

LX006

Fingerprint Identification Proximity Reader



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1. IMPORTANT SAFETY INSTRUCTIONS

The description below is to keep user's safety and prevent any product damage. Please fully read these instruction and use the product properly.



Danger: This symbol indicates that incorrect handling of the product may result in serious injury or death.



Warning: This symbol indicates that incorrect handling of the product may result in injury or property damage.



Cautions about power

- Only use the standard voltage (DC +12V/ 350mA).
(When supplying DC power to the device, we recommend that you use the adapter or SMPS that come standard with the device.)
- If the product emits smoke or smells, stop using the product. Unplug the product from DC power source and contact nearest service center.



Cautions about installation

- Do not install the product in humid, dust (metallic dust) and sooty place.
- Do not install the product in a place subject to high/ low temperature or high humidity
- Do not install the product with tools such as driver in hand when power has been supplied.



Cautions about usage

- Do not drop liquid like water and give a shock severely.
- Do not place magnetic objects near the product.
- Do not replace the wiring cables installed by experts.
- Do not use the product near direct sunlight and heating apparatus.
- If you want to relocate the installed product, turn power off and then move and reinstall it.
- Do not use the product near flammable spray or objects.
- Do not disassemble, repair or modify the product by yourself. If the product needs service or repair, contact nearest service center.
- If liquid has been spilled on the product, unplug it and contact nearest service center.



Cautions about cleaning

- Do not clean the product with water. Clean gently with dry cloth or towel.
- Do not use chemicals such as benzene, thinner or acetone for cleaning.

2. FEATURES

▪ Fingerprint Recognition Proximity Reader

The LX006 is a Fingerprint and Proximity Reader compatible with existing proximity readers. The LX006 has a built-in proximity reader and fingerprint module so that the access is only allowed when the personal ID and fingerprint are authorized and this integrated system gives you high and reliable security. The LX006 can register up to 200,000 User IDs and 1,000(default)/ 2,000(optional) / 4,000(optional) fingerprint users.

▪ Easy Installation

LX006 can be easily installed on flat wall or the door frame.

▪ 1:1 Verification and 1:N Identification

User can select operation mode between 1:1 Verification and 1:N Identification for his convenience.

▪ RF Only Mode and RF + FINGER Mode

The LX006 has two operation modes when it is operated as a reader.

- RF Only Mode

In the RF Only Mode, only card authorization is needed to grant access. If a card is authorized, the corresponding card ID will be transmitted to the controller.

- RF + FINGER Mode

In the RF + Finger Mode, both card and fingerprint authorization is needed to grant access. If a fingerprint is authorized, the corresponding card ID will be transmitted to the controller. If user's fingerprint is not registered, the mode is automatically working as 'RF Only'

▪ Network Communication

The LX006 can establish network communication via RS232 / RS485 and built in TCP/IP internal module.

■ Card Number Output Format

When a fingerprint is authorized, the corresponding card number is transmitted to the controller via 26/34Bit (SR) Wiegand or ABA Track II according to the output type setting. It is set by application software.

■ Card Number Input Format

The LX006 receives the card number from the external reader while the LX006 contains a built-in proximity reader inside. The LX006 receives the card number in 8bit Burst or 26bit Wiegand or ABA Track II format. It is set by application software.

■ User Registration and Deletion Using Master Card

User can register and delete IDs using Master Card without application software. Also the master card is used to toggle the LX006 between the reader mode and the registration/deletion mode.

■ Firmware Upgrade

User can upgrade firmware using application software

■ Voice Message Generation and Tamper switch

Voice Message notifies users whether the LX006 is normally operating or not.

When someone has broken the installed LX006 by force, Tamper Switch transmits corresponding data to the Host PC to prevent theft.

■ Plenty of Application Software

There are plenty of application software for LX006, STARWATCH STANDARD, STARWATCH ENTERPRISE, STARWATCH DUAL PRO I, II, STARWATCH iTDC PRO I, II, STARWATCH LX ACCESS PRO II, STARWATCH ENROLLMENT PRO. If you use LX006 which has linked with the third party access controller, visit IDTECK's homepage (www.IDTECK.com) and download STARWATCH FINGERPRINT ENROLLMENT PRO via download center.

3. SPECIFICATION

Model			LX006
CPU			32bit ARM9 and Dual 8bit Microprocessor
Memory	Fingerprint Module	Program Memory	2MByte Flash Memory for 1000 Fingerprints 6MByte for 2000/4000 Fingerprints
		Data Memory	8MByte SDRAM
	Controller	Program Memory	128KByte Flash Memory
		Data Memory	256KByte Flash Memory 32KByte SRAM
User ID			10,000 User IDs
Fingerprint User			1,000 / 2,000 / 4,000 Fingerprint Users
Reader Data Output Format			26Bit Wiegand, ABA Track II
Reading Time (Card)			30ms
Verification / Identification Time			Less than 1sec. / Less than 2sec.
Power / Current			DC +12V / Max.290mA
External Reader Port			1 port (26bit Wiegand, 4/8bit Burst for PIN, ABA Track II)
Communication			RS232 / RS485 (Max.32ch)
			TCP/IP
Baud Rate			57,600bps (Recommended)/9,600bps/ 19,200bps/38,400bps (Selectable)
Input Port			3ports(LED, Buzzer, Application Mode Control)
Output Port			3ports(Error-Output, OK-Output, Tamper-Output) (Open Collector Output Format)
LED Indicator			3 Array LED Indicators (Red, Green and Yellow)
Beeper			Piezo Buzzer
Operating Temperature	Fingerprint Module		-15° to +60°C (+5° to +140°F)
	RF Reader		-35° to + 65°C (-31° to +149°F)
Operating Humidity			10% to 90% Relative Humidity Non-condensing
Color / Material			Black, Red, Gray, Silver, Dark Gray, Gold and Gold with Black / Polycarbonate
Weight / Dimension (W x H x T)			230g(0.51lbs)/ 69mm x 127mm x 43mm
Certification			FCC, CE, KC, ROHS
Language			English(Default), (Other Language Support Available)

▪ Read Range

Model		IDC80	IDC170
Read Range	LX006	Maximum of 4 inches (10cm)	

▪ Fingerprint Module Specification

Resolution	500dpi
Capture Image Size	356 X 292 pixels
Extraction Image Size	248 X 292 pixels
Sensing Area	12.7 X 14.9mm
Scanner	High Quality Optical Sensor
FAR(False Acceptance Ratio)	0.001%
FRR(False Reject Ratio)	0.1%
ESD(Electro Static Discharge)	±8KV
Verification Time	Less than 1sec.
Identification Time	Less than 2sec.

4. IDENTIFYING SUPPLIED PARTS

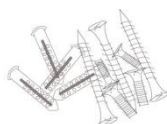
Please unpack and check the contents of the box. If any of the following items is missing, please contact nearby contributor. (Optional accessories, if purchased, may be included in the package.)



LX006
(1 ea)



Wall Mount
(1 ea)



Screw

3 X 30 mm – 2 ea

3 X 6 mm – 1 ea

3.5 X 12 mm – 2 ea

Plastic Anchor 6 x 30 mm – 2 ea



Cable

300mm 2P – 1 ea

300mm 6P – 1 ea

300mm 8P – 1 ea

150mm 8P – 1 ea



Master Card
(1 ea)



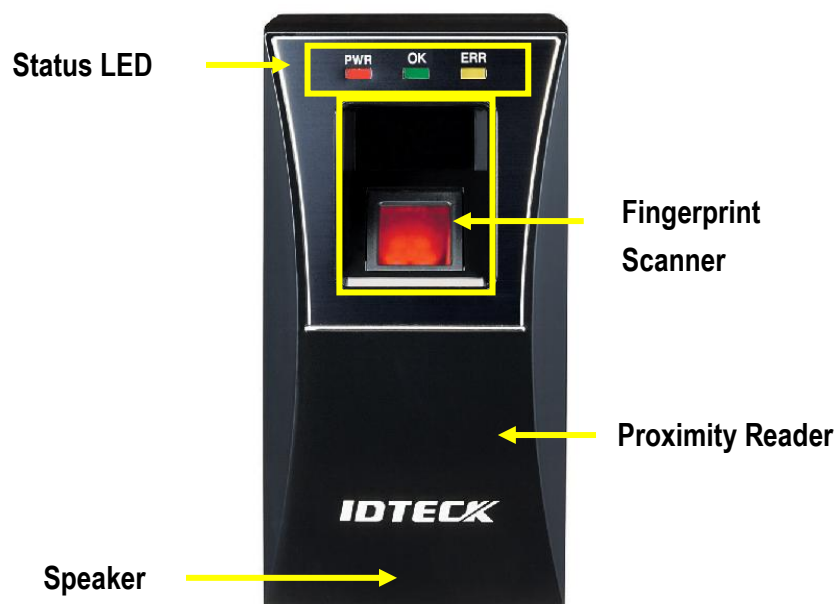
User's Manual
(1 Copy)



