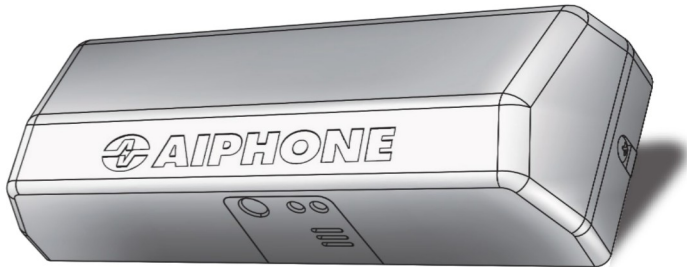




Installation manual

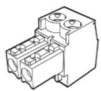
AC-2DM



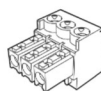
Part Number	Motion Sensor	Color	
AC-2DM-B	Yes	Black	☐
AC-2DM-W	Yes	White	☐

Package Contents

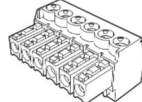
AC-2DM x 1



2P Connector x 4



3P Connector x 2



6P Connector x 2



Supervisor Input
Resistor(1K Ω) x 8



Cover screw x 2



Wall screw x 4

UL 294 / S319 Compliance Notices

This product complies with the following UL294 Access Control Performance Levels when installed as part of the Listed AC-NIO system:

Endurance Level IV (100,000c)
Line Security Level I

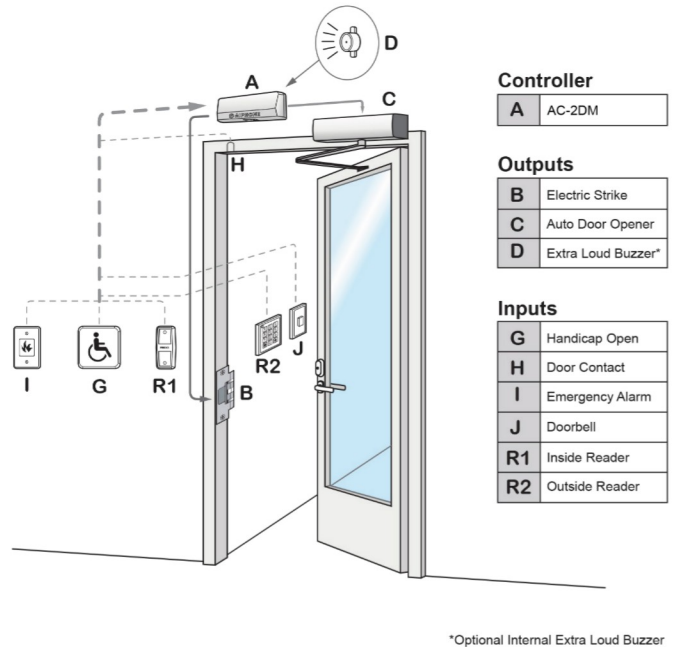
Wiring methods shall be in accordance with the National Electrical Code (ANSI/NFPA70), CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, Part I, local codes, and the authorities having jurisdiction. All interconnecting devices must be UL Listed, low-voltage Class 2 power limited. The minimum permissible wire size to be used shall not be less than 26 AWG (0.24 mm²).

Products have been evaluated for "Indoor Use" only, and to be installed within the "protected" or "restricted" area. This product is not intended for outside wiring as covered by Article 800 in the National Electrical Code, NFPA 70. Products are not intended to be installed or mounted in air-handling spaces. Products are intended to be installed by manufacturer trained service installers only.

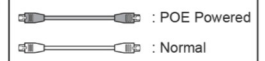
All recommended connected peripherals such as power supplies, UPS/battery backups, PoE switches, electrified strikes, readers require to be UL Listed.

Please refer to the AC-NIO UL Reference document for more comprehensive information available via the installation USB drive or downloadable from our website. Hard copy of the AC-NIO UL Reference Manual document is available – call for pricing.

