



MT30 Linear Image Barcode Scan Engine, Integration Guide, V1.7

MT30 **(3.3V High Performance Barcode Scan Engine)**

Integration Guide

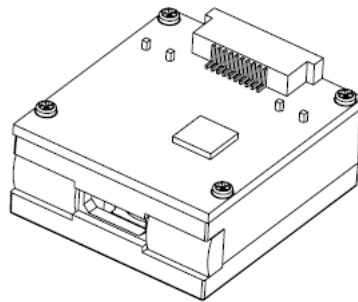




TABLE OF CONTENTS

| | |
|--|-----------|
| 1. INTRODUCTION..... | 1 |
| 1-1. MT30 Block Diagram..... | 1 |
| 1-2. Electric Interface..... | 2 |
| 1-2-1. Pin Assignment..... | 2 |
| 1-2-2. Electric Characteristics..... | 5 |
| 1-2-3. Flex Cable..... | 5 |
| 1-3. Operational Timing..... | 6 |
| 1-3-1. Power Up..... | 6 |
| 1-3-2. Sleep (Idle) Mode..... | 6 |
| 1-3-3. Decode Timing..... | 6 |
| 1-3-4. Summary of Operation Timings..... | 7 |
| 2. SPECIFICATIONS..... | 8 |
| 2-1. Introduction..... | 8 |
| 2-2. Technical Specifications..... | 8 |
| 2-3. Interface..... | 10 |
| 2-3-1. UART Interface..... | 10 |
| 2-3-2. USB Interface..... | 11 |
| 2-4. Operation Method..... | 12 |
| 2-5. Mechanical Dimension..... | 12 |
| 2-6. Scanning Range..... | 13 |
| 2-6-1. Typical Scanning Range..... | 13 |
| 2-6-2. Guaranteed Scanning Range..... | 14 |
| 2-7. Pitch Angle, Roll Angle and Skew Angle..... | 15 |
| 2-8. Specular Dead Zone..... | 16 |
| 2-9. Curvature Degree..... | 17 |
| 2-10. Flex Cable Specification..... | 17 |
| 2-11. Screw Specification..... | 18 |
| 2-12. Connector Specification..... | 18 |
| 3. INSTALLATION..... | 19 |
| 3-1. Electrostatic Discharge Cautions..... | 19 |
| 3-2. Mechanical Dimension..... | 19 |
| 3-3. Window Materials..... | 20 |
| 3-4. Window Specifications..... | 21 |
| 3-5. Window Care..... | 23 |
| 4. REGULATIONS..... | 23 |
| 5. DEVELOPMENT KIT..... | 24 |
| 6. SLEEP (IDLE) MODE..... | 25 |
| 7. PARAMETER SETUP..... | 26 |
| 8. VERSION HISTORY..... | 27 |

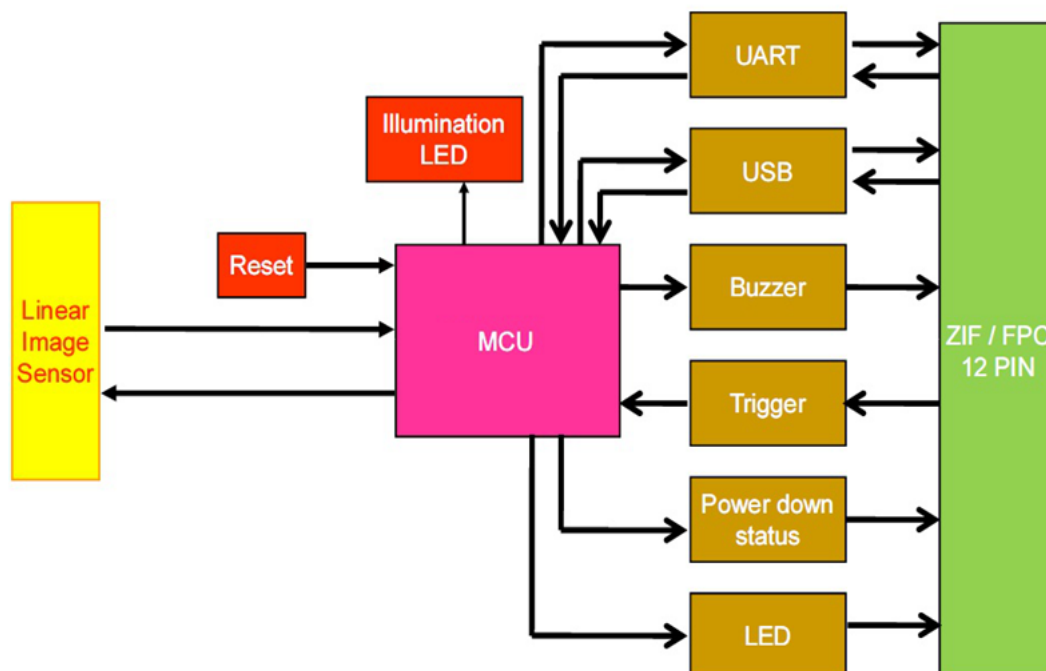
1. INTRODUCTION

The MT30 Linear Image Barcode Scan Engine is designed for 1D high performance barcode scanning with optimal performance and easy integration. MT30 is ideal for integration into data terminals and other small mobile devices.

The MT30 consists of 2 illumination LEDs, a high-quality linear image sensor and 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; USB interface emulates a USB Keyboard device and communicates with the host system over USB.

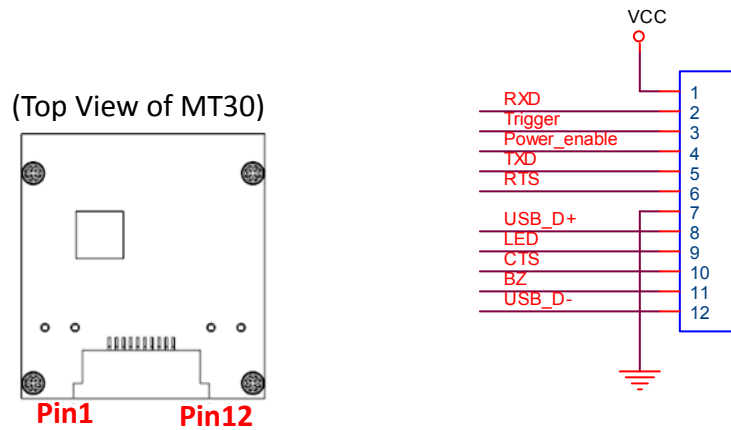
1-1. MT30 Block Diagram





1-2. Electric Interface

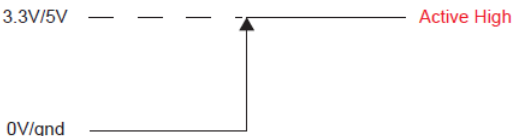
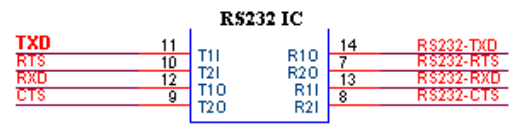
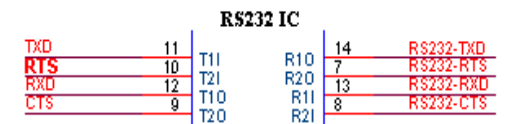

