Integration Guide

RT830D/RT860D

Chapter 1 Introduction

1.1 Product Overview

RT830D/RT860D series 2D barcode scan scanners, a computerized image recognition system, with state-of-the-art technology, are very outstanding in reading speed.

The RT830D/RT860D supports all mainstream 1D and standard 2D barcode symbologies (e.g UPC/EAN, ISSN, UCC Coupon Extended Code, Code128, GS1-128, ISBT 128, Code 39)as well as (PDF417, MicroPDF417, Composite Codes, Data Matrix, Maxicode, QR Code, Micro QR, Aztec).

1.2 Illumination

The RT830D/RT860D's quipped with enhanced illumination, with bright LEDs. This makes it can compliant with most of circumstances: near or far, dark or bright environment, even work under sunlight.
The illumination can be programmed On or Off.

Chapter 2 Installation

2.1 General Requirements

2.1.1 ESD

ESD protection has been taken into account when designing the RT830D/RT860D and the scanner is shipped in ESD safe packaging. Always exercise care when handling the scanner outside its package. Be sure grounding wrist straps and properly grounded work areas are used.

2.1.2 Dust and Dirt

The RT830D/RT860D must be sufficiently enclosed to prevent dust particles from gathering on the imager and lens.
Dust and other external contaminants will eventually degrade the scanner's performance.

2.1.3 Ambient Environment

The following environmental requirements should be met to ensure good performance of the RT830D/RT860D:

WorkingTemperature	-20℃to 60℃
StorageTemperature	-30℃to 70℃
Humidity	5% ~95% (non-condensing)

2.1.4 Thermal Considerations

Electronic components in the RT830D/RT860D generate heat during the course of their operation. Operating the RT830D/RT860D in continuous mode for an extended period may result in an increase in temperature by 20℃ inside the scanner. The following precautions should be taken when integrating the RT830D/RT860D:

Reserve sufficient space for good air circulation during design.

Avoid wrapping the RT830D/RT860D with thermal insulation materials such as rubber.

2.2 Optics

2.2.1 Window Placement (RT830D)

The window should be positioned properly to let the illumination and aiming beams pass through as much as possible and no reflections back into the scanner (reflections can degrade the reading performance).

The window should be mounted close to the front of the scanner (parallel). The maximum distance is measured from the front of the scanner cover to the farthest surface of the window. Avoid unwanted reflections and use thin material for window so as to reach better reading performance. The distance from the front of the scanner cover to the furthest surface of the window should not exceed 0.5mm and its better to make the window contact with the scanner rubber cover.

If the window is required to be in a tilted position, the above distance requirements should be met and tilt angle should ensure no reflections back into the lens.

2.2.2 Window Material and Color

Wavelengths of illumination and aiming beams should be taken into consideration when choosing window material and color, to achieve the possible highest spectral transmission and lowest blurriness. It is suggested PMMA or optical glass with spectral transmittance over 90% and blurriness less than 1%. Whether to use an anti-reflection coating or not depends on the material and application needs.
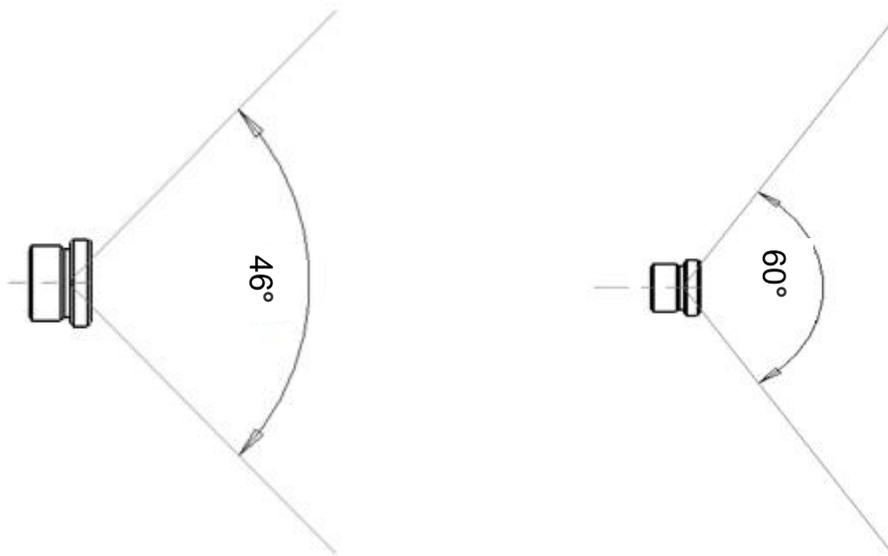
2.2.3 Scratch Resistance and Coating

