

# DQ-CUBE

# User Manual

**DUALi Inc.**

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## Revision History

- 2018.11.19 (Ver. 1.00) : First Release
- 2019.01.30 (Ver. 1.01) : Wgd Parity, reverse command correct
- 2019.12.18(Ver 1.02) Remove the communication command part
- 2019.12.23(Ver 1.03) Change the QR Module
- 2021.03.08(Ver 1.04) Add connector information

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

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## CONTENTS

01. Introduction .....	5
02. Specification .....	5
03. Contents Confirmation .....	6
04. Appearance & Installation.....	7
04.1 DQ CUBE Feature & Dimension.....	7
05. Connection Diagram .....	8
06. Operation & Usage.....	9
07. Output Format .....	10
08. Function configuration (Communication setting).....	11
08.1 Wiegand option set (Parity, Reverse).....	12
09. Certifications.....	13
10. Warranty & Service .....	13

## 01. Introduction

DQ-CUBE is a wiegand access control reader based on 13.56 Mhz contactless card communication technology with stylish and rugged design. And it also can read QR code and 1D/2D barcode. It can be installed for Indoor use. The ideal combination of NFC & QR reader could upgrade your application into another level. The reader is designed for wall mounting type of Access / Time attendance & parking management systems, and etc.

## 02. Specification

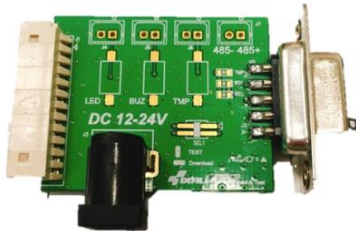
<b>Communication Interface</b>	Wiegand - 32 / 34 /56/ 58/ 64/ 66 bit RS-232 – 115200bps RS-485 – 115200bps USB - HID
<b>Operating Frequency</b>	13.56MHz
<b>Credential Type</b>	Contactless > ISO 14443 TYPE A and B > Mifare™ > FeliCa® > ISO 15693 > ISO 18092 (NFC)  Contact (SAM) > ISO7816 Class A (5V) SAM Card Slot * 1EA
<b>1D/2D QR Recognizable spec</b>	UPC/EAN, UPC/EAn with Supplementals, Bookland EAN, ISSN, UCC Coupon Extended Code, Code128, GS1-128, ISBT 128, Code 39, PDF417, MicroPDF417, Composite Codes, Data Matrix, Maxicode, QR Code, micro QR, Aztec
<b>Indicator</b>	Magnetic Buzzer
<b>Power Supply</b>	USB – DC5V (500mA) WGD, Serial – DC9~12V (1A)
<b>Operating Condition</b>	> -4° to 158°F (-20° to 70°C guaranteed) > 5% to 90% relative humidity
<b>Storage Condition</b>	> -4° to 158°F (-20° to 80°C) > > 5% to 90% relative humidity
<b>Housing Material</b>	PC (polycarbonate)
<b>Dimensions</b>	76.2(mm) x 71.0(mm) x 47.0(mm)
<b>Weight</b>	169.6g
<b>Cable length</b>	USB – 1.6M (160cm) WGD, Serial – 1M (100cm)
<b>Certifications</b>	KC (KOR), CE (EU)