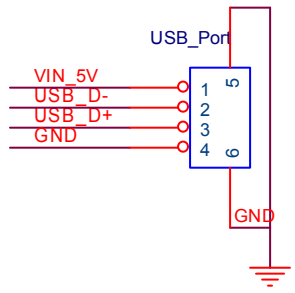
1-2-1. Pin Assignment

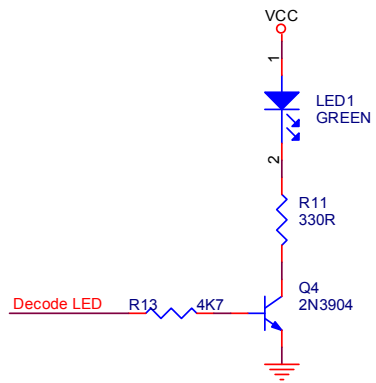
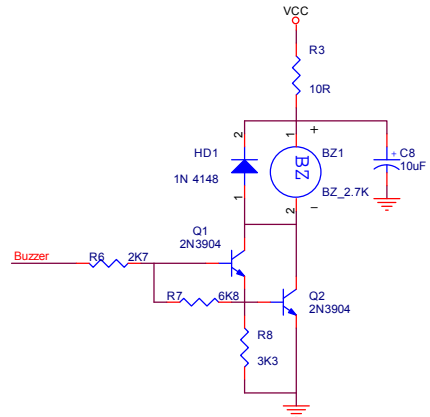
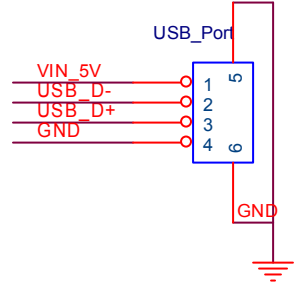


| Pin# | UART | USB | I/O | Description | Schematic Example |
|------|---------|---------|-------|---|--|
| 1 | VCC | VCC | ----- | Supply voltage input. Must always be connected to 3.3 power supply. | |
| 2 | RXD | ----- | Input | UART TTL data input. | <p>Sipex® Vendor P/N: SP232ACT</p> |
| 3 | Trigger | Trigger | Input | High: Power-up/Standby Low: Scanning Operation *Warning: 1. Pull low at power-up will prompt the scan engine into firmware update mode. | <p>Once trigger is pressed (pull low), 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.</p> |



MT30 Linear Image Scan Engine, Integration Guide, V1.7

| Pin# | UART | USB | I/O | Description | Schematic Example |
|------|--------------|--------------|---------------|---|--|
| 4 | Power Enable | Power Enable | Input | High: Scan Engine Off Low: Scan Engine On *Except: 1. During data transmission 2. Writing parameters to non-volatile memory. |  <p>When Power Enable pin is pull high, scan engine will be shut down with power consumption of less than 1uA.</p> |
| 5 | TXD | ----- | Output | UART TTL data output. |  <p>Sipex® Vendor P/N: SP232ACT</p> |
| 6 | RTS | ----- | Output | When handshaking is enabled, MT30 requests permission from host to transmit data on TXD line. |  <p>Sipex® Vendor P/N: SP232ACT</p> |
| 7 | GND | GND | ----- | Power and signal ground. |  |
| 8 | ----- | USB D+ | Bidirectional | Differential Signal Transmission |  |

| Pin# | UART | USB | I/O | Description | Schematic Example | | | | | | | | | | | | | | | | | | | | |
|------|--------|--------|---------------|--|--|-----|----|-----|----|-----------|-----|----|-----|---|-----------|-----|----|-----|----|-----------|-----|---|-----|---|-----------|
| 9 | LED | LED | Output | Active high, it indicates the status of Power-Up or a successful barcode decoded (Good Read). |  | | | | | | | | | | | | | | | | | | | | |
| 10 | CTS | ----- | Input | When handshaking is enabled, host authorizes MT30 to transmit data on TXD line. | <div><table><tr><td>TXD</td><td>11</td><td>T11</td><td>14</td><td>R5232-TXD</td></tr><tr><td>RTS</td><td>10</td><td>T21</td><td>7</td><td>R5232-RTS</td></tr><tr><td>RXD</td><td>12</td><td>T10</td><td>13</td><td>R5232-RXD</td></tr><tr><td>CTS</td><td>9</td><td>T20</td><td>8</td><td>R5232-CTS</td></tr></table></div> <p>Sipex® Vendor P/N: SP232ACT</p> | TXD | 11 | T11 | 14 | R5232-TXD | RTS | 10 | T21 | 7 | R5232-RTS | RXD | 12 | T10 | 13 | R5232-RXD | CTS | 9 | T20 | 8 | R5232-CTS |
| TXD | 11 | T11 | 14 | R5232-TXD | | | | | | | | | | | | | | | | | | | | | |
| RTS | 10 | T21 | 7 | R5232-RTS | | | | | | | | | | | | | | | | | | | | | |
| RXD | 12 | T10 | 13 | R5232-RXD | | | | | | | | | | | | | | | | | | | | | |
| CTS | 9 | T20 | 8 | R5232-CTS | | | | | | | | | | | | | | | | | | | | | |
| 11 | Buzzer | Buzzer | Output | Active high: Power-Up or a successful barcode decoded. PWM controlled signal can be used to drive an external buzzer for a successful barcode decoded (Good Read). |  | | | | | | | | | | | | | | | | | | | | |
| 12 | ----- | USB D- | Bidirectional | Differential Signal Transmission |  | | | | | | | | | | | | | | | | | | | | |

1-2-2. Electric Characteristics

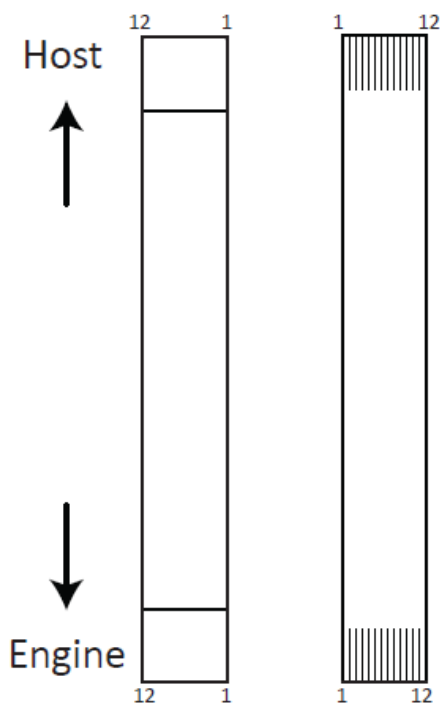
| Symbol | Ratings | Min | Max | Unit |
|----------------|--|---|-----------------------|------|
| V_{IH} | Input high level | $0.41*(V_{DD}-2)+1.3$ | $V_{DD}+0.3$ | V |
| V_{IL} | Input low level | 0 | $0.28*(V_{DD}-2)+0.8$ | V |
| V_{OH} | Output high level | $V_{DD}-0.4$ | - | V |
| V_{OL} | Output low level | - | 0.4 | V |
| $V_{ESD(HBM)}$ | Electrostatic discharge voltage (human body model) | $\pm 4kV$ contact direct discharge, $\pm 8kV$ indirect discharge. Requires housing that is designed for ESD protection and stray electric fields. | | kV |

***Note:**

1. Power Supply: $V_{DD} = 3.3$ V
2. Exposure to maximum rating conditions for extended periods may affect device reliability.

1-2-3. Flex Cable

The flex cable is used to connect MT30 with the host side. There are 12 pins on both the engine (MT30) side and the host side. Please see Chapter 2-10 for more details of flex cable.



| Flex cable (P/N: 67XX-1009X12) | |
|-----------------------------------|------------------------|
| Pin# | Pin Assignment To Host |
| 1 | VCC |
| 2 | RXD |
| 3 | Trigger |
| 4 | Power Enable |
| 5 | TXD |
| 6 | RTS |
| 7 | GND |
| 8 | USB D+ |
| 9 | LED |
| 10 | CTS |
| 11 | Buzzer |
| 12 | USB D- |

***Note:** Conforms to MARSON MT742(L)/MT752(L) pin assignment.



1-3. Operational Timing

This chapter describes the timing associated with the various operating modes of the MT30 including Power Up, Sleep Mode, and Decode Timing.

1-3-1. Power Up

When power is initially applied, the MT30 is activated and begins the process of initialization. Once initialization (duration $\leq 10\text{mS}$) is completed, the MT30 enters **Standby Mode** and is ready for barcode scanning.

1-3-2. Sleep (Idle) Mode

The MT30 may enter **Sleep (Idle) Mode** after a programmable time period has elapsed without any activity. Please see Chapter 6 for more details about Sleep Mode.

1-3-3. Decode Timing

In **Standby Mode**, the MT30 is activated by the Trigger signal which **MUST** be kept low for at least 20 ms until the successful scan is achieved, as indicated by the Buzzer/LED signals.

In **Sleep Mode**, the MT30 can be waken up by the Trigger signal which **MUST** be kept low for at least 2 mS, which will prompt the scan engine into **Standby Mode**.

The total scan and decode time is approximately equal to the time from the Trigger signal going low to the Buzzer/LED signal going high. This time will vary slightly based on several factors including barcode quality, barcode type and the distance between MT30 and the barcode scanned.

