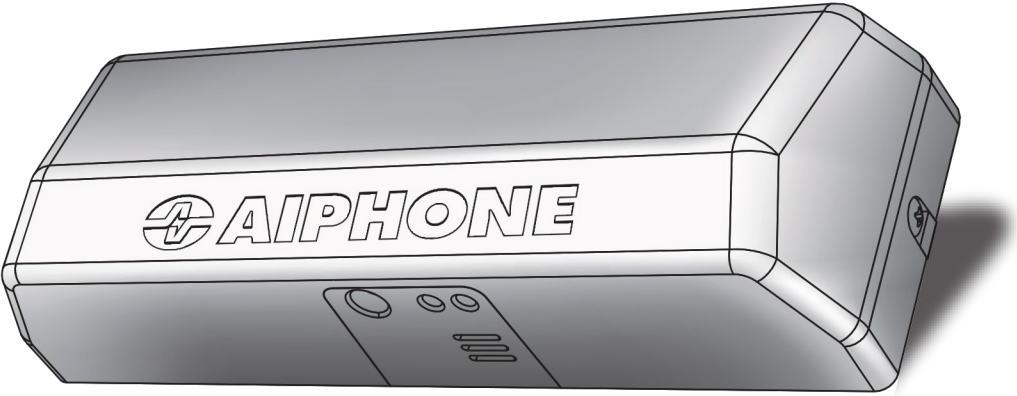# AIPHONE

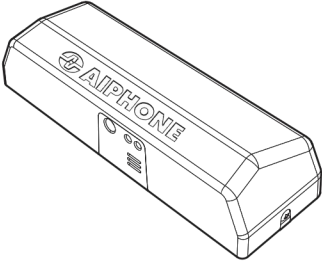# Installation manual
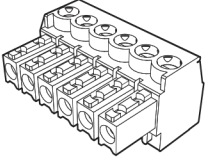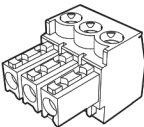
## AC-2DM
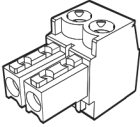
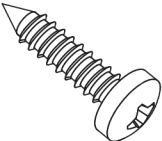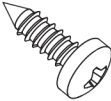| Part Number | Motion Sensor | Color | |
|---|---|---|---|
| AC-2DM-B | Yes | Black | |
| AC-2DM-W | Yes | White | |
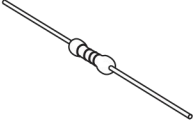
## Package Contents



AC-2DM x 1

2P Connector x 4    3P Connector x 2    6P Connector x 2

Supervisor Input Resistor(1KΩ) x 8    Cover screw x 2    Wall screw x 4

### UL 294 / S319 Compliance Notices

## Installation Example



### Controller
| A | AC-2DM |
|---|---|

### Outputs
| B | Electric Strike |
|---|---|
| C | Auto Door Opener |
| D | Extra Loud Buzzer* |

### Inputs
| G | Handicap Open |
|---|---|
| H | Door Contact |
| I | Emergency Alarm |
| J | Doorbell |
| R1 | Inside Reader |
| R2 | Outside Reader |

*Optional Internal Extra Loud Buzzer

## Networking Examples

: POE Powered
: Normal

① Controller - POE Injector - PC (Direct)
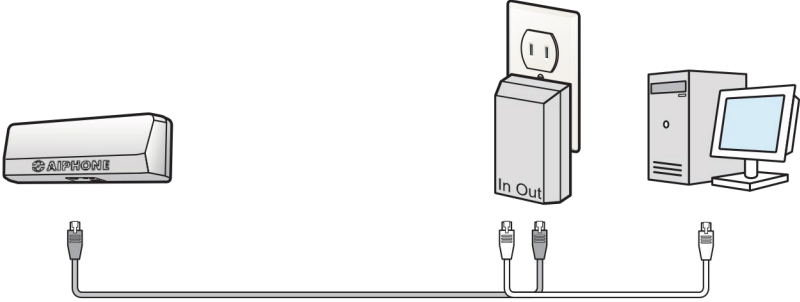


② Controller - POE Injector - Router - PC



* LAN or Internet
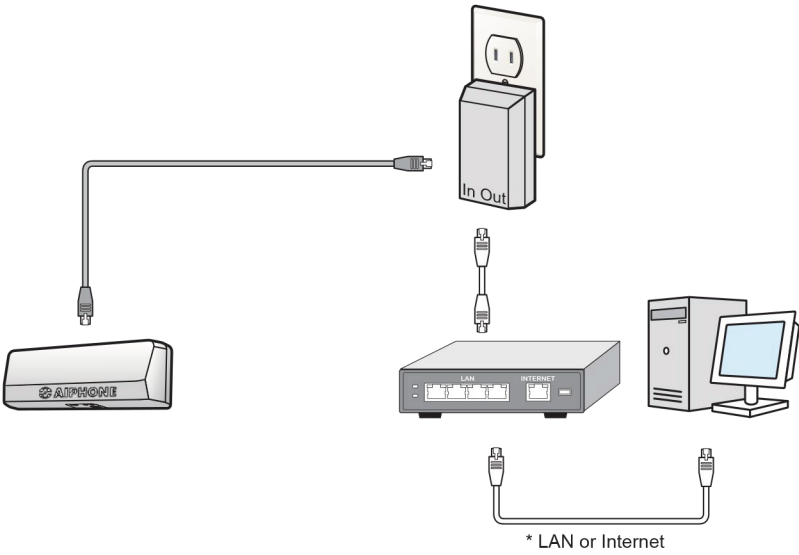
③ Controllers - POE Router - PC



* LAN or Internet

# Networking Examples
(Continued)

 : POE Powered

 : Normal

**④ Controllers - POE Switch - Router - PC**



* LAN or Internet

**⑤ Controllers - POE Switch (at doors) - Router - PC**

* At door
* Can be wireless
* LAN or Internet
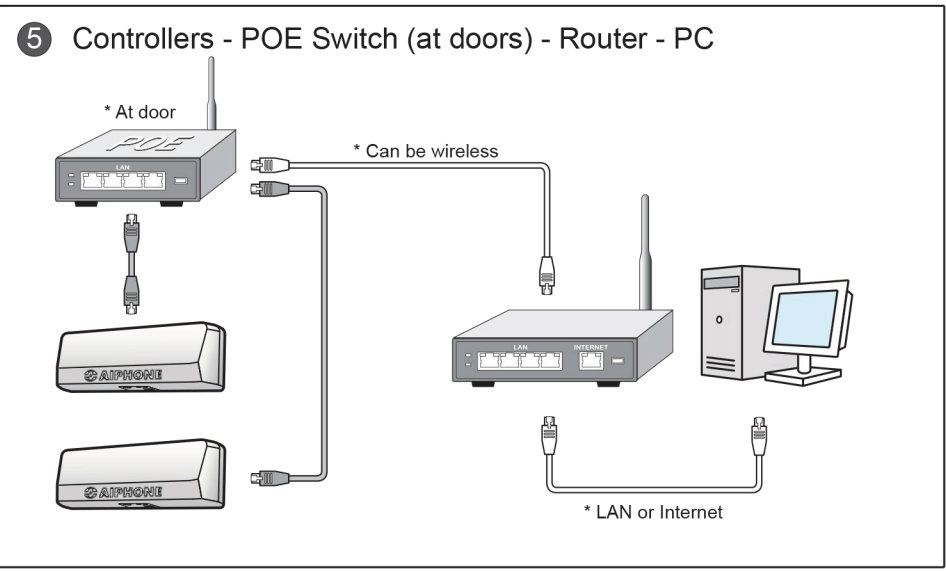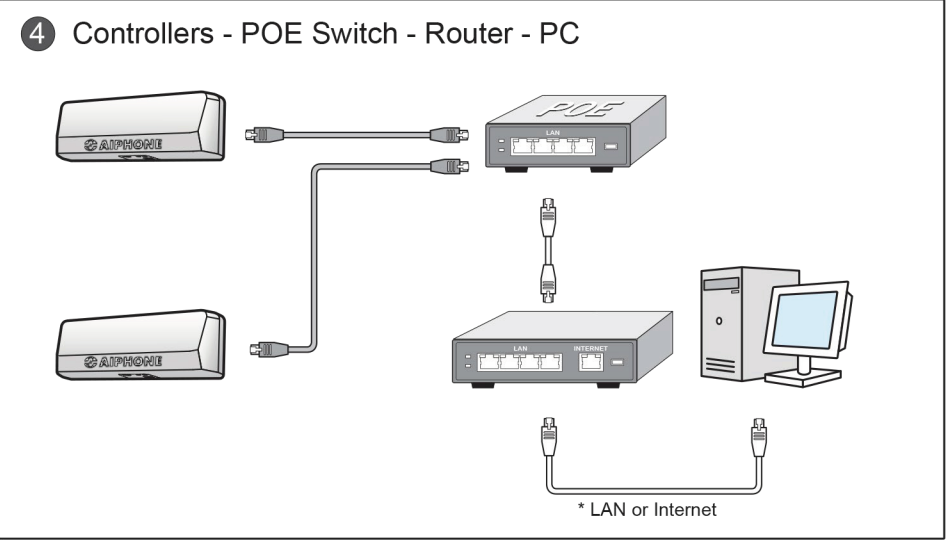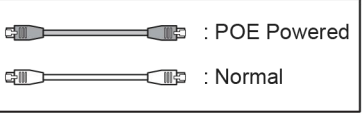


# Readers & Usage Example

## Wiring Specification

| Ground | Black and shield wires | ❶ |
|---|---|---|
| Power (12V DC) | Red wire | ❷ |
| LED | Brown wire | ❸ |
| Buzzer | Blue wire | ❹ |
| Data 1 | White wire | ❺ |
| Data 0 | Green wire | ❻ |
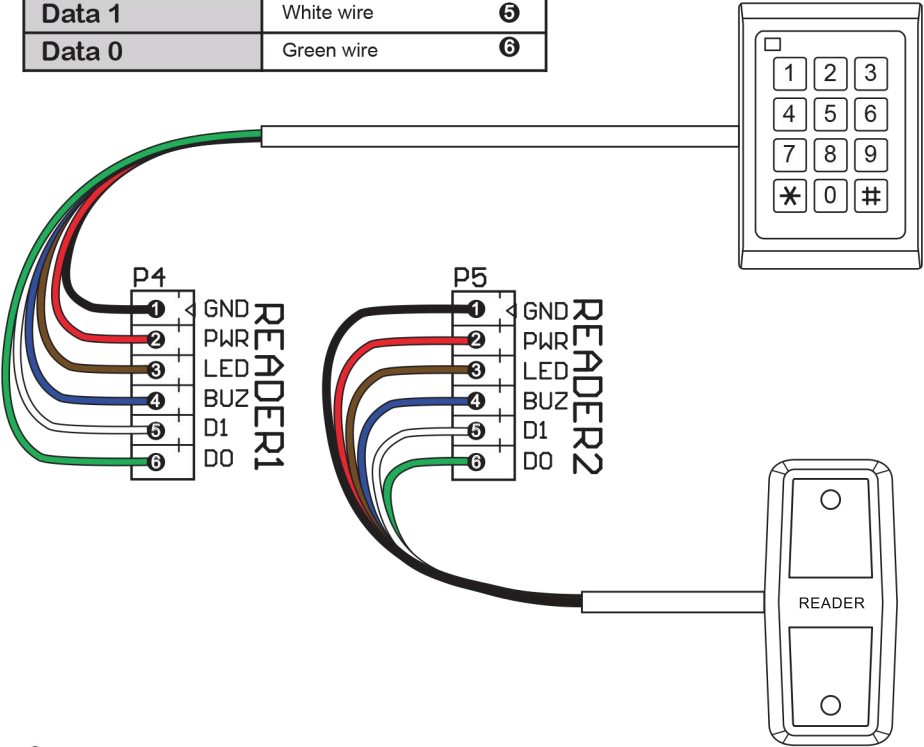
P4 — READER1: ❶ GND, ❷ PWR, ❸ LED, ❹ BUZ, ❺ D1, ❻ D0

P5 — READER2: ❶ GND, ❷ PWR, ❸ LED, ❹ BUZ, ❺ D1, ❻ D0

READER



### ☑ Note : Reader Test

❶ Get in **Setup Menu Edit Mode** by pressing **Enter Key** and hold.

❷ Select **Reader Test** menu. ( ↑ ↓ Enter keys )

❸ Scan a card or press numbers and # ( keypad reader only ). LCD shows the data infomation.

Enter

```
 Input Test
→Reader Test
```

```
 Reader:1,   Bit:40
 33, 13532
```

# Outputs & Usage Example

## Specification

| P1 (Relay1, Lock power) | Lock power relay, ❶ GND, ❷ 12V DC 500mA |
|---|---|
| P8 (12V DC out) | 12V DC output, ❶ GND, ❷ 12V DC 200mA |
| P6 (Relay2) | 24V DC 1A limit |
| P7 (Relay3) | 24V DC 1A limit |

* All the relay outputs are configurable.
  For example, Relay2 can be configured to a door strike.
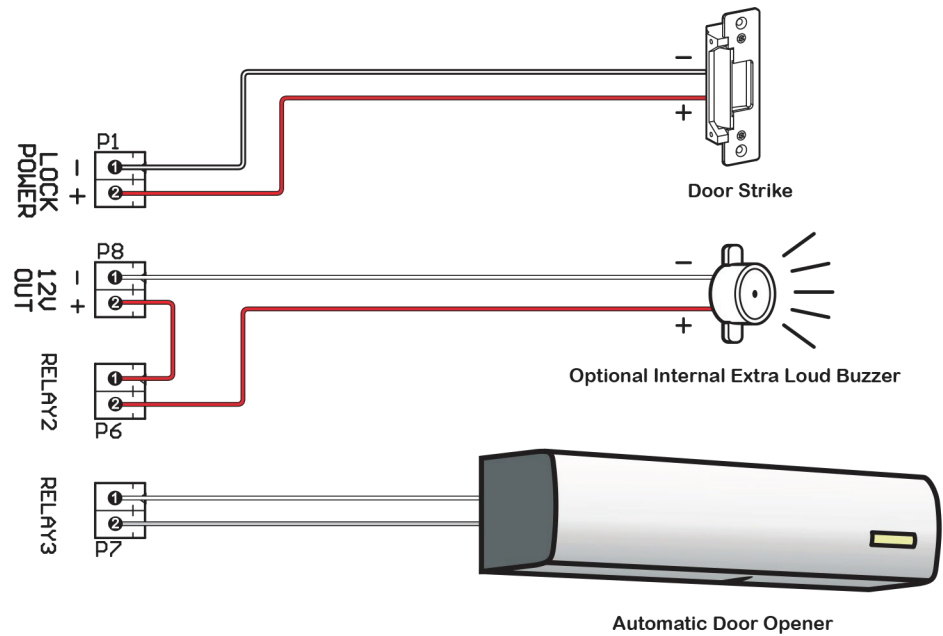
LOCK POWER — P1: ❶ −, ❷ +

Door Strike

12V OUT — P8: ❶ −, ❷ +

Optional Internal Extra Loud Buzzer

RELAY2 — P6: ❶, ❷

RELAY3 — P7: ❶, ❷
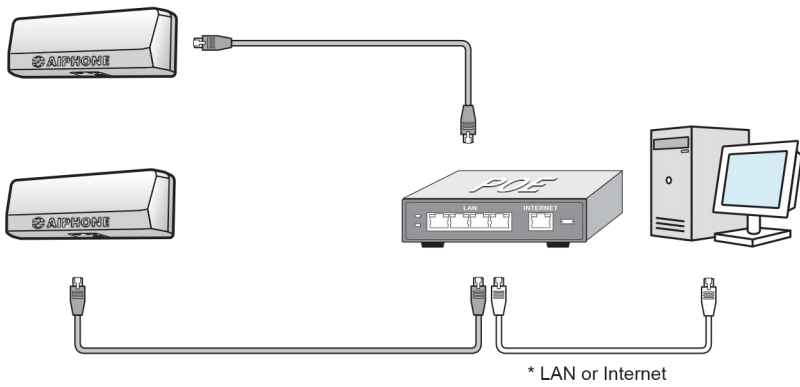
Automatic Door Opener

### ☑ Note : Output Test

❶ Get in **Setup Menu Edit Mode** by pressing **Enter Key** and hold.

❷ Select **Output Test** menu. ( ↑ ↓ Enter keys )

❸ Toggle selected relay by pressing Enter. ( Select change : ← → keys, 0 = Off, 1 = On )

Enter

```
→Output Test
 Input Test
```

```
 R1 R2 R3
 1  0  0
```

# Inputs & Usage Example

## Specification

| P2 1-2 Pin (Input1) | ❶ Input | ❷ Common (GND) |
|---|---|---|
| P2 2-3 Pin (Input2) | ❷ Common (GND) | ❸ Input |
| P3 1-2 Pin (Input3) | ❶ Input | ❷ Common (GND) |
| P3 2-3 Pin (Input4) | ❷ Common (GND) | ❸ Input |

* All the inputs are configurable.
  For example, Input1 can be configured to a doorbell or a door contact of Door_2
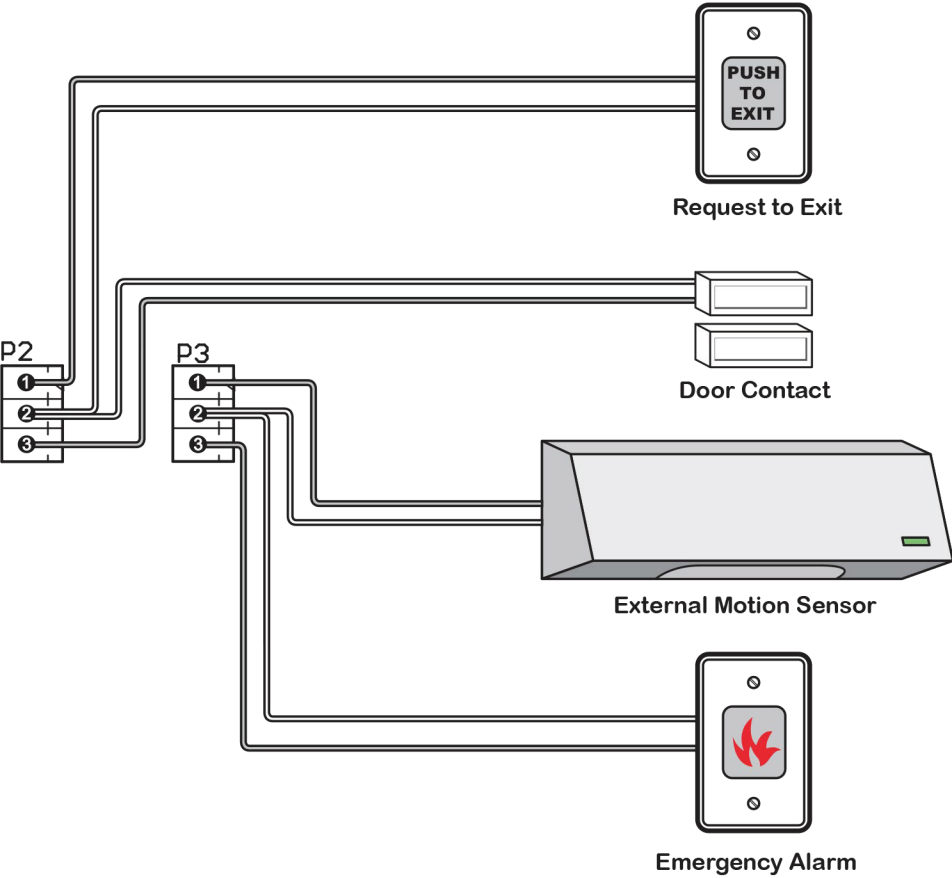
PUSH TO EXIT

**Request to Exit**

P2: ❶, ❷, ❸

P3: ❶, ❷, ❸

**Door Contact**

**External Motion Sensor**

**Emergency Alarm**

### ☑ Note : Input Test

❶ Get in **Setup Menu Edit Mode** by pressing **Enter Key** and hold.

❷ Select **Input Test** menu. ( ↑ ↓ Enter keys )

❸ LCD displays current input states. ( D = Digital, S = Supervised, O = Open, C = Closed )

Enter

```
→Input Test
 Reader Test
```

```
 I1 I2 I3 I4
 DO DC DO SC
```

# Input Types

## Specification

| Digital* | Off(DO), On(DC) |
|----------|-----------------|
| Supervised* | Off(SO), On(SC), Short(DC), No connection(DO) |

\* Software selectable

**① Digital Input States**

| P2 | Off |
|----|-----|
| Input1 ① | |
| Common ② | |
| ③ | |

| P2 | On |
|----|-----|
| Input1 ① | |
| Common ② | |
| ③ | |

**② Supervised Input States**

| P2 | Off |
|----|-----|
| Input1 ① | * |
| Common ② | * |
| ③ | |

| P2 | On |
|----|-----|
| Input1 ① | |
| Common ② | |
| ③ | |

| P2 | Short |
|----|-----|
| Input1 ① | |
| Common ② | |
| ③ | |

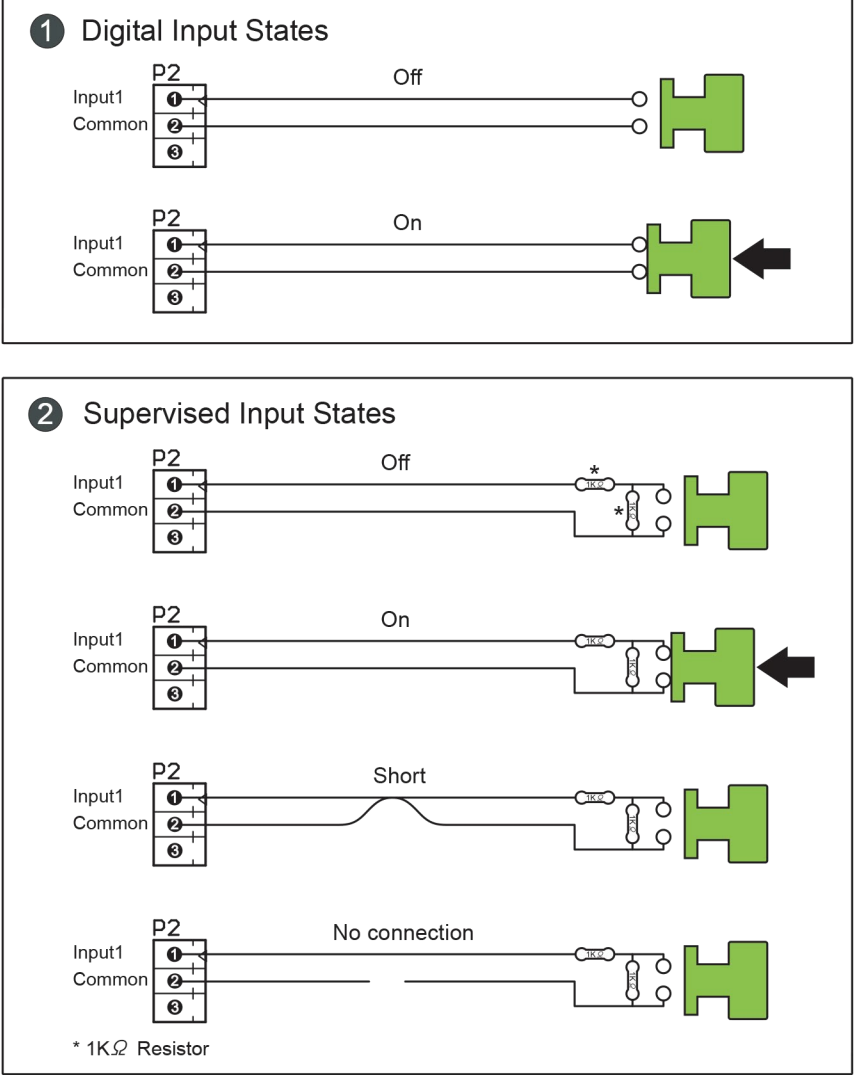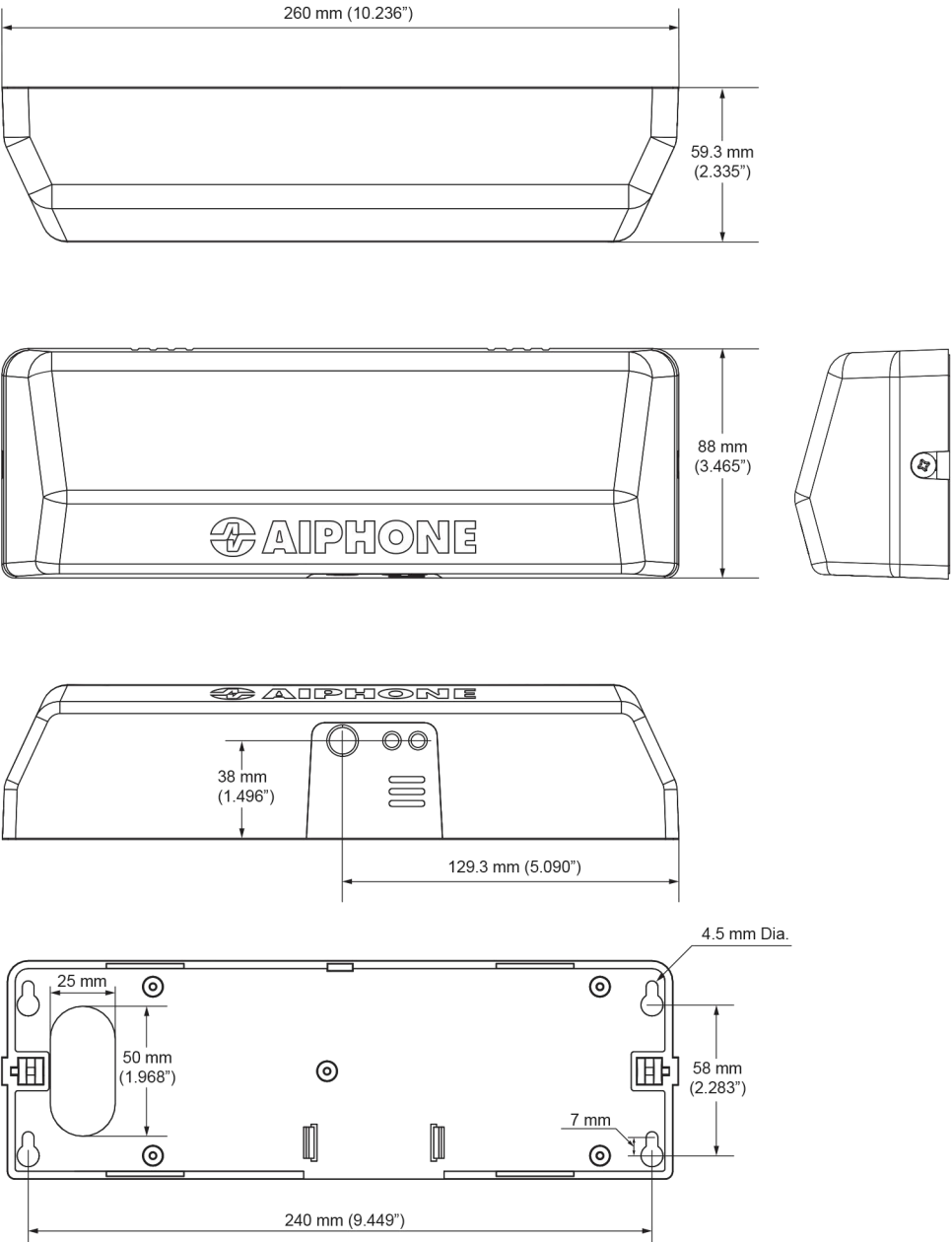| P2 | No connection |
|----|-----|
| Input1 ① | |
| Common ② | |
| ③ | |

\* 1KΩ Resistor

# Dimensions



260 mm (10.236")
59.3 mm (2.335")
88 mm (3.465")
38 mm (1.496")
129.3 mm (5.090")
4.5 mm Dia.
25 mm
50 mm (1.968")
58 mm (2.283")
7 mm
240 mm (9.449")

# Board I/O and Connections
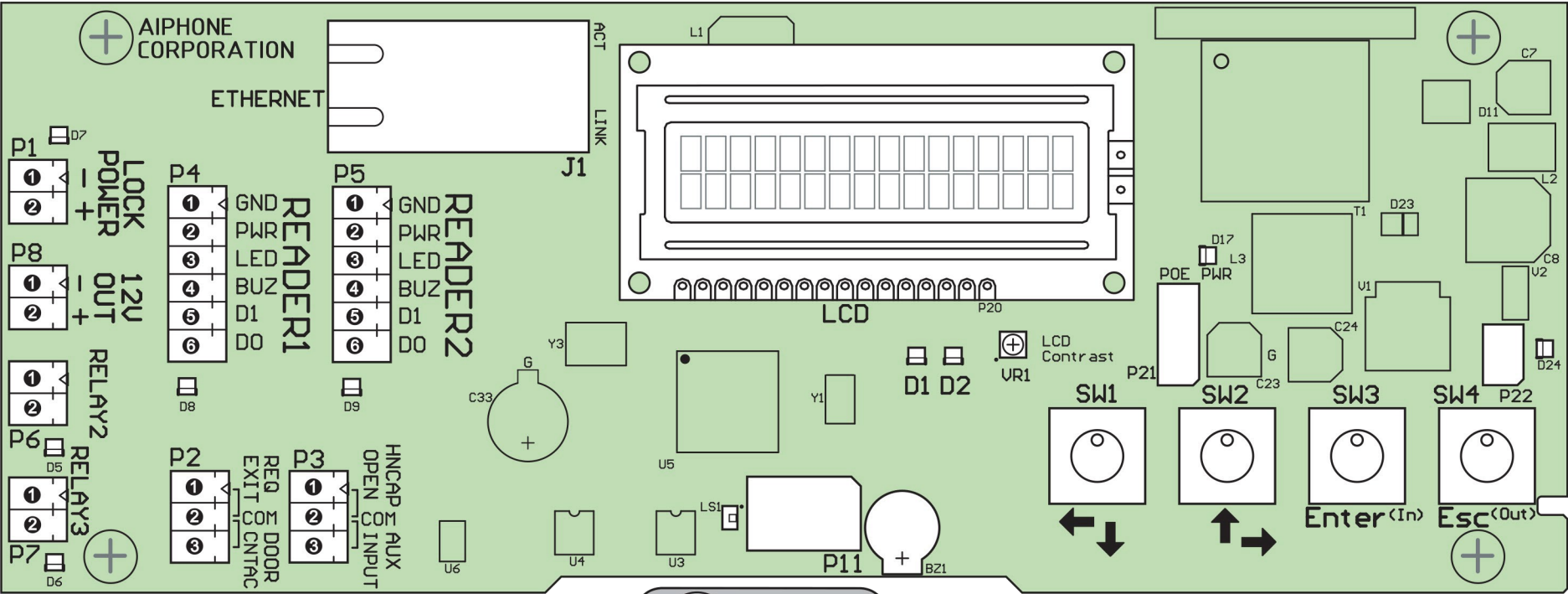


## LEDs

| D1 | System heart beat |
|----|-------------------|
| D2 | Server log on/off state Key pressed |
| D3 | On: Server log off Blink: Server log in |
| D4 | Green: Motion detected Red: Door Opened |
| D5 | Relay2 on |
| D6 | Relay3 on |
| D7 | Relay1 on |
| D8 | Reader1 data flow |
| D9 | Reader2 data flow |
| D17 | POE power |
| D24 | CPU power |
| LINK | Ethernet linked |
| ACT | Ethernet Activity |

## Connectors

| P1 | Relay1, DC 12V wet contact |
|----|-----------------------------|
| P2 | Input1, Common, Input2 |
| P3 | Input3, Common, Input4 |
| P4 | Reader1 |
| P5 | Reader2 |
| P6 | Relay2 |
| P7 | Relay3 |
| P8 | DC 12V out |
| P11 | Sensor module |
| P21 | Expansion |
| P22 | Expansion |
| J1 | Ethernet |
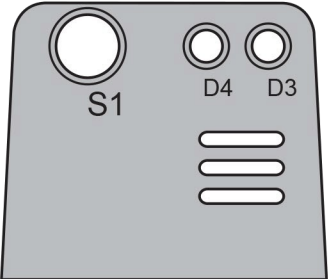
## Keys

| SW1 | Left(←), down(↓) |
|-----|------------------|
| SW2 | Right(→), up(↑) |
| SW3 | Enter, get in |
| SW4 | Esc, exit |

## Etc

| LS1 | Tamper sensor |
|-----|---------------|
| S1 | Motion sensor |
| BZ1 | Embedded buzzer |
| P20 | LCD display |
| VR1 | LCD contrast |

## Setup Menu View Mode

| Get in | Press and hold Esc (beeps after 2 sec) |
|--------|----------------------------------------|
| Get out | Esc |
| Move cursor | Up(Right),Down(Left) |
| Select menu | Enter |
| Exit menu | Esc |

## Setup Menu Edit Mode*

| Get in | Press and hold Enter (beeps after 2 sec) Enter password** |
|--------|-----------------------------------------------------------|
| Toggle cursor | Enter White blink: move Black blink: edit |
| Get out | Esc |
| Move cursor | Up(Right),Down(Left) |
| Select menu | Enter |
| Exit menu | Esc |

⚠ **Note**

\* For a first time installation, use this mode to do the following tests.
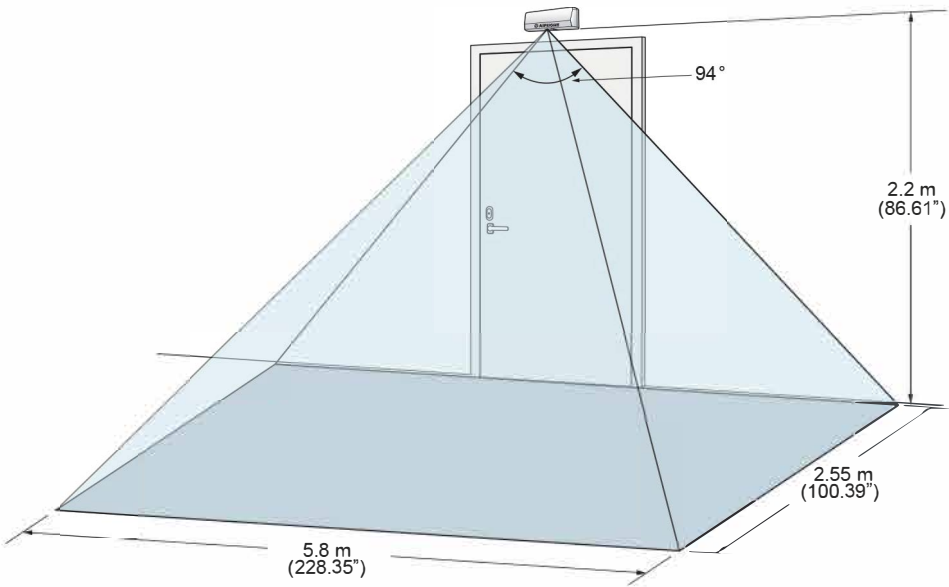- Output Test : Toggle relays with Enter
- Input Test : Shows input states
- Reader Test : Shows scanned card info

\*\* Factory default password is 0000.

Toll Free: 1-800-692-0200

# Motion Sensor

## Specification

| Sensor Type | PIR |
|---|---|
| Detection Range | 5 m |
| Detection Angle | H: 94°, V: 82° |
| Detection Zone | 64 zones |

94°

2.2 m (86.61")

2.55 m (100.39")

5.8 m (228.35")

# Cable Requirements

| Name | Maximum Distance | Cable Type | Code |
|---|---|---|---|
| Network Cable*** | 100 m (328') | twisted pair, 4 pairs | Cat5 100BASE-T or better |
| Reader Cable | 18 AWG: 152 m (500')<br>22 AWG: 76.2 m (250')**** | 6 conductor stranded not twisted, 22 AWG or thicker, 100% overall shielded | Belden 5304FE or equivalent |
| Door Strike Cable | 152 (500') | 2 conductor stranded 18 AWG | Aiphone 821802 or equivalent* |
| Output Cable | 152 m (500') | 2 conductor stranded 22 AWG | Aiphone 822202 or equivalent* |
| Input Cable | 152 m (500') | 2 conductor stranded 22 AWG, shielded | Aiphone 822202 or equivalent* |
| RS-485 Cable with Power | 600 m (2000') | 4 conductor stranded, twisted pair, 2 pairs, 22 ~ 16 AWG**, shielded | Belden 9402 or equivalent* |

\* Unless otherwise specified by manufacturer.
\*\* Varies by current consumption of the other side.
\*\*\* RecommendedT T568B wiring for both ends.
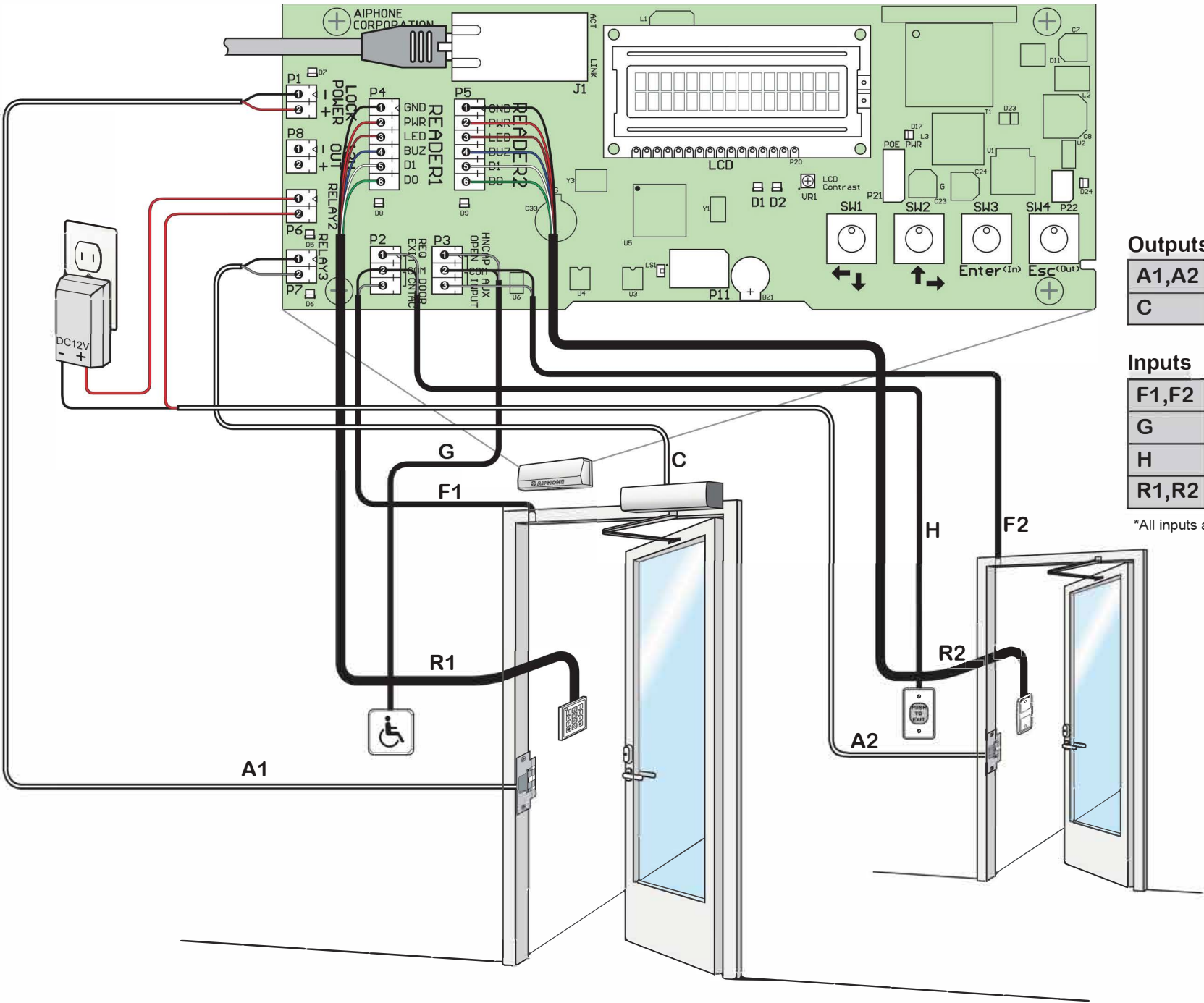\*\*\*\* Max distance may vary depending on cable gauge, environmental conditions and reader model.

## T568B (TIA/EIA568B) Wiring
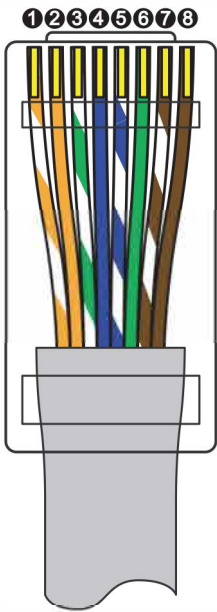
①②③④⑤⑥⑦⑧

| ❶ | White/Orange |
|---|---|
| ❷ | Orange |
| ❸ | White/Green |
| ❹ | Blue |
| ❺ | White/Blue |
| ❻ | Green |
| ❼ | White/Brown |
| ❽ | Brown |

# Two Door Typical

(with motion, two readers, two door contacts, auto door opener)

## Outputs

| A1,A2 | Wet Lock Power (12V DC 500mA) |
|---|---|
| C | Auto Door Opener (dry) |

## Inputs

| F1,F2 | Door Contact (dry) |
|---|---|
| G | Handicap Button (dry) |
| H | Request to Exit (dry) |
| R1,R2 | Readers |

*All inputs are configurable and interchangeable