12v dc adapter (option)
(DVE DSA-60W-12 1)

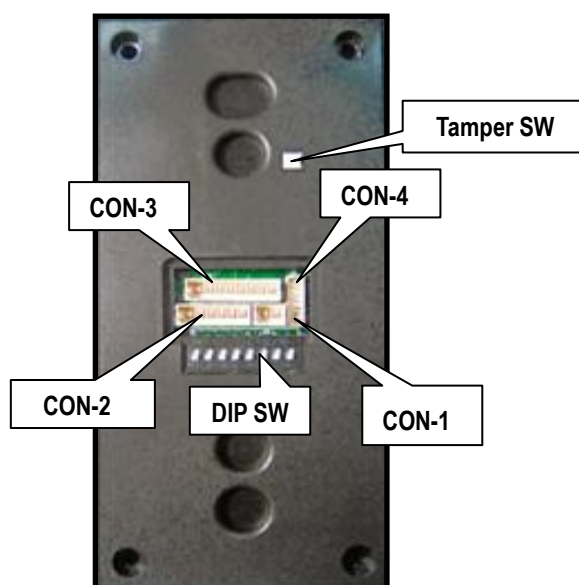
5. PRODUCT EXPLANATION

5.1 PANEL LAYOUT



(Figure: Panel Codes)

5.2 CONNECTION LAYOUT



(Figure: Connector Arrangement)

5.3 COLOR CODED & WIRING TABLE

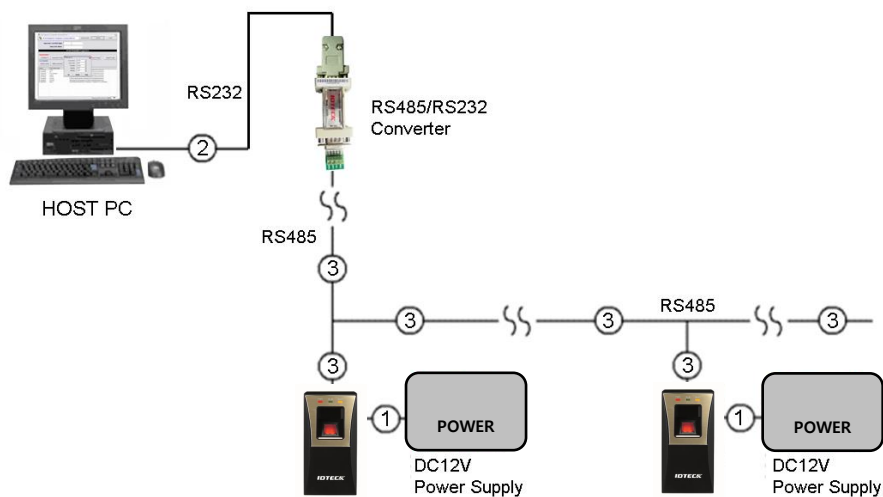
I/O PORT NAME		SIGNAL NAME	WIRE COLOR
CON-1: Power (2PIN Connector)			
Power (+12V)		DC +12V	Red
Ground		GND (-)	Black
CON-2: In/Output (6PIN Connector)			
EX Input Wiegand DATA0		EX-DATA0 ABA Track II Data In	Pink
EX Input Wiegand DATA1		EX-DATA1 ABA Track II Clock In	Cyan
NC			Brown
NC			Blue
RS4	RS485-A(+)	RS485-A(+)	Yellow
85	RS485-B(-)	RS485-B(-)	Gray
CON-3: In/Output (8PIN Connector)			
Wiegand DATA 0		DATA-0 ABA Track II Data Out	Green
Wiegand DATA 1		DATA-1 ABA Track II Clock Out	White
ERROR SIGNAL OUT		ERROR SIGNAL OUT ABA Track II CLS Out	Orange
OK SIGNAL OUT		OK SIGNAL OUT	Orange with Black stripe
TAMPER OUT		TAMPER OUT	Purple
EX_LED_CONTROL		EX_LED_CONTROL	Blue with White stripe
EX_BUZZER_CONTROL		EX_BUZZER_CONTROL	White with Red stripe
EX_SYS_CHANGE_IN		EX_SYS_CHANGE_IN	Gray with Red stripe
CON-4: TCP/IP (8PIN Connector) RJ45 Cable Connection			

6. INSTALLATION TIPS & CHECK POINTS

Please refer to information below to stably operate the LX006.

6.1 CHECK POINTS BEFORE INSTALLATION

6.1.1 CABLE SELECTION



(Figure: System configuration)

6.1.2 RECOMMENDED CABLE TYPE AND PERMISSIBLE LENGTH OF CABLE

No	Description	Cable specification	Maximum distance
1	LX006 Power (DC+12V) DC Power -> LX006	Belden #9409, 18 AWG 2 conductor, unshielded	3m
*2	RS232 Cable converter->Host P.C.	Belden #9829, 24 AWG 2-twisted pair, shielded	15m
3	RS485 Cable LX006 -> LX006 LX006 -> Converter	Belden #9829, 24 AWG 2-twisted pair, shielded	1,200m

* Thicker wires are required if you connect the reader with high current consumption.

6.1.3 READER CONNECTION

If you install the reader in a long distance between the ACU and the reader, you should be aware there could be voltage drop between ends of GND wire. For example, if you connect a reader with 100mA current consumption at 100m distance (assume to using DC resistance of cable of 100Ω/100m) and the reader power is supplied from the ACU, the voltage drop of the GND wire will be 1V. In this case, the Wiegand data signal cannot be measured lower than 1V.

The most of ACU is capturing the signal by the voltage level of data input. 1V is the critical point whether the ACU read the data logic “1” or logic “0” therefore the reader output cannot be read correctly from the ACU.

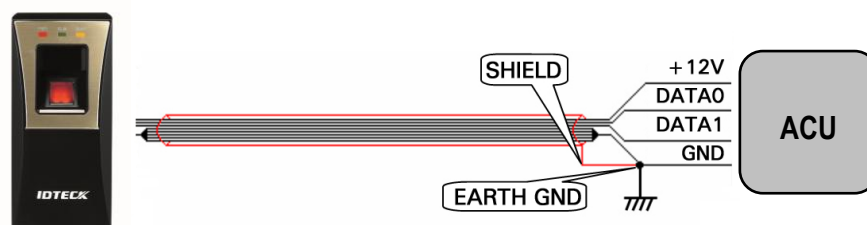
There will be two methods to reduce the voltage drop and ACU can read data correctly.

▪ **Reduce the DC resistance of GND wire;**

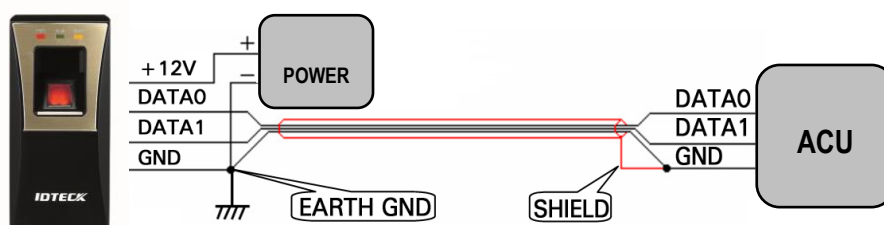
Using thick cable or add more wires to GND wire in parallel. If you connect 4 wires in parallel for GND, the DC resistance of GND wire will be reduced to 1/4 of single wire.

▪ **Use separate power for the reader;**

Disconnect +12V wire from the ACU and connect external power supply to the reader nearby. There will be no current flow through the GND wire and no voltage drop between ends of GND wire.



(Figure: When Sharing a Single Power Supply for Multiple Units)



(Figure: When Using a Separate Power Supply for the LX006)

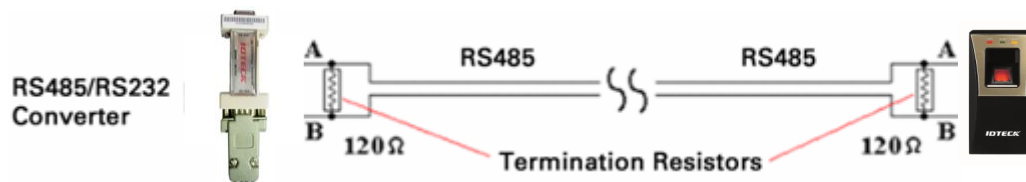
6.2 CHECK POINTS DURING INSTALLATION

6.2.1 TERMINATION RESISTOR

Termination resistors are used to match impedance of the network to the impedance of the transmission line being used. When impedance is mismatched, the transmitted signal is not completely absorbed by the receiver and a portion of signal is reflected back into the transmission line.

The decision whether or not to use termination resistors should be based on the cable length and data rate used by the communication system.