Scratch on the window can greatly reduce the performance of the RT830D/RT860D. It is suggested to use abrasion resistant window material or coating.
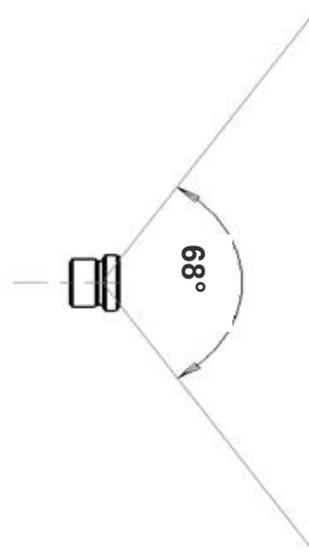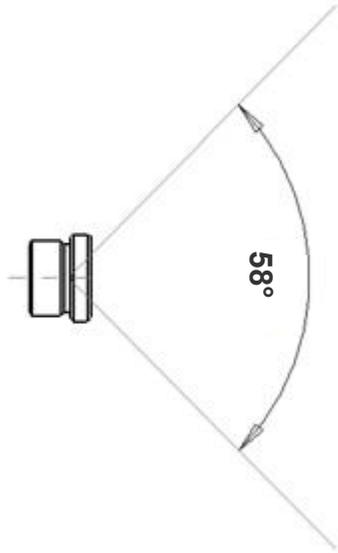
2.2.4 Window Size

The window must not block the field of view and should be sized to accommodate the aiming and illumination envelopes   shown below.

RT830D:

RT860D:

2.2.5 Ambient Light

The RT860D may show better performance with ambient light. However, high-frequency pulsed light can result in performance degradation.

RT830D can work indoors and outdoors under sunlight, when under sunlight, the illumination must be always-on.

2.2.6 Eye Safety

The RT830D/RT860D has LEDs that create the illumination beams. These LEDs are bright, but testing has been done to demonstrate that the scanner is safe for its intended application under normal usage conditions. However, the user should avoid staring at the beam.

2.2.7 Mounting

The illustrations below show the mechanical mounting dimensions for the RT830D/RT860D. The structural design should leave some space between components and provide sufficient space for flat flexible cable.

Elements listed in previous sections should also be taken into consideration when integrating the RT830D/RT860D.