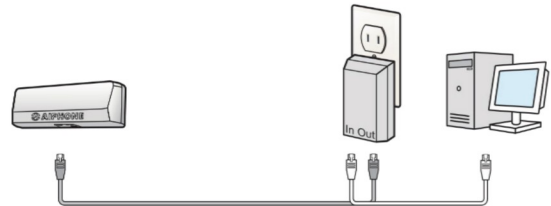
Installation Example



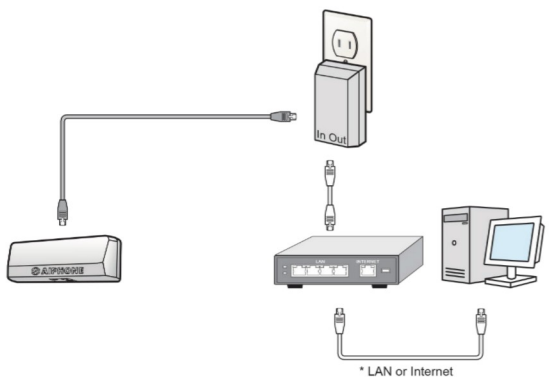
Networking Examples



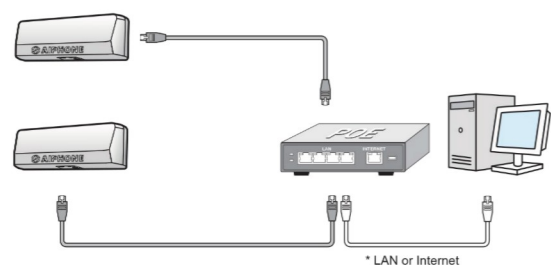
1 Controller - POE Injector - PC (Direct)



2 Controller - POE Injector - Router - PC

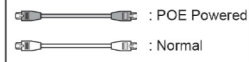


3 Controllers - POE Router - PC

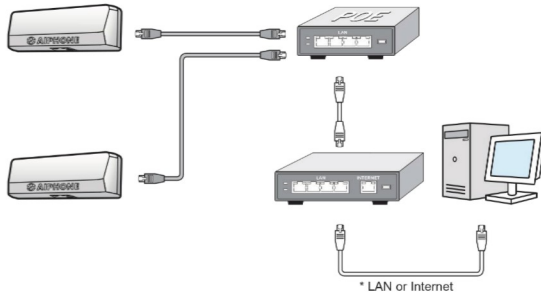


Networking Examples

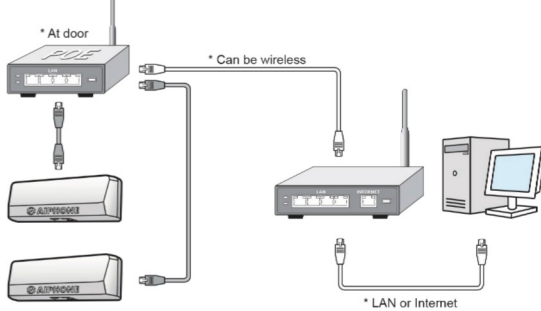
(Continued)



4 Controllers - POE Switch - Router - PC



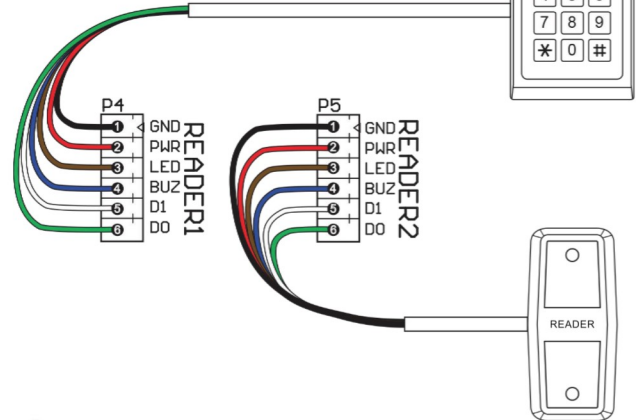
5 Controllers - POE Switch (at doors) - Router - PC



Readers & Usage Example

Wiring Specification

Ground	Black and shield wires	1
Power (12V DC)	Red wire	2
LED	Brown wire	3
Buzzer	Blue wire	4
Data 1	White wire	5
Data 0	Green wire	6