6.2.2 HOW TO CONNECT TERMINATION RESISTORS



(Figure: Termination resistors for 2 wire RS485 communication system)

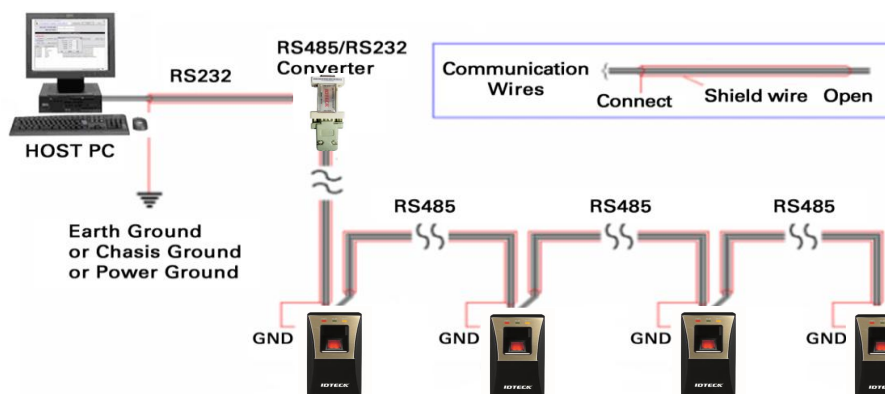
6.2.3 GROUNDING SYSTEM FOR COMMUNICATION CABLE

We recommend proper grounding system on the communication cable. The best method for grounding system is to put the shield wire of the communication cable to the 1st class earth grounding; however it is not so easy to bring the earth ground to the communication cable and also the installation cost is raised. There will be three grounding point where you can find during installation;

- 1, Earth Ground
2. Chassis Ground
3. Power Ground

The most important point for grounding system is not to connect both ends of shield wires to the grounding system; in this case there will be a current flow through the shield wire when the voltage level of both ends of shield wire is not equal and this current flow will create noise and interfere to communications. For the good grounding, we recommend you to connect ONLY one end of shield wire of communication cable to grounding system; If you find earth ground nearby, connect one end of shield wire to earth ground; If you do not have earth ground nearby, find chassis ground and connect one end of shield wire to chassis ground; If you do not find both earth ground and chassis ground, then connect one end of shield wire to power ground. (GND of LX006).

Note that if the chassis ground is not properly connected to the earth and floated from the ground level, then grounding to the chassis ground will make the worst communication; in this case we recommend you to use power ground instead of chassis ground.

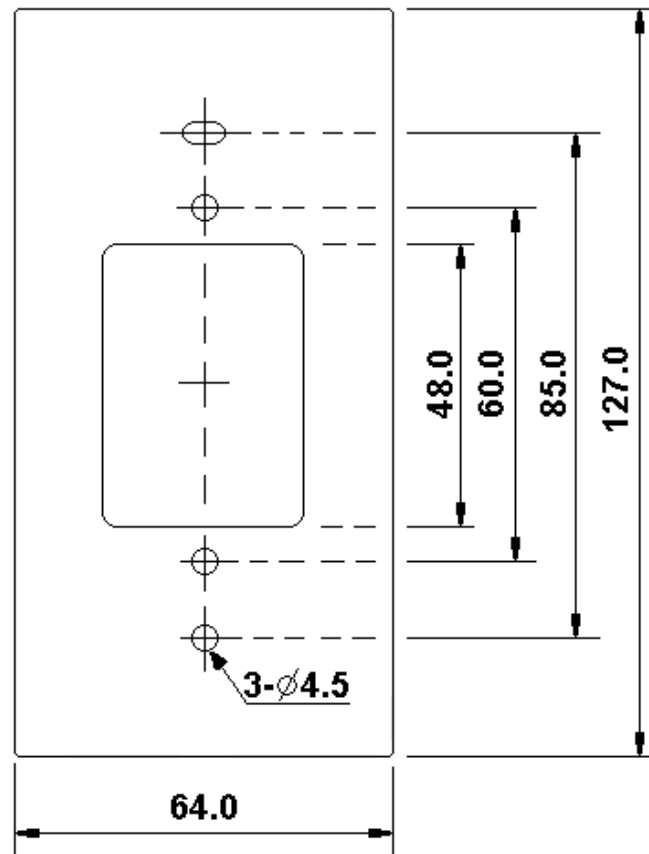


(Figure: Grounding system)

7. INSTALLATION OF THE PRODUCT

7.1 WALL MOUNT DRAWING

(Unit: mm)



(Figure: Wall Mount)

7.2 INSTALLATION OF WALL MOUNT

- Place the Wall Mount on the desired position on the wall and mark the locations of the 2 screw holes.
- Drill a hole in the center of the Wall Mount for cable.
- Take out the cable from the center of hole.
- Wire cable to four connectors and then perform initialization and set communication ID.
- By using of one screw on the bottom, fix the Wall Mount with LX006.

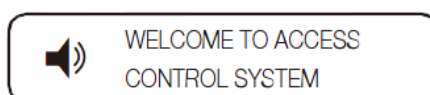
7.3 SYSTEM INITIALIZATION

Initialize the system using the DIP switch on the rear of the product.

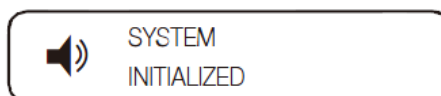
1. Disconnect the power supply.
2. Position the DIP switch on the rear of the product to ON (upside) and apply power to the product.



3. The product sounds a beep once with a voice message, and proceed with the hardware initialization process.



4. When the initialization is done, the product sounds a beep three times with a completion message output.



- The product keeps sounding the beep until you change the communication address.
5. Use the DIP switch to specify the BOARD ID.
 - Refer to “7.4 COMMUNICATION ID SETTING”.
 6. You must specify the communication address and register the master ID.



Cautions

- After fixing the LX006 on the wall mount, you can't initialize the system by this procedure. But you can initialize it through Application Software
- If you initialize the system using software, all data except for the IP setting returns to the default.
- If you initialize the hardware system, all data settings return to the factory default. (including IDs, fingerprint data, master ID, card number output format, IP)
- If the communication address is set to 255, the initialization process gets started immediately

7.4 COMMUNICATION ID SETTING

LX006 can upload/ download user's information by application software and adjust setting values. Communication ID is the unique communication address to recognize each LX006 in the software so each communication ID on the same communication loop must not be duplicated.

There is 8-bit DIP switch on the back of LX006 for communication ID setting and each channel of DIP switch has assigned address values. The communication ID is calculated by the sum value of each bit set to "ON" position. Communication ID can be set from '0' to '255'. Refer to examples below to set communication ID.



Cautions

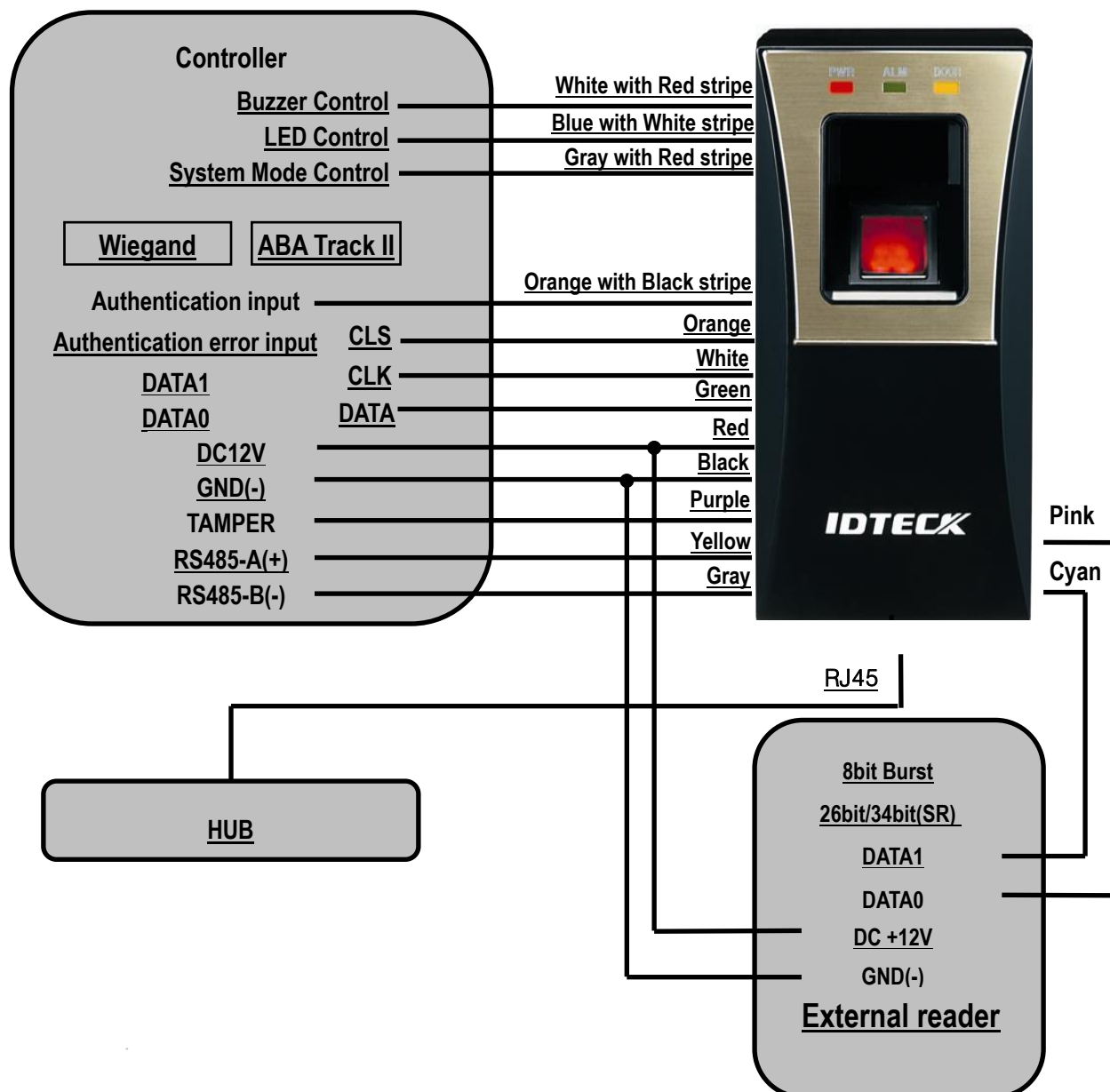
Each communication ID in the same communication loop must not be duplicated. If the same communication IDs are on the loop, it may cause communication error.