Upon a successful scan, the MT30 outputs the Buzzer/LED signal and keeps this signal for the duration of the transmission of the data decoded to the host side. The duration is about 75 ms.

Therefore, the total duration of a typical scanning operation (from Trigger turning low to the end of Buzzer PWM signal) is also approximately 120mS.



1-3-4. Summary of Operation Timings

1. The maximum duration of initialization is 10mS.
2. The maximum duration of scanning operation in Standby Mode is 120mS.
3. The minimum duration of waking up MT30 from Sleep Mode by Trigger signal is about 2 ms.
4. The maximum duration of waking up MT30 from Sleep Mode by Trigger signal and completing decode (when barcode is within optimal focus) is about 120ms



2. SPECIFICATIONS

2-1. Introduction

This chapter provides technical specifications of the MT30 scan engine. Operating method, scanning range and scan angle are also presented.

2-2. Technical Specifications

| Optic & Performance | |
|--|---|
| Light Source | 625nm visible red LED |
| Sensor | Linear Image Sensor |
| Scan Rate | 400 Scans/ sec (Smart Detection) |
| Resolution | 3mil/ 0.075mm |
| Scan Angle | 41° |
| Print Contrast Ratio | 30% |
| Width of Field | 200mm (13Mil Code39) |
| Typical Depth Of Field (Environment: 800 lux) | 3 Mil Code39: 56 ~ 97mm (4 digits) |
| | 4 Mil Code39: 47 ~ 126mm (4 digits) |
| | 5 Mil Code39: 45 ~ 164mm (4 digits) |
| | 10 Mil Code39: 25 ~ 356mm (4 digits) |
| | 15 Mil Code39: 35 ~ 552mm (4 digits) |
| | 13 Mil UPC/ EAN: 31 ~ 448mm (13 digits) |
| Guaranteed Depth Of Field (Environment: 800 lux) | 3 Mil Code39: 60 ~ 90mm (4 digits) |
| | 4 Mil Code39: 60 ~ 120mm (4 digits) |
| | 5 Mil Code39: 50 ~ 160mm (4 digits) |
| | 10 Mil Code39: 35 ~ 340mm (4 digits) |
| | 15 Mil Code39: 50 ~ 520mm (4 digits) |
| | 13 Mil UPC/ EAN: 35 ~ 400mm (13 digits) |
| Physical Characteristics | |
| Dimension | (W)20.6 x (L)22.5 x (H)11.2 mm |
| Weight | 3.3g |
| Color | Black |
| Material | PC |
| Connector | 12pin (pitch = 0.5mm) ZIF |
| Cable | 12pin (pitch = 0.5mm) flex cable |



| Electrical | |
|-----------------------|---|
| Operation Voltage | 3.3VDC \pm 5% |
| Working Current | < 150 mA |
| Standby Current | < 70 mA |
| Idle Current | < 6 mA (see Chapter 6 for Sleep/Idle Mode) |
| Power Down Current | < 300 μ A (see Chapter 1-2-1 for Power Enable pin) |
| Surge Current | < 500 mA |
| Connectivity | |
| Interface | UART (TTL-level RS232) |
| | USB (HID Keyboard) |
| User Environment | |
| Operating Temperature | -10°C ~ 60°C |
| Storage Temperature | -20°C ~ 60°C |
| Humidity | 0% ~ 95%RH (Non-condensing) |
| Drop Durability | 1.5M |
| Ambient Light | 60,000 Lux (Sunlight) |
| Symbologies | UPC-A/ UPC-E EAN-8/ EAN-13 Matrix 2 of 5 China Postal Code (Toshiba Code) Industrial 2 of 5 Interleaved 2 of 5 Standard 2 of 5 (IATA Code) Codabar Code 11 Code 32 Standard Code 39 Full ASCII Code 39 Code 93 Code 128 EAN/ UCC 128 (GS1-128) MSI/ UK Plessey Code Telepen Code GS1 Databar |
| Regulatory | |
| ESD | Functional after 4KV contact, 8KV air discharge (it requires housing that is designed for ESD) |



MT30 Linear Image Scan Engine, Integration Guide, V1.7

| | |
|------------------------|---|
| | protection and stray from electric fields.) |
| EMC | FCC – Part15 Subpart B (Class B) CE – EN55022, EN55024 |
| Safety Approval | IEC 62471 (Exempt Group) |
| Environmental | WEEE, RoHS 2.0 |

2-3. Interface

2-3-1. UART Interface

Below default values of communication parameters apply to both Standard mode and Command mode firmware.

Baud rate: 9600

Data Bits: 8

Parity: None

Stop Bit: 1

Handshaking: None

Flow Control Timeout: None

ACK/NAK: OFF

BCC: OFF

A. Standard Mode

Firmware version: [SM3-j-x.xx](#)

(MT30 P/N: [1030-A000000](#))

Characteristics:

- (1) Configurable by scanning configuration barcodes or Ez Utility® (a PC-based software utility, available for download at www.marson.com.tw)
- (2) Supports hardware trigger only

Interface Configuration Barcode:

. □□□2\$



UART

Scanning above barcode will set your MT30 to UART interface.



B. Command Mode

Firmware version: [SM3-j-x.xx.CMD](#)

(MT30 P/N: [1030-A000001](#))

Characteristics:

- (1) Configurable by commands sent from host or
BEO® (a PC-based software utility, available for download at
www.marson.com.tw)
- (2) Supports both hardware and software triggers

Interface Configuration Barcode:

Not supported.

2-3-2. USB Interface

Firmware version: [SM3-j-x.xx](#)

(MT30 P/N: [1030-A000000](#))

Characteristics:

- (1) Configurable by scanning configuration barcodes or
Ez Utility® (a PC-based software utility, available for download at
www.marson.com.tw)
- (2) Supports hardware trigger only
- (3) Emulates a USB Keyboard device

Interface Configuration Barcode:

. C008\$



USB HID

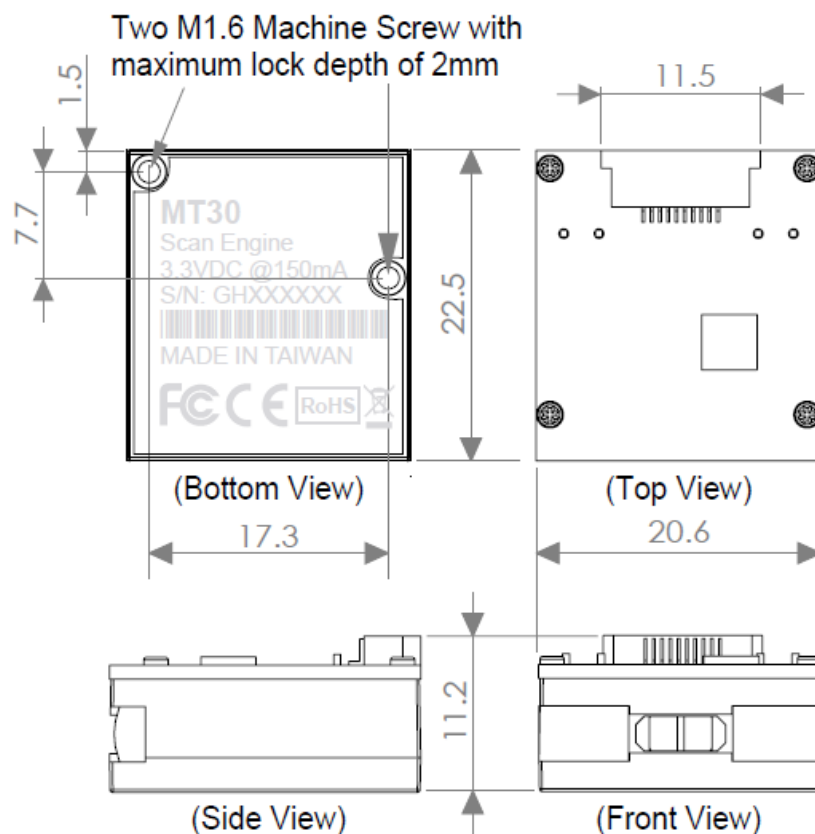
Scanning above barcode will set your MT30 to USB interface.

