

IDTeck **FGR006**

Fingerprint & Proximity Reader

Rev. 3.0



USER'S MANUAL



CONTENTS

- 1. Important Safety Instructions**
- 2. Introduction**
 - 2.1 Identifying Supplied Parts**
 - 2.2 About NESS - IDTECK FGR006**
 - 2.3 Specification**
- 3. Product overview**
 - 3.1 Function**
 - 3.2 Product Explanation**
 - 3.2.1 Panel Description**
 - 3.2.2 Colour Coded & Wiring Table**
- 4. Installation**
 - 4.1 System Initialisation**
 - 4.2 Wire Connection of FGR006**
 - 4.3 Wire Connection of FGR006EX**
 - 4.4 Network Connection of FGR006**
 - 4.5 For Example**
 - 4.5.1 Power**
 - 4.5.2 Input Connections (FGR006EX Only)**
 - 4.5.3 Output Connections**
 - 4.5.4 Error Signal Connection**
- 5. Communication**
 - 5.1 Address Setting for RS485/RS422 Communication**
 - 5.2 RS232 Communication Port Connection**
 - 5.3 RS485 Communication Port Connection**
 - 5.4 RS422 Communication Port Connection**
- 6. Operation**
 - 6.1 Master Card Registration Mode**
 - 6.2 Reader Mode**
 - 6.3 Registration Mode**
 - 6.4 Auto match Function (OPTION 1)**
 - 6.5 External RS232 Serial Jack (OPTION 2)**
- 7. Operation Indication of Reader/Register**
- 8. FCC Registration Information**
- 9. Contacts**

1. Important safety instructions

To prevent injuries to persons and damages to property, please read all the instructions and follow them whenever you deal with this product.

After reading, please put this instruction manual where it can be easily seen for the system operator.

ON INSTALLATION AND POWER

Use 12V DC power ONLY

- Connecting to higher than 12V DC may result in a risk of electric shock, fire, or heavy damage of the unit.

Do NOT install this product at places with wet or metallic dust, or that can be watered.

- There may be risks of electric shock and fire.

Do NOT install this product near electric motors running.

- The unit may not operate normally.

Do NOT set this product near heaters or any thing that produces heat.

- There may be a risk of fire.

Be ALWAYS careful not to short-circuit any part of the circuitry with tools like a screwdriver in hand.

- There may be a risk of fire or heavy damage of the unit.

ON MAINTENANCE

Do NOT use any kind of liquid for cleaning.

- There may be a risk of electric shock, fire or heavy damage of the unit. Use an air spray, if needed.

Users are cautioned NOT to attempt repair of this product or modify the wirings set by the installer at their own discretion.

- It may pose the risk of fire, hardware damages, or abnormal operations of the unit.

It is recommended not to use a flammable spray or something easy to burn near this product.

- There may be the risk of an explosion or fire.

Keep the unit away from any unauthorized people.

- It may cause abnormal operations of the unit.

NOTICE

Please, contact a designated service centre or the outlet at which the product was purchased when

- A. Any liquid has been spilt or sprayed onto the product. In this case, cut the power off first.
- B. The product seems to be operating abnormally.
- C. The unit exhibits a distinct change in performance.
- D. The unit has fallen to be broken down or damaged on its case.

* The cost of repairing can be charged for troubles due to the improper handling or negligence of users or the operator.

2. Introduction

2.1 Identifying Supplied Parts

Please unpack and check the contents of the box.



Main Unit



Bezel



User's Manual



RS232 Serial line
(OPTION)

2.2 About NESS - IDTECK FGR006/FGR006EX

The NESS - IDTECK FGR006 is a Biometrics and Proximity Reader, which is compatible to existing proximity readers. FGR006 can be connected to any existing access control panel and you will have personal authorization by one's fingerprint to avoid any access from un-authorized person. FGR006 has built-in proximity reader and fingerprint module so that the access is only allowed when the personal ID and fingerprint are authorized. Its modern design gives you an easy installation (just replace existing reader) to metal door frame (mullion) or to any flat wall surface. FGR006 ensures you a successful operation where you want biometrics access control. FGR006 has three LED of red, green and lens (upper right), inside beeper sound to guarantee you an accurate and reliable access control.

2.3 Specification

CPU	32bit, dual 8bit Microprocessor
Memory	Program Memory: 64KB EEPROM
Power	DC 12V/350mA max
Card Holders	720 (optional 2,000/4,5000)
Reader Port (FGR006EX only)	1 Extra port
Reader Data Format	26bit Wiegand, 8bit burst Format for keypad reader
Output Format	26bit Wiegand, ABA Track II Magstripe format (Caution: Card Present signal is Open Collector)
Communication port	RS232, RS485, RS422 (default, up to 255ch) selectable 4800,9600(Default), 19200, 38400, 57600, 115200bps communication speed
LED Control Input	Low active, maximum 20mA current drain
Beeper Control Input	Low active, maximum 20mA current drain
Tamper Switch	Low active
LED/Beeper	Three LEDs / Piezo Buzzer

Colour	Light and Dark Grey
Operating Environment	-15°~+40° (-5°~ +104°), 0~90% Humidity
Overall Size (WxHxD)	66x129x51mm (2.6"x5.1"x2.0")
Weight	230g (0.5lb)

3. Product Overview

3.1. FUNCTION

The FGR006 is finger reader with integrated proximity reader and registration terminal.