Example 1	Example 2	Example 3
$1+2 = 3$ (Communication ID = 3)	$4+32 = 36$ (Communication ID = 36)	$128 = 128$ (Communication ID = 128)

(Figure: Communication ID Setting Example)

7.5 WIRING

7.5.1 WIRING LAYOUT



7.5.2 Power Wiring

1. Connect +12V (+) wire of Power to Red wire of LX006
2. Connect GND (-) wire of Power to Black wire of LX006



Cautions

You can use separate power supplies for the LX006 and the Controller; however, the GND(-) wire must be connected to the Black wire, in any case.

7.5.3 INPUT WIRING

■ External LED Control Connection

Connect the LED Control Input wire (Blue wire with White stripe) to the NO port of controller relay output, and GND to the COM port. Set I/O of the controller; then you can control tuning on and off the green LED. While the LED control is working, the green LED stays on.

The controller can use the I/O setting to set the LED controller so that it displays the additional LED status for authorized/unauthorized access. For more information about the I/O setting of the controller, refer to the controller's user manual.

■ External Buzzer Control Connection

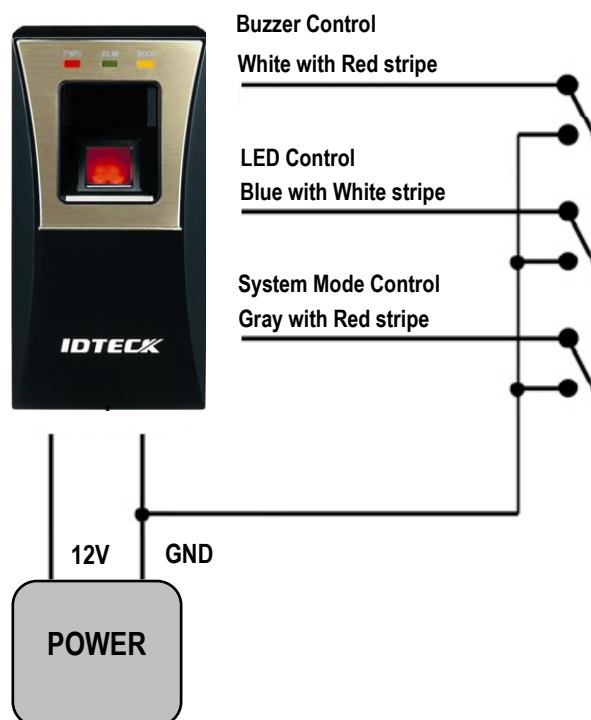
Connect the Buzzer Control Input wire (White wire with Red stripe) to the NO port of controller relay output, and GND to the COM port. Set I/O of the controller; then you can generate beep sound. While the buzzer control is working, the product keeps sounding beep.

The controller can use the I/O setting to set the buzzer controller so that it sounds the additional beep for authorized/unauthorized access. For more information about the I/O setting of the controller, refer to the controller's user manual.

■ External Input Device Connection (System Operating Mode Change through External Input)

Connect the System Mode Control wire (Gray wire with Red stripe) to the NO port of controller relay output, and GND to the COM port. Set I/O of the controller; then you can control the system mode. While the system mode is controlled, RF Only mode is operated.

With I/O or time schedule setting, the controller can switch system operation mode in a specific time section. For more information about the I/O setting of the controller, refer to the controller's user manual.



(Figure: Input Connection)

7.5.4 OUTPUT CONNECTION

■ Wiegand DATA Output Connection

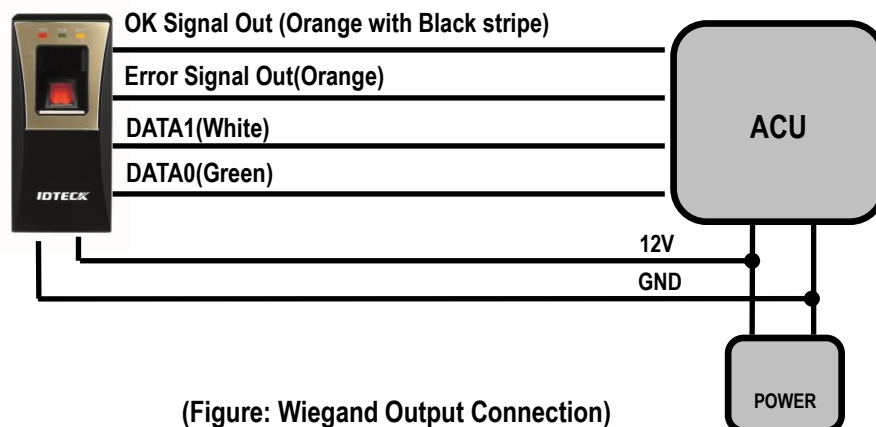
1. Connect Wiegand Data 0 wire (Green wire) to Wiegand Data 0 terminal of the Controller.
(Used for DATA when ABA Track II is output)
2. Connect Wiegand Data 1 wire (White wire) to Wiegand Data 1 terminal of the Controller.
(Used for CLOCK when ABA Track II is output)
3. The GND(-) wire must be connected between the LX006 and the Controller.

■ Access Error Signal Connection

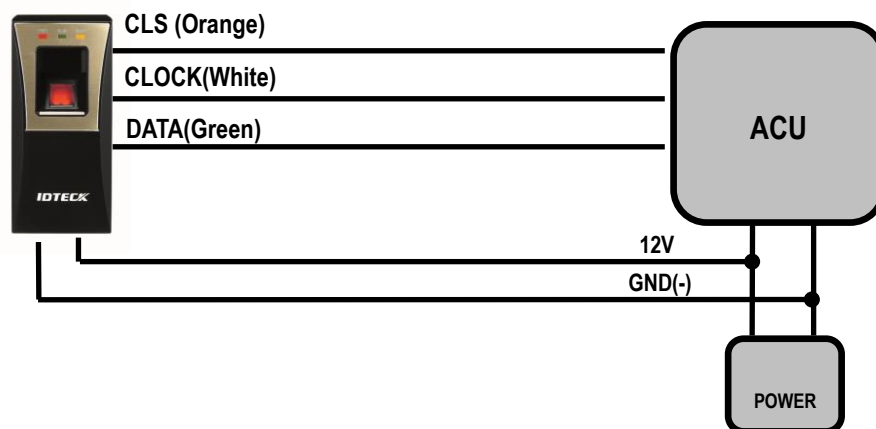
- Connect the Access Error Signal wire (Orange wire) to the Access Error Input terminal of the Controller. (Used for CLS when ABA Track II is output)

■ Access OK Signal Connection

- Connect the Access OK Signal wire (Orange wire with Black stripe) to the Access OK Input terminal of the Controller. (Not used when ABA Track II is output)



(Figure: Wiegand Output Connection)



(Figure: ABA Track II Output Connection)

7.5.5 EXTERNAL READER CONNECTION

■ Proximity Reader Connection

1. Connect the DC+12V wire of Power Supply to (+) wire of reader.
2. Connect the GND(-) of Power Supply to (-) wire of reader
3. Connect the Wiegand Data 0 wire of the External Reader to the Wiegand Input Data 0 wire of LX006 (Pink wire).
4. Connect the Wiegand Data 1 wire of the External Reader to the Wiegand Input Data 1 wire of LX006 (Cyan wire).
5. The GND(-) wire must be connected between the external and the LX006.