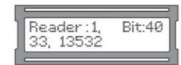


Note : Reader Test

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

2 Select Reader Test menu. (↑↓ Enter keys)

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

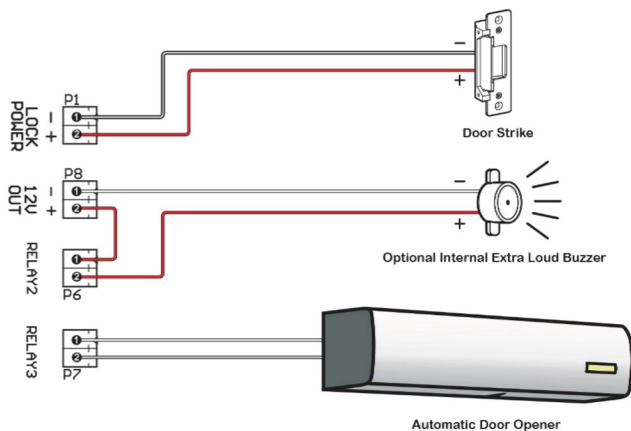


Outputs & Usage Example

Specification

P1 (Relay1, Lock power)	Lock power relay. 1 GND, 2 12V DC 500mA
P8 (12V DC out)	12V DC output. 1 GND, 2 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.

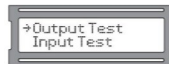


Note : Output Test

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

2 Select Output Test menu. (↑↓ Enter keys)

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

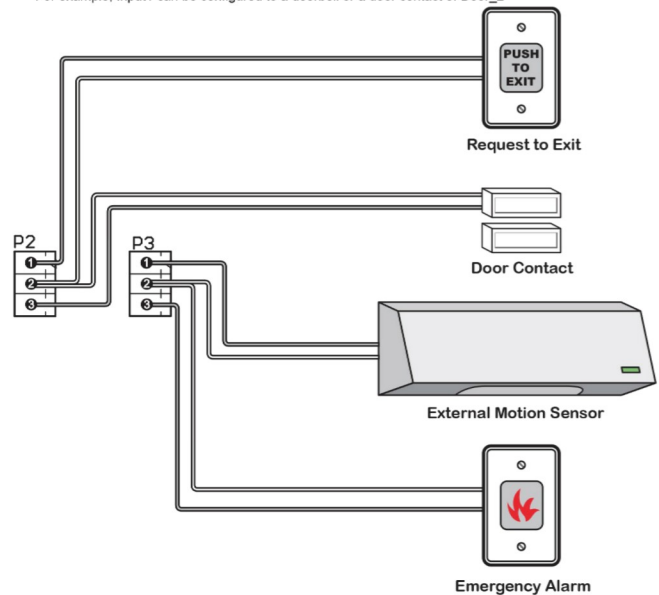


Inputs & Usage Example

Specification

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

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

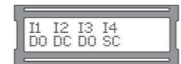


Note : Input Test

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

2 Select Input Test menu. (↑↓ Enter keys)

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



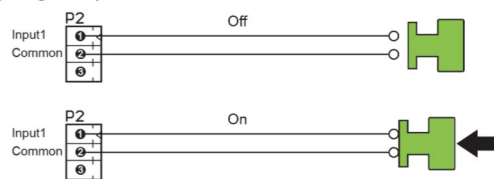
Input Types

Specification

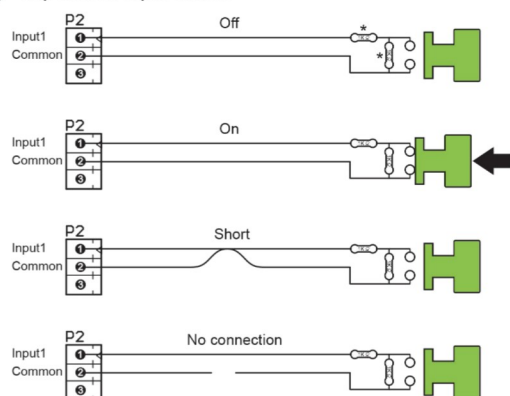
Digital*	Off(DO), On(DC)
Supervised*	Off(SO), On(SC), Short(DC), No connection(DO)

