

***Star* RFK101**
***iPASS* IPK101**
PIN & Proximity Card Reader



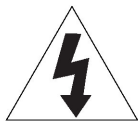
Table of Contents

Table of Contents	ii
1 Safety Information	1
1 IMPORTANT SAFETY INSTRUCTIONS	3
2 General	4
3 Features	5
4 Identifying Supplied Parts	6
5 Specification	7
6 Installation	8
7 Wire Color Table of the Reader	9
8 Wire Connection to Access Controller	10
9 Operation	12
1 Output Format Setting	12
2 Output Mode Setting	13
3 Operation	13
3.1 Basic Operation	13
3.2 Advanced Operation (Optional)	14
10 Output Format	16
1 26bit Wiegand output format	16
1.1 Data format	16
1.2 Timing diagram	16
2 4 / 8bit Burst output format (for PIN)	17
2.1 Data format	17

2.2 Timing diagram	17
3 RS-232 output format	18
3.1 Data format (Baud rate: 9600bps)	18
3.2 Data structure	18
11 FCC REGISTRATION INFORMATION	19
12 RMA Request	20

Safety Information

1



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol indicates that dangerous voltage consisting a risk of electric shock is present within this unit.



This exclamation point symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING

To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

WARNING

1. Be sure to use only the standard adapter that is specified in the specification sheet. Using any other adapter could cause fire, electrical shock, or damage to the product.
2. Incorrectly connecting the power supply or replacing battery may cause explosion, fire, electric shock, or damage to the product.

3. Do not connect multiple controllers to a single adapter. Exceeding the capacity may cause abnormal heat generation or fire.
4. Securely plug the power cord into the power receptacle. Insecure connection may cause fire.
5. When installing the controller, fasten it securely and firmly. The fall of controller may cause personal injury.
6. Do not place conductive objects (e.g. screwdrivers, coins, metal parts, etc.) or containers filled with water on top of the controller. Doing so may cause personal injury due to fire, electric shock, or falling objects.
7. Do not install the unit in humid, dusty, or sooty locations. Doing so may cause fire or electric shock.
8. If any unusual smells or smoke come from the unit, stop using the product. In such case, immediately disconnect the power source and contact the service center. Continued use in such a condition may cause fire or electric shock.
9. If this product fails to operate normally, contact the nearest service center. Never disassemble or modify this product in any way. (SAMSUNG is not liable for problems caused by unauthorized modifications or attempted repair.)
10. When cleaning, do not spray water directly onto parts of the product. Doing so may cause fire or electric shock.

CAUTION

1. Do not drop objects on the product or apply strong blows to it. Keep away from a location subject to excessive vibration or magnetic interference.
2. Do not install in a location subject to high temperature (over 50°C), low temperature (below -30°C), or high humidity. Doing so may cause fire or electric shock.
3. If you want to relocate the already installed product, be sure to turn off the power and then move or reinstall it.
4. Remove the power plug from the outlet when there is a lightning storm. Neglecting to do so may cause fire or damage to the product.
5. Keep out of direct sunlight and heat radiation sources. It may cause fire.
6. Install it in a place with good ventilation.
7. Avoid aiming the controller directly towards extremely bright objects such as sun.
8. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.
9. The Mains plug is used as a disconnect device and shall stay readily operable at any time.

1 IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.
13. Unplug this apparatus when a card is used. Use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

The **Star RFK101 / iPASS IPK101** is an elegant and attractive looking 10cm (4") read range proximity reader with a Keypad. The **Star RFK101 / iPASS IPK101** has backlighting on the Keypad that ensures you successful operation even at night. The **Star RFK101 / iPASS IPK101** allows you to access the door with proximity card and PIN numbers. Three LEDs of green, yellow and red colors and the built-in Piezo buzzer sound will guarantee you accurate and reliable system operations.