[Registration Mode]

The registration mode registers (or deletes) user cards.

[Reader Mode]

If your fingerprint is authorized then FGR006 will send your card ID to the access controller.

[Master Card]

A master card is used to change modes from Registration to reader modes.

[A Card Number Output Form]

If your fingerprint is authorized then output becomes the card number to 26bit Wiegand or ABA Track II according to an output type.

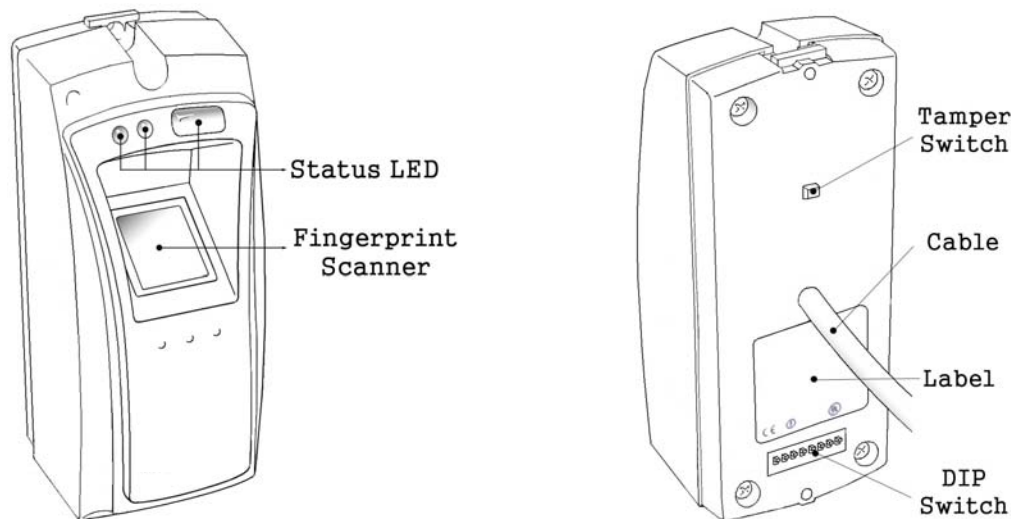
[An Error Signal Output]

If your fingerprint is not authorized then FGR006 will generate finger error signal for 500ms of low active pulse. (Only available when your FG006 is set to 26bit Wiegand output)

This signal is open collector.

3.2. PRODUCT EXPLANATION

3.2.1 PANEL DESCRIPTION



3.2.2 COLOUR CODED & WIRING TABLE

IO PORT NAME	SIGNAL NAME	COLOUR CODE
POWER		
Main Power (+12V)	+12V	RED
Power Ground	GND	BLACK
INPUT (Only available with RS232/RS485 Communication)		
LED Control Input	LED	BROWN
Beeper Control Input	BEEP	BLUE
WIEGAND OUTPUT		
Wiegand Data-0	DATA0	GREEN
Wiegand Data-1	DATA1	WHITE
* Finger Error	ERROR	ORANGE
* Note that the Finger Error output is only available with Wiegand output.		
ABA TRACK II OUTPUT		
Card Present	CLS	Orange
Clock	CLK	White
Data	DATA	Green
RS232 COMMUNICATION PORT		
RS232 RX	RXD	Grey
RS232 TX	TXD	Yellow

RS485 COMMUNICATION PORT

RS485-A	485A	Grey
RS485-B	485B	Yellow

RS422 COMMUNICATION PORT → DEFAULT

RS422 TX+	TX+	Grey
RS422 TX-	TX-	Yellow
RS422 RX+	RX+	Brown
RS422 RX-	RX-	Blue

TAMPER SWITCH

Tamper Switch	TAMPER	Purple
---------------	--------	--------

EXTERNAL READER PORT (FGR006EX Only)

