The 1st Chapter INTRODUCTION

Brief Introduction

E1006 Embedded bar code scanner engine , which adopts the international advanced intelligent photo identifying technology， combining the advanced photo identifying algorithm with high-end chip designment and manufacturing technology perfectly, simplifies the 1D bar code scanning process, to obtain high performance, reliability and low consumption of 1D image bar code scanner product.

E1006 can decode EAN-13, EAN-8, UPC-A, UPC-E, ISSN, ISBN, Codabar, Code 128, Code 93, Interleaved 2 of 5,Code 39。

Aiming Indication

The aiming indication of E1006 is a beam of red light.

The 2nd Chapter INSTALLATION

General requirement

ESD

E1006 is designed with anti-static protection and anti-static casing, but the anti-static measure is necessary during opening and using,such as taking a ground strap or other devices.

Dustproof and antifouling prevention

In the conserving and using processes, enough airtightness is necessary, to avoid the powder, granule and other pollutant cohering at the lens,circuit or other sectors, which could lower the performance of machine.

Environment

E1006 fits to the following environmental requirement during normal working:

Working Temperature	-20℃ ~ 60℃
Storage Temperature	-40℃ ~ 85℃
Relative Humidity	5% ~95% (Non-condensing)

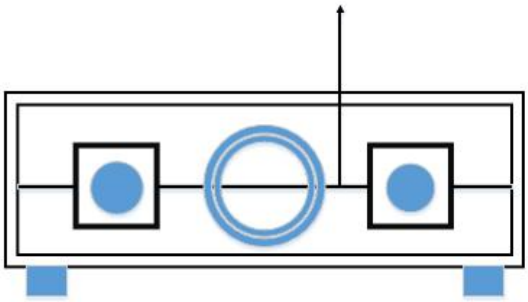
Heat Dissipation

During working, E1006 used to emit heat. While E1006 is working in full speed, heat will accumulate and cause the high temperature of its CIS chip and decode chip. Although E1006 can work at that environment ,it may cause the increasing noise of CIS chip and influence the quality of picture, limiting its decode ability. Before putting E1006 in the high-temperature working environment, a test that determines whether the decline of decode ability is acceptable is important, and then work out plans to dissipate heat.

- ✧ Enough space could form an natural convention or internal forced convention
- ✧ Avoid using the materials that could not dissipate heat such as rubber to warp the E1006.

Direction of Installing

When the E1006 is placed or installed correctly, its front facade is like the following picture. The lens in the center with two aiming area alongside, decode circuit above and screw fixing hole beneath. At same time, E1006 will capture the picture it confront

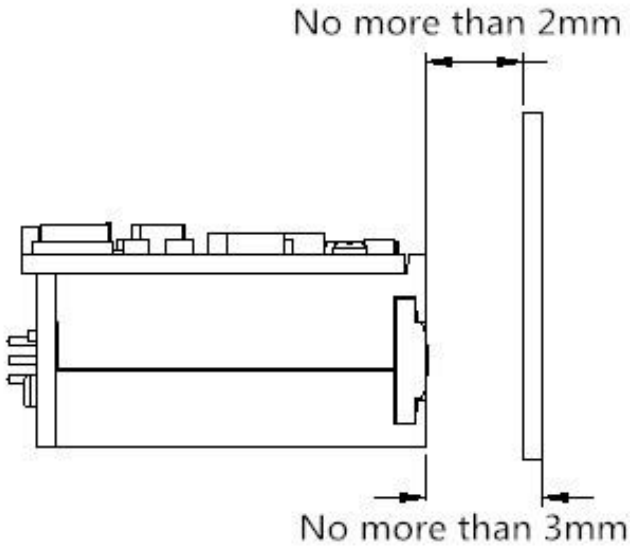


Optics

Window placing

The window is a light path ，a kind of specious transparent medium which installed on the front of the engine of E1006, separating the inside and outside of product and preserving bar code for E1006. The window should be at a place at which could make lighting beam and aiming beam shooting out and prevent the reflection backing into the engine. If the reflection of lighting beam into the engine, the decode ability of engine could be reduced.

