VAX Multi-Door Controller
Quick Start Guide

**Part Number** | **VAX-EXP-2D** | **VAX-EXP-4D** | **VAX-EXP-6D** | **VAX-EXP-8D**
--- | --- | --- | --- | ---
VAX-MDK-2 | 1 | 1 | 1 | 1
VAX-MDK-4 | 2 | 2 | 2 | 2
VAX-MDK-6 | 3 | 3 | 3 | 3
VAX-MDK-8 | 4 | 4 | 4 | 4

**Part Number** | **VAX-IO-EXP8PCB** | **VAX-IO-EXP8PCB** | **VAX-IO-EXP8PCB** | **VAX-IO-EXP8PCB**
--- | --- | --- | --- | ---
PRS-1IO | 1 | 1 | 1 | 1
PRS-2IO | 2 | 2 | 2 | 2
PRS-3IO | 3 | 3 | 3 | 3
PRS-4IO | 4 | 4 | 4 | 4
PRS-5IO | 5 | 5 | 5 | 5
PRS-6IO | 6 | 6 | 6 | 6
PRS-7IO | 7 | 7 | 7 | 7
PRS-8IO | 8 | 8 | 8 | 8

**Package Contents**
- 2P Connector x 1
- Battery Cable x 1
- PRS-MASTER x 1
- 3P Strip(s)

**Networking Example**
- VAX-MDK CONTROLLER
- Router
- PC

**Cable Requirements**

<table>
<thead>
<tr>
<th>Name</th>
<th>Maximum Distance</th>
<th>Cable Type</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Cable***</td>
<td>100 m (328&quot;)</td>
<td>twisted pair, 4 pairs</td>
<td>Cat5 100BASE-T or better</td>
</tr>
<tr>
<td>Reader Cable</td>
<td>152 m (500&quot;)</td>
<td>6 conductor stranded not twisted, 24 AWG or thinner, 100% overall shielded</td>
<td>Belden 9537 or equivalent</td>
</tr>
<tr>
<td>Door Strike Cable</td>
<td>152 m (500&quot;)</td>
<td>2 conductor stranded 18 AWG</td>
<td>Belden 9740 or equivalent*</td>
</tr>
<tr>
<td>Output Cable</td>
<td>152 m (500&quot;)</td>
<td>2 conductor stranded 22 AWG</td>
<td>Belden 8740 or equivalent*</td>
</tr>
<tr>
<td>Input Cable</td>
<td>152 m (500&quot;)</td>
<td>2 conductor stranded 22 AWG, shielded</td>
<td>Belden 8723 or equivalent*</td>
</tr>
<tr>
<td>RS-485 Cable with Power</td>
<td>600 m (2000&quot;)</td>
<td>4 conductor stranded, twisted pair, 2 pairs, 22 – 16 AWG**, shielded</td>
<td>Belden 9402 or equivalent*</td>
</tr>
</tbody>
</table>

* Unless otherwise specified by manufacturer.
* Varies by current consumption of the other side.
** Recommended the following T568B wiring for both ends.

**UL 294/S319/Safety EN 60950-1, A2 Compliance Notices**

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

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

**Wiring methods** shall be in accordance with the National Electrical Code (NEC/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 sizes 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 or licensed 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 VAX UL Reference document for more comprehensive information available downloadable from our website.

**T568B (TIA/EIA658B) Wiring**

- White/Orange
- Orange
- White/Green
- Blue
- White/Blue
- Green
- White/Brown
- Brown

**Notes:**
- To shut down the unit/controller cards, disconnect the network cable from the unit.
- Only a qualified person should install and handle the system.
- The unit gets up to 48 VDC from any PoE switch if it is used.
- The VAX units are not connected to the electric line.
- Grounding is not required.
- A nylon cable gland needs to be installed in the access hole where the cables enter the case.
- Units powered by PoE must use a detachable network cable.
- This is an indoor unit with an operating temperature range of 32° – 122° F (0° – 50° C).
**Power Connection**

- DC 12 ~ 14V

**Outputs & Usage Example**

### Specification (PRS_TDM)
- **Lock Power (wet)**
  - Lock power relay, GND, 12V DC 500mA
- **12V Out**
  - 12V DC output, GND, 12V DC 500mA
- **Relay (dry)**
  - 30V DC 1A limit

### Specification (PRS_IO8)
- **12V Out**
  - 12V DC output, GND, 12V DC 200mA
- **Relay (dry)**
  - 30V DC 500mA limit

*All the relay outputs are configurable. For example, any relay can be configured to a door strike.*

**Wiring Specification**

- Ground: Black and shield wire
- Power (12V DC): Red wire
- LED: Brown wire
- Buzzer: Blue wire
- Data 1: White wire
- Data 0: Green wire

**Example:** P14, P15 on VAX-EXP-2D

**Note: Output Test**

- Get in Setup Menu Edit Mode by pressing Enter Key and hold.
- Select Output Test menu.
- Select relay.
- Toggle selected relay by pressing Enter.