Wiegand Data-0	IN_DATA0	Pink
Wiegand Data-1	IN_DATA1	Cyan

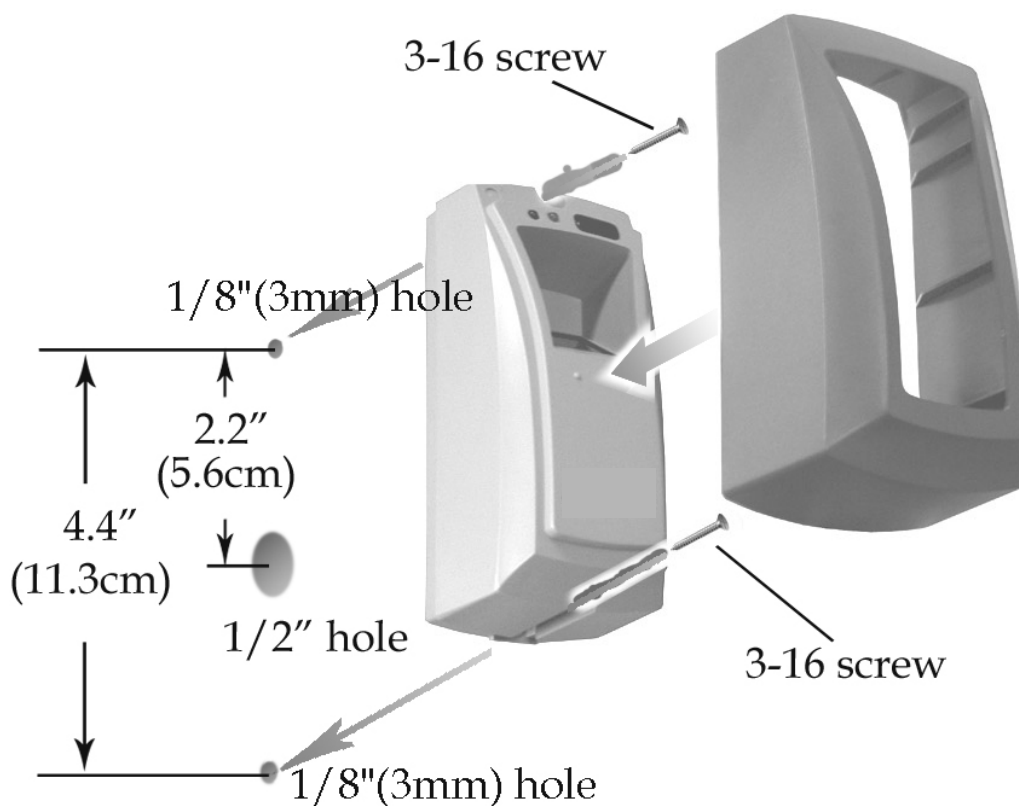
4. INSTALLATION

4.1 Mullion/Wall Mount

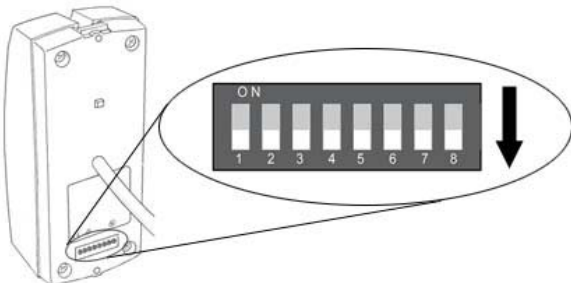
4.1.1 Drill two Ø1/8"(3mm) holes, 4.4"(113mm) apart in vertical and drill one Ø1/2" hole for the reader cable 2.2"(56mm) apart from the top hole.

4.1.2 Connect wires between the control panel and FGR006 reader then put reader cable into the centre hole and install the main unit by using two 3-16 screws.

4.1.3 Put bezel into the main unit then push bezel until you hear the locking sound.



4.2 System Initialisation



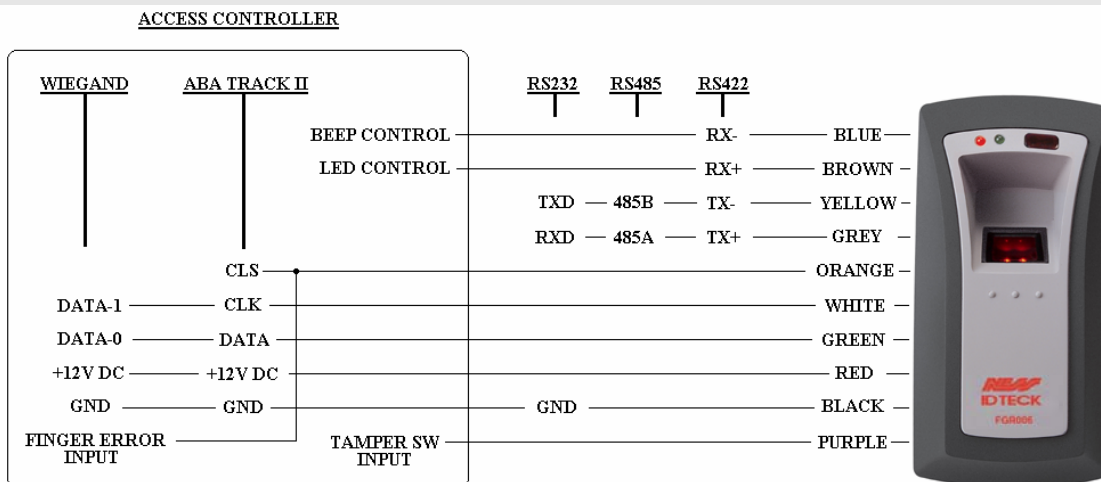
You can H/W initialise using DIPswitch.

