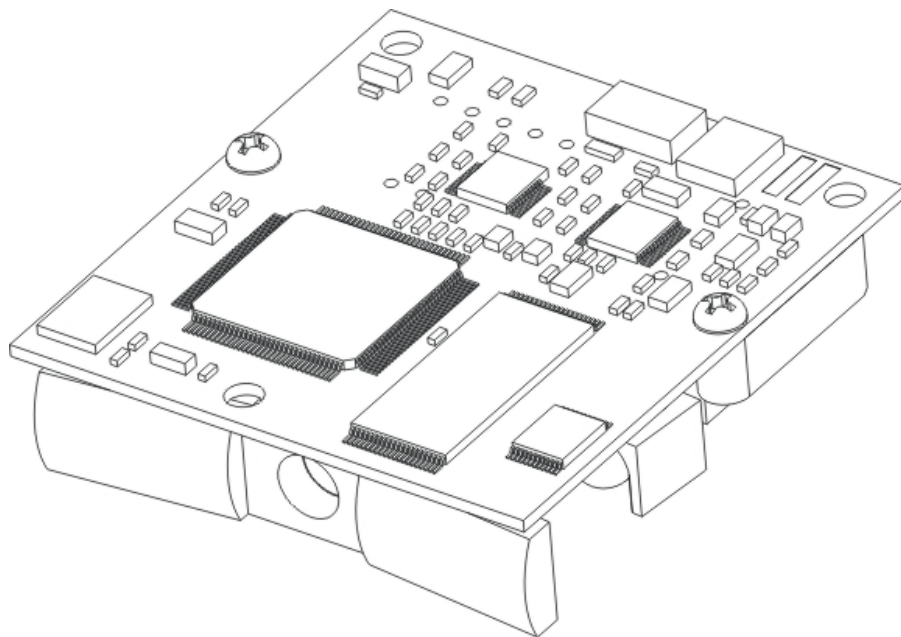


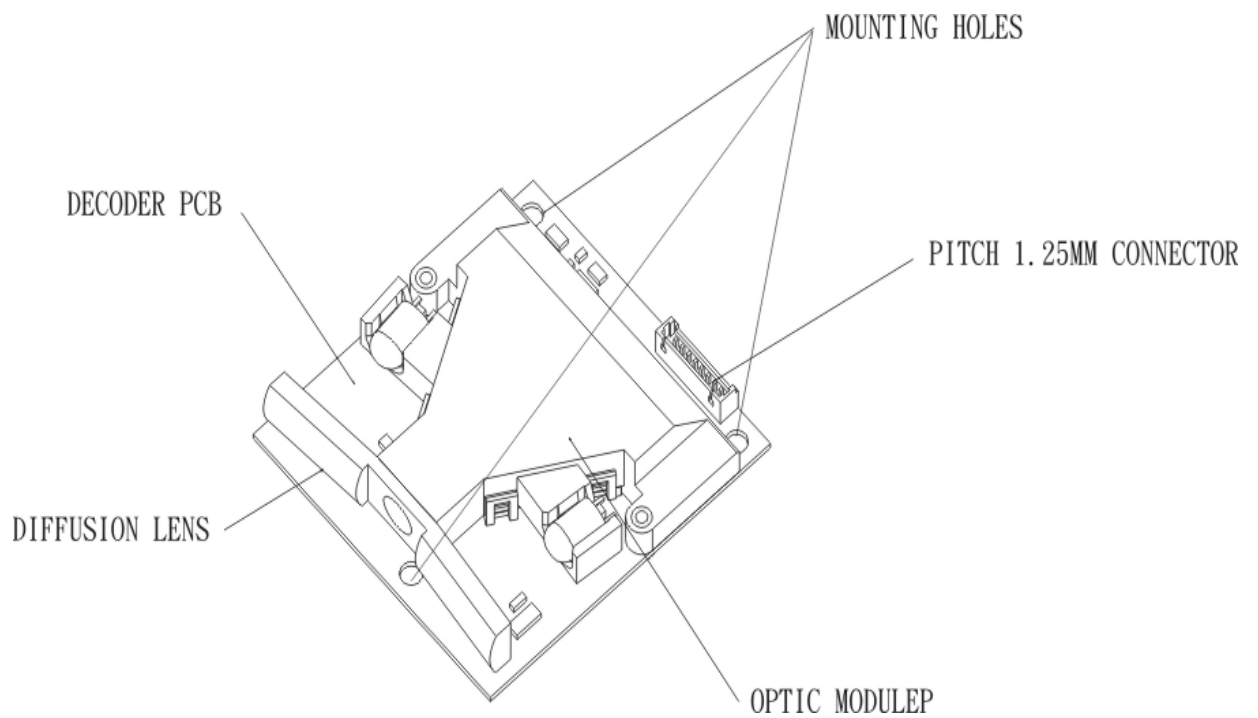


# 1400 SERIES INTEGRATION GUIDE



## 1. INTRODUCTION

### 1-1 MODULE DETAIL



**Figure1-1 Component Side View**

## 2. MECHANICAL INTEGRATION

The following information is intended as a guide for engineering purposes. It features the layout and mounting features, window dimensions and positioning.

