Hardware Development Manual

USB Scanner

COLUMBO DT

Fingerprint Scanner (SAP30)

Revision History

Revision No.	Issue Date	Comments
1.0	2015.01	1.0 Version Preliminary

Contents

1. General Description

- This manual is a guide for COLUMBO DT.
- COLUMBO DT is the USB Fingerprint Scanner. COLUMBO DT using the USB communication with PC can be connected. COLUMBO DT is up to the Security Level Applying biometric fingerprint technology instead of using Password.
- COLUMBO DT offers high reliability and speed using excellent video processing capability and High-performance fingerprint acquisition algorithm.
- COLUMBO DT offers USN function to use two or more scanners in a PC.
- Driver of USB scanner could be used on Windows XP/Vista/7/8, Linux, Android.

2. Explanation of terms
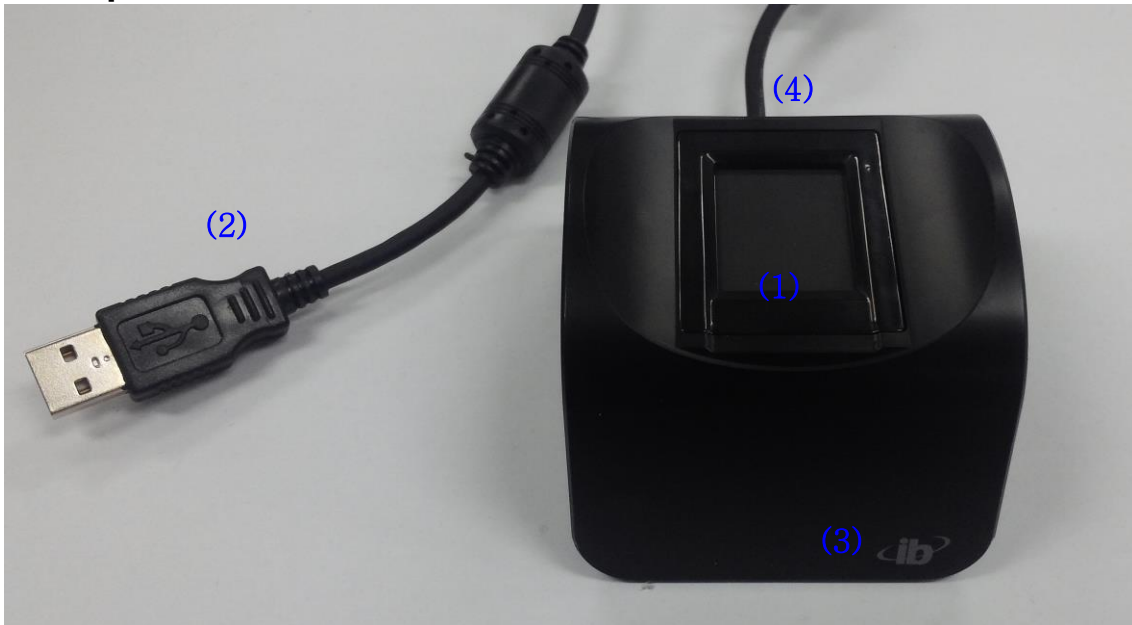
(1) LE Sensor : **L**ight **E**mitting **Sensor**

(2) USB Connector

(3) COLUMBO DT Case

(4) USB Cable

3. Features

- **High Security Level**
  - Distinguishes live human finger copied or forged fingerprint
  - U.S patented Contact Light Emitting Sensor
- **High image quality**
  - FBI PIV SAP30 certified.
- **Excellent Authentication Performance**
  - The fastest matching algorithm proven in FVC 2004
  - The efficient algorithm provide incomparable performance
  - The best performance for dry or wet fingers
  - U.S. NBSP (National Biometric Security Project) in the Class 1 certified algorithms are used
- **USB Interface**
  - Take fast and effective fingerprint image using USB Interface
  - Support Plug and play USB 2.0/1.1
  - Support Active Directory, USN (unique serial number)
- **SDK Available**
  - Windows & Linux application development (Visual Basic, Visual C++, NET)
- **Certifications**
  - CE/FCC/KC, USB-IF

