
Connector	12pin ZIF (pitch=0.5mm)
Cable	12pin flex cable (pitch=0.5mm)
Electrical	

Operation Voltage	3.3VDC ± 5%
Working Current	< 170 mA

Standby Current	< 70 mA
Connectivity	
Interface	UART (TTL-level RS232)
	USB (HID Keyboard)
	USB (Virtual COM)
User Environment	
Operating Temperature	-20°C ~ 60°C
Storage Temperature	-40°C ~ 80°C
Humidity	0% ~ 95%RH (Non-condensing)
Drop Durability	1.5M
Ambient Light	100,000 Lux (Sunlight)
1D Symbologies	UPC-A/ UPC-E EAN-8/ EAN-13 Codabar Matrix 2 of 5 Code 93 Code 128 Code 39 Interleaved 2 of 5
2D Symbologies	QR Code Micro QR Code PDF417 Data Matrix Aztec
Regulatory	
ED	Functional after 4KV contact, 8KV air discharge (It requires housing that is designed for ESD protection and stray from electric fields.)
EMC	FCC Part 15B Class B, CE EN55032/35
Safety Approval	EN62471 (Exempt Group)

Environmental	WEEE, RoHS 2.0

2-3. Interface
2-3-1. UART Interface
Below are default communication protocols:
Baud rate: 9600
Data Bits: 8
Parity: None
Stop Bit: 1
Handshaking: None
Flow Control Timeout: None
ACK/**NAK**: OFF
BCC: OFF

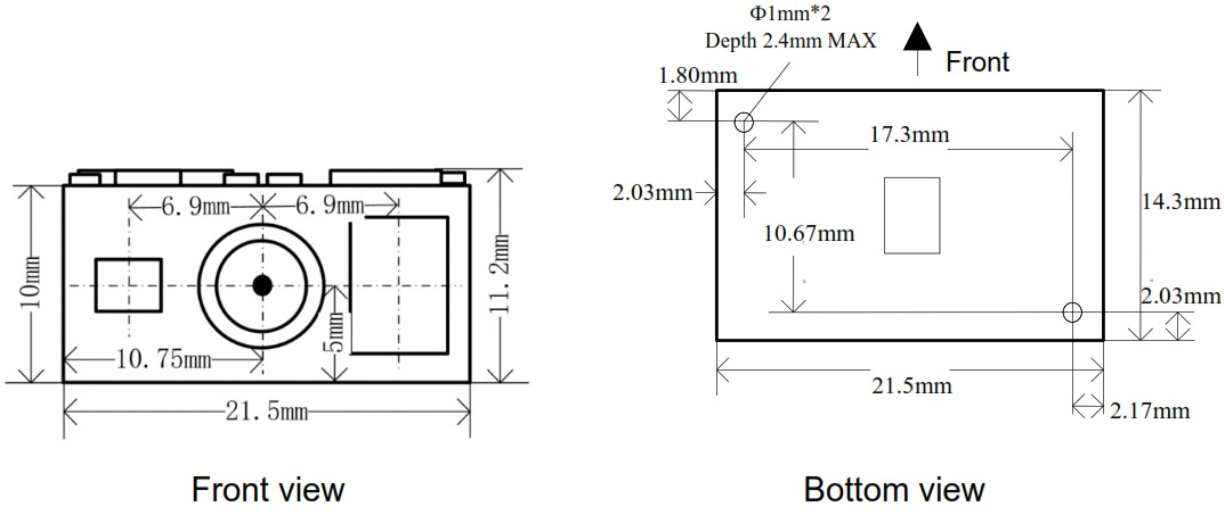
Interface Configuration Barcode:	**2-3-2. USB HID Interface** **Interface Configuration Barcode:**
UART	USB HID

2-4. Operation Method

1. At power-up, the MT82Ag sends the Power-Up signals over Buzzer and LED pins as an indication that the MT82Ag enters Standby Mode and is ready for operation.
2. Once the MT82Ag is triggered by either hardware or software method, MT82Ag will emit a beam of light that is aligned with the sensor's field of view.
3. The area image sensor captures the image of the barcode and produces an analog waveform, which is sampled and analyzed by the decoder firmware running on the MT82Ag.
4. Upon a successful barcode decoded, the MT82Ag turns off the illumination LEDs, sending the Good Read signals over Buzzer and LED pins and transmitting the decoded data to the host.