First, turn on the system power and turn off all Dipswitches. Set the DIPswitch after an initialisation completion.

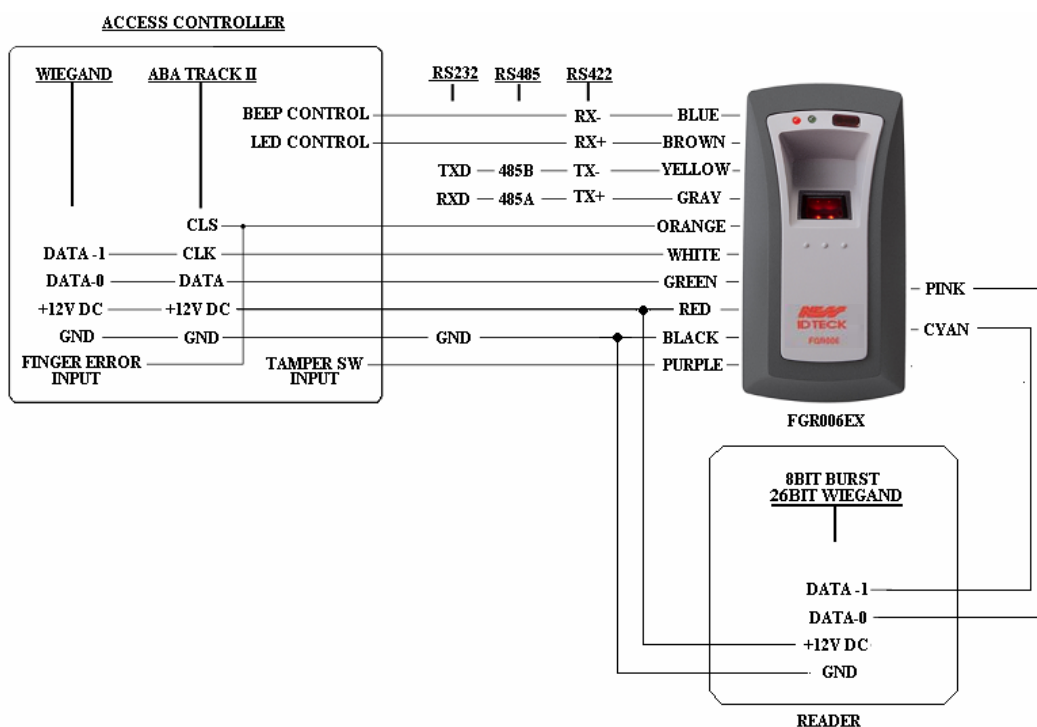
*** DIP Switch use for address of RS422/RS485 communication.**

An Initialisation situation refers to the "7.Operation Indication of Reader / Register" of manual.