RT830D (unit: mm)
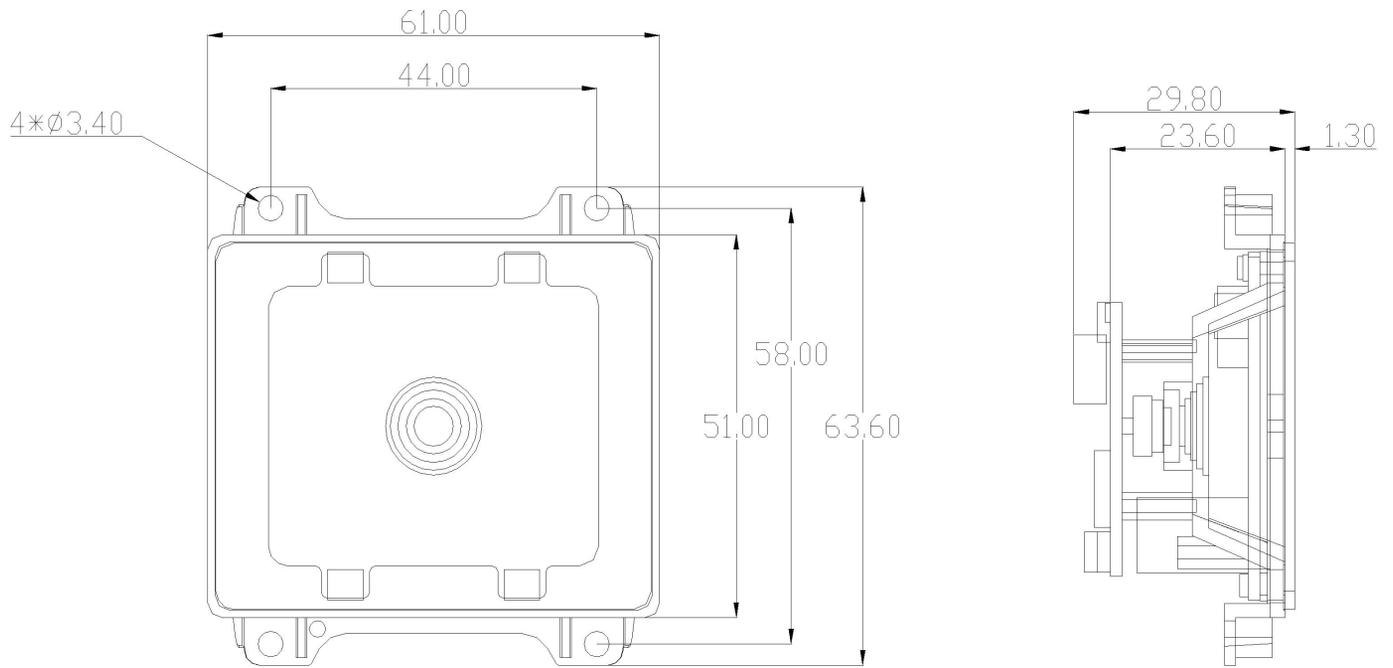
RT860D (unit: mm)
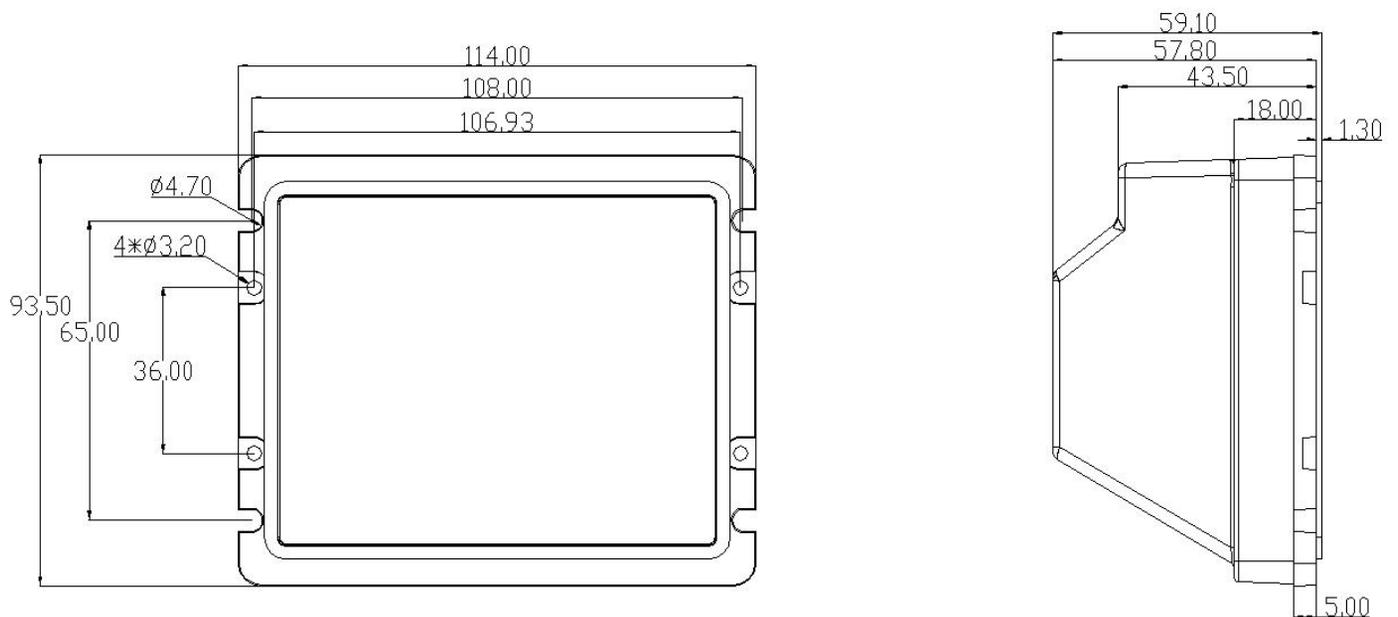
Chapter 3 Electrical Specifications

3.1 Power Supply

Do not power up the RT830D/RT860D until it is properly connected. Be sure the power is cut off before connecting a flexible cable to or disconnecting a flexible cable from the host interface connector. This could damage the scanner.