* Software selectable

1 Digital Input States

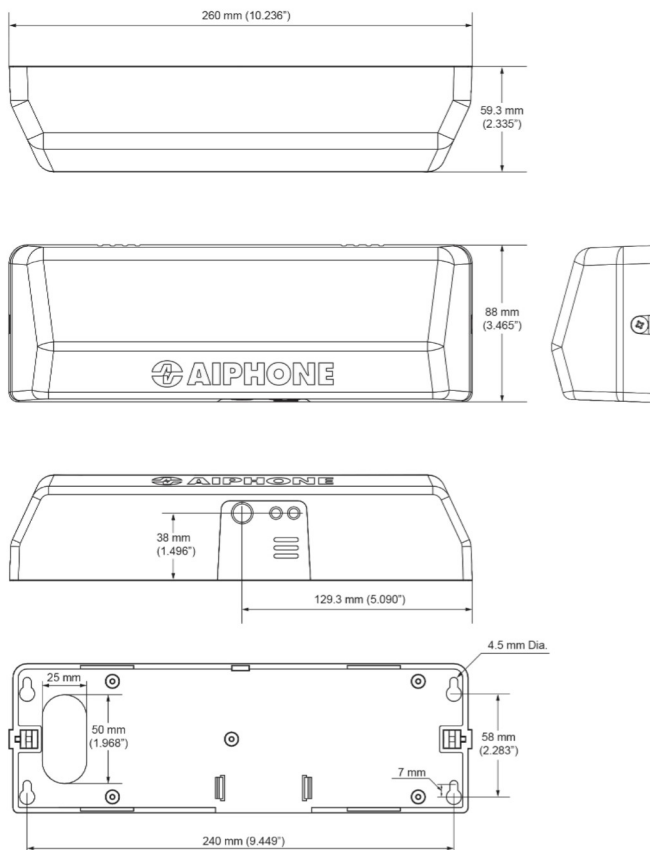


2 Supervised Input States

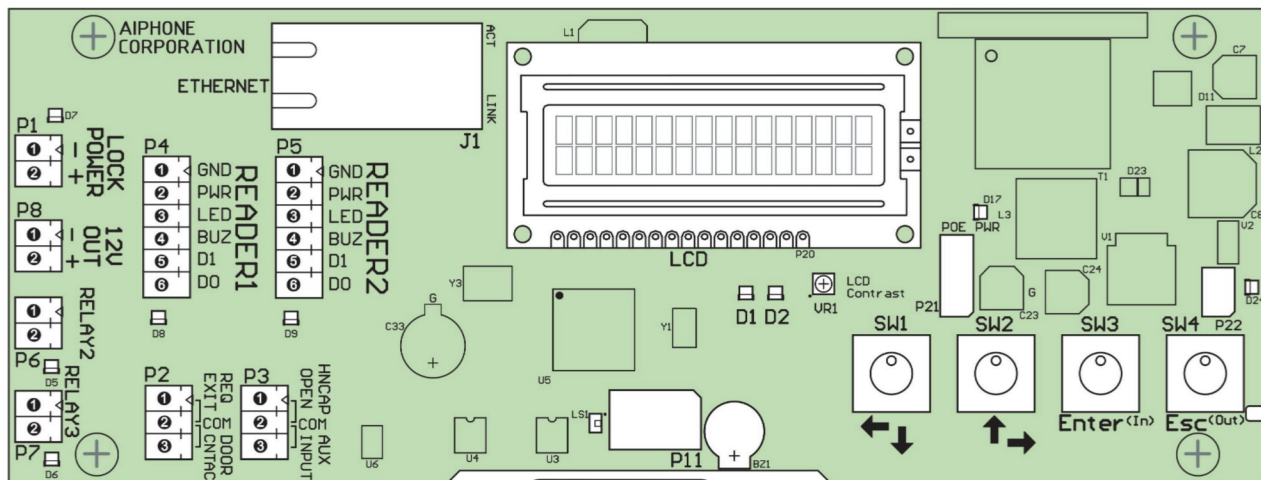


* 1KΩ Resistor

Dimensions



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.

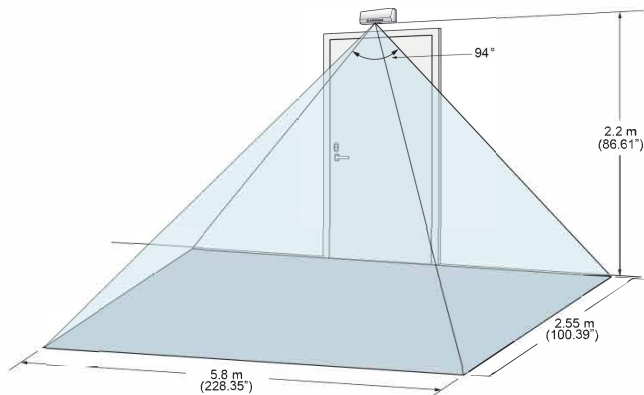
- Output Test : Toggle relays with Enter
- Input Test : Shows input states
- Reader Test : Shows scanned card info

** 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



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') 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 m (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*

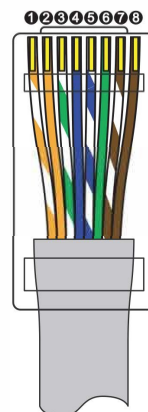
* Unless otherwise specified by manufacturer.