■ Compatible Reader:

LX006:

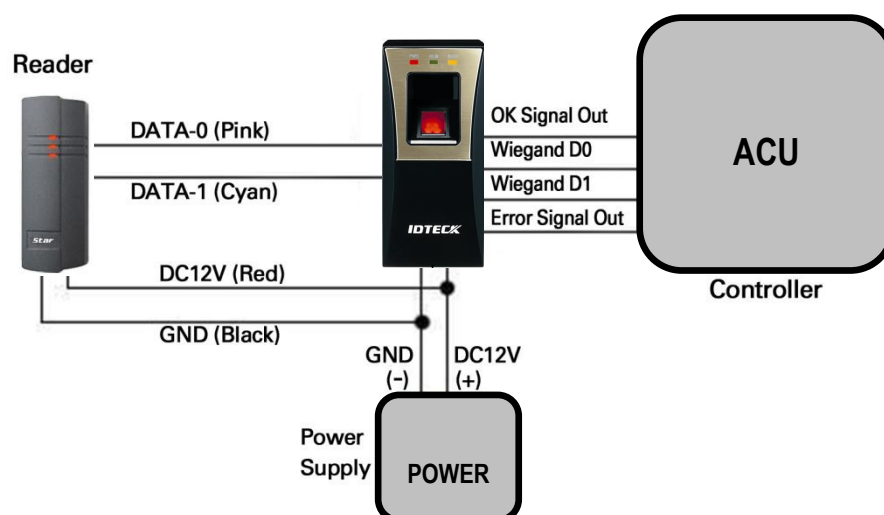
Standard 26bit Wiegand proximity reader

Standard 26bit Wiegand + 4/8bit burst proximity/ keypad reader

LX006SR:

Standard 34bit Wiegand proximity reader

Standard 26bit Wiegand + 4/8bit burst proximity/ keypad reader



(Figure: External Reader Connection)

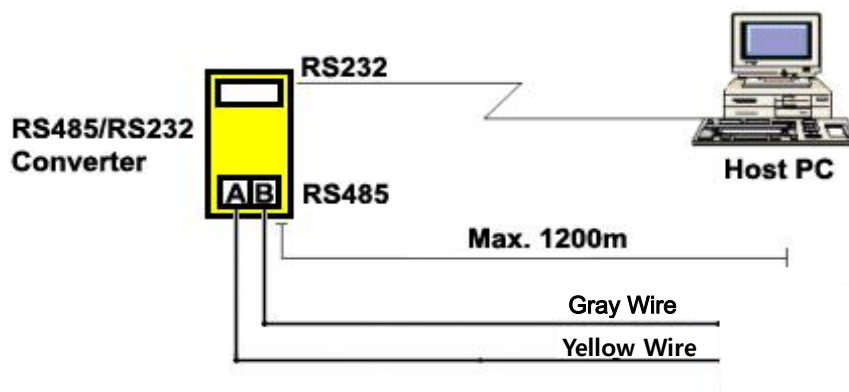
8. COMMUNICATION

8.1 RS485 COMMUNICATION PORT CONNECTION

8.1.1 RS485 COMMUNICATION PORT CONNECTION (SINGLE CONNECTION)

An RS-485/RS-232 converter is required to connect serial communication RS485 between the LX006 Main Unit and the Host Computer.

- Connect RS485 - RTX (+) (Yellow) wire of Main Unit to RS485-A of Converter.
- Connect RS485 - RTX (-) (Gray) wire of Main Unit to RS485-B of Converter.
- Plug the RS232 9-pin connector of INC300 converter into COM1 or COM2 Port of Computer.
- Install and run the application software.



(Figure: RS485 Connection between LX006 and Host PC)

** The maximum of cable length can be shortened depending on communication speed, the type of communication cable and cable installing environment.*

8.1.2 RS485 COMMUNICATION PORT CONNECTION (MULTIPLE CONNECTION)

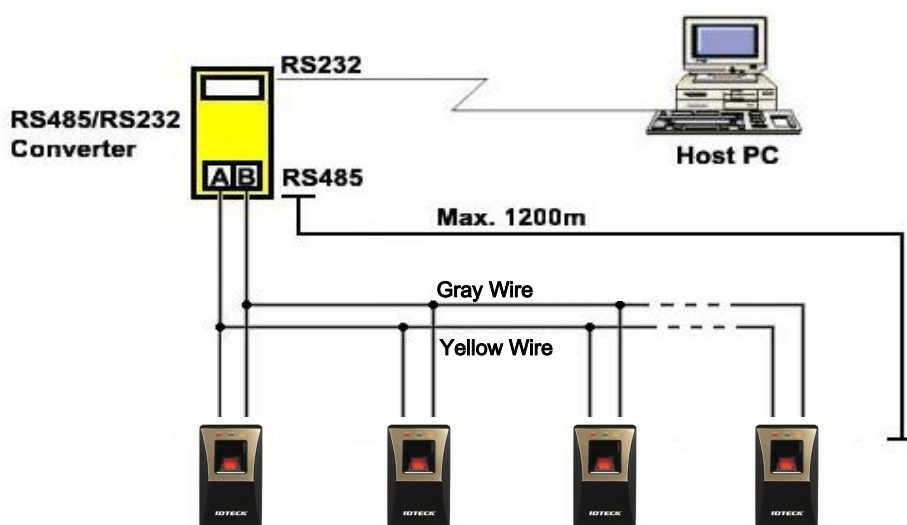
RS485/RS232 converter is required to use RS485 communication between multiple LX006s and a host computer. Please follow the following instructions.

First, you have to connect all RS485 port of all LX006s in parallel. (Maximum of 255)

- Connect RS485-A(+) (Yellow) of one LX006 to RS485-A(+) (Yellow) of another LX006.
- Connect RS485-B(-) (Gray) of one LX006 to RS485-B(-) (Gray) of another LX006.
- Set different COMM ID for each LX006.

Second, you have to connect one of RS485 port of LX006 to RS485/RS232 converter.

- Connect RS485-A(+) (Yellow) of one LX006 to RS485-A port of the Converter.
- Connect RS485-B(-) (Gray) of one LX006 to RS485-B port of the Converter.
- Plug in the RS485/RS232 9-pin connector of the converter to the COM1 or COM2 Port of the PC.
- Install and run LX006 Application Software.

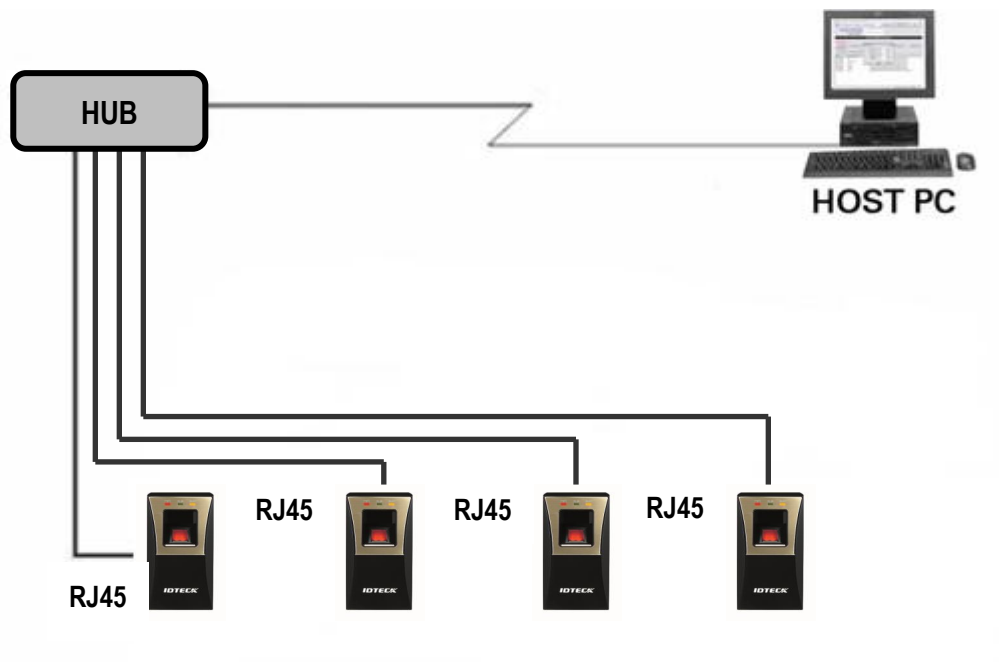


(Figure: Multiple Connection of LX006 with RS485)

8.2 TCP/IP COMMUNICATION PORT CONNECTION

For TCP/IP communication, external cable is required to connect to CON4 (8PIN connector). Please follow the following instructions.

1. Connect the LAN cable of the network system to the RJ45 jack of the LX006.
2. Install and run the Application Software.



