

DQ-MINI

User Manual

DUALi Inc.

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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 stably both indoor and outdoor.** 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

| | |
|-----------------------------------|---|
| Communication Interface | RS-232 – 115200bps |
| Operating Frequency | 13.56MHz |
| Credential Type | Contactless > ISO 14443 TYPE A and B |
| 1D/2D QR Recognizable spec | 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 |
| Indicator | LED (RED /BLUE) Magnetic Buzzer |
| Power Supply | 12VDC Linear supply recommended, 200 mA @ 12 VDC |
| Operating Condition | > -4° to 158°F (-20° to 55°C guaranteed) > 5% to 90% relative humidity |
| Storage Condition | > -4° to 158°F (-20° to 80°C) > > 5% to 90% relative humidity |
| Housing Material | PC (polycarbonate) |
| Dimensions | 99.3(mm) x 91.9(mm) x 88.4(mm) |
| Cable length | 1000(mm) |
| Certifications | FCC Certification (US), CE(EU) |

03. Contents Confirmation



< DQ Mini >



< Wall bracket >



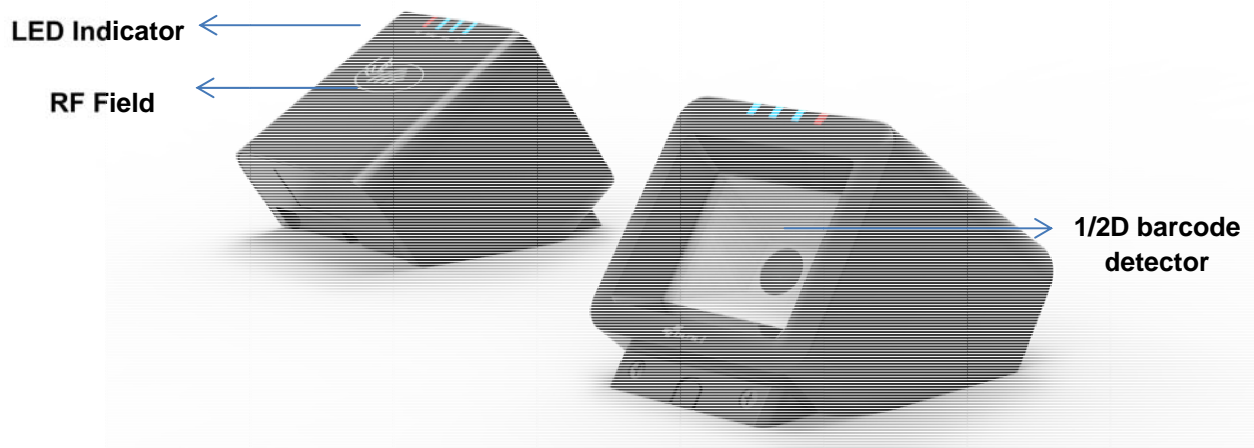
< Zig Board >



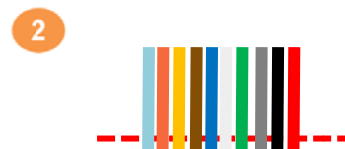
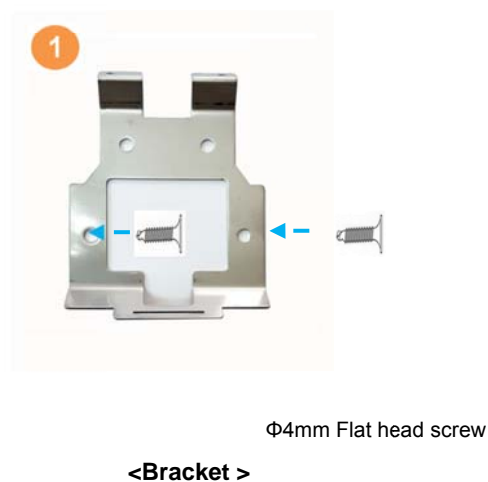
< USB to Serial cable>