4. Application

- Printer security system
- Electronic Settlement System
- Online Time & Attendance System
- Web Verification : Banking system, Missing child project
- POS-System : Customer mileage, Staff management

5. USB Specification

5.1. OS Driver Support

Section	Spec.	Remarks
Windows Family	XP	
	VISTA	
	7	
	8	
Linux	Kernel 2.6 or higher	
Android	4.0	

5.1. Recommend PC

Section	Spec.	Remarks
CPU	Pentium4 - 2.0GHz or higher	
Memory	512 RAM or higher	
USB	USB 2.0	

5.2. PC Minimum Requirement

Section	Spec.	Remarks
CPU	Pentium4 - 1.0GHz or higher	
Memory	256RAM or higher	
USB	USB 1.1	

6. Hardware Specification

6.1. Specification

Section		Spec.	Remarks
Main	Main	77.5mm(L) x 65.9mm(W) x 49.6mm(H)	
	Cable	1500 ± 30mm	
Sensor	Allowed shift angle	±30˚	
	Type	LE Sensor + CMOS Image Sensor	
	Capture area	15mm(W) x 18mm(H)	
	Resolution	500DPI	
	Image Size	288(W) x 352(H) pixels	

6.2. Electrical DC Characteristics (Top = 25℃)

Section	Min.	Typ.	Max.	Unit
Power Supply Voltage	4.5		5.5	V
Idle State Current	-	-	105	mA
Capture State Current	-	-	135	mA

6.3. Interface

Section	Spec.	Remarks
USB	USB 2.0 /1.1 High speed/Full speed, Plug & Play	

6.4. Temperature & Humidity

Section	Spec.	Remarks
Operating Temperature	-10℃ ~ 50℃	
Storage Temperature	-30℃ ~ 80℃	

7. Dimension

Board Name	Size	Remarks
Main	77.5mm(L) x 65.9mm(W) x 49.6mm(H)	
Cable	1500 ± 30mm	
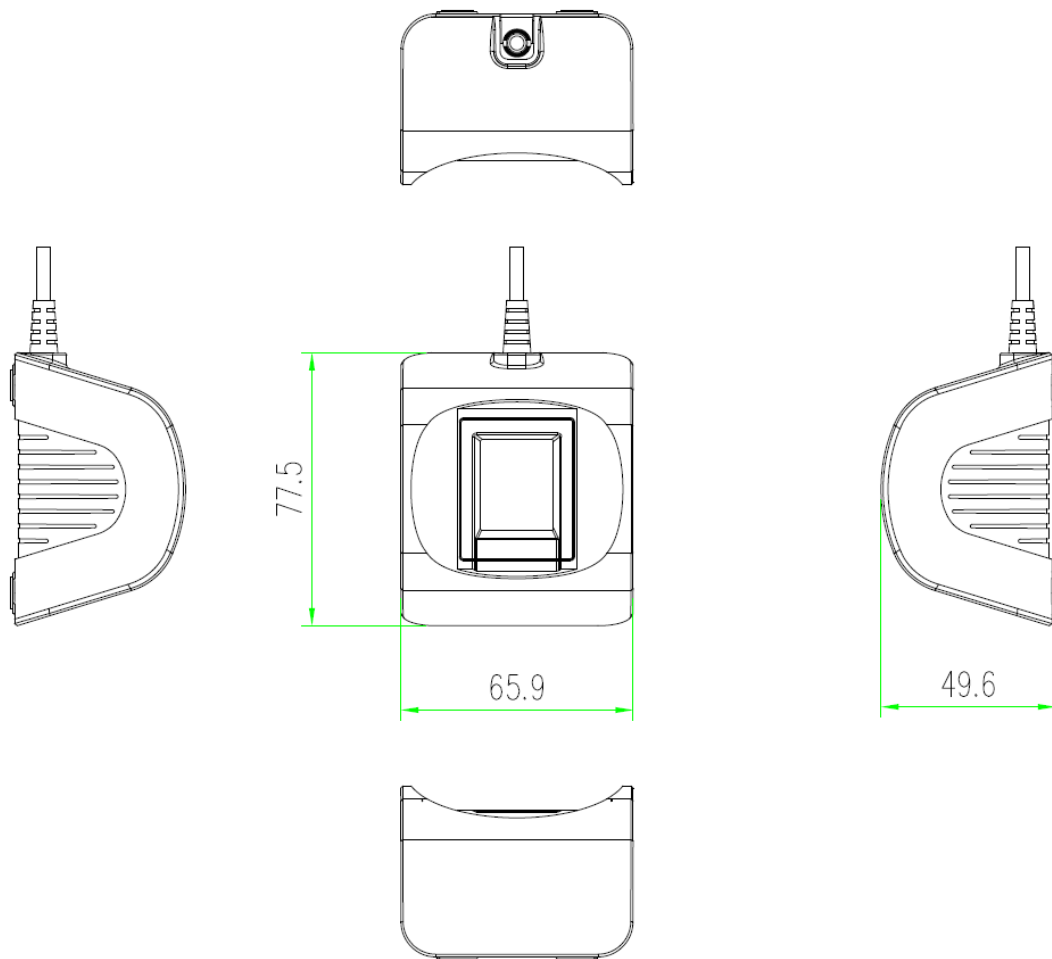
8. USB Pin Description
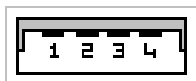
| Pin No.	Name	Description
1	VCC	5 VDC
2	D-	DATA -
3	D+	DATA +
4	GND	Ground