(Figure: TCP/IP Communication connection of LX006)

9. BASIC SETTING

9.1 INITIALIZATION OF LX006

- Initialization should be performed before mounting the LX006 to the Wall Mount.
- If you need to initialize LX006 after installing it on the wall, you can use the Application Software to do that. (Refer to the Software Manual for more information.)
- For more information about how to initialize the LX006, refer to '**7.3 SYSTEM INITIALIZATION**'.



Cautions

If the Controller is initialized, all data stored in the Controller will be cleared and the default setting values (factory setting values) will be reloaded. Therefore, the Initialization should be performed by authorized person only. It is strongly recommended to upload all events data before initialization.

9.2 COMMUNICATION ID SETTING

- The LX006 can upload or download user's fingerprint data using the Application Software. You can also customize the settings of LX006 for your needs.
- There is one 8 channel DIP switch on the back of FGR006/SR unit for communication ID setting. Each channel of DIP switch has assigned address value. The communication ID is calculated by the sum value of each switch set to "ON" position. Communication ID can be set from '000' to '255'. Please refer to the '**7.4 COMMUNICATION ID SETTING**' for more details.

10. OPERATION MODE

10.1 MASTER CARD REGISTRATION MODE

While the LX006 is operating in the Master Card Registration Mode, the Red and Green LEDs are lit.

10.1.1 MASTER CARD REGISTRATION

The card presented to the LX006 for the first time after initialization becomes the master card.

※ **NOTE: Fingerprint verification is not used for the Master Card.**

After the Master Card is recognized, the Green LED blinks with 3 beeps.

10.1.2 MASTER CARD CHANGE

You can change the registered Master Card after system initialization.

※ **CAUTION : If you initialize the system, all user data will be deleted.**

Alternatively, you can change the Master Card using the application software. (Using the application software keeps the user data unchanged.)

10.1.3 MASTER CARD FUNCTION.

The Master Card is used to toggle the LX006 between the Reader Mode and the Registration Mode.

※ **For example,**

If you present the master card in the Reader Mode, the LX006 shifts to the Registration Mode.

If you present the master card in the Registration Mode, the LX006 shifts to the Reader Mode.

10.2 REGISTRATION / DELETION MODE

While the LX006 is operating in the Registration/Deletion Mode, the Yellow and Green LED blink.

10.2.1 REGISTRATION MODE FUNCTION

In the Registration Mode, you can register new user cards or delete registered user cards.

- If you present a registered user card, it will be removed from the LX006. (4 beeps)
- If you present an unregistered user card, it will be newly registered to the LX006. (3 beeps)
- If fingerprint registration is failed, only card ID is registered then it works as RF Only mode.

10.2.2 USER CARD REGISTRATION

1. Present the Master Card to the LX006.

2. Yellow and Green LED indicators blink.
3. Present the Proximity Card you want to delete to the LX006.

4-1. RF + FINGER MODE:

After presenting the user card you want to register, you should enter the desired fingerprint twice.

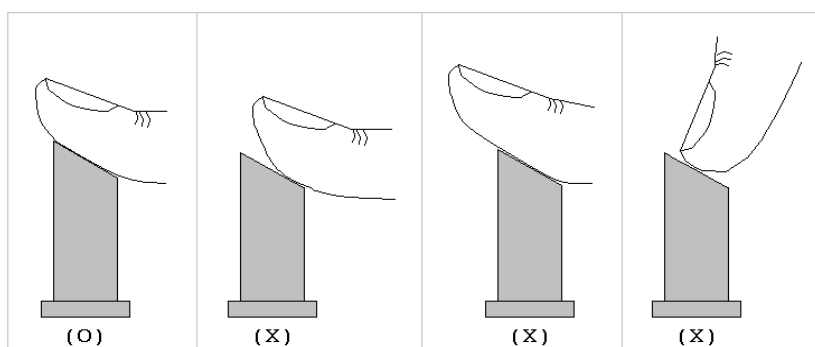
Follow the steps below to register a new user card;

- Present the proximity card to the LX006.
- Place the fingerprint on the fingerprint scanner while red light is illuminated from it
- Lift the fingerprint up when the red light from the scanner turns off.
- Place the fingerprint on the fingerprint scanner once again while the red light is illuminated again.
- 3 beeps will be generated if the registration is successfully completed. If the fingerprint registration is not successful, only Card ID is registered then beep sound is generated 3 times.
- If you want to register more user cards, repeat the steps above.
- If you want to finish registration process, present the Master Card to return to the Reader Mode.

4-2. RF Only:

If you'd like to register a new user card without use of fingerprint, don't place the fingerprint on the fingerprint scanner and wait until the red light from the scanner turns off automatically.

- Just present the user card you want like to register.
- After the registration is successfully completed, you'll hear 3 beeps. If the registration is not successful, you'll hear only 2 beeps.
- If you' want to register more user cards, repeat the procedure above. Or, if you'd like to finish registration process, present the Master Card to return to the Reader Mode



(Figure: Correct placement of fingerprint)

10.2.3 USER CARD DELETION

To delete registered user cards, follow steps below;

1. Present the Master Card to the LX006.
2. Yellow and Green LED indicators blink.
3. Present the Proximity Card you want to delete to the LX006.
4. After the deletion is successfully completed, you'll hear 4 beeps. If the deletion is not successful, you'll hear 2 beeps.
5. If you want to delete more user cards, repeat the steps above.
6. To finish the user card deletion process, present the Master Card to return to the Reader Mode.

10.3 READER MODE

While the LX006 is operating in the Reader Mode, the Red LED is lit.

10.3.1 READER MODE FUNCTION.

In the Reader Mode, the LX006 authorizes or denies users who attempt access by presenting their cards.

- If a user is authorized, the LX006 transmits the User ID to the controller.
- If a user fails to be authorized, the LX006 transmits the error signal to the controller. (The error signal is not generated when using ABA Track II format.)

10.3.2 AUTHORIZATION

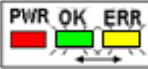
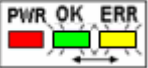
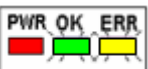
- If the LX006 is operating in the RF-Only Mode or the User Card is registered as an RF-Only mode card,
 1. Present the registered card to the LX006.
 2. If the card is authenticated, a long beep will be generated and the Green LED will be lit.
If the card fails to be authenticated, the LX006 output the user ID information according to the output format setting.
- If the LX006 is operating in the RF+FINGER Mode and the User Card is registered as an RF+FINGER mode card,
 1. Present the registered card to the LX006.
 2. After the card is recognized, the fingerprint scanner emits red light.
 3. Place the registered fingerprint on the scanner.
 4. If the fingerprint is successfully verified, a long beep will be generated and the Green LED will be lit.
The User ID will be transmitted according to the output format setting.
 5. If the fingerprint fails to be verified, the buzzer will generate 2 short beeps and the Yellow LED will blink twice. Also, an Access Error Signal output (Low Active) will be generated for 500ms. (The

error signal is not generated when using ABA Track II format.)

- If the card hasn't yet been registered,
 1. The buzzer generates 2 short beeps and the Yellow LED blinks twice to indicate that the presented card is unregistered or deleted.
 2. When an unregistered card is presented or a fingerprint is not verified, an Access Error Signal output (Low Active) will be generated for 500ms. (The error signal is not generated when using ABA Track II format.)

10.4 READER INDICATOR

LED ON:  LED OFF:  LED Blinking: 

LED	BEEP	VOICE MESSAGE	STATUS
	1	WELCOME TO ACCESS CONTROL SYSTEM	Power is applied and the LX006 is booting up.
	X	SYSTEM INITIALIZED	The initialization has been finished.
REGISTRATION MODE			
	X	MASTER ID REGISTRATION MODE	In the status of system initialize. The card recognized in this status, it becomes Master card.
	X	REGISTRATION AND DELETION MODE, PRESENT A CARD	User card registration/deletion is available
	3 BEEPS	ID REGISTERED	User card registration successfully completed
	3 BEEPS	FINGERPRINT REGISTERED	User card/Fingerprint registration successfully completed
	2 BEEPS	FINGERPRINT REGISTRATION FAILED, PLEASE TRY AGAIN	User card/Fingerprint registration is failed
	4 BEEPS	ID DELETED	User card/Fingerprint deletion successfully completed
READER MODE			
	X	READER MODE	The LX006 is in its normal status, waiting for a User Card to be presented.
	1 BEEP	ACCESS GRANTED	Authentication completed
	2 BEEPS	ACCESS DENIED, PLEASE TRY AGAIN	Authentication failed
	4 BEEPS	ID UNREGISTERED	Unregistered person

10.5 DEFAULT SETTINGS

The initialization before installation restores the default values (factory settings) of the LX006. For desired applications, you may adjust or customize the settings via the Application Software.