2-4. Operation Method

1. At power-up, the MT30 sends the Power-Up signals over Buzzer and LED pins as an indication that the MT30 enters **Standby Mode** and is ready for operation.
2. Once the MT30 triggered by either hardware or software method, it will emit a narrow, horizontal slab of light which is aligned with the sensor's field of view.
3. The linear image sensor captures the linear image of barcode and produces an analog waveform, which is sampled and analyzed by the decoder firmware running on the MT30.
4. Upon a successful barcode decoded, the MT30 turns off the illumination LEDs, sends the Good Read signals over Buzzer and LED pins and transmits the decoded data to the host.
5. The MT30 may enter **Sleep Mode** (Please see Chapter 6 for more details) after a period of inactivity in order to reduce power consumption.

2-5. Mechanical Dimension

(Unit = mm)





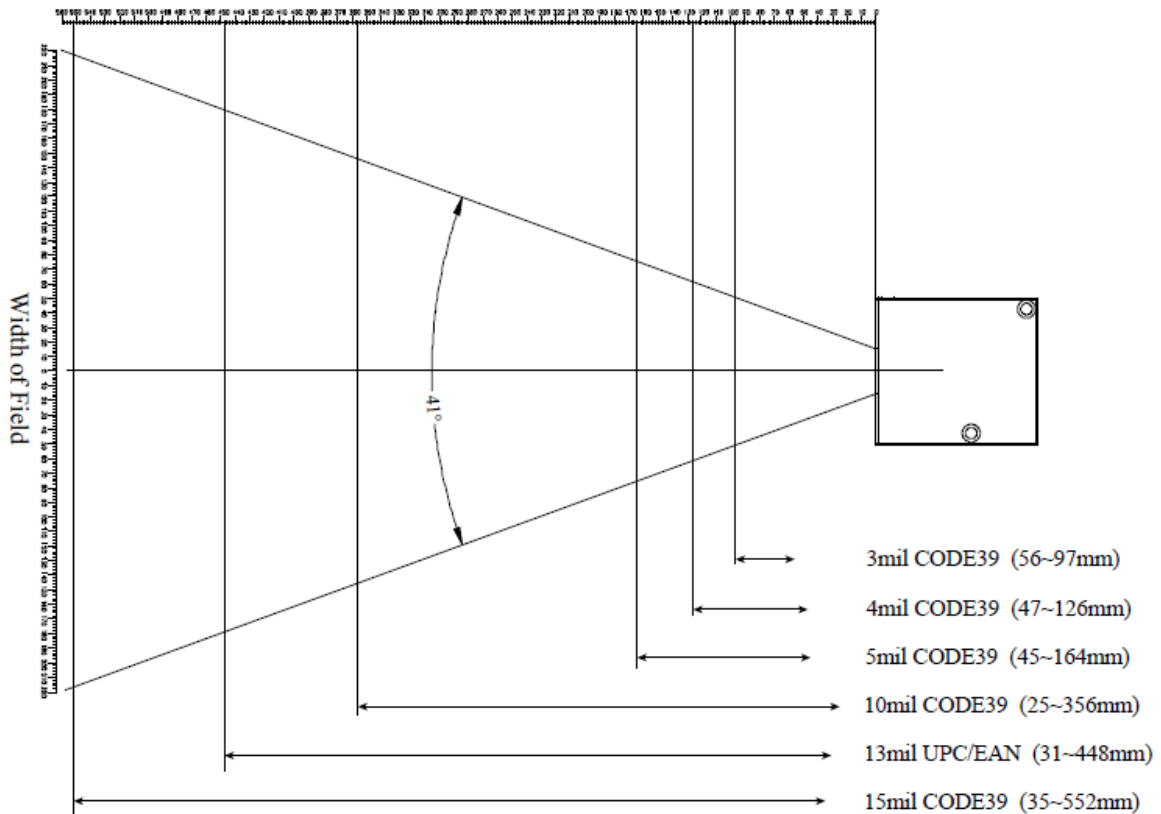
2-6. Scanning Range

2-6-1. Typical Scanning Range

Test Condition - MT30

Barcode Length: Code39 – 4 characters
EAN/UPC – 13 characters
Bar & Space Ratio: 1 to 2.5
Print Contrast Ratio: 0.9
Ambient Light: > 800 lux

Depth of Field



Minimum & Maximum Scan Distance of MT30

| Symbology | Resolution | Distance | No. of Encoded Characters |
|---------------------------------|------------|-------------|---------------------------|
| Standard Code 39 (w/o checksum) | 3 Mil | 56 ~ 97 mm | 4 char. |
| | 4 Mil | 47 ~ 126 mm | |
| | 5 Mil | 45 ~ 164 mm | |
| | 10 Mil | 25 ~ 356 mm | |
| | 15 Mil | 35 ~ 552 mm | |
| EAN 13 | 13 Mil | 31 ~ 448 mm | 13 char. |

Maximum Scan Width of MT30

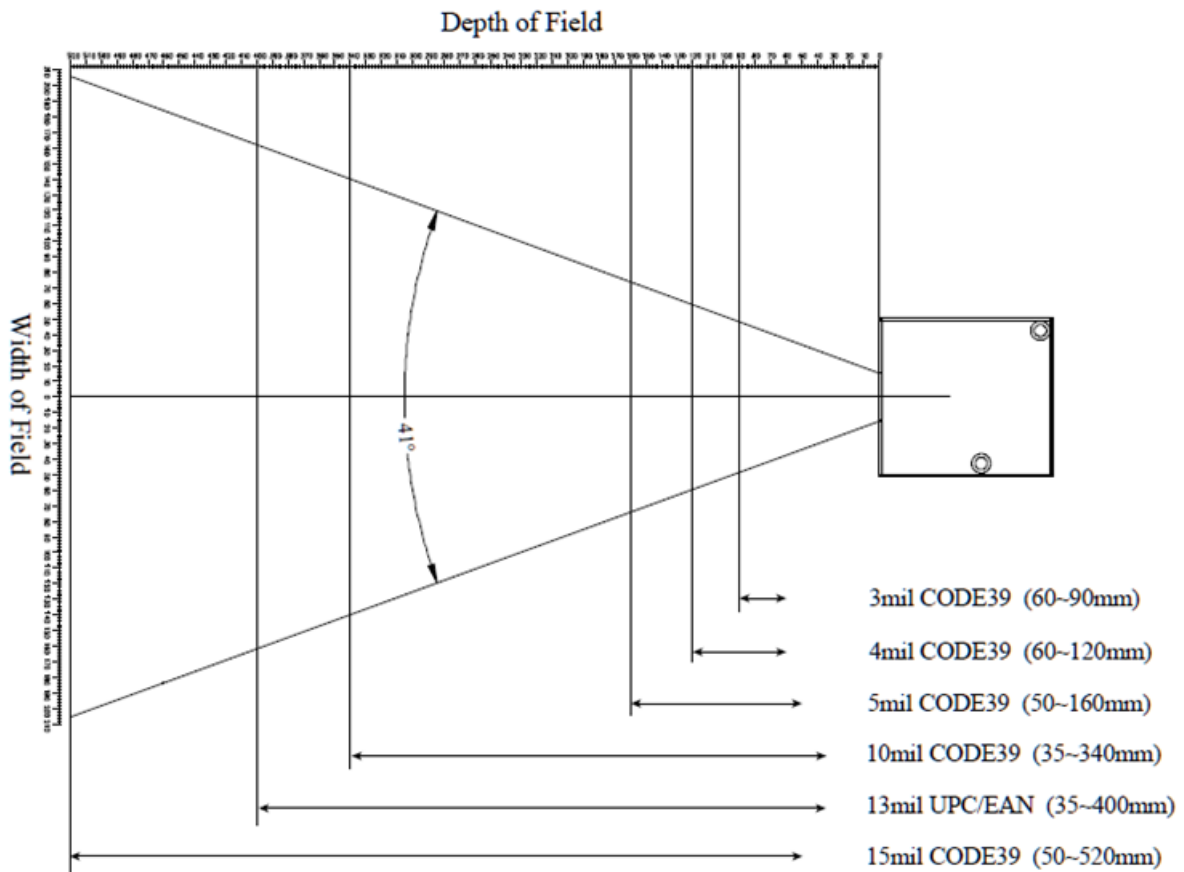
| Symbology | Resolution | Barcode Length | No. of Encoded Characters |
|---------------------------------|------------|----------------|---------------------------|
| Standard Code 39 (w/o checksum) | 13 Mil | 200 mm | 37 char. |



2-6-2. Guaranteed Scanning Range

Test Condition - MT30

Barcode Length: Code39 – 4 characters
EAN/UPC – 13 characters
Bar & Space Ratio: 1 to 2.5
Print Contrast Ratio: 0.9
Ambient Light: > 800 lux



Minimum & Maximum Scan Distance of MT30

| Symbology | Resolution | Distance | No. of Encoded Characters |
|---------------------------------|------------|-------------|---------------------------|
| Standard Code 39 (w/o checksum) | 3 Mil | 60 ~ 90 mm | 4 char. |
| | 4 Mil | 60 ~ 120 mm | |
| | 5 Mil | 50 ~ 160 mm | |
| | 10 Mil | 35 ~ 340 mm | |
| | 15 Mil | 50 ~ 520 mm | |
| EAN 13 | 13 Mil | 35 ~ 400 mm | 13 char. |

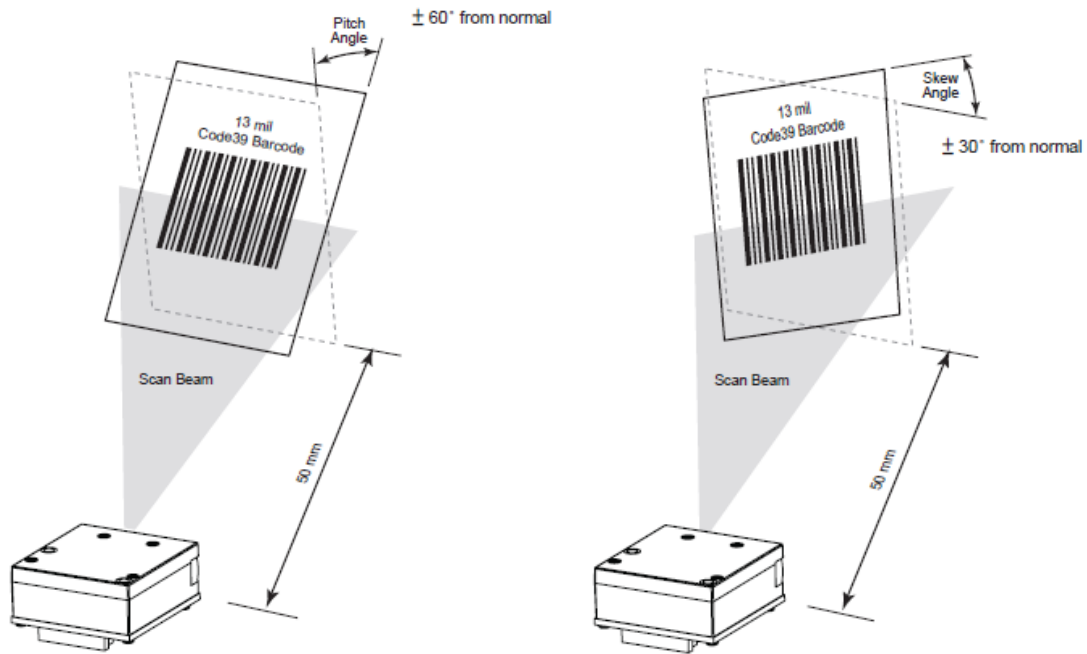
Maximum Scan Width of MT30

| Symbology | Resolution | Barcode Length | No. of Encoded Characters |
|---------------------------------|------------|----------------|---------------------------|
| Standard Code 39 (w/o checksum) | 13 Mil | 200 mm | 37 char. |



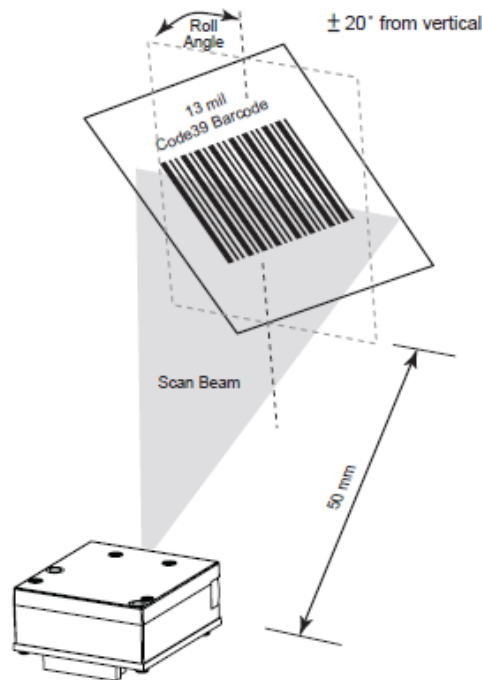
2-7. Pitch Angle, Roll Angle and Skew Angle

Be aware of the tolerance for the pitch, roll and skew angle of bar code you are trying to scan.



Pitch Angle: $\pm 60^\circ$

Skew Angle: $\pm 30^\circ$

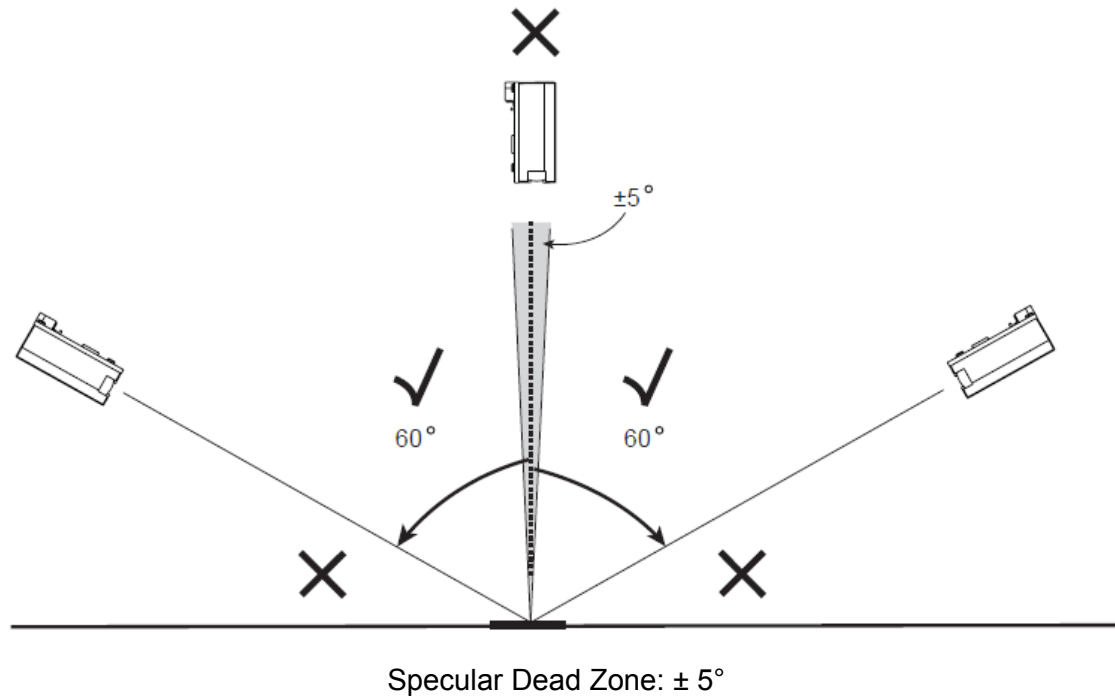


Roll Angle: ± 20



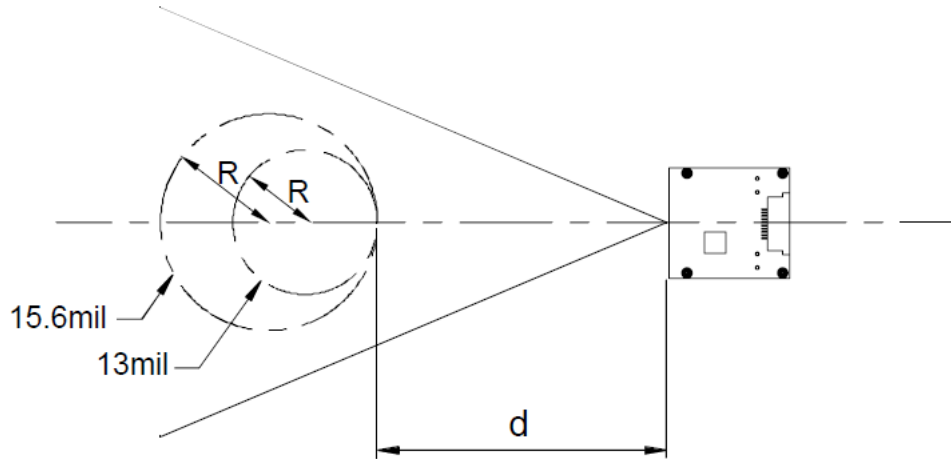
2-8. Specular Dead Zone

Do not place the MT30 directly over the barcode. The light reflecting directly back into the MT30 from the barcode is known as specular reflection, which can make decoding difficult. The specular dead zone of MT30 is up to 5° depending on target distance and substrate glossiness.