** Varies by current consumption of the other side.

*** Recommended T568B wiring for both ends.

**** Max distance may vary depending on cable gauge, environmental conditions and reader model.

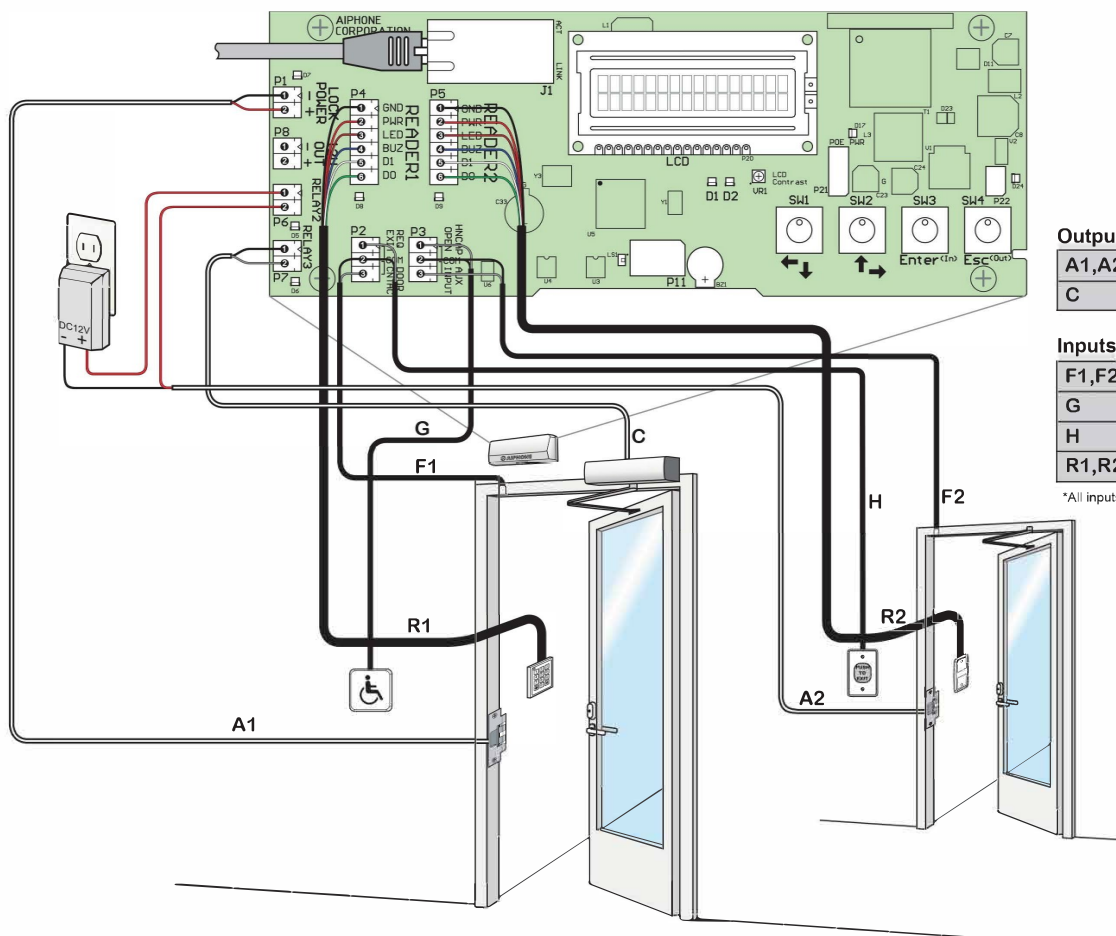
T568B (TIA/EIA568B) Wiring



- ① White/Orange
- ② Orange
- ③ White/Green
- ④ Blue
- ⑤ White/Blue
- ⑥ Green
- ⑦ White/Brown
- ⑧ 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