Unstable power supply or sharp voltage drops may lead to unstable performance of the scanner. Do not resupply the power immediately after cutting it off. The interval must be greater than 3 seconds.

3.2 Ripple Noise

To ensure the image quality, a power supply with low ripple noise is needed. Acceptable ripple range (peak-to-peak) : ≤50mV (≤30mV recommended).

3.3 DC Characteristics

3.3.1 Operating Voltage-RT830D

Ta = 25℃：

	MIN	Tpy	MAX	
V_{CC}	4.25	5	5.25	V

3.3.2 Current-RT830D

Ta=25℃，VCC=5V

Parameter	Starting	Working	Standby
I(mA)	290	385	220

3.3.3 Operating Voltage-RT860D

Ta = 25℃：

	MIN	Tpy	MAX	
V_{CC}	4.25	5	5.25	V

3.3.4 Current-RT860D

Ta=25℃，VCC=5V

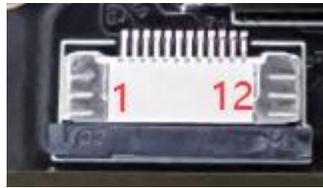| Parameter	Starting	Working	Standby
I(mA)	470	456	220

Chapter 4 Interfaces

The following table lists the pin functions of the 6-pin host interface connector:
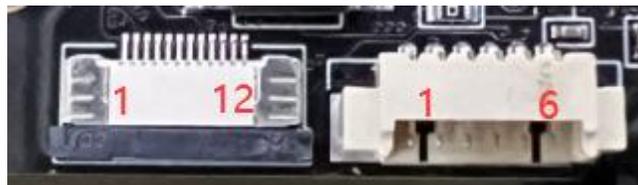
PIN#	Signal Name	I/O	Function
1	TX	Output	TTL-232 transmission
2	RX	Input	TTL-232 receiving
3	D-	Input/ Output	USB D- data signal
4	D+	Input/ Output	USB D+ data signal
5	VCC	-	Power supply
6	GND	-	Ground

The following table lists the pin functions of the 12-pin host interface connector.

PIN#	Signal Name	I/O	Function
1	NC	-	
2	VCC	-	5V Power supply
3	GND	-	Ground
4	RX	Input	TTL-232 receiving
5	TX	Output	TTL-232 transmission
6	D-	Input/ Output	USB D- differential data signal
7	D+	Input/ Output	USB D+ differential data signal
8	NC	-	
9	BUZ	Output	Beeper output. For the information of beeper driver circuit,see the **"Control Interfaces"** section
10	NC	-	
11	NC	-	
12	TRIG	Input	Trigger signal input: Driving this pin low to start a scan and decode session.

4.1   Host Interface Connector

The RT830D/RT860D's host interface includes a 12-pin connector which can be used to connect a host device with a flat flexible cable, a USB signal port and a RS232 signal port (optional).

4.2   Flat Flexible Cable

A 12-pin flat flexible cable can be used to connect the RT830D to OEM equipment. The cable design must be consistent with the following specifications shown below. Use reinforcement material for the connectors on the cable and reduce cable impedance for reliable connection and stable performance.
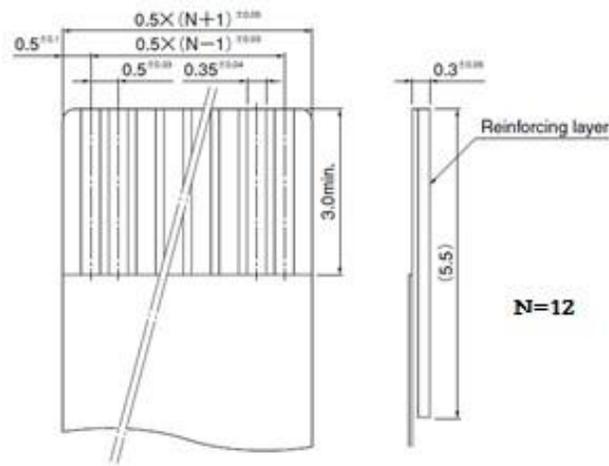
4.3 Communication Interfaces

TTL-232:

TTL-232 signal, connect to host device with a flat cable.