2-9. Curvature Degree

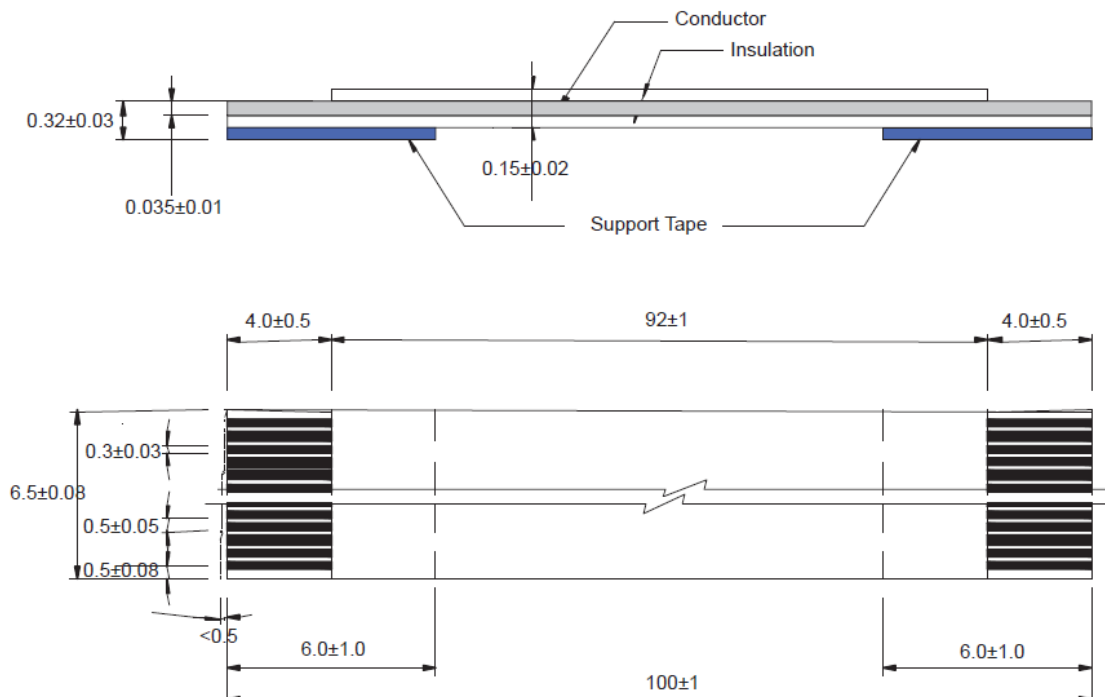
The curvature degree of a scanned barcode is specified as below:



| | | |
|-------------------|-------------------------------------|------------------------|
| Barcode | EAN13 (L=37mm) | |
| Resolution | 13 mil (0.33 mm) | 15.6 mil (0.39 mm) |
| R | $R \geq 20 \text{ mm}$ | $R \geq 25 \text{ mm}$ |
| d | 90 mm | 120 mm |
| PCS | 0.9 (printed on photographic paper) | |

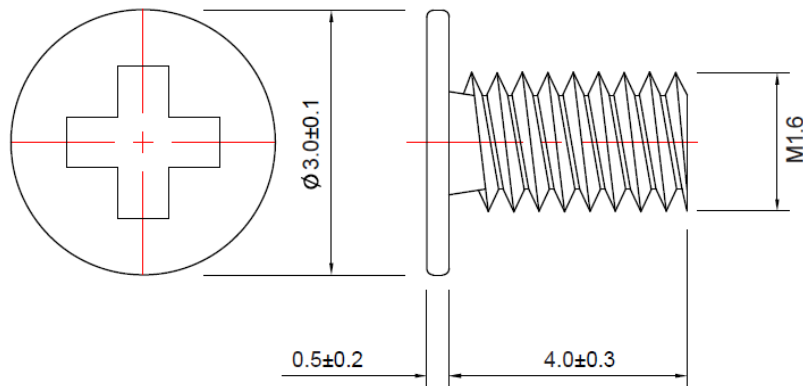
2-10. Flex Cable Specification

Below is the drawing of flat cable(P/N: 67XX-1009X12) that comes with MT30.



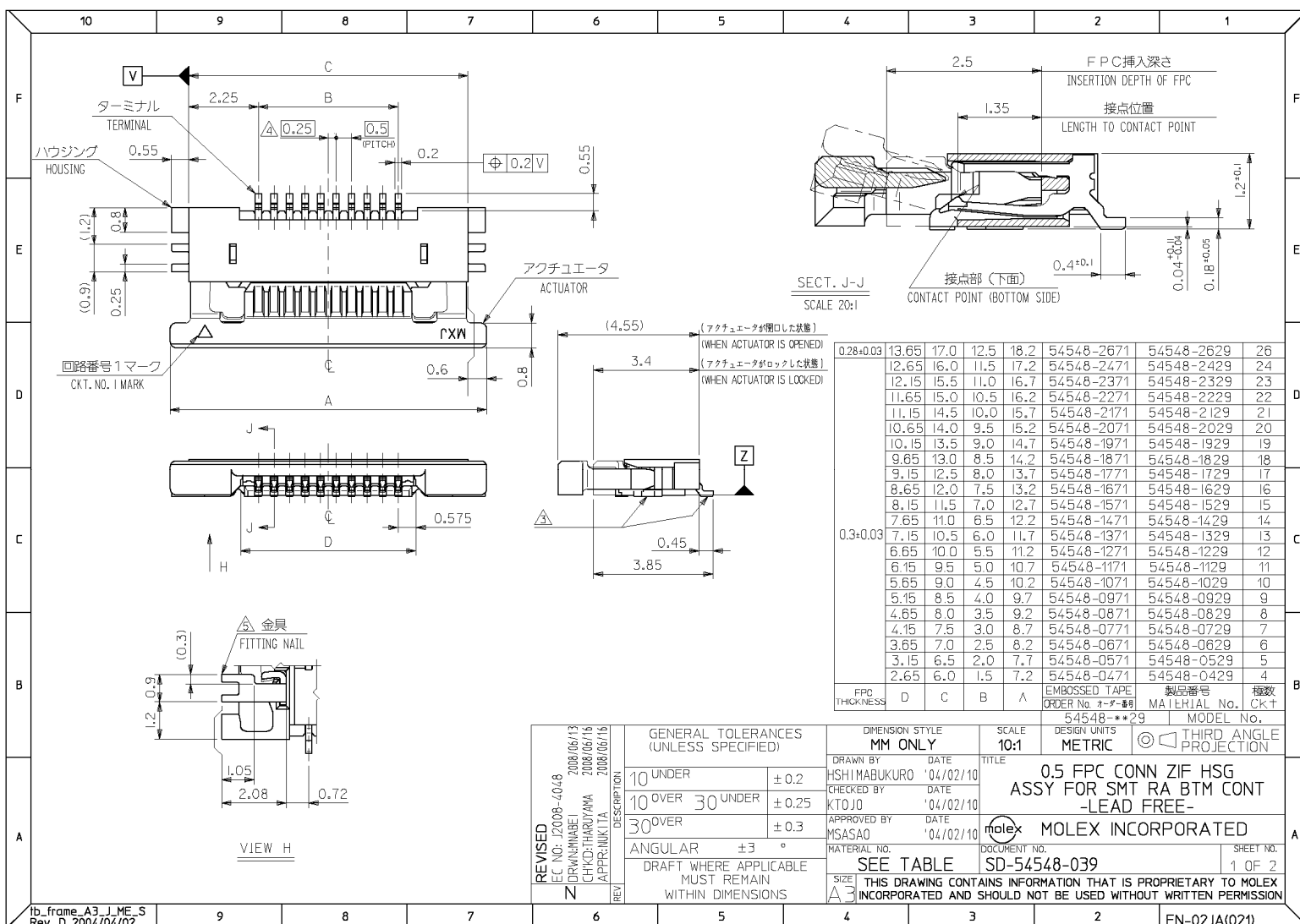
2-11. Screw Specification

Below is the drawing of M1.6x4 screws(P/N: 4210-1604X01) that come with MT30.