Features

3

- 125KHz Proximity & PIN Reader
 - Star **RFK101**: PSK Modulation (IDTECK Format)
 - iPASS **IPK101**: ASK[EM] Format
- Read Range: Up to 4 inches (10cm)
- User format available
- Output Format:
 - Card: 26bit Wiegand and RS232 (default)
 - Keypad: 8bit burst (default), 26bit Wiegand (selectable) or 4bit burst (selectable)
- 12-Key Numeric Keypad with Back Lighting
- External LED Control / External Buzzer Control
- Tamper Switch
- Wall Mount (US, EU, Asian Gang Box Size)
- Reverse Polarity Protection
- Options: Supervisory Signal
- Compatible Controller: iCON100, iTDC, iMDC, Standalone Controller, Third Party Controller

Identifying Supplied Parts

4

Please unpack and check the contents of the box.



**Main unit
(1ea)**



**Wall Mount
(1ea)**



**O-ring
(5ea)**



**User's Manual
(1copy)**



**3.5*40 Screw
(4ea)**



**3.5*12 Screw
(4ea)**



**6.0*30 Anchor Bolt
(4ea)**



**Cable
(3ea)**

Specification

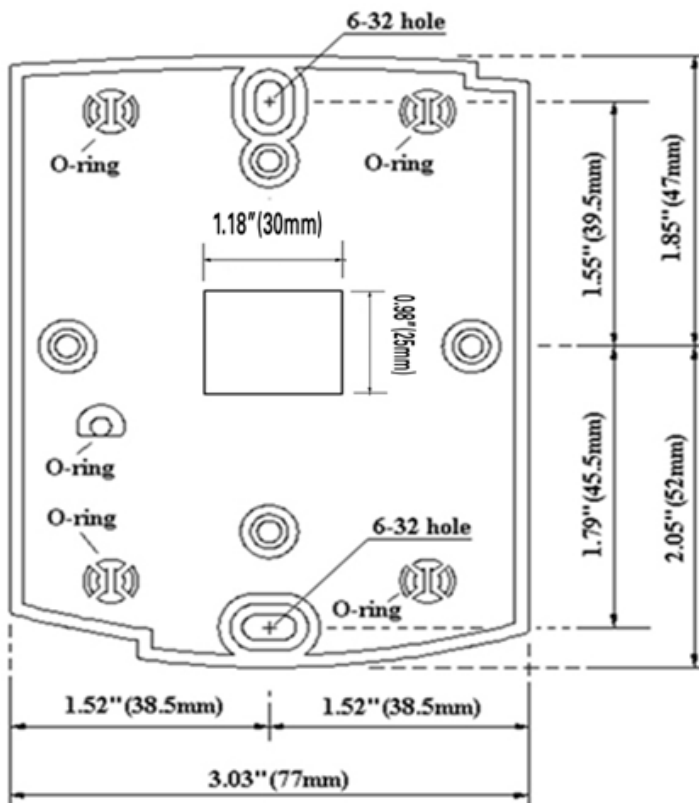
5

Model	RFK101 / IPK101	
Read Range	RFK101	IDC80 / IDC170: Up to 4 inches (10cm)
	IPK101	IPC80 / IPC170: Up to 4 inch (10cm)
Reading Time (Card)	30ms	
Power / Current	DC12V / Max.150mA	
Input Port	3 Ports for External LED Control, 1 Port for External Buzzer Control	
Output Format	Card: 26bit Wiegand and RS232 (default) Keypad: 8bit burst (default), 26bit Wiegand (selectable) or 4bit burst (selectable)	
Keypad	12 Key Numeric Keypad with Back Lighting	
LED Indicator	3 Array LED Indicators (Red, Green and Yellow)	
Beeper	1 Buzzer	
Operating Temperature	-35 to +65C (-31 to +149F)	
Operating Humidity	10% to 90% relative humidity non-condensing	
Color	Dark Pearl Gray	
Material	Polycarbonate	
Dimension (W x H x T)	87mm x 100mm x 31mm (3.4" x 3.94" x 1.22")	
Weight	190g (0.42lbs)	
Certification	FCC, CE, KCC, RoHS	

Installation

6

1. Use the provided Template on Page 18 to drill two 6-32 or M3 screw holes 3.3" (8.38cm) apart in vertical and one 1/2" hole at the center of these two holes.
(If you have installed electric gang box then skip this step.)
2. Using two 6-32 or M3 screws, install wall mount to the wall.
3. Insert 5 O-rings to the wall mount as indicated, then route the cable of the main unit through the center hole and push the main unit to wall mount to lock the main unit and make sure that the main unit is locked with wall mount.