### 2.1 MOUNTING OPTION

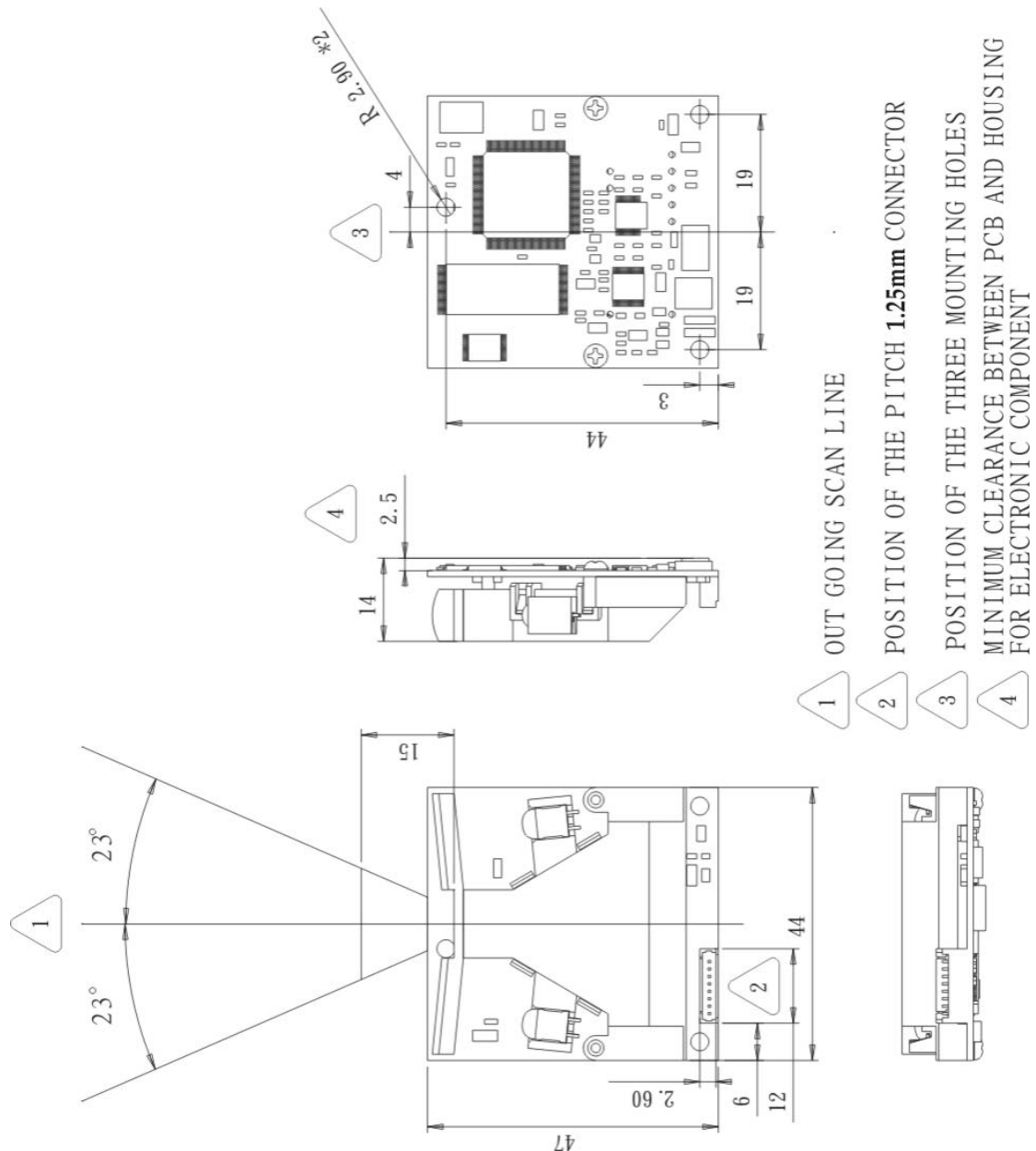
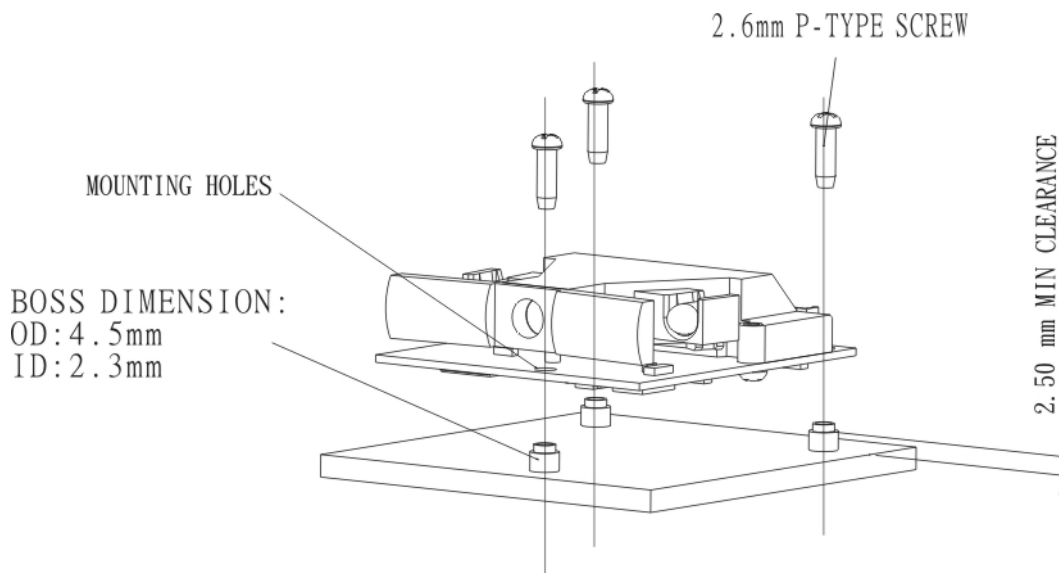


Figure 2-1 Outer Dimension Diagram



Figure 2-1 shows the outline drawing of the scan module, including the emitted scan line and the interface connector location. The scan module may be mounted in any orientation in your product using the three mounting holes shown in Figure 2-2, and a P-TYPE 2.6mm screw is recommended when mounting.