04. Appearance & Installation

04.1 DQ MINI Feature & Dimension



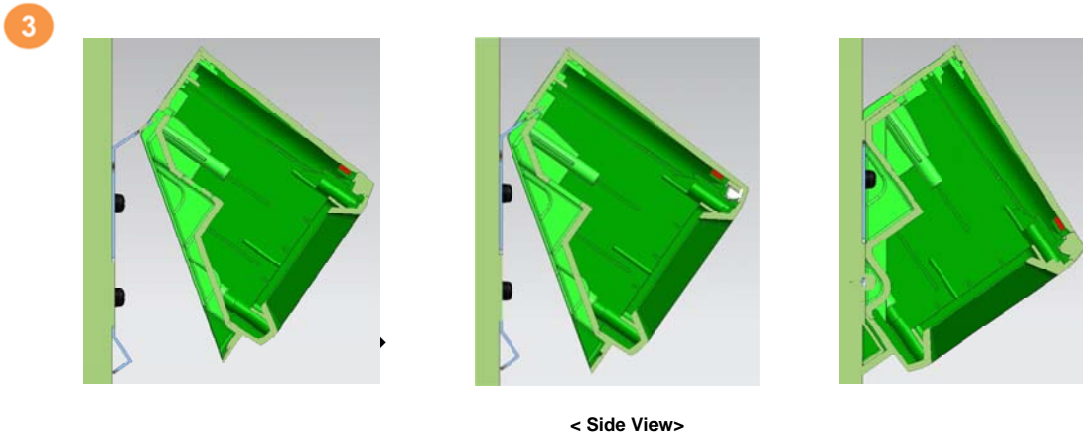
04.2 Mounting DQ Mini on the wall



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.

Place the provided wall mount bracket on the wall and fix it tightly with screw ($\Phi 4$ mm Flat head)

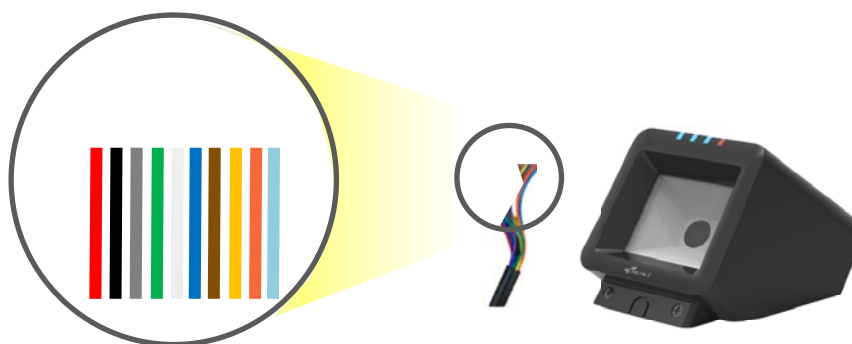


Tilt the device slightly and insert to the wall mount from the top as above step. Fix it tightly with 3*4 flat head machine screw.

※ **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 short if the wall is made of steel or metal.

05. Connection Diagram



| PIN NAME | COLOR | 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 |

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. (Refer to chapter 10)

- <34 bit>

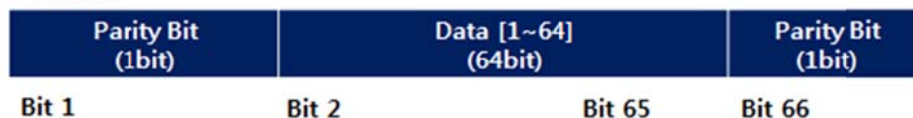


First Bit (Parity) : Even parity of bit 2 ~ bit 17

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

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

- <66 bit>



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>

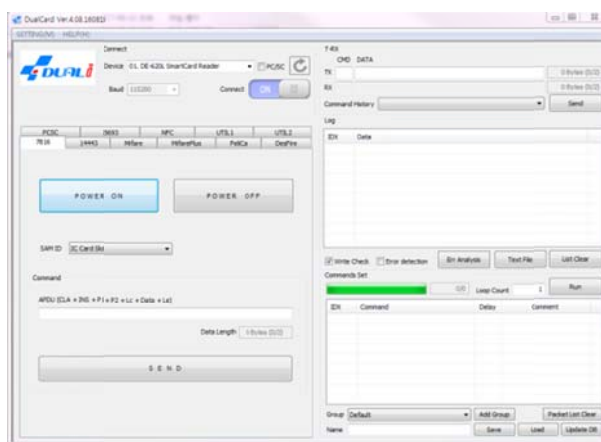
Data[1-64] :

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 QR Mode option set

Following is the communication frame for QR mode 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[0] | DATA[1] | LRC |
|------|------|------|------|---------|---------|-----------------------------------|
| 0x02 | 0x00 | 0x02 | 0xE3 | 0x00 | DATA[1] | LENH^LENL ^ CMD ^ DATA[0]^DATA[1] |

(^: exclusive oring)

| DATA[1] | State | Description |
|---------|---------------------|--|
| 0x00 | Presentation mode | QR scan mode change to Presentation mode |
| 0x01 | Manual Trigger mode | QR scan mode change to Manual trigger mode |



Tip – To change the QR Mode to Presentation mode

The screenshot shows a T-RX interface with the following details:

- TX:** CMD: E3, DATA: 0001 (highlighted with a red box). Status: 2 Bytes (2/2).
- RX:** 00. Status: 0 Bytes (0/2).
- Command History:** A dropdown menu and a "Send" button (highlighted with a blue dashed box).
- Log:** A table with two entries:

| IDX | Data |
|-----|----------|
| 1 | =>E30001 |
| 2 | <=>00 |

08.2 QR Reading timeout

Following is the communication frame for same QR reading timeout 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[0] | DATA[1] | LRC |
|------|------|------|------|---------|---------|---|
| 0x02 | 0x00 | 0x02 | 0xE3 | 0x01 | DATA[1] | LENH^LENL ^ CMD ^ DATA[0]^DATA[1]^DATA[2] |

(^: exclusive oring)

| DATA[1] | State | Description |
|-----------|--------------------------|---|
| 0x05~0x32 | Timeout Parameter | Set same QR reading timeout (Range: 05~0x32(=50)) Each numbers are automatically multiplied by DQ-MINI |



Tip – To set the same QR read timeout for 1.6s(1600ms)

T-RX

| | CMD | DATA | |
|----|-----|------|---------------|
| TX | E3 | 0110 | 2 Bytes (2/2) |
| RX | 00 | | 0 Bytes (0/2) |

Command History Send

Log

| IDX | Data |
|-----|----------|
| 1 | =>E30110 |
| 2 | <=>00 |

08.3 QR scan interval set

Following is the communication frame for QR Scan interval 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[0] | DATA[1] | LRC |
|------|------|------|------|---------|---------|-------------------------------|
| 0x02 | 0x00 | 0x02 | 0xE3 | 0x02 | DATA[1] | LENH^LENL^CMD^DATA[0]^DATA[1] |

(^ : exclusive oring)

| DATA[1] | State | Description |
|-----------|------------------|---|
| 0x02~0x1E | QR Scan interval | QR Scan Interval setting(Range: 0x02~0x1E(=30)) Each numbers are automatically multiplied by DQ-MINI |

*** THIS MODE IS ONLY WORK ON QR MANUAL TRIGGER MODE**



Tip – To set the QR scan interval to 0.5s(500ms)

T-RX

| | CMD | DATA | |
|-----------------|-----|------|---------------|
| TX | E3 | 0205 | 2 Bytes (2/2) |
| RX | 00 | | 0 Bytes (0/2) |
| Command History | | | Send |

Log

| IDX | Data |
|-----|----------|
| 1 | =>E30205 |
| 2 | <=>00 |

08.4 QR Maximum length set

Following is the communication frame for QR maximum length 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[0] | DATA[1] | LRC |
|------|------|------|------|---------|---------|---------------------------------------|
| 0x02 | 0x00 | 0x02 | 0xE3 | 0x03 | DATA[1] | LENH ^ LENL ^ CMD ^ DATA[0] ^ DATA[1] |

(^: exclusive oring)

| DATA[1] | State | Description |
|-----------|-------------------|--|
| 0x01~0x10 | QR Maximum length | QR Maximum length setting(Range: 0x01~0x10(=16)) |



Tip – To set the maximum QR length to 16



08.5 QR data send channel set

Following is the communication frame for QR data send channel set. 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[0] | DATA[1] | LRC |
|------|------|------|------|---------|---------|---------------------------------------|
| 0x02 | 0x00 | 0x02 | 0xE3 | 0x04 | DATA[1] | LENH ^ LENL ^ CMD ^ DATA[0] ^ DATA[1] |

(^: exclusive oring)

| DATA[1] | Description |
|---------|----------------|
| 0x02 | RS-232 Send ON |

※ Default setting is RS-232 send ON



Tip – To set the QR data send via Wiegand and RS-232

The screenshot shows a software interface for configuring a T-RX device. It features a 'CMD DATA' section with two input fields: 'TX' containing 'E3' and 'DATA' containing '0403'. A 'Send' button is located to the right of these fields. Below the input fields is a 'Log' section with a table showing the history of commands and data received.

| IDX | Data |
|-----|----------|
| 1 | =>E30403 |
| 2 | <=>00 |

08.6 RF Scan option set

Following is the communication frame for RF Scan 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[0] | DATA[1] | LRC |
|------|------|------|------|---------|---------|---------------------------------------|
| 0x02 | 0x00 | 0x02 | 0xE3 | 0x06 | DATA[1] | LENH ^ LENL ^ CMD ^ DATA[0] ^ DATA[1] |

(^: exclusive oring)

| DATA[1] | Description |
|---------|----------------|
| 0x40 | TYPE-B Scan ON |
| 0x20 | Felica Scan ON |
| 0x08 | 15693 Scan ON |

※ Reading Mifare Type A can not be turned off



Tip – To set the reader to read Mifare type A , FeliCa™ and TypeB

T-RX

CMD DATA

TX E3 0660 2 Bytes (2/2)




RX 00 0 Bytes (0/2)

Command History [dropdown] Send

Log

| IDX | Data |
|-----|----------|
| 1 | =>E30660 |
| 2 | <=00 |

09. Certifications

| Symbol | Description |
|---|--|
|  | Communaute Europeenne Marking |
|  | Korea Certification Marking |
|  | Federal Communication Commission Marking |
|  | Electrical waste and electronics equipment |

- 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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