2-12. Connector Specification

Below is the drawing of 12-pin 0.5-pitch FPC Connector(P/N: 4109-0050X00) of MT30.



3. INSTALLATION

The MT30 scan engine is designed specifically for integration into customer's housing for OEM applications. However, the MT30'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 MT30.

3-1. Electrostatic Discharge Cautions

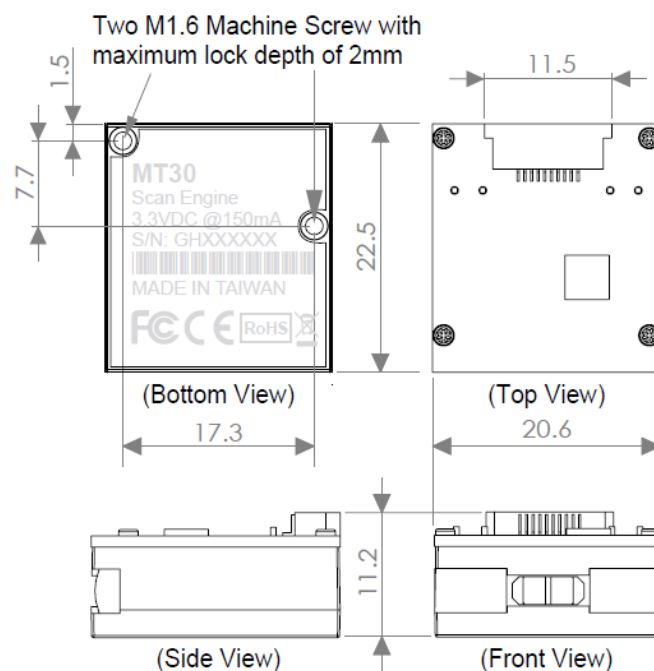
All MT30s are shipped in ESD protective packaging due to the sensitive nature of the exposed electrical components.

1. ALWAYS use grounding wrist straps and a grounded work area when unpacking and handling the MT30.
2. Mount the MT30 in a housing that is designed for ESD protection and stray electric fields.

3-2. Mechanical Dimension

When securing the MT30 by utilizing the machine screws:

1. Leave sufficient space to accommodate the maximum size of the MT30.
2. Do not exceed 1kg-cm (0.86 lb-in) of torque when securing the MT30 to the host.
3. Use safe ESD practices when handling and mounting the MT30.





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 sheet 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)

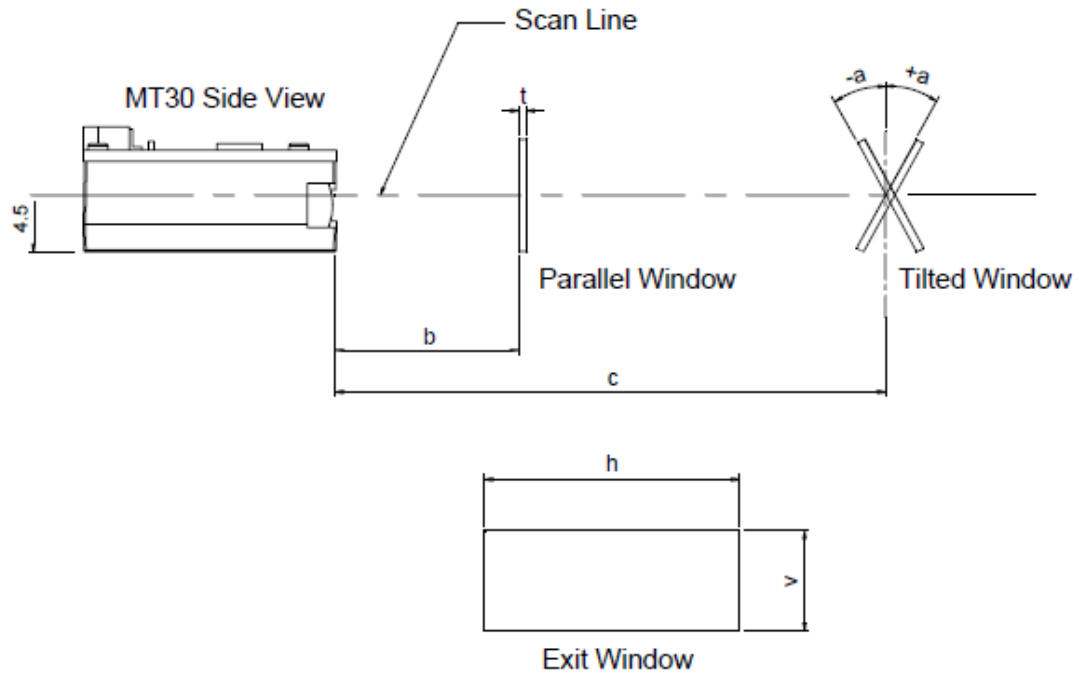
Also known as CR-39™, ADC, a thermal setting plastic widely used for plastic eyeglasses, has excellent chemical and environmental resistance. It also has an inherently moderate surface hardness and therefore does not require hard-coating. This material cannot be ultrasonically welded.

Chemically Tempered Float Glass

Glass is a hard material which 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.

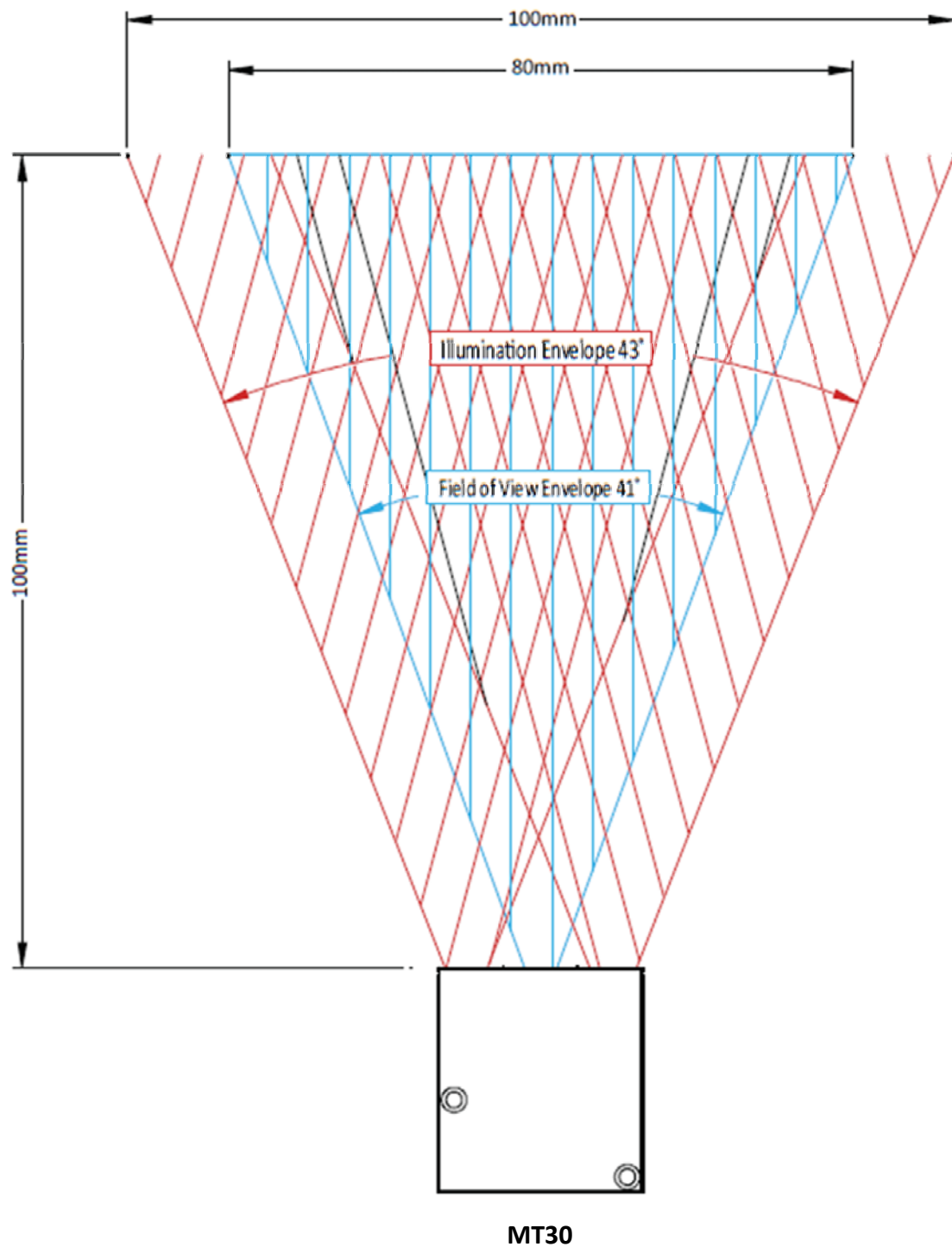
| Property | Description |
|-----------------------|--|
| Spectral Transmission | 85% minimum from 635 to 690 nanometers |
| Thickness | < 1 mm |
| Coating | Both sides to be anti-reflection coated to provide 1% maximum reflectivity from 635 to 690 nanometers at nominal window tilt angle. An anti-reflection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

3-4. Window Specifications



| Window Specifications for MT30 Integration | | | | | |
|--|----------------|--------|---------------------|--------------|---------------|
| Distance | Tilt Angle (a) | | Minimum Window Size | | |
| | | | Horizontal (h) | Vertical (v) | Thickness (t) |
| 0 mm (b) | 0 | 0 | 21 mm | 8 mm | < 1 mm |
| 10 mm (c) | > +20° | < -20° | 40 mm | 11 mm | |
| 20 mm (c) | > +12° | < -12° | 45 mm | 13 mm | |
| 30 mm (c) | > +8° | < -8° | 50 mm | 15 mm | |

The window size must increase as it is moved away from MT30 and should be sized to accommodate the field of view and illumination envelopes shown below:





3-5. Window Care

In the aspect of window, the performance of MT30 will be reduced due to any kind of scratch. Thus, reducing the damage of window, there are few things have to be noticed.

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

4. REGULATIONS

The MT30 scan engine conforms to the following regulations:

1. Electromagnetic Compliance – CE EN55022, EN55024
2. Electromagnetic Interference – FCC Part15 Subpart B (Class B)
3. Photobiological Safety – IEC 62471 (Exempt Group)
4. Environmental Regulations – RoHS 2.0, WEEE

5. DEVELOPMENT KIT

MARSON MB100 Demo Kit (P/N: [11A0-9801A20](#)) enables the development of products and systems using the MT30 on the MS Windows OS platform. Besides the Multi I/O board (P/N: [2006-1007X00](#)), the MB100 Demo Kit provides the software and hardware tools required for testing the MT30 applications before integrating it into the host device. Please contact your sales representative for ordering information.

MB100 Multi I/O Board (P/N: [2006-1007X00](#))

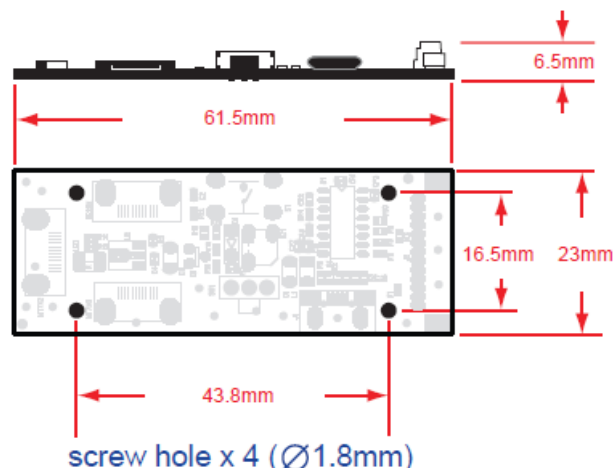


MB100 Demo Kit Accessories

O: Supported X: Not Supported

| Interface | RS232 | USB HID | USB VCP |
|--|-------|---------|---------|
| Cable | | | |
| External Y-cable (P/N: 7090-1583A00) | O | O | O |
| Internal Y-cable (P/N: 5300-1315X00) | O | O | O |
| Micro USB Cable (P/N: 7005-9892A50) | X | O | O |

Due to the advantage of its small size, MB100 Multi I/O board is also suitable for being installed inside the host system, as an interface board connecting MT30 to the host device.





6. SLEEP (IDLE) MODE

The **Sleep (Idle) Mode** is disabled by default. To enable **Sleep (Idle) Mode**, simply follow below instruction to configure the “Pre-Idle Time”, or the period of inactivity before MT30 enters Sleep (Idle) Mode, as appropriate.

A. Standard Mode

Firmware version: [SM3-j-x.xx](#)
(MT30 P/N: [1030-A000000](#))

Steps:

1. Scan SET MINUTE [.B030\$] or SET SECOND [.B029\$]
2. Scan two digit from the numeric barcode table below.
3. Scan SET MINUTE [.B030\$] or SET SECOND [.B029\$]

Notes:

Pre-Idle Time - Min: 10 sec, Max: 60 min & 60 sec



1

6



2

7



3

8



4

9



5

0





B. Command Mode

Firmware version: SM3-k-x.xx.CMD

(MT30 P/N: 1030-A000001)

| Property | Option | Remark |
|--------------------------------|--|---|
| Sleep (Idle) Mode {MC11WT1} | 0 Off 1 On | Default : Off When enabled, scanner will automatically enter Sleep Mode after a period of inactivity(Sleep Mode timeout). |
| Pre-Idle Time {MC11WT,1,0} | A number from 0~60 (Minute) A number from 0~60 (Second) | Default : 1 minute Sleep Mode timeout(10 sec ~ 60 min & 60 sec), the period of inactivity before the scanner enters Sleep Mode . |

Steps:

1. Send {MC11WT1} & {MC11WT,1,0} to the MT30 if you want to enable **Sleep (Idle) Mode** and set Pre-Idle Time as 1 minute.
2. The MT30 will return {MC11,OK} and {MC11,1,1,0} respectively as confirmation.
3. If you want above settings to be saved permanently in Flash ROM, send {MCMDDWT1} to the MT30. Otherwise MT30 will be reset to default after wake up from sleep..

Notes:

Curly braces “{ }” must be included at both ends of each command.

7. PARAMETER SETUP

You can set up your MT30 using one of the following methods:

1. Standard Mode (F/W ver.: SM3-j-x.xx):

Scan configuration barcodes from the Universal User's Manual, or use Ez Utility®, both of which are available for download at www.marson.com.tw

2. Command Mode (F/W ver.: SM3-j-x.xx.CMD):

Send software commands from the host, or use BEO®, which is available for download at www.marson.com.tw. Full list of software commands can be found in the Help File of BEO program, on the chapter *Test Window/ Command Operation*.



8. VERSION HISTORY

| Rev. | Date | Description | Issued | Checked |
|------|------------|--|--------|-------------|
| 1.0 | 2016.10.04 | Initial Release | Shaw | Kenji & Hus |
| 1.1 | 2016.10.31 | Revised Sleep Mode command in Chapter 6 | Shaw | Kenji & Hus |
| 1.2 | 2016.12.23 | Updated D.O.F | Shaw | Kenji & Hus |
| 1.3 | 2017.06.21 | Deleted Red Cell-Cast Acrylic Description | Shaw | Hus |
| 1.4 | 2018.03.15 | Updated Chapter 1 and 1-1 on MCU. Updated Chapter 6 on Command Mode settings. | Shaw | Kenji & Hus |
| 1.5 | 2018.07.23 | Added Typical D.O.F & Guaranteed D.O.F | Shaw | Hus |
| 1.6 | 2018.09.03 | Updated Chapter 3-4 | Shaw | Hus |
| 1.7 | 2019.04.23 | Updated Screw Drawing | Shaw | Hus |

Marson Technology Co., Ltd.

9F., 108-3, Mincyuan Rd., Sindian Dist., New Taipei City, Taiwan

TEL: 886-2-2218-1633

FAX: 886-2-2218-6638

E-mail: info@marson.com.tw

Web: www.marsontech.com