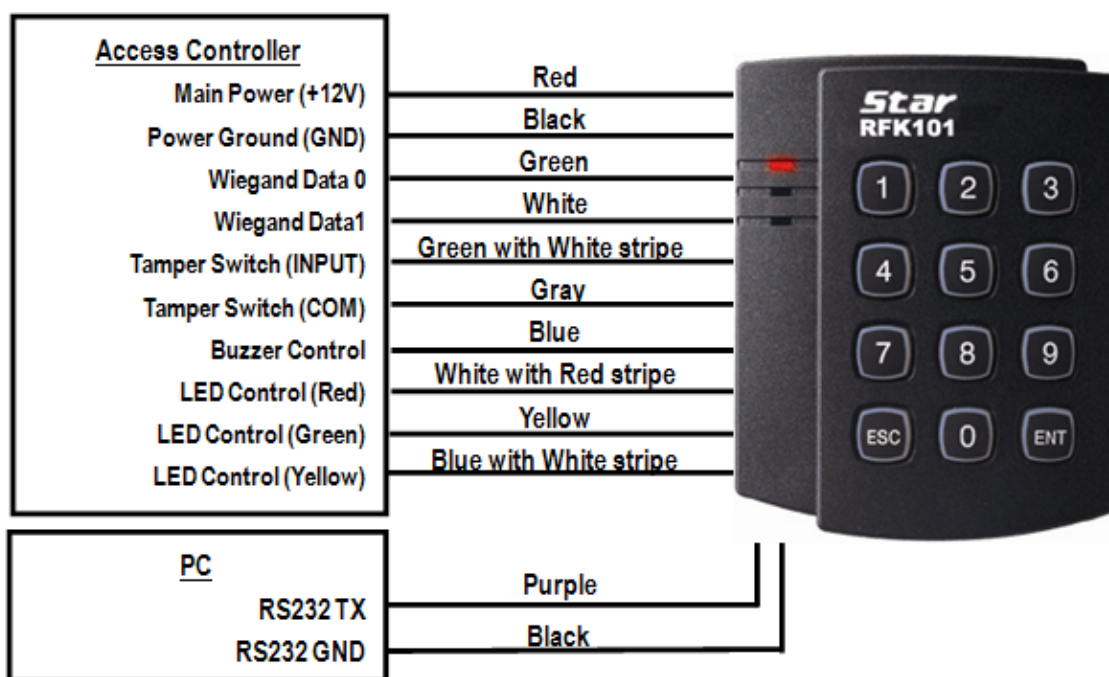
Wire Color Table of the Reader

7

IO PINs	Signal	Wire Color
2PIN	(J1)	
Main Power (+12V)	DC +12V	Red
Power Ground	GND	Black
6PIN	(J2)	
Wiegand Data 0 Out	WIK_DATA0	Green
Wiegand Data 1 Out	WIK_DATA1	White
Not Connect	Not Connect	Orange
RS-232-TX	TX OUT	Purple
Not Connect	Not Connect	Brown
RS-232-GND	GND	Black
8PIN	(J3)	
Tamper Out (INPUT)	Tamper Switch-IN	Green with White stripe
Tamper Out (GND)	Tamper Switch-GND	Gray
LED Control In	RED Control	White with Red stripe
LED Control In	GRN Control	Yellow
LED Control In	YEL Control	Blue with White stripe
Buzzer Control In	Buzzer Control	Blue
Not Connect	Not Connect	Pink
Not Connect	Not Connect	Cyan

Wire Connection to Access Controller

8



Connection Parts	Connection Method
Main Power (+12V)	Connect DC+12V wire of Power to Red wire of RFK101 / IPK101. Connect GND wire of Power to Black wire of RFK101 / IPK101.
Wiegand Data Out	Connect Green wire of RFK101 / IPK101 to Wiegand D0 input port of the Controller. Connect White wire of RFK101 / IPK101 to Wiegand D1 input port of the Controller.
LED Control In	If you want to control LEDs, connect each LED Control wire (White with red stripe, Yellow, Blue with White stripe wire) of RFK101 / IPK101 to GND o

Connection Parts	Connection Method
	f controller. (In case of using a relay, connect NO to the LED Control wire and COM to GND)
Buzzer Control In	If you want to control the buzzer, connect Blue wire of RFK101 / IPK101 to GND of controller. (In case of using a relay, connect the NO to the Blue wire and COM to GND)
RS-232-GND	Connect to the COM port of the PC. (Connect pin #2 of the DB-9 connector to the purple wire; connect the black wire of the 6-pin connector to pin # 5 of the DB-9 connector).

1 Output Format Setting

You can set output format of numeric input using output format setting switches. Select one between 4/8 bit Burst and 26bit Weigand format depending on the controller type receiving control input. Output format setting switches are on the back of RFK101 / IPK101 unit.

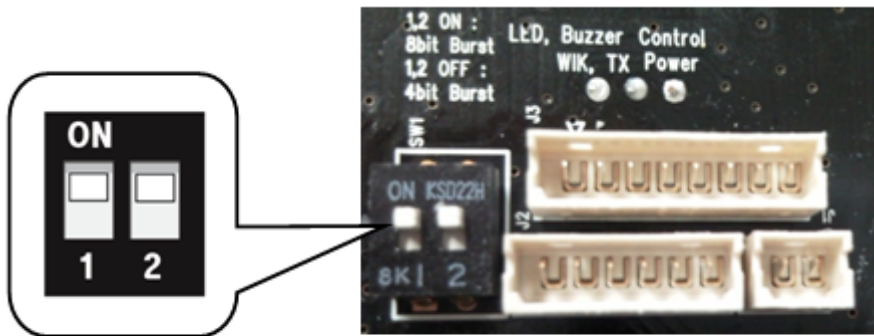


Figure: Position of Output Format Setting Switch

2 Output Mode Setting

Table 1. Jumpers Setting

SW1#1	SW1#2	Card Output Format	Keypad Output Format
ON	ON	26bit Wiegand + RS232	8bit Burst
ON	OFF	26bit Wiegand + RS232	26bit Wiegand + RS232
OFF	ON	26bit Wiegand + RS232	26bit Wiegand + RS232
OFF	OFF	26bit Wiegand + RS232	4bit Burst



The default settings for SW1#1 and SW1#2 are “ON”(short circuit).

3 Operation

3.1 Basic Operation

1. Once power is applied, you can hear 3 initial beeps while the 3 LEDs turn on. Then, the only red LED light stays on, indicating that the reader is in the standby mode after successful initialization and diagnostics.
2. Present an RF proximity card to the reader until you hear a beep sound and see the green LED on. The reader will send the RF card data to the controller, then the green LED turns off again going back to the standby mode for the next reading.
3. 26bit Wiegand + RS232 Output Format
 - I. If you set the output to 26bit Wiegand + RS232 format and press numeric keys on the keypad, you can hear a beep sound and the yellow LED turns on, which indicates PIN entry start. Once you enter the PIN, press “ENT” key to finish PIN entry. The yellow LED will turn off indicating PIN entry is finished. The reader will then send the PIN data to the controller.
 - II. In the 26bit Wiegand + RS232 output format, a facility code is within the range of 0 to 255 and an ID (PIN) is in the range of 0 to 65535. If you do not finish your PIN entry with “ENT” key or if you do not press any key within 5 seconds, the reader will make error beeps “Beep Beep Beep Beep” then clear the PIN data (no output) and return to the standby mode. An ID (PIN) you can enter via the keypad is from 1 to 8 digits.



If you enter a 1-8 digit PIN,

① 1234ENT Wiegand 00001234
RS232 00001234

② 12345678ENT Wiegand 12345678
RS232 12345678

4. Burst + RS232 Output Format

- I. When you set output to Burst + RS232 format and press numeric keys on the keypad, you can hear a beep sound and the green LED turns on indicating PIN entry start.
- II. When you set output to Burst + RS232 format, PIN data sends 8bit Burst format if you press numeric keypad. And if you enter <ENT> key with 1 to 8 digit of keypad, PIN data sends RS232 format. In case of RS232 output format, if you do not finish PIN entry with “ENT” key and/or if you do not press any keypad for 5 seconds, clear PIN data (no output) and return to normal mode.

5. LED Control:

You may change the behavior of the red, green and yellow LEDs as follows:

- I. To keep the red LED turned off, connect the LED control in wire (white with red stripe) to the GND.
- II. To keep the green LED turned on, connect the LED control in wire (yellow wire) to the GND.
- III. To keep the yellow LED turned on, connect the LED control in wire (Blue with white Stripe wire) to the GND. For more information, please refer to 8. Wire Connection to Access Controller on Page 9.

6. Beeper Control:

In normal operation, the reader sounds one beep when it reads a proximity card.

However additional beeps can be sounded to improve indication for access status (granted or denied) by wiring blue wire of the beeper control input to system ground level.

The beeper will remain on as long as the blue wire is connected to system ground.

7. Tamper Switch

The RFK101 / IPK101 has normal close (NC) type Tamper Switch. When the unit is installed with wall mount, the tamper switch output wires, the gray wire (COM) and the green with white stripe

wire (NC) will be short circuits. When the unit is removed from the wall mount, the tamper switch output wires will be open circuits.

3.2 Advanced Operation (Optional)

1. Supervisory Signal:

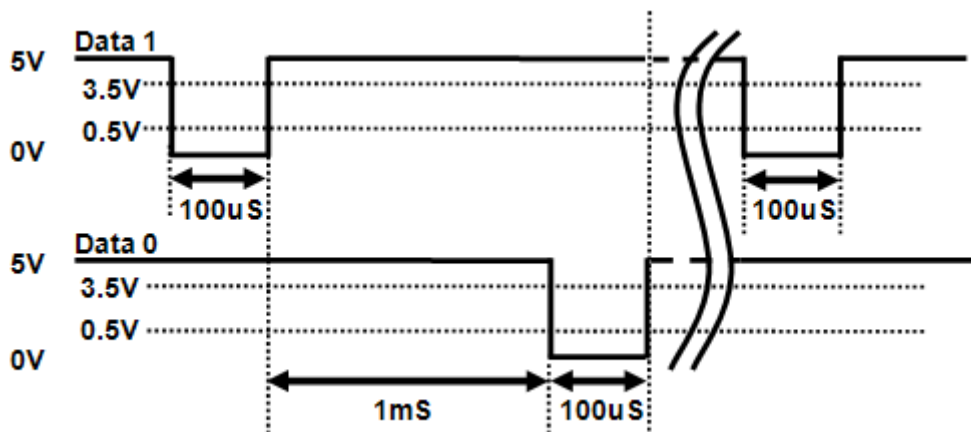
This unit sends supervisory signal through reader's output for a preset time.

1 26bit Wiegand output format

1.1 Data format

- Bit 1 : Even parity of bit 2 - bit 13
- Bit 2 - 9 : Facility code (000 - 255)
- Bit 10 - 25 : ID number (00000 - 65,535)
- Bit 26 : Odd parity of bit 14 - bit 25

1.2 Timing diagram



2 4 / 8bit Burst output format (for PIN)

2.1 Data format

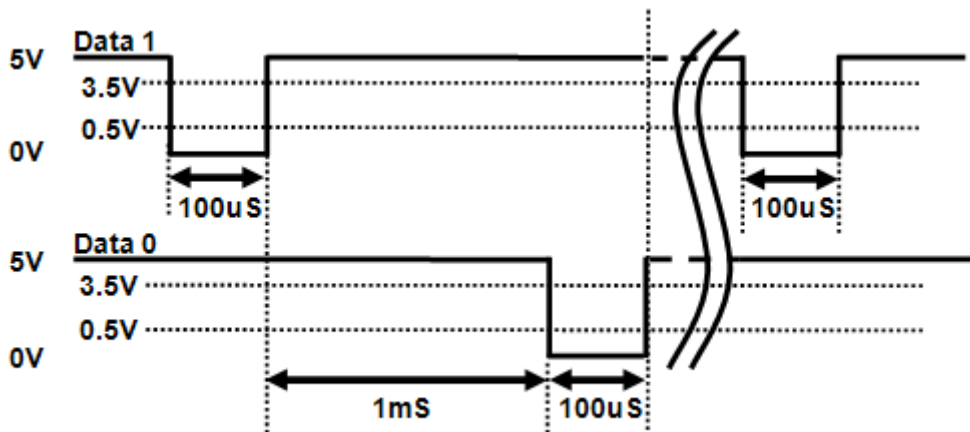
(4bit Burst output format)

Keypads	Binary	Hexa	Keypads	Binary	Hexa
0	0000	0	6	0110	6
1	0001	1	7	0111	7
2	0010	2	8	1000	8
3	0011	3	9	1001	9
4	0100	4	ESC	1010	A
5	0101	5	ENT	1011	B

(8bit Burst output format)

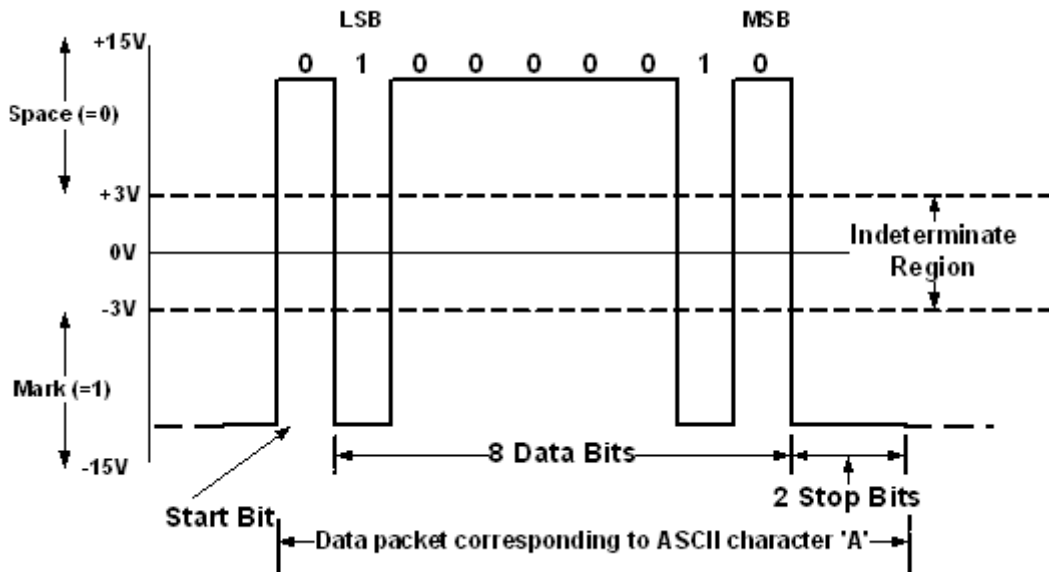
Keypads	Binary	Hexa	Keypads	Binary	Hexa
0	11110000	F0	6	10010110	96
1	11100001	E1	7	10000111	87
2	11010010	D2	8	01111000	78
3	11000011	C3	9	01101001	69
4	10110100	B4	ESC	01011010	5A
5	10100101	A5	ENT	01001011	4B

2.2 Timing diagram



3 RS-232 output format

3.1 Data format (Baud rate: 9600bps)



3.2 Data structure

START(0X02H)	DATA (8 Char)	END (0x03H)	LRC	(CARD output)
--------------	---------------	-------------	-----	---------------

START(0X02H)	DATA (1- 8 Char)	END (0x03H)	LRC	(Keypad output)
--------------	------------------	-------------	-----	-----------------

FCC REGISTRATION INFORMATION

11

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.

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.

RMA Request

12

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,
Gangseo-Gu, Seoul, 157-030, Korea

Tel: +82 2 2659 0055

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

2F, 89-4Dodang-Dong, Weonmi-Gu,
Bucheon-Si, Gyeonggi-Do 420-130, Korea

Tel: +82 2 2659 0055

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 at any time.