**Figure 2-2 Mounting Diagram**



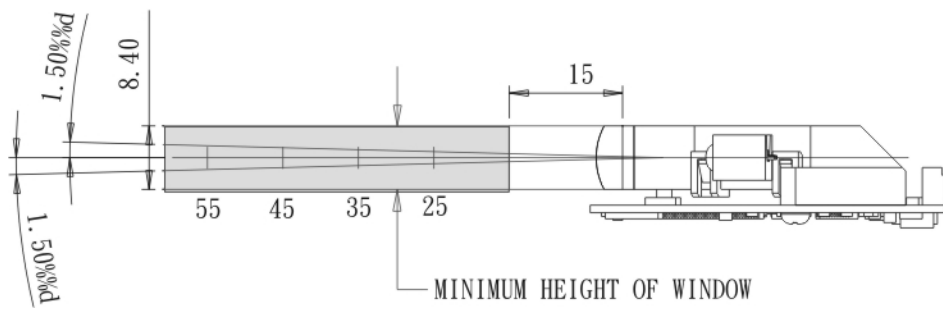
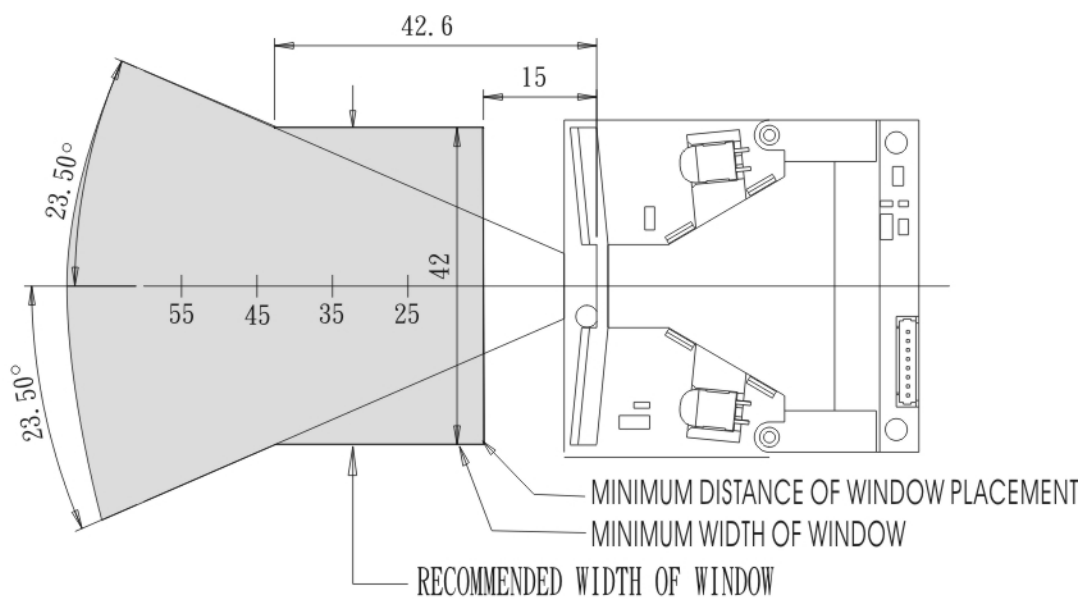
## 2 OPTICAL WINDOW DESIGN

A suitable optical window is required to protect the module from dust and other environmental contaminants as these can lead to a reduction in scan performance. The 1400 series module LEDs emit a 630nm wavelength visible red light beam in the form of a scan line to illuminate target barcode. In order to scan successfully the beam travels through the device optical window, reflects off the barcode symbol, returns through the window and to be collected by a CCD image sensor. As in any optical system, all types of window will cause a reduction in scanning performance due to some light loss as a result of surface reflection. Beyond these reflection losses the light beam should not be materially degraded as it passes through the window.

Consideration should be given to the window's optical material and placement of suitable window as part of an overall design for complete product housing for optimum performance:

1. Optical window must not attenuate emitted light
2. Window must not block or be angled to cause loss of light reflected from the barcode. Figure 2-3 shows the minimum size and position of the window along the horizontal and vertical axis
3. Emitted light reflected from the window should not reach the front face of the scan module, either directly or through internal reflection within the host system. Such reflections generally have much greater optical amplitude than the reflection from the barcode symbol, and so can significantly reduce depth-of-field