The distance of placing the window is obtained from measuring the distance between the front facade of E1006 and the farthest facade of the window. To acquire the optimal decoding ability, the distance between the far-end facade of window and the front facade of E1006 should be within 3mm, meanwhile the distance between the near-end facade of window and the front facade of E1006 should be within 2mm.



If slant design is requested, the demanding distance is equal to the paralleled installation. Ensuring that no reflected light could into the lens to guarantee the decoding ability.

The texture and color of window

The selection of texture and color is base on the consideration of the lighting of E1006 and the wavelength of light CIS could affect(mainly the red light band), to higher the successful rate of the light passing through and to lower the ambiguity rate as possible and to assure the uniformity of refractive at the same time. Generally, PMMA or optical glass is available. The transmittance of red light is higher than 90% and the ambiguity is lower than 1%. Whether adopt the anti-reflective coating is base on the specific texture and application.

Scratch Resistant and Coating

Any spot or scratch on window may reduce the decoding ability of E1006. Scratch-resistant and anti-fouling design on window is suggested. High-wear material or high-wear coating is considerable.

Environmental Light

The environmental light is important factor in great performance of E1006. E1006 could fit to the normal 50~60Hz lighting , but its performance maybe affected by interfering under the jamming of high PRF circumstance.

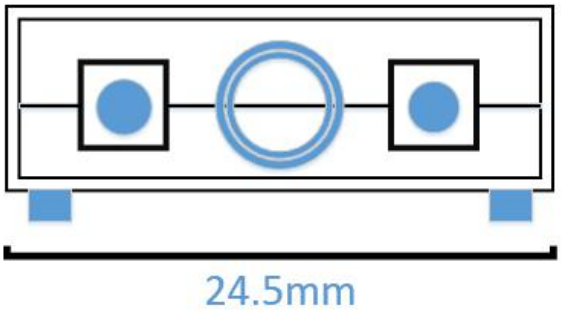
Eye-Safe

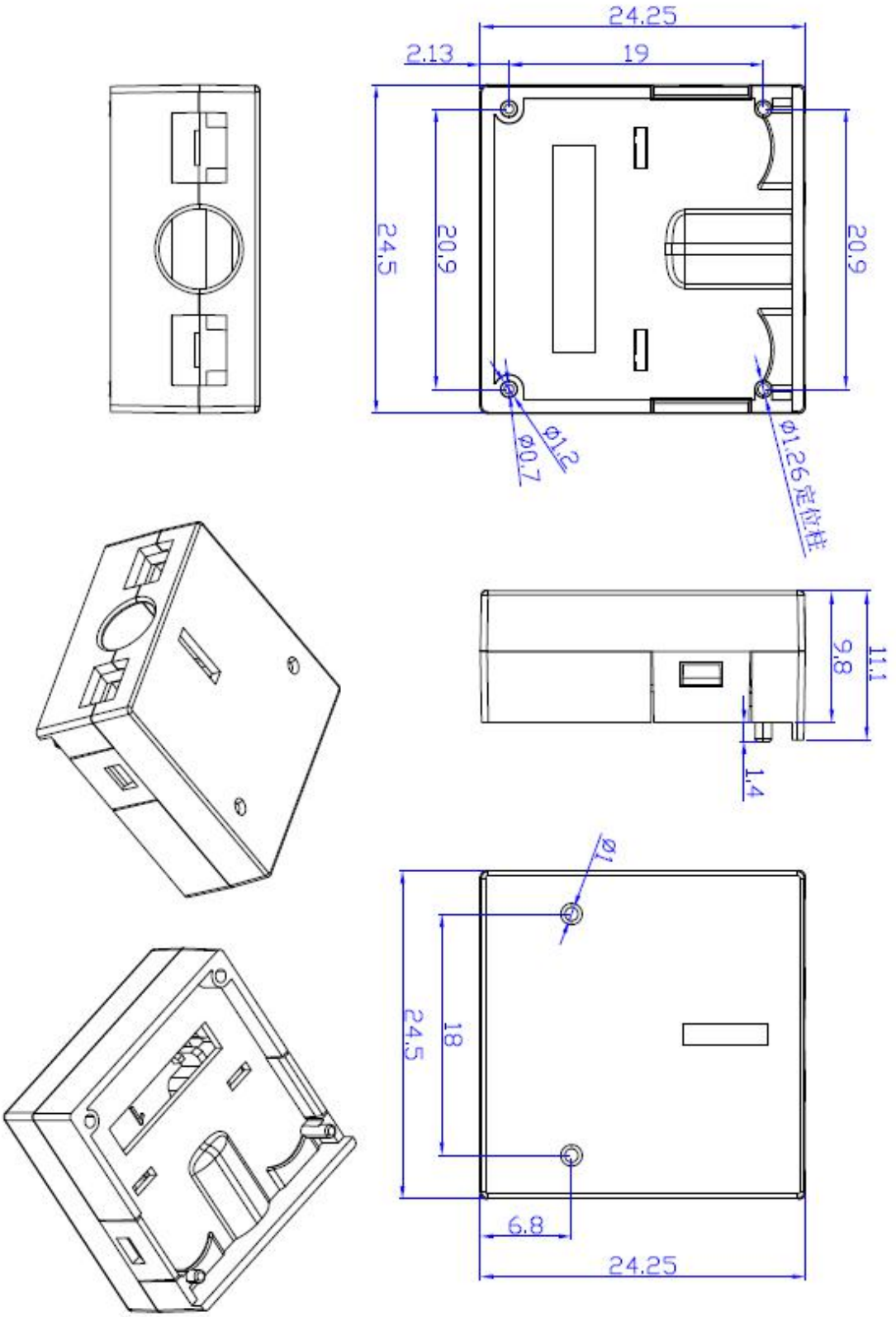
LED is adopeted to form the indicative aiming image.Usually the wavelength of LED is safe under the correct usage, but avoid shooting at eyes directly in case causing damage.

Installation

When putting E1006 into integrated application, please refer to the dimensions data showed as following. Additional remark: E1006 could not be compressed by other units.

THE FRONT FACADE OF E1006 (by millimeter)




24.25
2.13
19
24.5
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20.9
ø1.2
ø0.7
ø1.26定位柱
11.1
9.8
1.4
ø1
24.5
18
6.8
24.25

The 3rd Chapter ELECTRICAL CHARACTER

Power requirement

Before connecting with E1006, do not plug the equipment into an electricity supply. If connecting or drawing out the E1006 with electric cables, the circuits would be damaged. Assuring the power is cut off before plug in or plug out the connector.

Poor power connection or turning on and turning off the power in short time or excessive pulse may set the E1006 into the unstable working condition. Stable power input is necessary.

E1006 can not control the power automatically. While using it, cutting off the power could stop it to save electricity.

The time of start up process of E1006 is less than 200ms from turning on the power. After turning off the power, 500ms interval is suggested to turn on it again.

Ripple Noise

Due to the input power is supply to picture sensor and decode chip directly, to ensure stable working, taking power input of low ripple noise is suggested. The ripple noise within 50mV(peak to peak) is optimal, at least not higher than 100mV(peak to peak).