### 03. Contents Confirmation



< DQ-CUBE >

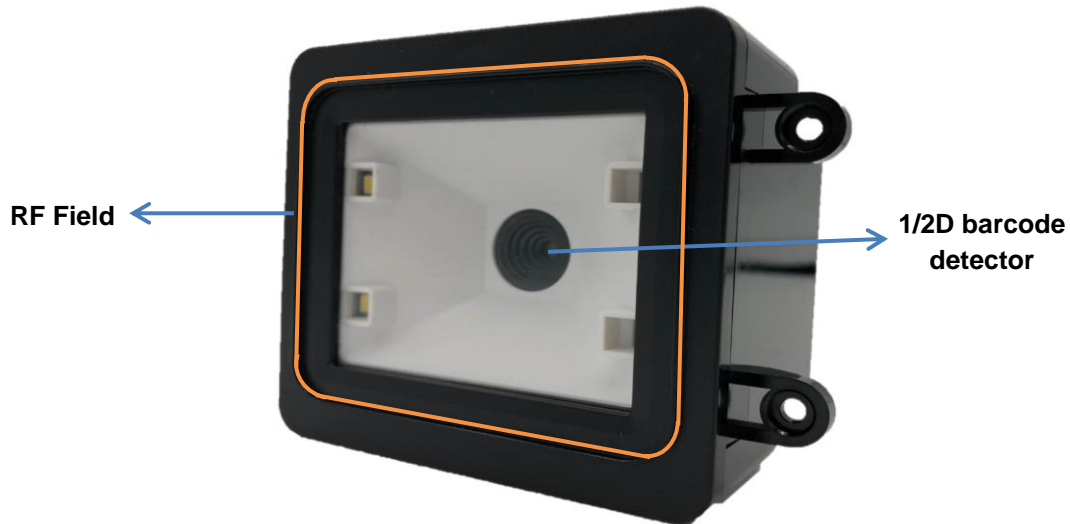
<Option>



PC Test/FW download jig

## 04. Appearance & Installation

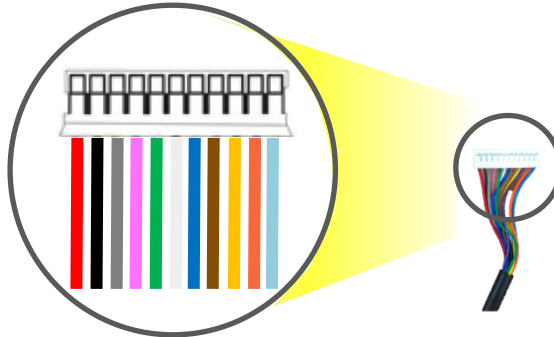
### 04.1 DQ-CUBE Feature & Dimension



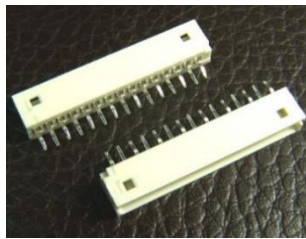
#### ※ **Caution**

- Do not push the bracket too hard when fixing it to the wall.
- Screw has to be selected depending on the wall's material and condition
- Place the reader to flat panel between the wall mount bracket and the wall.  
It could cause a problem to assemble the device if the bracket is bent.
- **Card reading distance can be short if the wall is made of steel or metal.**

## 05. Connection Diagram



- 2.00mm pitch, 12PIN connector (Yeonho-electronic : 20017HS-12)
- Opposite connector (Female)



20017WS-12(Straight)



20017WR-12 (Right angle)

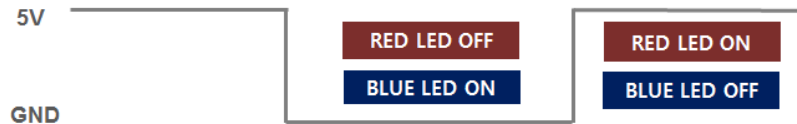
PIN NAME	COLOR	PIN NUMBER
PWR_IN	RED	1
PWR_GND	BLACK	2
RS232_RX	GRAY	3
RS232_TX	PINK or JADE	4
WGD_D0	GREEN	5
WGD_D1	WHITE	6
PWR_GND	BLUE	7
LED	BROWN	8
BEEP	YELLOW	9
TAMPER	VIOLET	10
RS485+	ORANGE	11
RS485-	SKYBLUE	12



## 06. Operation & Usage

### LED Control:

Reader turns on RED LED when LED Signal (BROWN) with 0V. In case of 5V, BLUE LED will be on.



### Buzzer Control:

Reader makes beep sound when BEEP Signal (YELLOW) with 0V.



## 07. Output Format

[Data format]

- Data format can be decided by setting.

- <34 bit>

Parity Bit (1bit)	Data [1~32] (32bit)	Parity Bit (1bit)
Bit 1	Bit 2	Bit 34

First Bit (Parity) : Even parity of bit 2 ~ bit 17

Data [1-32] : ID number (transmission data)

Last Bit (Parity) : Odd parity of bit 18 ~ bit 33

- <66 bit>

Parity Bit (1bit)	Data [1~64] (64bit)	Parity Bit (1bit)
Bit 1	Bit 2	Bit 66

First Bit (Parity): Even parity of bit 2 ~ bit 33

Data[1-64] : ID number(transmission data)

FeliCa™ card – IDM data(8bytes)

Mifare® card – Card serial number(4bytes)+0x00(4bytes)

Last Bit (Parity) : Odd parity of bit 34 ~ bit 65

- <32bit>

Data[1-32] : ID number(transmission data)

- <64bit>

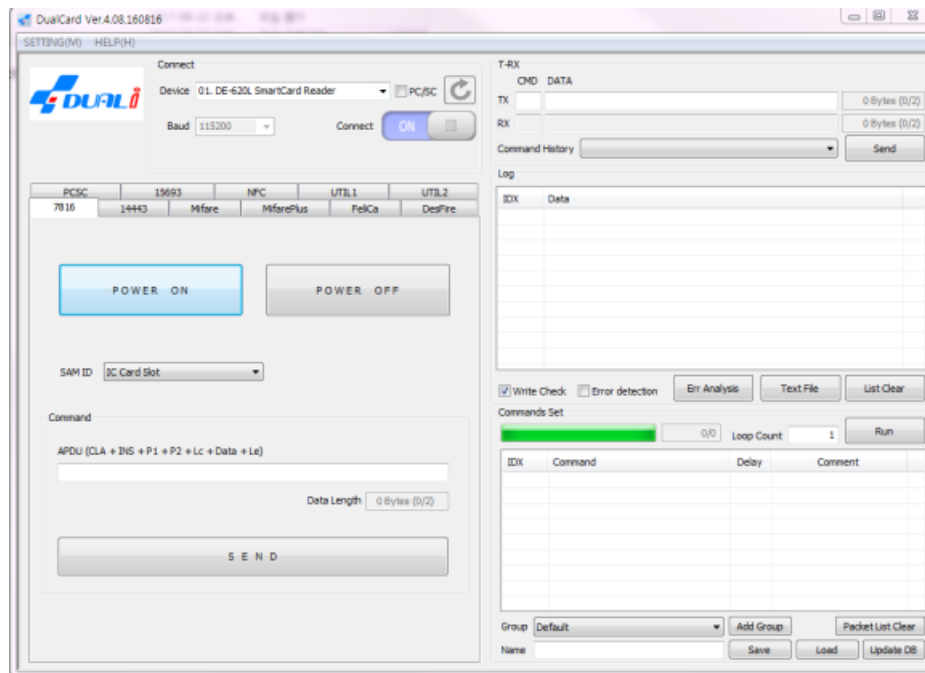
Data[1-64] :

FeliCa™ card – IDM data(8bytes)

Mifare® card – Card serial number(4bytes)+0x00(4bytes)

## 08. Function configuration (Communication setting)

Changing the reader settings is also possible using the SDK (DualCard program) provided by DUALi. You can easily change the setting of DQ-CUBE by executing the corresponding command referring to the communication frame below. (For more information on dual cards, please refer to DUALi SDK Manual.)



※ STX, LENH (Length High) and LENL (Length Low) value of each communication frame are automatically calculated in the dual card program. Just input corresponding value on each CMD/ DATA fields.

### 08.1 Wiegand option set (Parity, Reverse)

Following is the communication frame for wiegand option setting. Since it is saved in flash memory after the first setting, the reader does not need to be set again.

(115,200bps, 8 data, no parity, 1 stop bit)

STX	LENH	LENL	CMD	DATA	LRC
0x02	0x00	0x02	0xE0	DATA[0]	$\text{LENH} \wedge \text{LENL} \wedge \text{CMD} \wedge \text{DATA}[0]$

(^: exclusive oring)

DATA[0]	State	Description
Bit0	-	RFU
Bit1	00	Reverse OFF(Default)
	01	Reverse ON
Bit2	00	Parity ON(Default)
	01	Parity OFF
Bit3	00	Zero padding to LSB(Default)
	01	Zero padding to MSB
Bit4~7	03~08	04: Send Wiegand 32/34 Bit 07: Send Wiegand 56/58 Bit 08: Send Wiegand 64/66 Bit Other number will be send 64/66 Bit



**Tip – To change the Wiegand option to 32bit, parity, non reverse, LSB zero pad**

The screenshot shows a terminal interface for T-RX communication. The TX field contains the command 'E0' and the data '40', both highlighted with a red box. The RX field contains '00'. A 'Send' button is highlighted with a blue dashed box. Below the interface is a log table:

IDX	Data
1	=>E040
2	<=>00

## 09. Certifications



## 10. Warranty & Service

Warranty and Repair service

- DUALi Inc. warrants to the original consumer or other end user that this product, **DQ CUBE**, 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 shipping charges.

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

## **PRECAUTIONS**

- Do not drop the device.
- Do not modify, repair, or disassemble.
- Do not expose directly to water, alcohol, benzene, etc for cleaning.
- Do not expose directly to flammables.
- Do not place or keep the device near flammables.
- Keep the device away from excessive humidity and dust.
- Do not place heavy objects on the device.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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

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