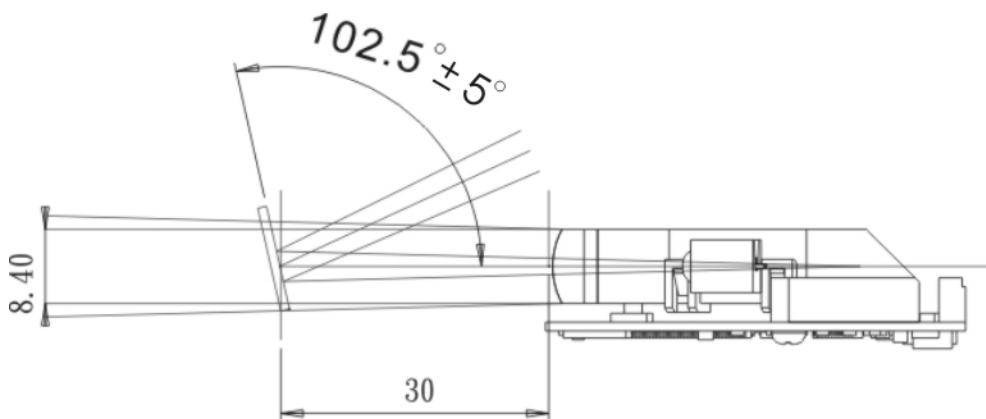
\*Contact Cipherlab for more advice on optical window design and specification





**FIGURE 2-3 CLEAR APERTURE REQUIREMENT**

You should determine the window tilt based on your application. The tilt angle of the optical window (i.e, position relative to the optical axis or center- line) is important because a portion of the emitted light will always be internally reflected from each of the two window surfaces. This reflected light must not reach the CCD image sensor and light box either directly or via multiple reflections paths from other parts of the module or the housing.



**FIGURE 2-4 WINDOW PLACEMENT (Suggested)**



## **3.CHARACTERISTICS**

### **3.1 ELECTRICAL**

#### **3.1.1 Working voltage :**

1400 : 5V  $\pm$ 10%

1410 : 3.3V  $\pm$ 10%

1420 : 5V  $\pm$ 10%

#### **3.1.2 Typical operation current**

1400 : <90mA

1410 : <80mA

1420 : <90mA

#### **3.1.3 Standby current**

1400 : <10mA

1410 : < 5mA

1420 : <10mA

### **3.2 ENVIROMENTAL**

**3.2.1 Operating temperature( $^{\circ}$ C) : 0 $^{\circ}$ C~50 $^{\circ}$ C**

**3.2.2 Storage temperature( $^{\circ}$ C) : -20 $^{\circ}$ C~60 $^{\circ}$ C**

**3.2.3 Operating humidity : 10~90% non-condensing**

**3.2.4 Storage humidity : 0~95% non-condensing**

### **3.3 PHYSICAL**

**3.3.1 Dimensions : 47 X 44 X 13 mm**

**3.3.2 Weight : 20g**





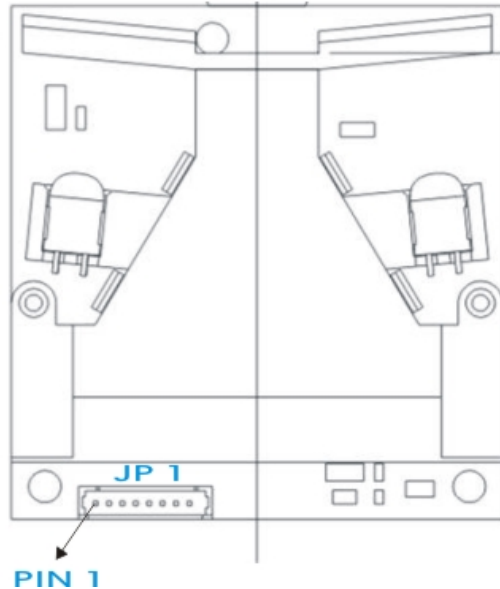
## 3.4 OPTICAL

- 3.4.1**     *Light source : 630 nm Red LED*
- 3.4.2**     *Resolution : up to 0.125 mm (5mil)*
- 3.4.3**     *PCS : up to 0.45*
- 3.4.4**     *Scan Rate : 100 scans/sec*
- 3.4.5**     *Ambient light rejection : 2000 lux fluorescent, 1000 lux  
sun light*
- 3.4.6**     **CCD Sensor:**
  - 1400 : 2048 pixels
  - 1410 : 3648 pixels
  - 1420 : 3648 pixels

## 3.5 INTERFACE

### 3.5.1 CMOS Level RS232, 1.25mm pitch 8pins connector

### 3.5.2 Pin-assignment



| Pin # | Signal     | Description   |
|-------|------------|---|
| 1     | TXD        | CMOS RS232 Transmit data pin, from module to Terminal(PC), Hi:1, Lo: 0. |
| 2     | RXD        | CMOS RS232 Receive data pin, from Terminal(PC) to module, Hi:1, Lo: 0.  |
| 3     | RTS        | CMOS RS232 RTS pin, from module to Terminal(PC)<br>active low           |
| 4     | CTS        | CMOS RS232 CTS pin , from Terminal(PC) to module, active low            |
| 5     | -Trigger   | Switch input pin,<br>active on falling edge                             |
| 6     | Indicator* | Indicator output pin<br>active Hi.                                      |
| 7     | VCC        | Power supply pin  |
| 8     | GND        | Ground  |

\* The LED indicator output can also be used to drive speaker.

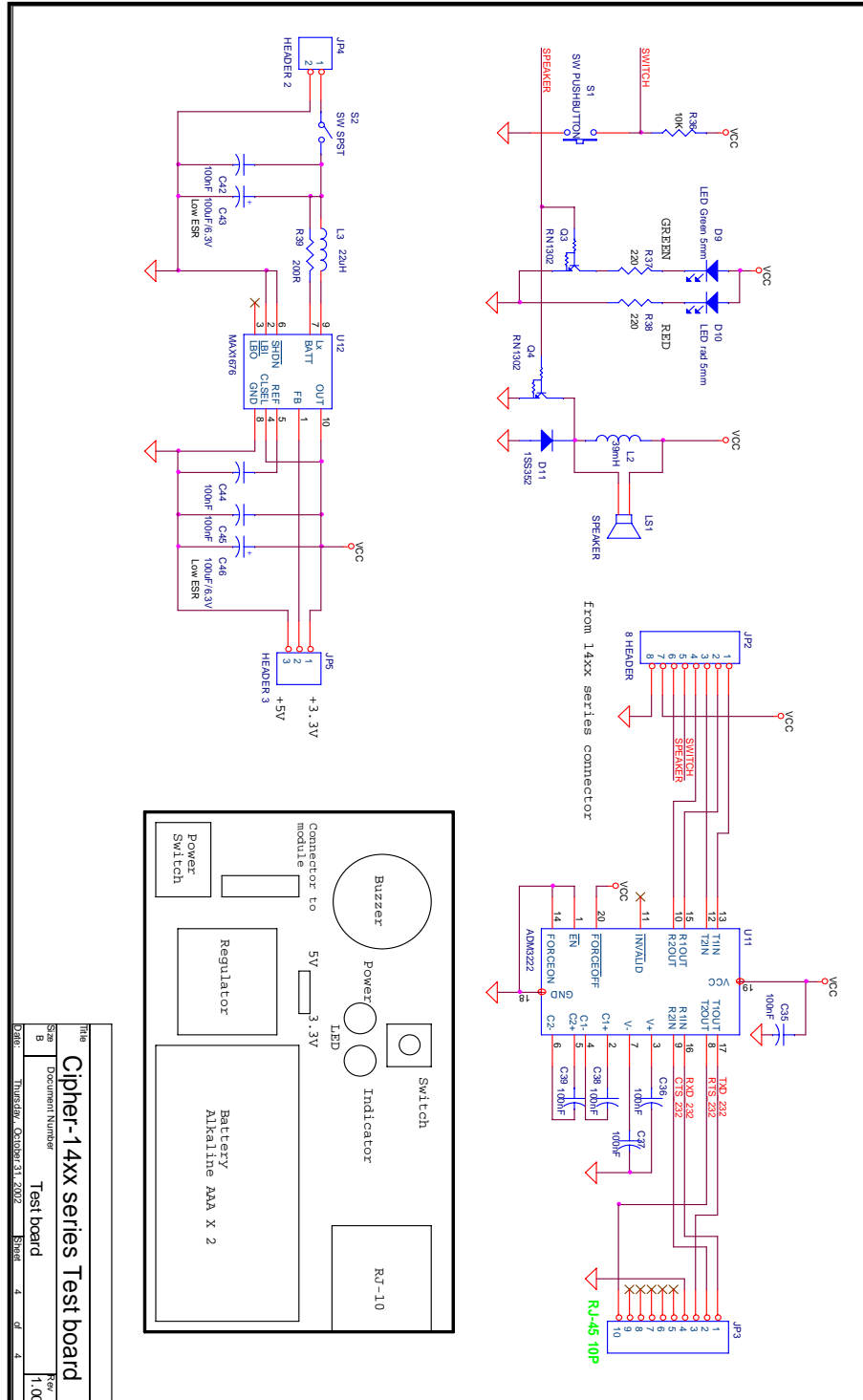


### 3.5.3 DC Characteristics

| Parameter             |                                   | Symbol    | Min           | Typ. | Max           | Unit |
|-----------------------|-----------------------------------|-----------|---------------|------|---------------|------|