DC Characteristics

Working Voltage

Ta=25℃

Parameter	Description	Minimum	Standard	Maximum	UNIT
V_{DD}	Interface power supply voltage	4.8	5	5.5	V
V_{IH}	Input high level	$0.7*V_{DD}$	-	-	V
V_{IL}	Input low level	-	-	$0.2*V_{DD}$	V
V_{OH}	Out put high level	$0.9*V_{DD}$	-	-	V
V_{OL}	Output low level	-	-	$0.1*V_{DD}$	V

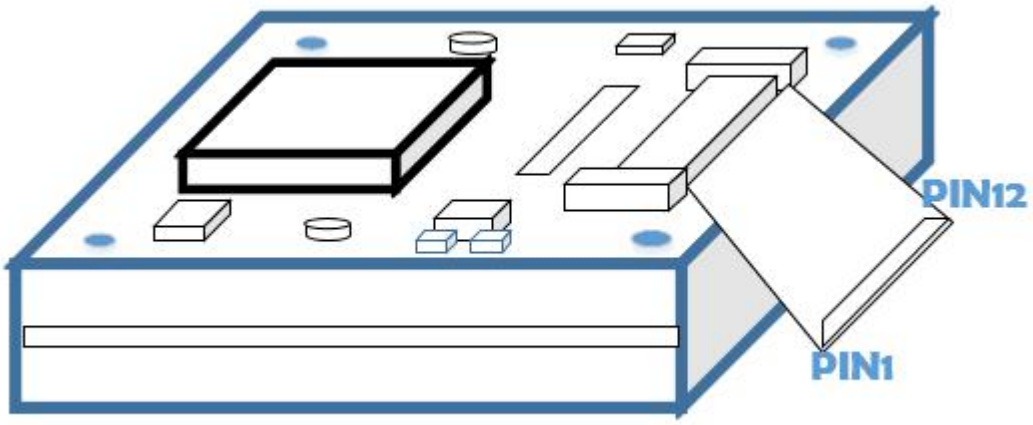
Working Current

Ta=25℃ V_{DD}=3.3V

Operating Current	Standby Current	UNIT
60	25	mA

The 4th Chapter INTERFACE ILLUSTRATION

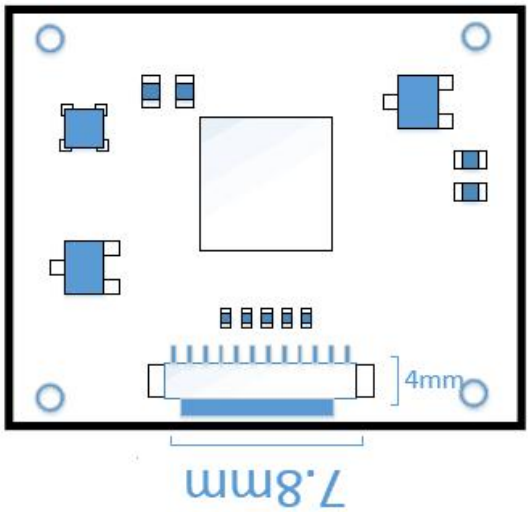
The graph listing below shows the name of each pin and explain signals of 12-pin of E1006.