The default values for the basic settings are as follows;

1. Operating Mode: RF + FINGER
2. Fingerprint Registration: 1 ID → 1 Finger Two Template
3. Output Format: 26bit Wiegand/34bit Wiegand(SR)
4. Input Format: 26bit Wiegand/34bit Wiegand(SR)
5. Output Mode: Normal Mode
6. Adaptive Mode: Disabled
7. High Security Mode: Enabled
8. Voice Volume: 3

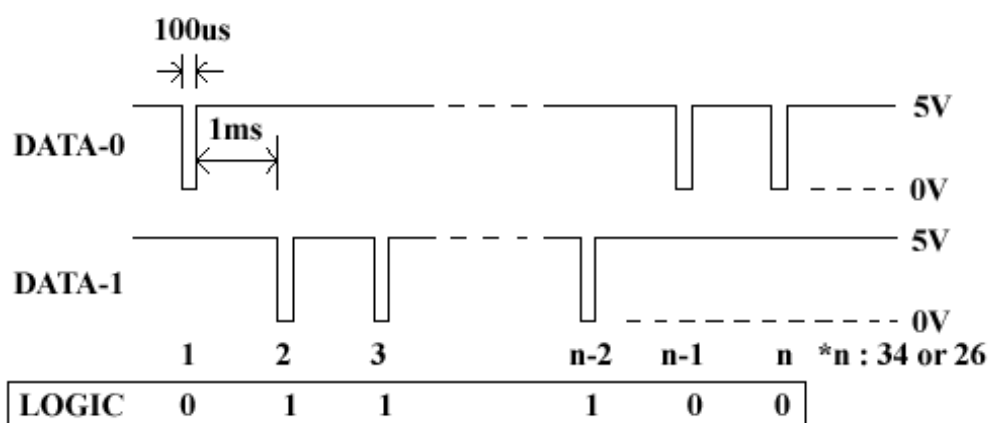
11. OUTPUT FORMAT

11.1 WIEGAND OUTPUT (DEFAULT)

Data format (26-bit)

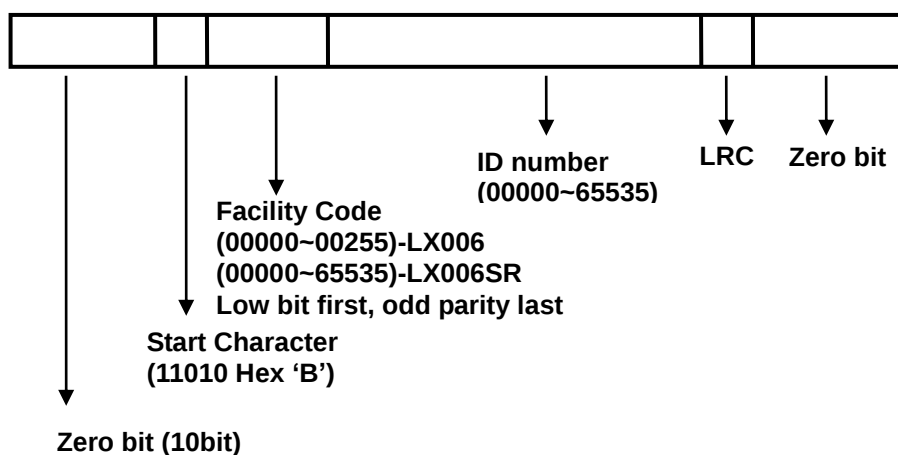
Bit 1 / Bit 1: From Bit 2 to Bit 13 / From even parity Bit 2 to Bit 17
 Bit 2 to Bit25 / Bit 2 to Bit33: 3-byte ID number / 4-byte ID number
 Bit 26 / Bit 34: From Bit 14 to Bit 25 / From odd parity Bit18 to Bit 33

Output Timing

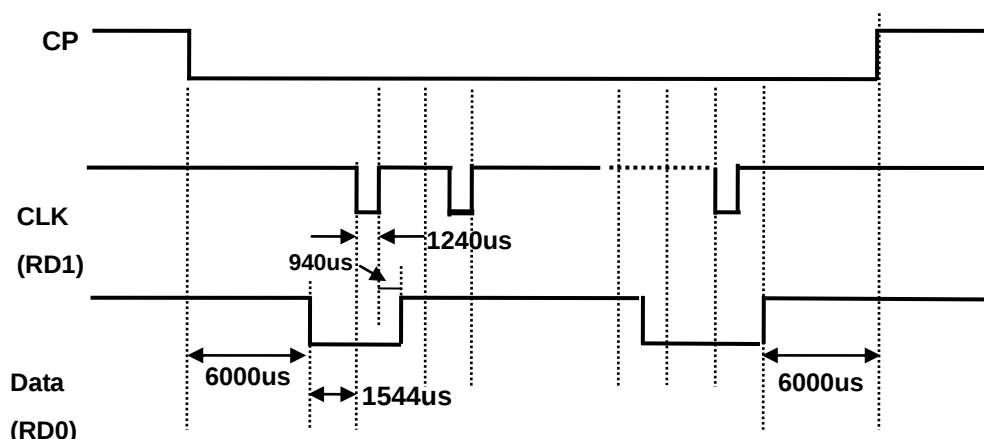


11.2 ABA TRACK II (SELECTABLE USING THE SOFTWARE)

Data format



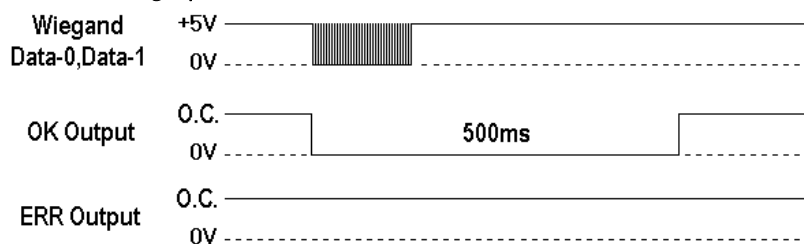
Output timing



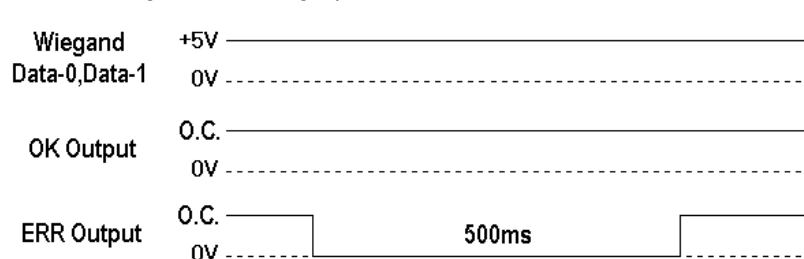
11.3 OUTPUT MODE

11.3.1 NORMAL OUTPUT MODE

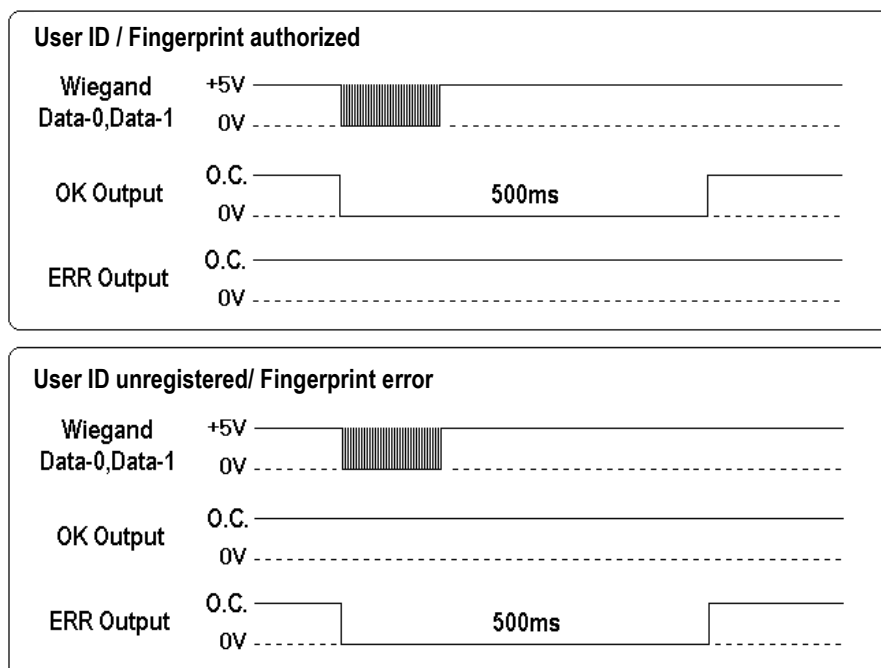
User ID / Fingerprint authorized



User ID unregistered/ Fingerprint error



11.3.2 EXTENSION OUTPUT MODE (SET BY APPLICATION SOFTWARE)



12. APPENDIX

A. Trouble Shooting

Unable to enter the registration mode with master card

Cause	Of master card registration error or of setup error
Cause	1. Check a master card. Try changing a master card and enter the registration mode with changed card. 2. Initialize the unit referring to user's manual. (When this problem occurs before mounting the LX006 on the wall) * You can use application software for initialization if the LX006 is already mounted on the wall. 3. If the problem still remains after following the procedure above, contact the designated service center.