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9. Block Diagram
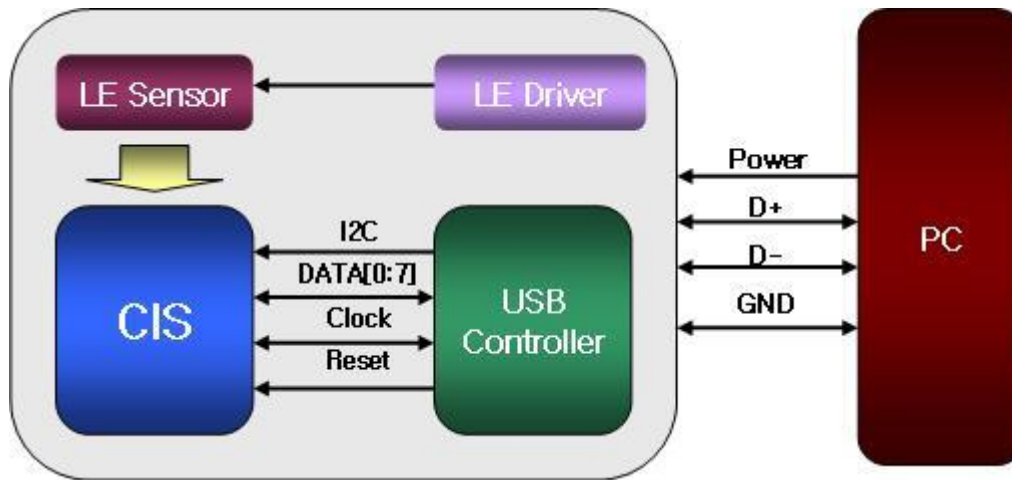
10. FAQ

▪ **Product is not working at all.**

- Install driver again and connect USB Scanner to PC and check 'Device Manager' if the driver is properly installed.