| Power Supply Voltage  | 1400/1420                         | $V_{CC1}$ | 4.5           |      | 5.5           | V    |
|                       | 1410                              | $V_{CC2}$ | 3             |      | 3.6           | V    |
| Input Low Voltage     | 1400/1420                         | $V_{IL1}$ | -0.3          |      | $0.3 V_{CC1}$ | V    |
|                       | 1410                              | $V_{IL2}$ | -0.3          |      | $0.3 V_{CC2}$ | V    |
| Input Height Voltage  | 1400/1420                         | $V_{IH1}$ | $0.7 V_{CC1}$ |      | $V_{CC1}+0.3$ | V    |
|                       | 1410                              | $V_{IH2}$ | $0.7 V_{CC2}$ |      | $V_{CC2}+0.3$ | V    |
| Output Low Voltage    | 1400/1420<br>( $I_{OL1}=1.6mA$ )  | $V_{OL1}$ |               |      | 0.45          | V    |
|                       | 1410<br>( $I_{OL2}=1.6mA$ )       | $V_{OL2}$ |               |      | 0.45          | V    |
| Output Height Voltage | 1400/1420<br>( $I_{OH1}=-400uA$ ) | $V_{OH1}$ | 4.2           |      |               | V    |
|                       | 1410<br>( $I_{OH2}=-400uA$ )      | $V_{OH2}$ | 2.4           |      |               | V    |

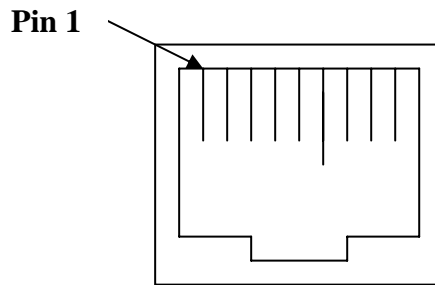
## 3.6 DEMONSTRATION BOARD

### 3.6.1 Schematic





### 3.6.2 Pin-assignment of Connector (JP3)

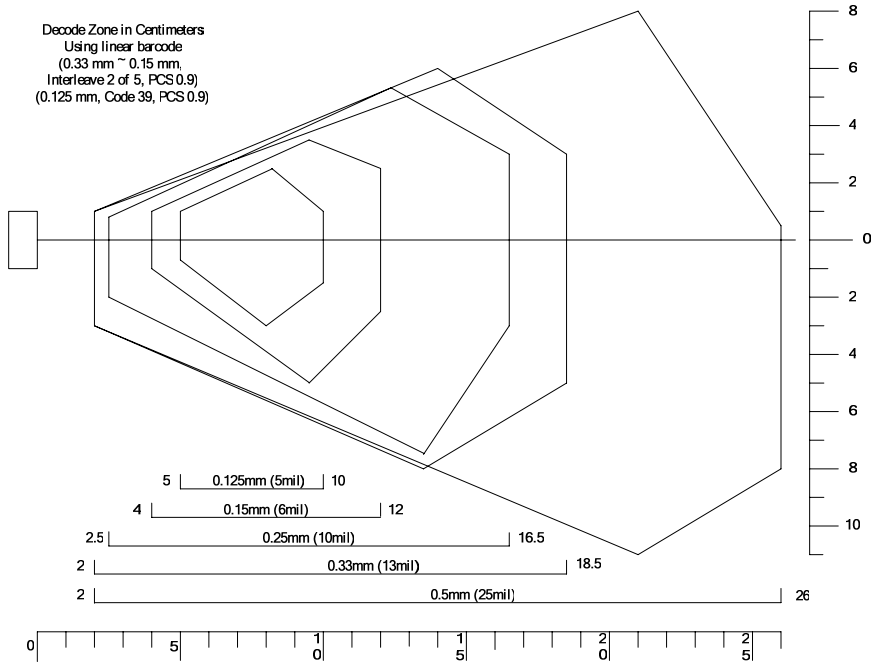


| Pin# | Signal | Description                            |
|------|--------|--|
| 1    | RXD    | Standard RS232 Receive data input pin. |
| 2    | CTS    | Standard RS232 CTS input pin.          |
| 3    | TXD    | CMOS RS232 Transmit data output pin.   |
| 4    | GND    | Ground                                 |
| 5    | NC     |  |
| 6    | NC     |  |
| 7    | NC     |  |
| 8    | NC     |  |
| 9    | NC     |  |
| 10   | RTS    | Standard RS232 RTS output pin.         |

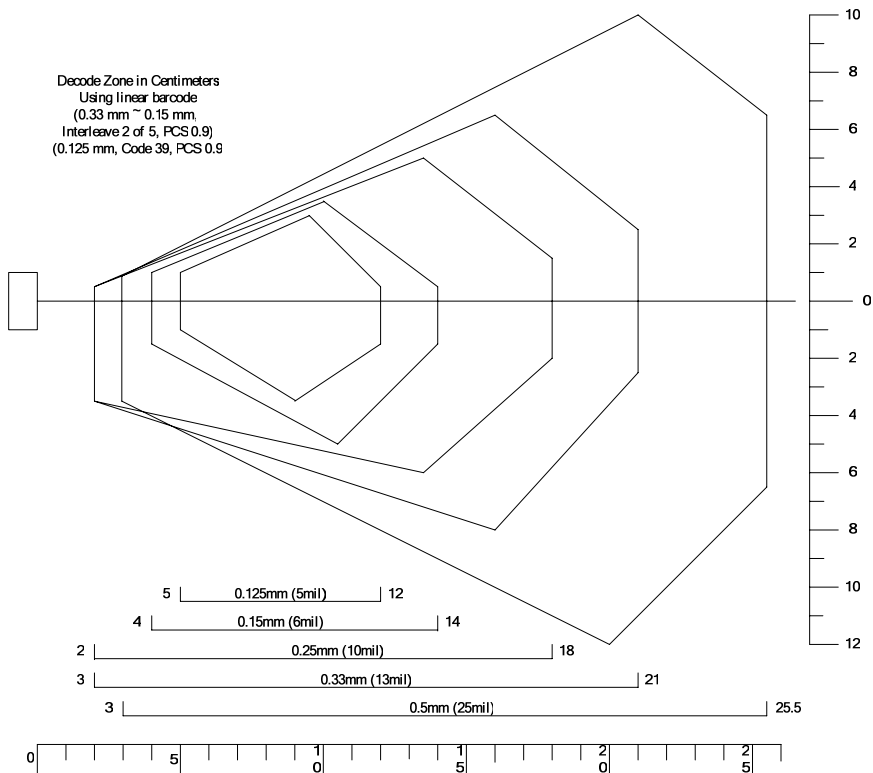
You can use our Cipher-1100 single RS232 cable, part No. is WSI6000100041, as the interface cable.

## 3.7 READING

### 3.7.1 1400



### 3.7.2 1410



## 3.7.3 1420