Fingerprint isn't registered or authenticated.

Cause	1. Check the fingerprint position on the scanner. 2. Check condition of the fingerprint. 3. Check whether ADAPTIVE MODE is applied or not. If not, Set the mode as ADATIVE MODE
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Cause	1. Check the fingerprint position on the scanner. . Correct position  Wrong position   
	2. Check condition of the fingerprint. Normal  Dry  Wet  Low pressure  High pressure 
	3. ADAPTIVE MODE is to compensate too dry and wet fingerprint. When ADAPTIVE MODE is applied, the fingerprint capture time takes longer but the performance of fingerprint recognition will be higher. You can apply ADAPTIVE MODE using application software.

 The controller does not communicate with Host PC.

Cause	Defective cable is used, errors in wiring, an error in setting Communication ID of the controller, or damage on the communication port (either on PC side or on the controller side).
Solution	1. Please, check the settings of the application software and the controller. - Check the controller's Communication ID is linked with application software. - Set the different Communication ID when two or more controllers are installed. ▪ In case of using Serial communication. - Check the communication speed (default 57600bps) is the same as the setting on the application software. Please refer to application software manual. - Make sure that the PC's COM port is set correctly on the application software. - The parameters at the application software should be set as follows. Parity bit : NONE Data bit : 8bit Stop bit : 1bit ▪ In case of using TCP/IP Communication - Check IP, Subnet Mask, Gateway and Port setting value. - Check more information about above setting value using the software manual.

2. Check the line connection for communication.

▪ In case of RS485

RS485 (mono)		
LX006	RS485/232 Converter	PC
RS485-A(+)	RS485-A(+)	RS232 Cable of connector
RS485-B(-)	RS485-B(-)	

RS485(Multi Drop)			
LX006	LX006	RS485/232 Converter	PC
RS485-A(+)	RS485-A(+)	RS485-A(+)	RS232 Cable of connector
RS485-B(-)	RS485-B(-)	RS485-B(-)	

- When a multi-drop communication doesn't work, test one-by-one Communication from first.

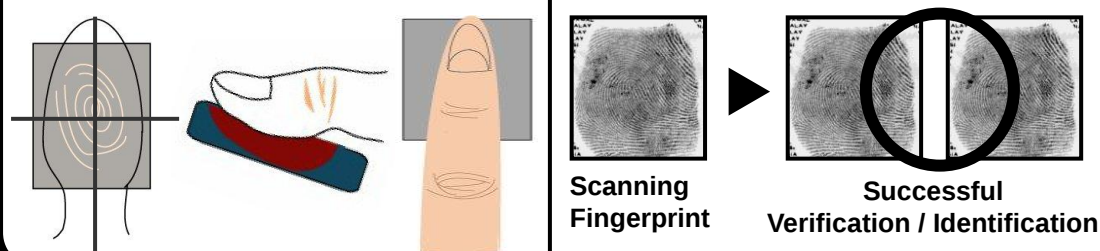
- In case of TCP/IP Communication
- Check the LED is flickering on the back of the product.
- If it is flickered, check the cable connection.

3. If the trouble remains after the procedure above, contact a designated service center.

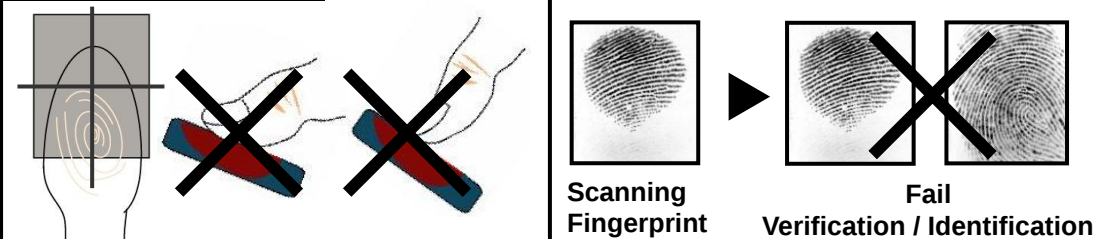
B. How to register fingerprint

Correct Fingerprint Registration Method

Correct Method

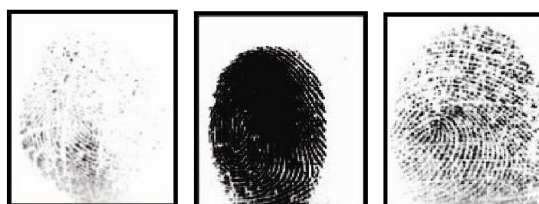


Incorrect Method



In case of not a fingerprint registration

- Wet Fingerprint
- Dry Fingerprint
- Scarred Fingerprint
- Injured Fingerprint



Dry

Wet

Scarred

Management Method

If Fingerprint is excellently recognized...

- In case of dry fingerprint, please somewhat strongly press your finger (fingerprint) on fingerprint recognition scanner.
- In case of wet fingerprint, please lightly press your finger (fingerprint) on fingerprint recognition scanner.
- Please be always clean on the surface of fingerprint recognition scanner.

13. FCC REGISTRATION INFORMATION

FCC Requirements Part 15

CAUTION: *Any changes or modifications in construction of this device which are not expressly approved by the responsible for compliance could void the user's authority to operate the equipment.*

NOTE: *This device complies with **Part 15 of the FCC rules**.*

Operation is subject to the following two conditions;

1. This device may not cause harmful interface, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to **part 15 of the FCC Rules**. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one more of the following measures:

- . Reorient or relocate the receiving antenna.
- . Increase the separation between the equipment and receiver.
- . Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- . Consult the dealer or an experienced radio/TV technician for help.

WARNING

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

14. WARRANTY POLICY AND LIMITATION OF LIABILITY

IDTECK warrants this product against defects in material and workmanship for the period specified below from the date of purchase under normal customer use. This Warranty doesn't apply: 1) to any product which has been dismantled without authorization of IDTECK or/and has a damaged or detached QC label on its back side; 2) to any losses, defects, or damages caused by improper testing, operation, installation, maintenance, modification, alteration, or adjustment; 3) to any product with a damaged or faded serial number on it; or 4) to any losses, defects, or damages caused by lightning or other electrical discharge, natural disaster, misuse, accident or neglect.

This Limited Warranty is in lieu of all other warranties, obligations, or liabilities on the part of IDTECK, and IDTECK DISCLAIMS ANY AND ALL WARRANTY, WHETHER EXPRESS OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IDTECK does not, and cannot, know who is present, what property is located, where this product will be used; it would be extremely difficult to determine the actual damages that may result from a failure of the product to perform as anticipated; and the low price of this product is based upon the nature of the product provided and the limited liability that IDTECK assumes. IDTECK IS NOT RESPONSIBLE FOR ANY PERSONAL INJURY, PROPERTY DAMAGE OR LOSS, DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR OTHER LOSS, AND IDTECK'S MAXIMUM LIABILITY SHALL NOT IN ANY CASE EXCEED THE PURCHASE PRICE OF THE PRODUCT.

To obtain repair or replacement under the terms of this warranty, visit IDTECK's Website (<http://www.idteck.com>) and place an online RMA request. After an RMA code is issued, return the product along with the authorization RMA code.

>> Warranty Period

	Product Category	Warranty Period
1	RF CARDS (ACTIVE TYPE)	1 year
	FINGERPRINT MODULE / SENSOR	
2	RF READERS (WITHOUT EPOXY POTTING)	2 years
3	STANDALONE CONTROLLERS	
4	CONTROL PANELS	
5	FINGERPRINT READERS	
6	RF READERS (WITH EPOXY POTTING)	Lifetime
7	RF CARDS (PASSIVE TYPE)	

15. HOW TO MAKE RMA REQUEST (AFTER SALES SERVICE)

To make the RMA request, the product must be initially registered on IDTECK webpage. After registering the product, please send it to IDTECK RMA Center.

Please follow the instructions below:

1. Please register the RMA request via IDTECK webpage.
: www.idteck.com → "Support & Download" → "Online RMA" → "RMA REQUEST"
(Please refer to the IDTECK webpage for more details.)
2. RMA Code will be issued after the RMA Center reviews the RMA request form.
3. Enclose the product along with the RMA Code and send it to IDTECK RMA Center.
(Product without RMA Code is not accepted.)

If you have any questions or problems regarding the RMA services, please contact us using the contact information below. Friendly representatives at IDTECK are always standing by to provide the best after sales services.

IDTECK Headquarter

5F, Ace Techno Tower B/D, 684-1, Deungchon-Dong,

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Fax: +82 2 2659 0086

E-mail: webmaster@idteck.com

Website: www.idteck.com

E-Training Center: <http://www.idtecktraining.com>

IDTECK Production Facility and RMA Center

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Fax: +82 2 2659 0086

E-mail: webmaster@idteck.com

Website: www.idteck.com

E-Training Center: <http://www.idtecktraining.com>



The specifications contained in this manual are subject to change without notice.

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