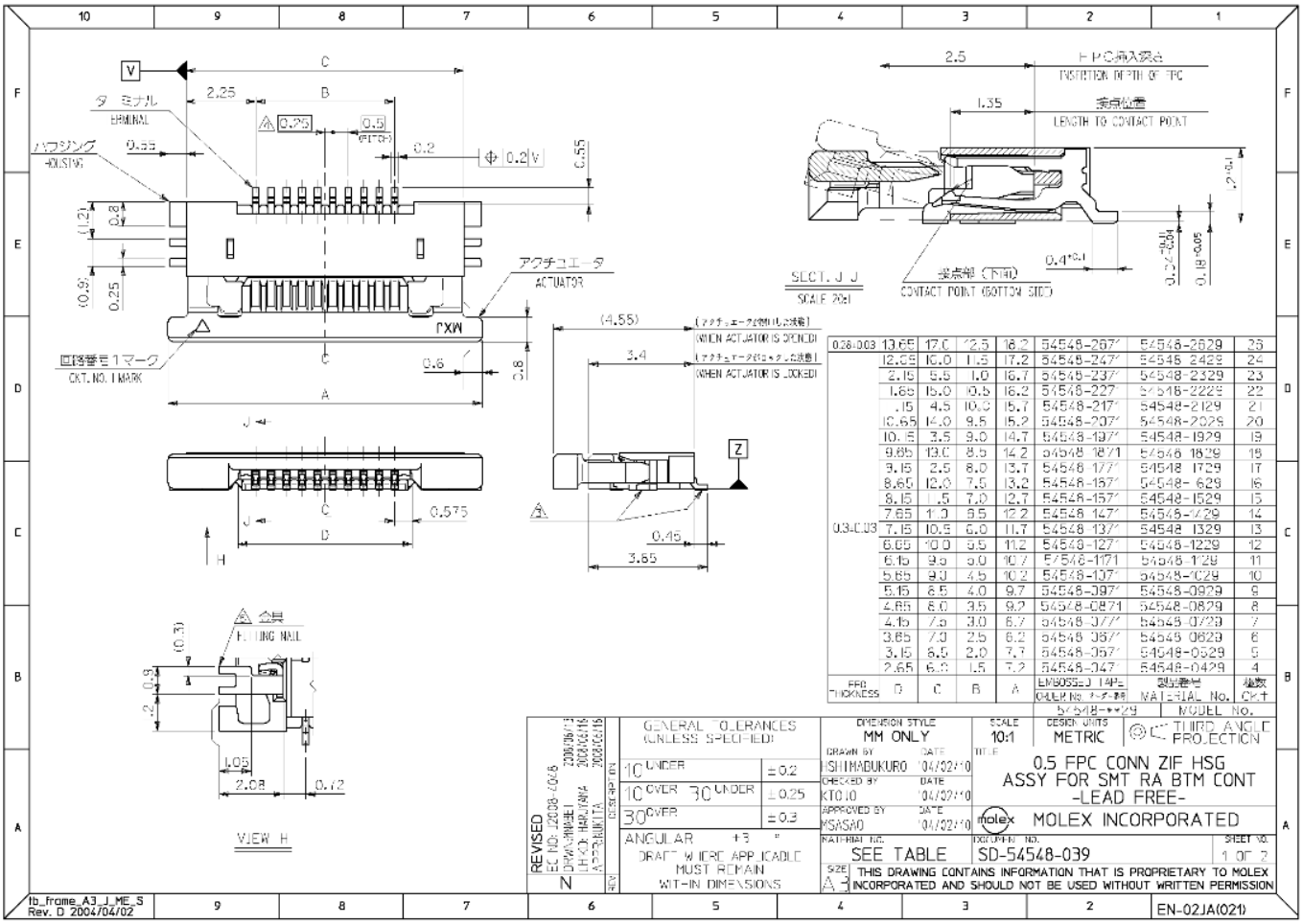
2-5. Mechanical Dimension

(Unit = mm)



2-6. Connector Specification

Below is the recommended 12-pin 0.5-pitch FPC connector on the host side.



INSTALLATION

The scan engine is designed specifically for integration into customers' housing for OEM applications. However, the scan engine's performance will be adversely affected or permanently damaged when mounted into an unsuitable enclosure.

Warning: The limited warranty is void if the following recommendations are not adhered to when mounting the scan engine.

3-1. Electrostatic Discharge Cautions

All scan engines are shipped in ESD protective packaging due to the sensitive nature of the exposed electrical components.

1. ALWAYS use grounding wrist straps and a grounded work area when unpacking and handling the scan engine.
2. Mount the scan engine in a housing that is designed for ESD protection and stray electric fields.

3-2. Mechanical Dimension
When securing the scan engine by utilizing the machine screws:

1. Leave sufficient space to accommodate the maximum size of the scan engine.
2. Do not exceed 1kg-cm (0.86 lb-in) of torque when securing the scan engine to the host.
3. Use safe ESD practices when handling and mounting the scan engine.

3-3. Window Materials
Following are descriptions of three popular window materials:

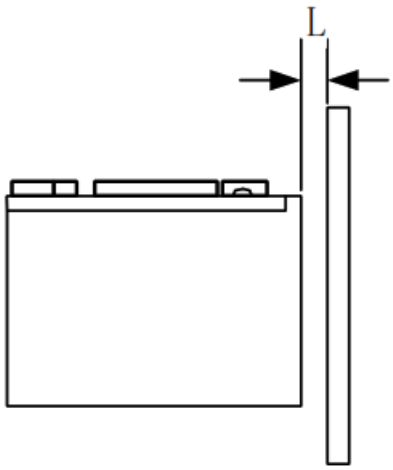
1. Poly-methyl Methacrylic (PMMA)
2. Allyl Diglycol Carbonate (ADC)
3. Chemically tempered float glass

Cell Cast Acrylic (ASTM: PMMA)
Cell cast Acrylic or Poly-methyl Methacrylic is fabricated by casting acrylic between two precision sheets of glass. This material has very good optical quality but is relatively soft and susceptible to attack by chemicals, mechanical stress, and UV light. It is strongly recommended to have acrylic hard-coated with Polysiloxane to provide abrasion resistance and protection from environmental factors. Acrylic can be laser-cut into odd shapes and ultrasonically welded.
Cell Cast ADC, Allyl Diglycol Carbonate (ASTM: ADC)
Also known as CR-39TM, ADC, a thermal setting plastic widely used for plastic eyeglasses, has excellent chemical and environmental resistance. It also has an inherently moderate surface hardness and therefore does not require hard-coating. This material cannot be ultrasonically welded.
Chemically Tempered Float Glass
Glass is a hard material that provides excellent scratch and abrasion resistance. However, un-annealed glass is brittle. Increased flexibility strength with minimal optical distortion requires chemical tempering. Glass cannot be ultrasonically welded and is difficult to cut into odd shapes.

Property	**Description**
Spectral Transmission	85% minimum from 635 to 690 nanometers
Thickness	< 1 mm
Coating	Both sides are to be anti-reflection coated to provide 1% maximum reflect ivity from 635 to 690 nanometers at a nominal window tilt angle. An anti-r eflection coating can reduce the light that is reflected back to the host cas e. Coatings will comply with the hardness adherence requirements of MIL -M-13508.

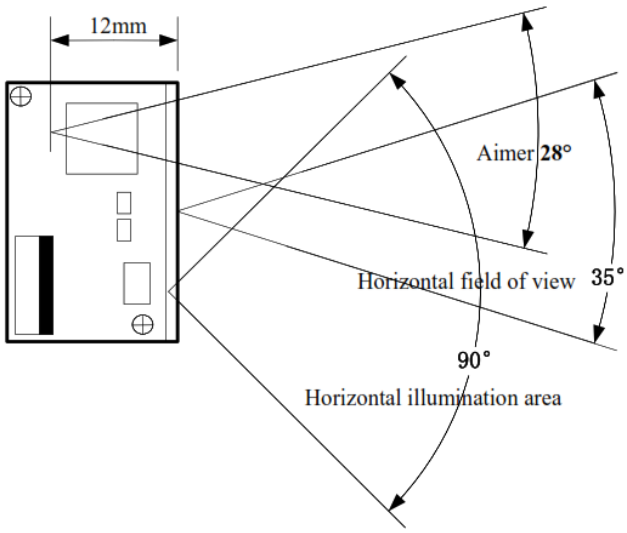
3-4. Window Placement

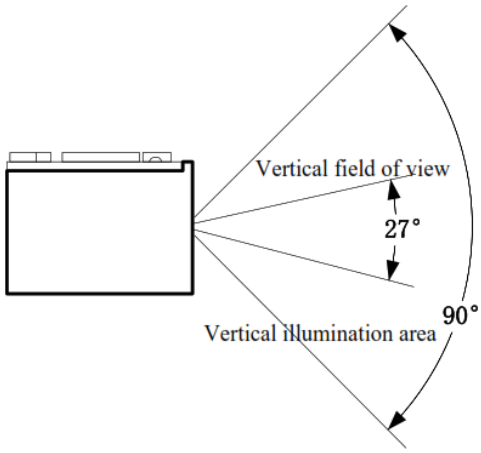
MT82Ag Side



The distance between the window and front of MT82Ag should not exceed L=0.5mm
The thickness of the window should not exceed 1mm

3-5. Window Size





The window size should ensure that field of view is not blocked, and the illumination area should not be blocked as well. For the size of the window, please refer to the above diagram of each optical area.

3-6. Window Care

In the aspect of the window, the performance of MT82Ag will be reduced due to any kind of scratch. Thus, reducing the damage to windows, there are a few things that have to be noticed.

1. Avoid touching the window as much as possible.
2. When cleaning the window surface, please use a non-abrasive cleaning cloth, and then gently wipe the host window with the cloth that is already sprayed with glass cleaner.

REGULATIONS

The MT82Ag scan engine conforms to the following regulations:

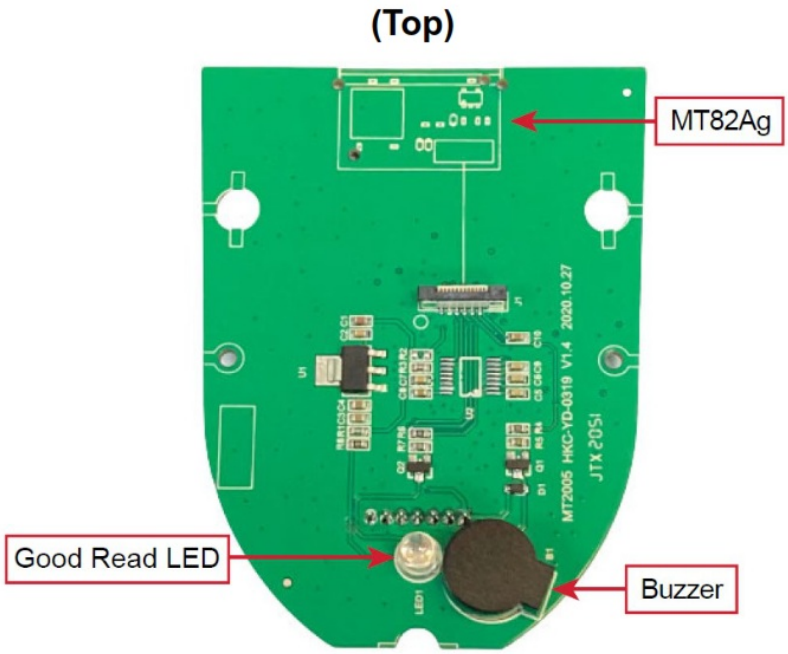
1. Electromagnetic Compliance – CE EN55032/35
2. Electromagnetic Interference – FCC Part 15B Class B