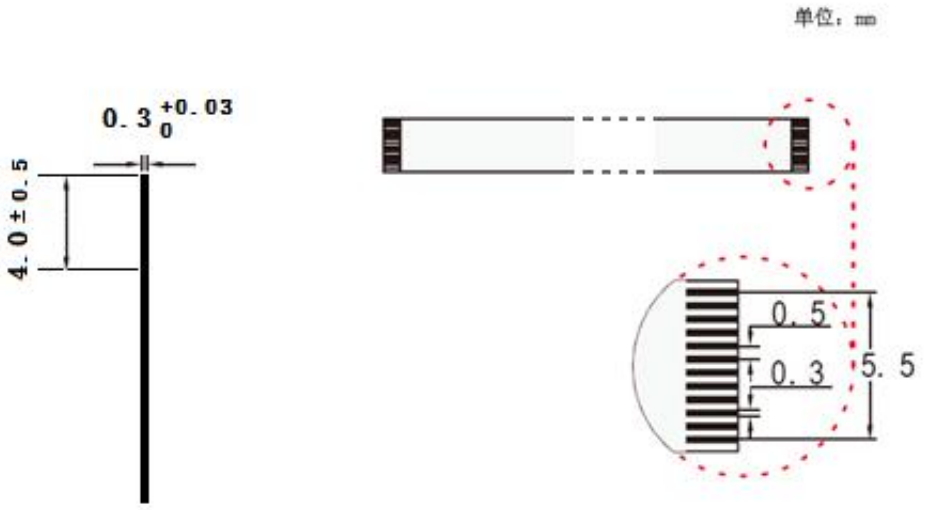
PIN	Signal	I/O	Instruction
1	NC	Suspended	Backup
2	VDD	-	5V Input power
3	GND	-	GND
4	RX	Input	TTL-232 receive
5	TX	Output	TTL-232 send out
6	USB_D -	Input/output	USB_D - signal
7	USB_D +	Input/output	USB_D + signal
8	NC	Suspended	Backup
9	Buzz	output	Buzzle output signal. External drive circuit can refer to the chapter “Buzzle signal”
10	LED	output	Indicative light output signal External drive circuit can refer to the chapter “Led signal”
11	NC	Suspended	Backup
12	nTrig	input	Trigger input signal, keeping OV higher than 10ms could trigger decoding

Connector

The graph shows the EM1365-LD connector. It adopts ZIF 12 PIN socket, connecting with host computer with flexible cables. The size is illustrated.(mm)



Flexible cable



The connector of E1006 is adopting the flexible cable, which could be designed as same or different surface cable. The specification is conform to the requirement as follow. To ensure the stability of connecting and working, reinforced material could be used at the connecting pin, reducing the impedance of cable at the same time.

Communication interface

Several ways of communication between E1006 and host computer.

✧ TTL-232 : the interface fits to most system frameworks. As for some systems that need the framework of RS232 demand switching circuit containing TTL-232 to RS-232.

✧ USB HID-KBW : Basing on the USB keyboard stimulation device, could connect with PC directly. Driver program is not necessary.

The TTL-232 communication interface provided by E1006 supports speed between 1200bps and 115200bps.

The default configuration of the TTL-232 communication interface are 115200bps、8 data bits、no parity、1 stop bit.

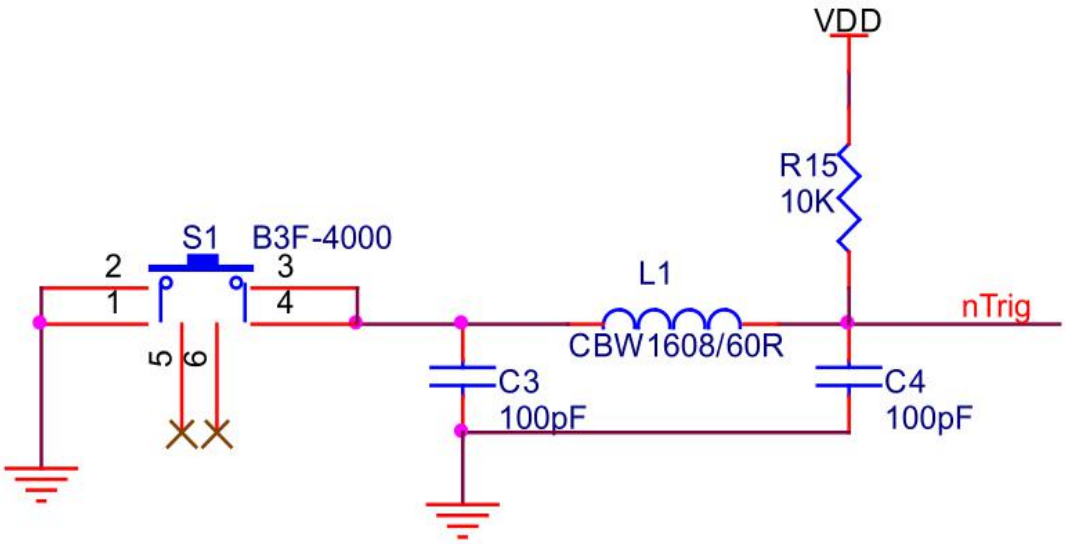
E1006 do not provide the hardware flow control and software flow control functions of communication interface.