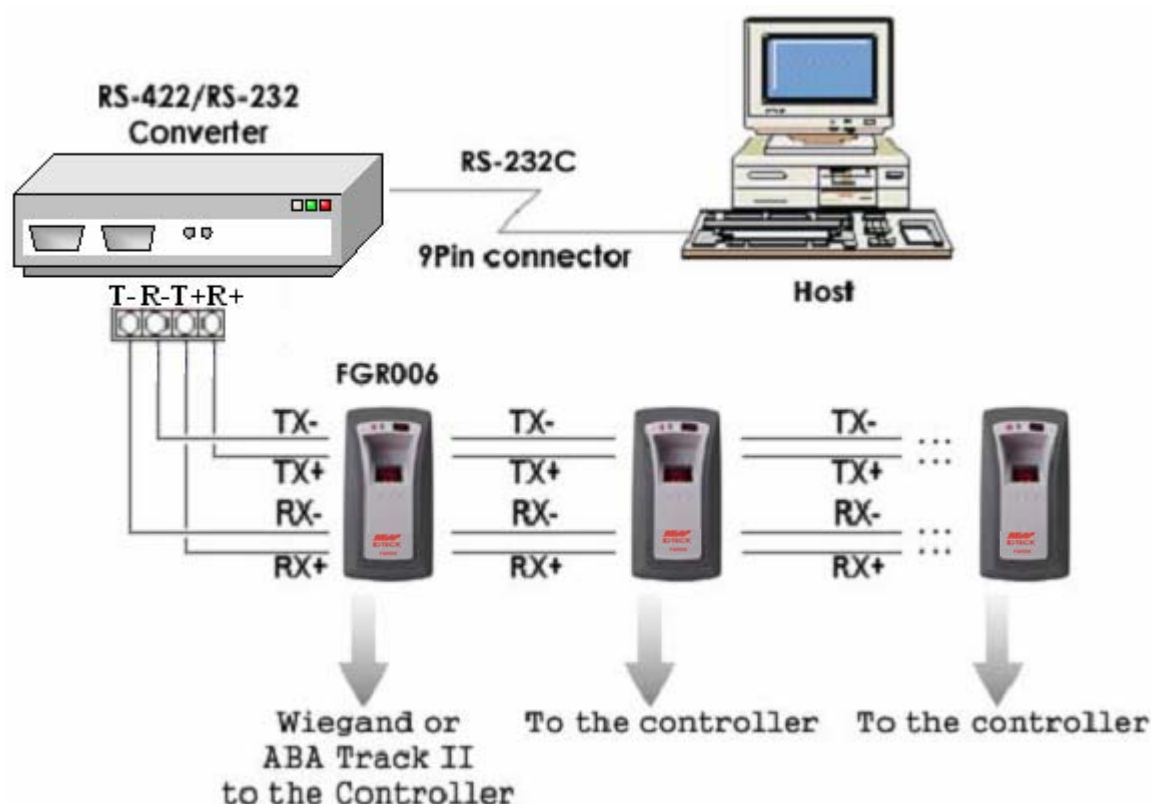
4.3 Wire Connection of FGR006



4.4 Wire Connection of FGR006EX



4.5 Network Connection of FGR006



4.6 Check Points and Tip

4.6.1 Recommended cable type and permissible length of cable

- Need thicker wire if you connect the reader with high current consumption.

Description	Cable Specification	Maximum Distance
Reader (Power and Data) Reader -> ACU	Belden #9512, 22 AWG 4 conductor, shielded	150m
	Belden #9514, 22 AWG 8 conductor, shielded	

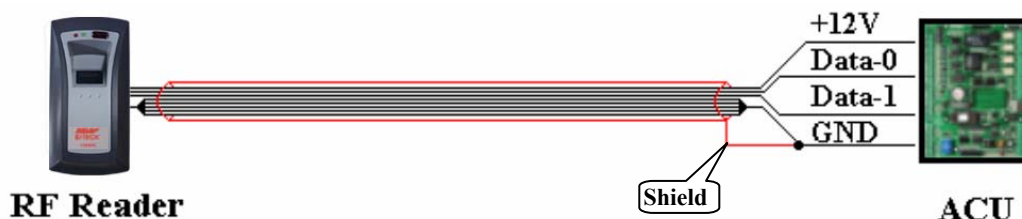
4.6.2 Reader connection

If you install the reader in a long distance between the ACU and the reader, you have to remind that there will be a voltage drop between both 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.

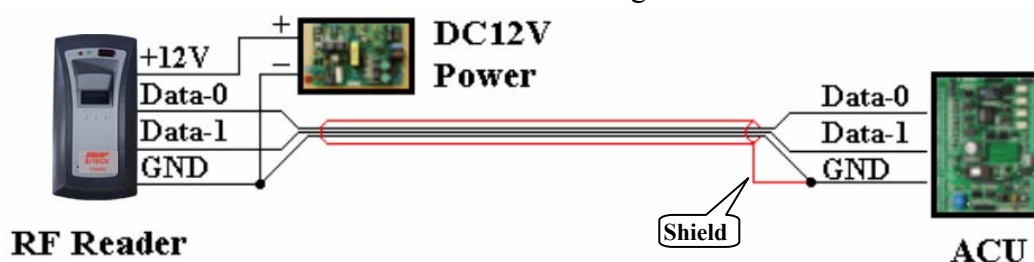
The most of ACU is capturing the signal by the voltage level of data input and 1V is the critical point whether the ACU read the data logic “1” or logic “0” therefore the reader output can not be read correctly from the ACU.

You have to think about how you reduce the voltage drop between both ends of GND wire. 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 then there will be no current flow through the GND wire and no voltage drop between both ends of GND wire.



< Reader connection using additional wires >



< Reader connection using external power supply >

4.7 For Example of Wiring

4.7.1 Power



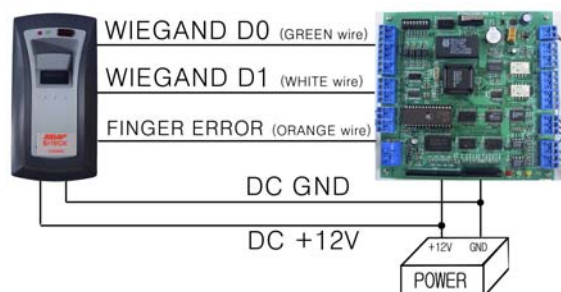
- Connect (+) wire of DC 12V power to Red wire
- Connect Power GND (-) wire of DC 12V to Black wire

4.7.2 Input Connection (Only available with RS232/RS485 communication)

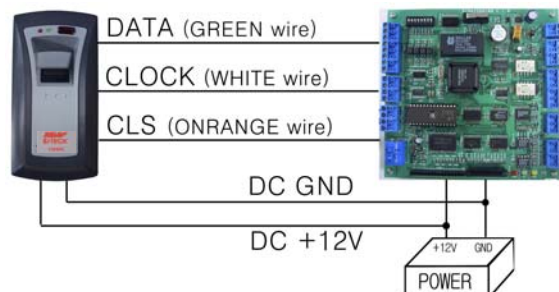


- A green LED turn on if the short does LED CONTROL INPUT wire with the GND
- The beep sound appears if the short does BEEPER CONTROLER INPUT wire with the GND.

4.7.3 Output Connections



[26bit Wiegand Output]

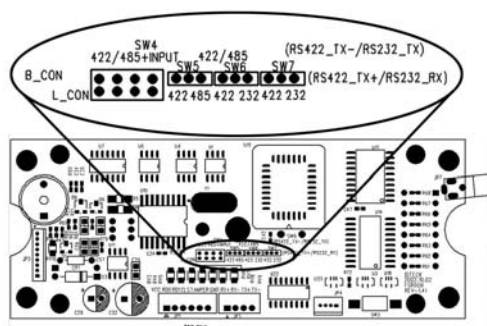


[ABA Track II Output]

4.7.5 External Reader Connection (FGR006EX Only)



5. Communication



The communication setting is defaulted to RS422.

If you need the change of the mode of the communication, FGR006 (FGR006EX) must set on the links on the MAIN PCB.

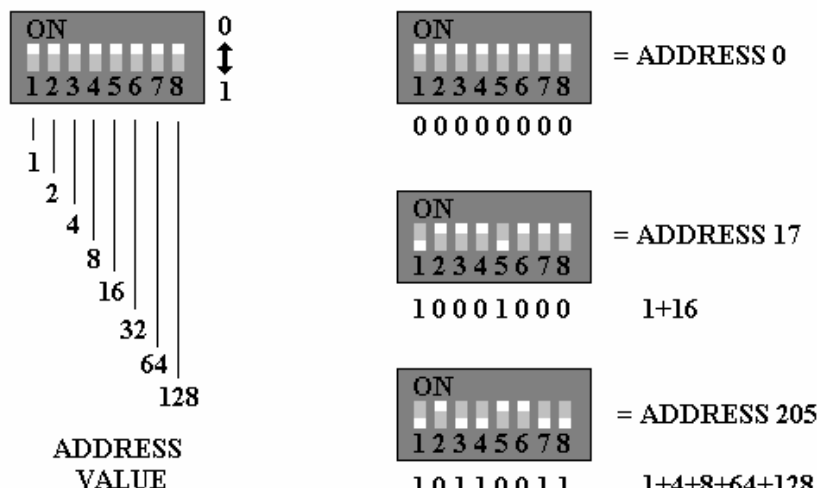
Changing this jumper setting requires the use of a soldering iron.

CAUTION: Damage to the PCB will void warranty.

5.1 Address Setting for RS485/RS422 Communication

There is 8bit DIP SW for address setting and it turns to 8bit binary code as below and each bit has fixed address value, the address is calculated the sum value of each bit set to “1” position.

Example

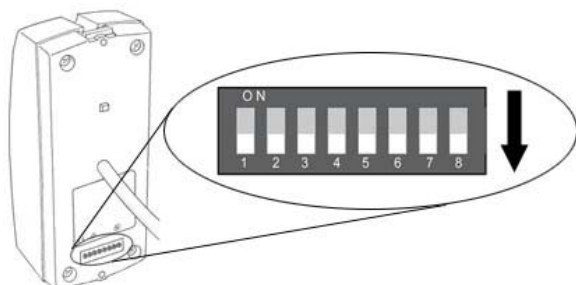


NOTE: Address Setting

If used with a Ness – IDTeck **iCON control panel** with Dual Pro software then the address **must start at 33** (i.e 1 & 6 down)) regardless of how many controllers you have online.

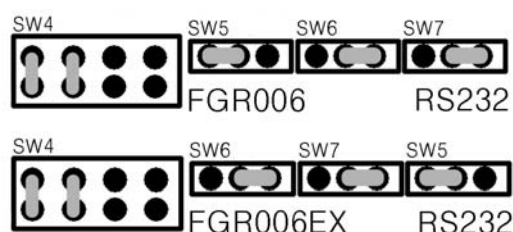
If used with a Ness – IDTeck **iTDC control panel** with iTDC Pro software then the address **must start at 100**. (i.e 3, 6 & 7 down) regardless of how many controllers you have online.

If used with 3rd party controllers refer to your vender for address instructions



NOTE: To select the address switch to “ON” switch it down.

5.2 RS232 Communication Port Connection



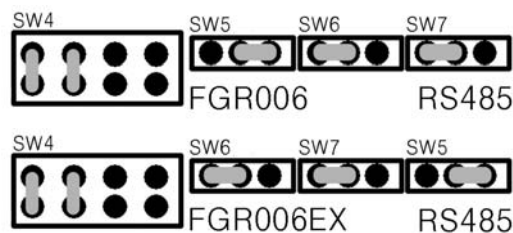
You set the jumper with a silkscreen side up.

9-pin connector (COM Port, D-SUB 9P Female) is required to connect serial communication RS-232 between Main Unit and PC (Personal Computer)

- Connect RS232 TX, Yellow wire of Main Unit to pin number 2 of 9-pin connector.
- Connect RS232 Rx, Grey wire of Main Unit to pin number 3 of 9-pin connector.
- Connect GND, Black wire of Main Unit to pin number 5 of 9-pin connector.
- Plug in 9-pin connector to COM1 or COM2 Port of PC
- Install and run Application Software.

FGR006 (FGR006EX) Wire		P C (D-SUB 9P Female)	
YELLOW	RS232 TX	2	RS232 Rx
GRAY	RS232 Rx	3	RS232 TX
BLACK	GND	5	GND

5.3 RS485 Communication Port Connection



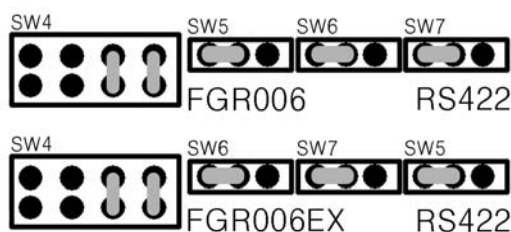
FGR006 (FGR006EX) Wire		CNP-200A Converter Wire	
GREY	RS485-A	RED	RS485-A
YELLOW	RS485-B	GREY	RS485-B

You set the jumper with a silkscreen side up.

RS-485/RS-232 converter is required to connect serial communication RS485 between Main Unit and PC (Personal Computer). The converter used CNP200A.

- Connect RS485 A, Grey wire of Main Unit to Red wire of CNP200A converter.
- Connect RS485 B, Yellow wire of Main Unit to Grey wire of CNP200A converter.
- Plug in RS232 9-pin connector of CNP200A converter to COM1 or COM2 Port of PC.
- Install and run application software.

5.4 RS422 Communication Port Connection



FGR006 (FGR006EX) Wire		CNP-200A Converter Wire	
YELLOW	RS422-Tx[-]	WHITE	Rx-
GRAY	RS422-Tx[+]	RED	Rx+
BLUE	RS422-Rx[-]	BLACK	Tx-
BROWN	RS422-Rx[+]	BLUE	Tx+

You set the jumper with a silkscreen side up.

RS422/RS232 converter is required to connect serial communication RS422 between Main Unit and PC (Personal Computer). The converter used CNP200A.

- Connect RS422 TX [-], Yellow wire of Main Unit to White wire (Rx [-] port) of CNP200A converter.
- Connect RS422 TX [+], Grey wire of Main Unit to Red wire (Rx [+] port) of CNP200A converter.
- Connect RS422 Rx [-], Blue wire of Main Unit to Black wire (TX [-] port) of CNP200A converter.
- Connect RS422 Rx [+], Brown wire of Main Unit to blue wire (TX [+] port) of CNP200A converter.
- Plug in RS232 9-pin connector of CNP200A converter to COM1 or COM2 Port of PC.
- Install and run application software

6. Operation

6.1 Master Card Registration Mode

6.1.1 A Master Card Registration

The first card presented to the FGR006 after initialisation becomes the Master Card.

For master card registration mode refer to the "7.Operation Indication of Reader / Register" of manual.

Note: A Master card cannot be used for access.

6.1.2 A Master Card Change

You can register Master Card again after initialisation of hardware.

CAUTION: If you initialise the hardware, all user data are deleted.

You can change the master card by using the application software.

Using the application software keeps the user data unchanged.

Please refer the FGR006 software manual for download master card.

6.1.3 A Master Card Function.

It is used as the key to change reader from normal mode to registration mode manually

For example)

In the Reader mode if you present the master card to the FGR006, it is changes it to registration mode.

In the Registration mode if you present the master card to the FGR006, it changes it to Reader mode.

(Therefore the master card cannot be used as an access card.) mode.

6.2 Reader Mode

6.2.1 *A Reader Mode Function.*

In reader mode cards and fingerprints are read for access authorization.

If your fingerprint is authorized then the system will transmit the card ID.

If your fingerprint is not authorized then error signal output.

For reader mode situation refer to the "7.Operation Indication of Reader / Register" of manual.

6.2.2 Authorization procedure.

When in program mode (i.e. after the Master card has been presented), present a proximity card to the FGR006

If your card ID is registered then fingerprint scanner will light on.

If your card ID is not registered then FGR006 will make 2 beep sounds and return to reader mode.

Put your finger on the fingerprint scanner for authorization.

If your fingerprint is authorized then FGR006 will turn on the lens led (upper light) and make a beep sound for a second and will send your card ID to the access controller.

If your fingerprint is not authorized then FGR006 will make 2 beep sounds and generate finger error signal for 500ms of low active pulse. (Only available when your FGR006 is set to 26bit Wiegand output)

6.3 Registration Mode

6.3.1 A Registration Mode Function

To access registration mode into a FGR006 you must first present the Master card.

In registration mode you can add or delete cards.

It deletes the card when user card has already been registered. (Beeps 4 times)

It registers the card when user card is not registered. (Beeps 3 times)

6.3.1 User Card Registration.

When registering a fingerprint you must present it twice.

Present a proximity card to the FGR006

Put your finger on the scanner when the red scanner light is illuminated, when the scanner light goes out remove your finger and then put the scanner finger back on when the scanner light is illuminated again.

It beeps 3 times when the registration is completed.

Add additional fingerprints the same as above.

After registration is complete present the master card again to toggle the reader from registration mode to reader mode.

It will beep 2 times when a registration error occurs.

6.3.2 User Card Deletion

Present proximity card to the FGR006

It beeps 4 times when the deletion is completed.

After deletion present proximity master card again, and it is changed to reader mode.

It beeps 2 times when the deletion is error.

6.4 Auto match Function (OPTION 1)

This function operates in the Reader mode.

User can be verified with Fingerprint template only. (No card necessary)

Sensor will be activated automatically when user places their registered finger on fingerprint scanner.

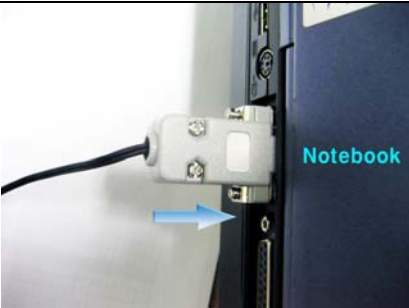
CAUTION: *This function will ONLY be available when the number of users is less than 100*

If your fingerprint is authorized the FGR006 will turn on the lens led (upper light) and make a beep sound for a second and will send your card ID to the access controller.

If your fingerprint is not authorized then FGR006 will make 2 beep sounds and generate finger error signal for 500ms of low active pulse. (Only available when your FGR006 is set to 26bit Wiegand output)

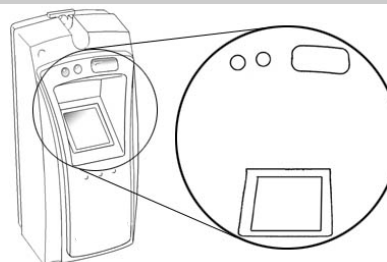
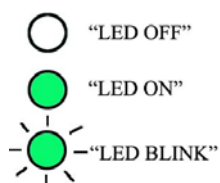
6.5 External RS232 Serial Jack (OPTION 2)

This function allows the FGR006 to connect directly to a PC (or Notebook) via RS232 for fingerprint registrations.

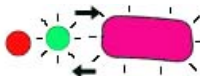
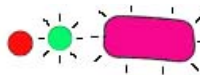
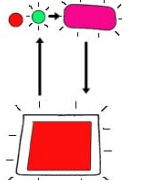
	
It is used to connect with FGR006 and RS232 port of PC (or notebook).	It uncover TOP CASE in FGR006. Extract after you pull TOP CASE bottom of FGR006
	
	
It insert RS232 serial jack at bottom of FGR006	It connects a d-sub connector with RS232 port of PC (or notebook).

7. Operation indication of Reader/Register

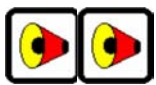
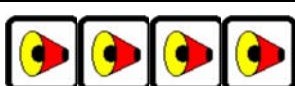
FGR006: over the version 3.00



7.1 LED status

LED	STATUS	FUNCTION
	Booting	The system is booting when power is supplied
	Register Master Card	The unit is initialised and master card is unregistered
	Registration Mode	Add / Delete user
	Reader Mode	Verify user card
	Initialisation	The unit is initialised
	Initialisation Completed	System initialisation is completed

7.2 Beeps sound status

BEEP SOUND	TIMES	STATUS
	1 time (1second)	Access granted.
	2 times	Error (Fingerprint or operation error)
	3 times	Register user card.
	4 times	Delete user card.

8. 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 A Digital Device**, pursuant to **Part 15 of the FCC Rules**. These limits are designed to 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 radio or television off and on, the user is encouraged to try to correct interference by one or more of the following measures.

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on another circuit.
4. Consult the dealer or an experienced radio/TV technician for help.

9. Contacts

Ness Security Products Pty Ltd

ABN 28 069 984 372

Head Office – NSW:
4 / 167 Prospect Hwy
Seven Hills, NSW, 2147 – Australia
Ph +61 2 8825 9222
Fax + 61 2 9674 2520

www.ness.com.au

email: ness@ness.com.au

NSW:
4 / 167 Prospect Hwy
Seven Hills, NSW, 2147
Ph (02) 8825 9222
Fax (02) 9674 2520
sales@ness.com.au

Vic:
24 Terracotta Drive
Blackburn, Vic, 3130
Ph (03) 9875 6400
Fax (03) 9875 6422
nessmelb@ness.com.au

QLD:
Unit 3A / 471 Lytton Road
Morningside, Qld, 4170
Ph (07) 3399 4910
Fax (07) 3217 9711
nessbris@ness.com.au

W.A:
Unit 1, 567 Newcastle Street
Perth, W.A., 6000
Ph (08) 9328 2511
Fax (08) 9227 7073
nessper@ness.com.au



[illegible]

[illegible]