3. Photobiological Safety – EN62471 (Exempt Group)
4. Environmental Regulations – RoHS 2.0, WEEE

DEVELOPMENT KIT

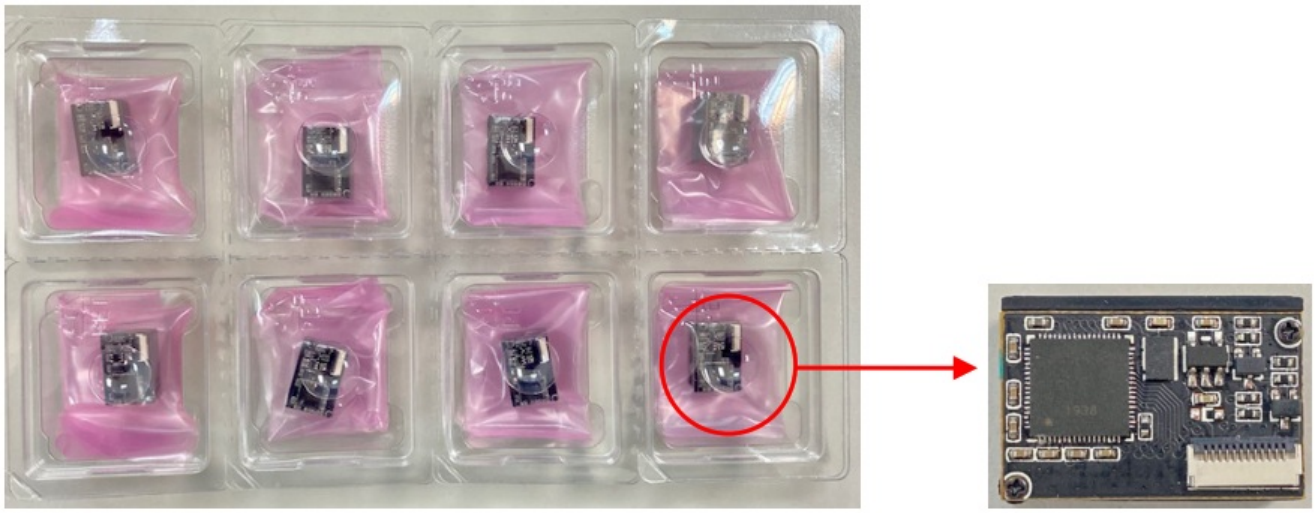
MARSON MB120 Demo Kit (P/N: **11C0-5020000**) enables the development of products and systems using the MT82Ag on the MS Windows OS platform. Besides the Multi I/O board (P/N: **9014-2700000**), the MB120 Demo Kit provides the software and hardware tools required for testing the MT82Ag applications before integrating them into the host device. Please contact your sales representative for ordering information.

MB100 Multi I/O Board (P/N: 9014-2700000)



PACKAGING

1. Tray (size: 24.7 x 13.7 x 2.7cm): Each tray contains 8pcs of **MT82Ag.**



2. **Box** (size: 25 x 14 x 3.3cm): Each Box contains 1pc of tray, or 8pcs of **MT82Ag.**

3. **Carton** (size: 30 x 27 x 28cm): Each Carton contains 16pcs of boxes, or 128pcs of **MT82Ag.**

VERSION HISTORY

Rev.	Date	Description	Issued	Checked
0.1	2020.09.15	Preliminary Draft Release	Shaw	Kenji
0.2	2020.09.23	Secondary Draft Revision Revised Model No. to MT82Ag Added Development Kit	Shaw	Kenji
0.3	2020.12.25	Updated Dimension	Shaw	Daniel
0.4	2021.01.20	Added Packaging Updated Typical Depth of Field	Shaw	Kenji
0.5	2021.01.21	Updated Working/Standby Current	Shaw	Kenji
0.6	2021.04.06	Added Aztec Updated Development Kit	Shaw	Kenji
0.7	2021.12.13	Updated Typical D.O.F, Dimension & Regulations	Shaw	Kenji

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Documents / Resources

	MARSON MT82Ag 2D Scan Engine [pdf] User Guide MT82Ag, 2D Scan Engine, MT82Ag 2D Scan Engine, Scan Engine, Engine

References

- The domain name marsontech.com is for sale | Dan.com