Trigger control

nTrig pin (pin12) will be triggered in the low level input current and stop in high level input current(or release). E1006 began to decode after receiving triggering indication. It will continue to input the decoding information then wait for the stop of triggering indication(or release). In the decoding process, once the triggering information is stop the decoding movement will stop. A new decoding process require new triggering information.

The decoding process consists by several procedures, including seizing image, bar code recognizing and decoding. A interval of more than 50ms between triggering indications is suggested.

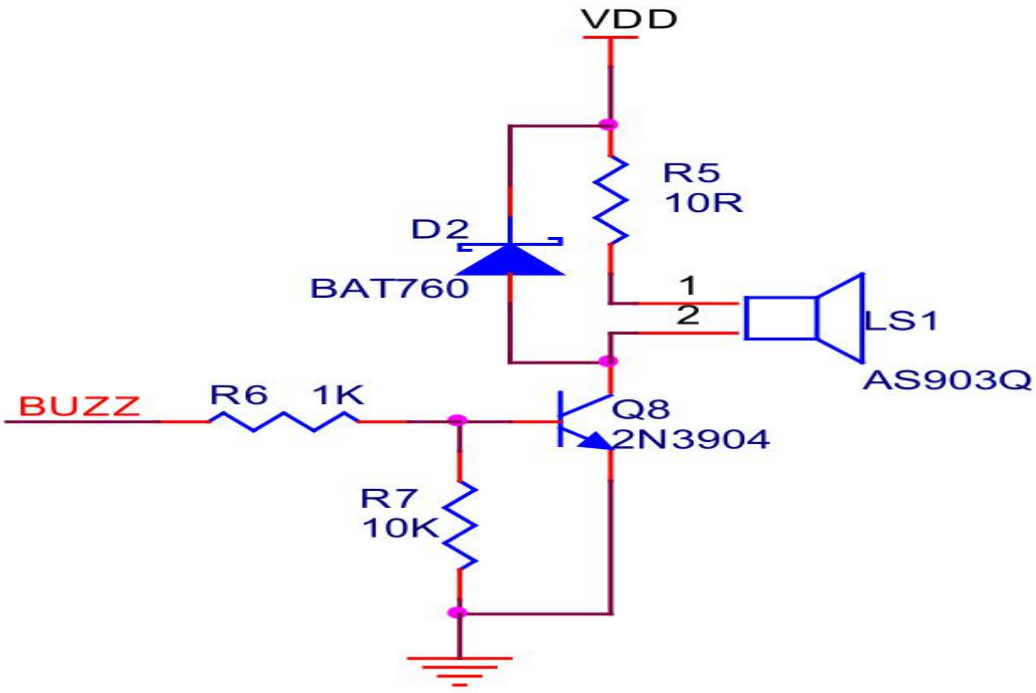
Triggering circuit design as follow:



Buzzle signal

Buzz pin adopts the PWM to provide the input signal of Buzzer.Buzz pin outputs PWM signal as E1006 turns on or decode ,which could trigger the Buzzle. For the limited load of Buzz pin, it could not drive the Buzzle directly, in case damaging the chip on E1006.

The Buzzle driver circuit is showed as follow



Decoding LED Signal

When decoding successfully, the LED PIN(PIN 10) sends out level signal, which usually used as the eternal decoding input control signal. Receiving the signal of decoding successfully, LED PIN sends out high level pulse that last around 300ms and then revert to low level. The load of LED PIN is limited, which can not drive the LED directly, as a result it is necessary to equip it a LED driver circuit.

The circuit is showed as following: