



DE-930 User's Manual

DUALi Inc.

Document Version: 1.0

Last Revised Date: Aug. 2011

Copyright © 2011 DUALi Inc. All rights reserved. You are strictly prohibited to copy, disclose, distribute, or use this document in part or as a whole for any purposes other than those for which this document is disclosed. This document is copyrighted and contains confidential information and other intellectual property rights of DUALi Inc. Any unauthorized use, copy, disclosure or distribution constitutes infringement of DUALi's intellectual property rights.

DUALi Inc. reserves the right to make changes to its applications or services or to discontinue any application or service at any time without notice. DUALi provides customer assistance in various technical areas, but does not have full access to data concerning the use and applications of customer's products.

Therefore, DUALi assumes no liability and is not responsible for customer applications or software design or performance relating to systems or applications incorporating DUALi products. In addition, DUALi assumes no liability and is not responsible for infringement of patents and/or any other intellectual or industrial property rights of third parties, which may result from assistance provided by DUALi.

Composition of the information in this manual has been done to the best of our knowledge. DUALi does not guarantee the correctness and completeness of the details given in this manual and may not be held liable for damages ensuing from incorrect or incomplete information. Since, despite all our efforts, errors may not be completely avoided, we are always grateful for your useful tips.

We have our development center in South Korea to provide technical support. For any technical assistance can contact our technical support team as below;

Tel: +82 31 213 0074

e-mail : duali@duali.com

FeliCa™ is registered trademark of SONY Corporation.
Mifare® is registered trademarks of NXP Semiconductors

Revision History

- 2011.08 (Ver. 1.0) : First Release

© Copyright 2000-2011 DUALi Inc.

CONTENTS

1. Introduction	5
2. Contents Confirmation	5
3. Hardware Specifications.....	5
4. Installation	6
5. Connection Diagram.....	7
6. Operation & Usage	8
7. Output Format.....	9
8 . Warranty & Service	11

1. Introduction

DE-930 is refined design of proximity reader which supports Contactless (ISO 14443 A/B type, Mifare®, FeliCa™) and SAM. It also supports 32/34 / 64/66-bit Wiegand format for Host communication which is the most widespread system. DE-930 is applicable to various systems as Access control system, Time attendance system, Parking management or e-Payment system.

2. Contents Confirmation

- The following items are contained in DE-930 package.



Reader unit
(1 ea)



Wall Mount
(1 ea)



User Manual
(1 ea)

3*4 Flat head
machine screw



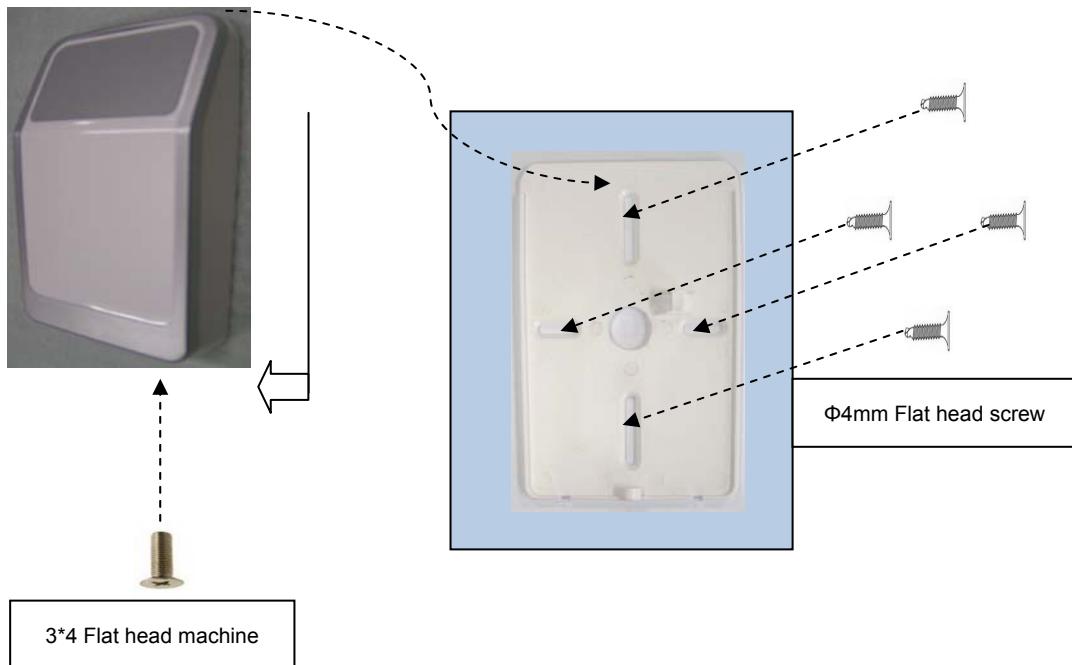
screw
(1 ea)

3. Hardware Specifications

Read Range	Up to 4cm
Input Voltage/Current	DC 12 V, MAX 140mA
LED/Beeper	2 LEDs(Red, Blue) / Magnetic Buzzer
Color	White(body) Silver(frame)
Operating Environment	-20°C ~ +60°C, 10~90% Humidity
Overall Size(WxHxD)	78 x 122 x 25mm
Output Format	32 / 34 / 64/ 66 bit Wiegand, RS-232/485(option)

4. Installation

1. Place the wall mount bracket on the wall and fix it tightly with Screw ($\Phi 4\text{mm}$ Flat head) -4nos.
2. Connect the power and communication cable to DE-930's Terminal Block. (refer to the picture as below)
3. Tilt the device slightly and insert to the wall mount from the top. Fix it tightly with $3*4$ Flat head machine screw.



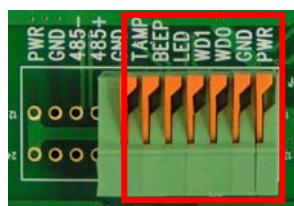
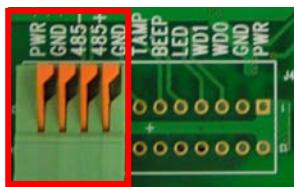
<Picture 1.Installation>

※ Caution

- Do not push the device/ wall mount bracket when fixing it to the wall.
- Screw has to be re-considered depends on wall's material and condition.
- Please place flat panel before wall mount bracket if the wall's not flat. It could cause a problem to assemble the device if the bracket bent.

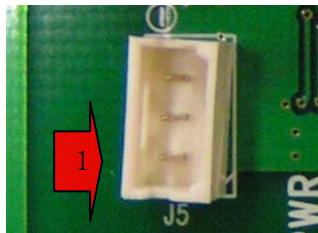
5. Connection Diagram

Terminal block can be differ by choosing option (RS485 OR Wiegand). See the table as below



Pin No.	Name	Description	Terminal Block Option
1	PWR	POWER	RS485 Comm. option
2	485G	POWER	
3	485-	Comm.	
4	485+	Comm.	
5	GND	POWER	
6	TAMP	Output	
7	BEEP	Input	Wiegand Comm. option
8	LED	Input	
9	WD1	Comm.(Output)	
10	WD0	Comm.(Output)	
11	GND	POWER	
12	PWR	POWER	

* RS232



Pin No.	RS-232 Description
1	TX
2	RX
3	GND

- Connector specification: 2mm X 3p housing (Part No.: 53014-0310)

(Housing Part No.:51004-0300, Terminal Part No.:50011, Vendor : Molex)

6. Operation & Usage

1. Apply power of the Reader, then check 5 times of Beep sound and RED LED is on. It means this device is ready.
2. Present an authorized contactless card to the reader until you hear 1 time of Beep sound and see Blue LED is blinking. The reader sends Card's data to Access controller through the Wiegand data line.
3. When User present unauthorized card to the reader, its Red LED will be blinking. The reader will also make 1 time of short Beep sound.
4. **LED Control (LED):**
Whenever it reads card, blue LED turns on for 0.1 second and return to red.
To change the LED color after read card, User can connect the LED Control Input to power ground (0V). Then it becomes to red color. This change remains while LED control Input is connected to power ground. After controlling LED, it goes to blue color.
So, last LED color is blue if it is controlled (for registered ID), and it is red if LED is not controlled (for unregistered ID).
5. **Beeper Control (BEEP):**
In standard operation mode, when it reads authorized card, this reader make 1 time of Beep sound. To add other situations(event) of beeping, connect Beeper Control Input to power ground(0V). This change remains while Beeper Control Input is connecting to power ground.
6. **Tamper (TAMP) :**
This reader sends a signal to Access controller and make alarm to notify when its case forced to open.
Tamper line indicates 0V when the reader is closed and it indicates 3.3V when the reader is opened.
7. **SAM interface**
It is designed to capable of communicating SAM (ISO 7816) by attaching extended parts for future use.

7. Output Format

7-1. Wiegand output format

1. Data format

- Data format can be decided by setting(Function Configuration). (Chapter 8)

<34bit>



First Bit 1 : Even parity of bit 2 ~ bit 17
Data[1-32] : ID number(transmission data)
Last Bit 34 : Odd parity of bit 18 ~ bit 33

<66bit>



First Bit 1 : Even parity of bit 2 ~ bit 33(Data[1-32])
Data[1-64] : ID number(transmission data)

FeliCa™ card – IDM data(8bytes)
Mifare® card – Card serial number(4bytes)+0x00(4bytes)
Last Bit 66 : Odd parity of bit 34 ~ bit 65(Data[33-64])

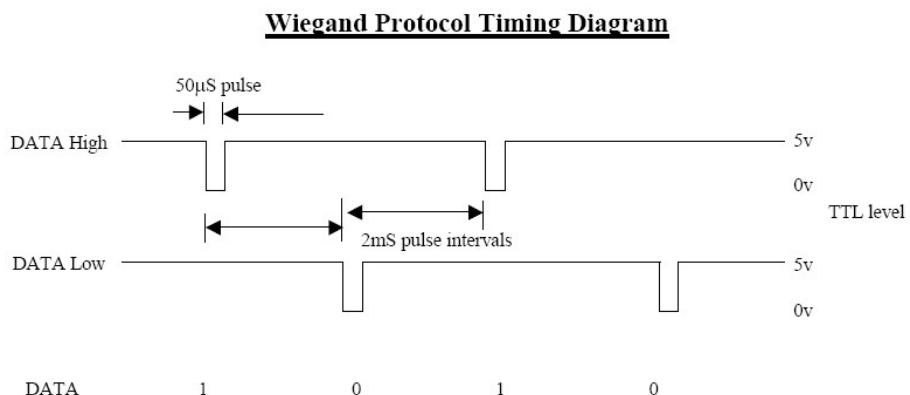
<32bit>

Data[0-31] : ID number(transmission data)

<64bit>

Data[0-63] :
FeliCa™ card – IDM data(8bytes)
Mifare® card – Card serial number(4bytes)+0x00(4bytes)

2. Timing diagram



8. Function Configuration

If User send the setting via RS232 , reader (DE-930) working pattern changes.

Following is the communication frame for setting.

It will be saved at flash memory. You don't need setting after first setting.

(9600bps, 8 data, no parity, 1 stop bit)

STX	LENH	LENL	CMD	DATA	LRC
0x02	0x00	0x02	0xE0	DATA[0]	LRC

DATA[0]	State	Description
Bit7~4	RFU	RFU
Bit3	0	4byte ID(32 or 34bit) depend on parity setting(No.2)
	1	8byte ID(64 or 66bit) depend on parity setting(No.2)
Bit2	0	Parity Send(34 or 66bit) depend on ID bytes(No.1)
	1	Parity Omit(32 or 64bit) depend on ID bytes(No.1)
Bit1	0	Forward ID byte order
	1	Reverse ID byte order
Bit0	0	Not Read MIFARE card in Security Mode (Security Mode : SAM authentication for FeliCa, Reader enters security mode when SAM exists when boot.)
	1	Read MIFARE card in Security Mode

9. Warranty & Service

- › Warranty and Repair service
- DUALi Inc. warrants to the original consumer or other end user that this product, DE-930, is free from defects in materials and workmanship for a period of 1 year from the date of purchase.

*** Note** Warranty/non-warranty repair fees do not include any shipping charges.

- › The damages(defaults) prescribed below are NOT to be covered by warranty.
- User's misuse of part/component.
- Fault by the unqualified user's own intention of repairs.
- Product's inspection requirement.
- Adding certain functions or extension of system.
- Fault by User's misuse against the product's manual.

EU

This product is CE marked according to the provision of the R&TTE Directive (99/5/EC). Here by DUALi Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

CE 1177

FCC STATEMENT

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 or 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.

***Please contact our service team for the technical/ sales supports.**

DUALi Inc.

1-309 Innoplex, 552 Wonchoen-dong, Youngtong-gu,

Suwon, Gyeonggi-do, Korea (zip: 443-380)

Tel : +82 31-213-0074

Fax : +82 31-213-0078

E-mail : duali@duali.com

Web-site : <http://www.duali.com>