USB HID-KBW:

Based on USB connection, the scanner's transmission is simulated as USB keyboard input. It works on a Plug and Play basis and no driver is required.

USB COM Port Emulation:

The USB port on the host device is emulated as a serial port with the same data transmission and configuration as a real serial port. A driver is required.

RS232 :

DB9 RS232 to host.

# 4.4 Control Interfaces

4.4.1 Trigger

RT830D/RT860D support automatic reading / sense mode which enable the scanner detect and read a bar code automatically.

If you use the 12pin TTL-232 interface, you can also use the level trigger mode: driving the TRIG pin (PIN 12) on the host interface connector low for a specified time period causes the scanner to start a scan and decode session. Please refer to the user manual for trigger command.The time period varies from one scan mode to another. Anti-shake mechanism is used in level trigger mode. Trigger is activated in this mode if the signal from the TRIG pin remains low for at least 10ms.

4.4.2 Beeper

The RT830D/RT860D provides a pin (BUZ, PIN 9) on the host interface connector that provides a PWM output to an external driver circuit for generating audible feedback to the user to indicate statuses like power up, good decode or operation mistake. The PWM output is not strong enough to drive a beeper, so a beeper driver circuit is needed.

The following beeper driver circuit is provided for reference.
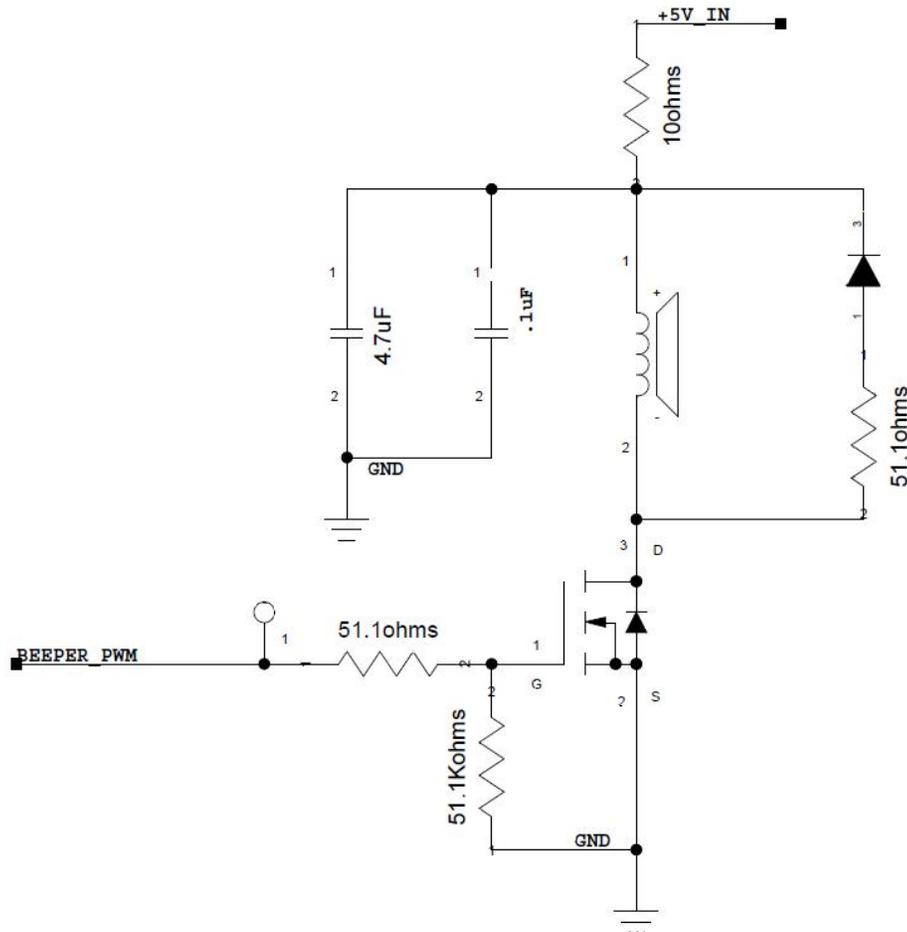
For any technical questions, please feel free to contact us at :
support@rtscan.net

Thanks!