

# DQ-MINI

# User Manual

**DUALi Inc.**

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## Revision History

- 2018.10.16 (Ver. 1.00): First Release
- 2018.11.13 (Ver. 1.01): Mifare Block read setting change  
Mifare, Wiegand setting show command add
- 2019.01.30 (Ver. 1.02): Wgd Parity, reverse command correct
- 2019.12.23 (Ver. 1.03): Change the QR Module , added wall bracket drawing
- 2021.02.08 (Ver. 1.04): Add connector information of cable
- 2021.03.08 (Ver. 1.05) : Connector specification added.

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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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## 01. Introduction

DQ-MINI 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) 2 SAM Card Slot
<b>1D/2D QR Recognizable spec</b>	UPC/EAN, UPC/EAN with Supplemental, 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>	LED (RED /BLUE) 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>	99.3(mm) x 91.9(mm) x 88.4(mm)
<b>Weight</b>	169.6g
<b>Cable length</b>	USB – 1.6M (160cm) WGD, Serial – 1M (100cm)
<b>Certifications</b>	KC (KOR), FCC Certification (US), CE (EU), EMV L1 (Contactless Level1)

### 03. Contents Confirmation



< DQ-Mini with Wiegand or USB cable >

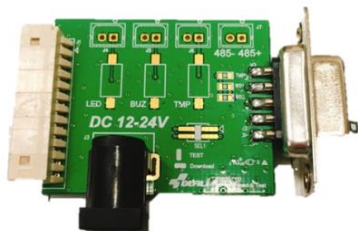


< Wall bracket >



<3x5 Flat head screw >

#### <Option>



PC Test/FW download zig

## 04. Appearance & Installation

### 04.1 DQ-MINI Feature & Dimension



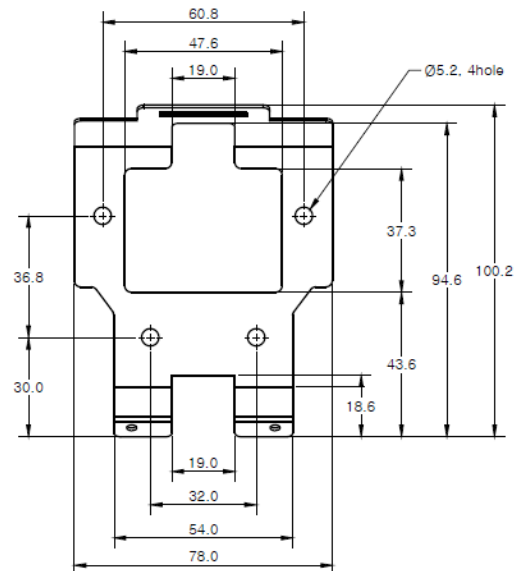
### 04.2 Mounting DQ Mini on the wall



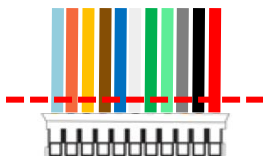
Φ4mm Flat head screw

**<Bracket >**

Place the provided wall mount bracket on the wall and fix it tightly with screw (Φ4mm Flat head)



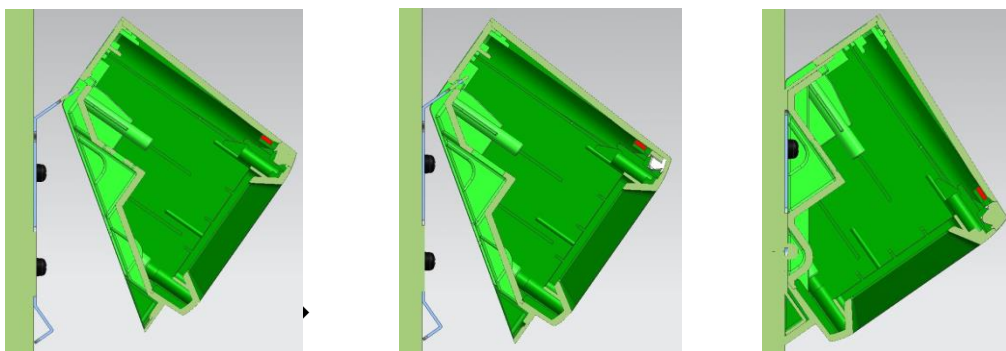
2



Connect the power and communication cable to DQ MINI's terminal block.

In case you don't use the cable as it is shipped, you could cut off the end of the cable and use only the wire that you need for connection.

3



< Side View >

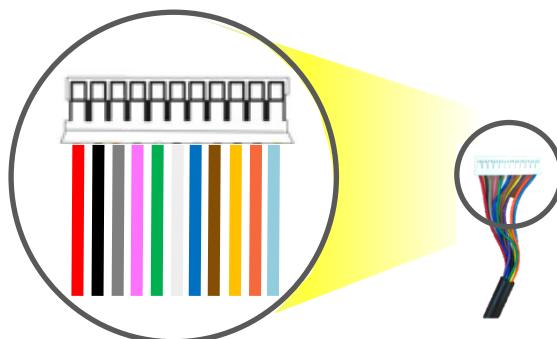
Tilt the device slightly and insert to the wall mount from the top as above step. Fix it tightly with 3\*4 flat head machine screw.

※ **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 shorter when there's metal or steel material near (within 3-7cm) from reader.



## 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

### Tamper (TAMP):

Reader makes alarm when its CASE is forced to open. It also makes TAMPER signal to access controller. In case of closed CASE, TAMPER line (VIOLET) shows 0V and otherwise (open) shows 5V.



### 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>

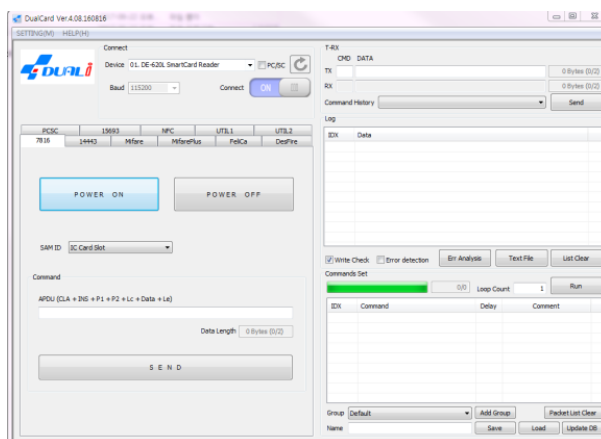
Data[1-64] :

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-MINI 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**

T-RX

CMD DATA

TX E0 40 1 Bytes (2/2)

RX 00 0 Bytes (0/2)

Command History

Log

IDX	Data
1	=>E040
2	<=00

## 09. Certifications

- 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



## 10. Warranty & Service

Warranty and Repair service

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