- If there is no driver shown in 'Device Manager' even though you installed the driver, connect USB Scanner to other USB port and check the driver in 'Device Manager'. If you cannot see the driver installed in 'Device Manager' after that, please contact with our customer service.
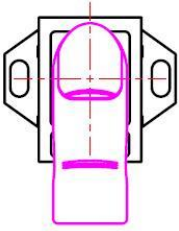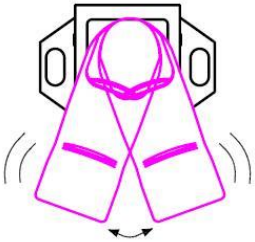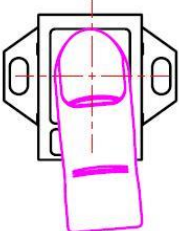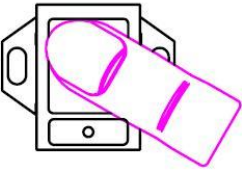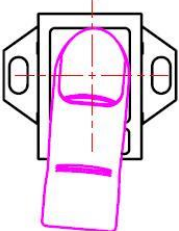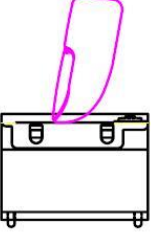
▪ **Driver shown in 'Device Manager' but cannot see fingerprint image.**

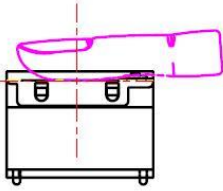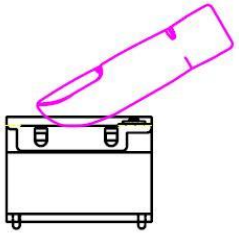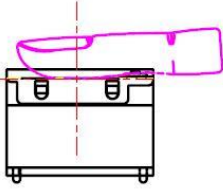- Check the image after placing the finger on the right position like below and your finger must be touched the metal frame. Please refer to FAQ below for fingerprint placing method.

- Please contact with our customer service if you cannot see the fingerprint image even though you place a finger on the right place.

▪ **Correct fingerprint placement**
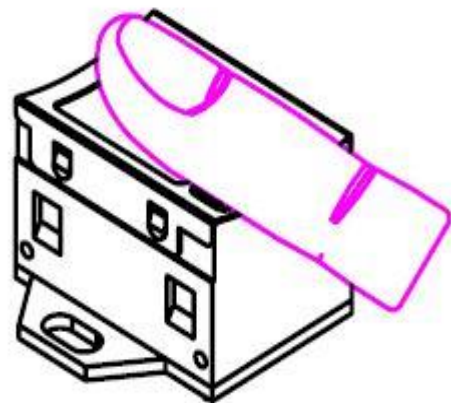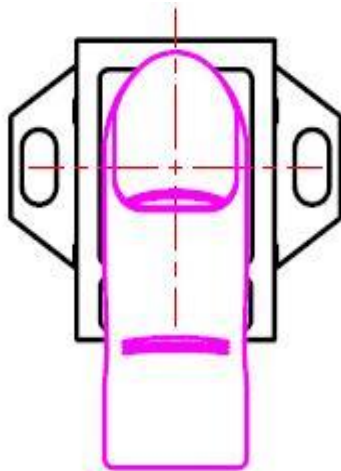
- Place the finger on the sensor like above figures.

- Place the finger softly and do not press too strong.

Section	Do	Do Not
Finger moving		
Finger Rotation (±30°)		
Finger Contact		

▪ Wet fingerprint by water or sweat can be identified?

- If a finger is a little wet by water or sweat, the fingerprint patterns can be distorted, but if you
  use our company's algorithm, those distortions can be recovered.

- But if a finger is too wet, it can cause capture error, and so if a finger is very wet, wiping the
  sweat off is recommended for easy idenification.

▪ What OSs(Operating System) are supported?

- Windows XP/Vista/7/8, Linux and Android 4.0 or higher are available.

▪ Can I use long USB cable extender?

- If the USB is not connected to HUB, theoridically shorter than 5m will be available. So even
  though you use cable extender, don't use longer than 5m cable.

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