**Note: Reader Test**

- Get in Setup Menu Edit Mode by pressing Enter Key and hold.
- Select Reader Test menu.
- Scan a card or press numbers and # (keypad reader only). LCD shows the data information.

**Readers & Usage Example**

**Specification**

- **1-2 Pin (Input1)**
  - Input, Common (GND)
- **2-3 Pin (Input2)**
  - Common (GND), Input

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

**Inputs & Usage Example**

- **Door Contact**
- **External Motion Sensor**
- **Emergency Alarm**
- **Automatic Door Opener**
- **Optional Internal Extra Loud Buzzer**
- **Door Strike**

**Note: Input Test**

- Get in Setup Menu Edit Mode by pressing Enter Key and hold.
- Select Input Test menu.
- Select board type and address.
- Select board type and address.

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**Optional Backup Battery**

- DC 12.8V ~ 14V recommended if a backup battery is used.

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**VICON INDUSTRIES INC.**

Vicon part number: 8009-8274-50-01 Rev. 618

WWW.VICON-SECURITY.COM
### Address Setting

Each expander board must be set an unique address to talk to PRS_MASTER. A DIP switch is used to set the address.

**Example : Address 09 setting**

Example : U2 DIP switch on VAX-EXP-2D

SW: up down up down

Only A0 ~ A3 is used for address

<table>
<thead>
<tr>
<th>Address*</th>
<th>A0</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>on</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>02</td>
<td>off</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>03</td>
<td>on</td>
<td>on</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>04</td>
<td>off</td>
<td>off</td>
<td>on</td>
<td>off</td>
</tr>
<tr>
<td>05</td>
<td>on</td>
<td>off</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>06</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>07</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>08</td>
<td>off</td>
<td>off</td>
<td>on</td>
<td>on</td>
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<tr>
<td>09</td>
<td>on</td>
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<td>on</td>
<td>on</td>
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<tr>
<td>10</td>
<td>off</td>
<td>on</td>
<td>off</td>
<td>on</td>
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<tr>
<td>11</td>
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<td>on</td>
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<td>12</td>
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<td>on</td>
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<td>13</td>
<td>on</td>
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<td>on</td>
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</tr>
<tr>
<td>14</td>
<td>off</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>15</td>
<td>on</td>
<td>on</td>
<td>on</td>
<td>on</td>
</tr>
<tr>
<td>00 (disabled)</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
</tbody>
</table>

*Address range restriction : PRS_IO8 board(01 ~ 08), other boards(01 ~ 15)

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### Board I/O and Connections

#### Connectors

- **P1**: DC 12V - 14V input
- **P2**: DC 12V Backup battery
- **P3**: Power and communication for the left strip
- **P4**: Power and communication for the right strip
- **P21**: Expansion
- **J1**: Ethernet
- **LS1**: Tamper sensor
- **BZ1**: Embedded buzzer
- **LCD**: LCD display

#### LEDs

- **D1**: System heart beat
- **D2**: Server log on/off state
- **D6**: P3(left strip) power
- **D7**: System power
- **D9**: P3(left strip) Rx data
- **D14**: P3(left strip) Tx data
- **D15**: P4(right strip) power
- **D16**: P4(right strip) Rx data
- **D20**: P4(right strip) Tx data
- **D21**: Ethernet linked/activity

#### Keys

- **SW1**: Left( ), down( )
- **SW2**: Right( ), up( )
- **SW3**: Enter, get in
- **SW4**: Esc, exit
- **J1**: Ethernet

#### Setup Menu Edit Mode*

<table>
<thead>
<tr>
<th>Get in</th>
<th>Press and hold Enter (beeps after 2 sec) Enter password**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toggle cursor</td>
<td>Enter White blink: move Black blink: edit</td>
</tr>
<tr>
<td>Get out</td>
<td>Esc</td>
</tr>
<tr>
<td>Move cursor</td>
<td>Up( ), Down( )</td>
</tr>
<tr>
<td>Select menu</td>
<td>Enter</td>
</tr>
<tr>
<td>Exit menu</td>
<td>Esc</td>
</tr>
</tbody>
</table>

#### Setup Menu View Mode

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

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* For the first time installation, get in this mode and do 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: 1-800-34-VICON (800-348-4266) TECH SUPPORT
Three Door Typical
(with two VAX-EXP-2D)

FCC Compliance Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

Outputs*
A1,A2,A3 Wet Lock Power (12V DC 500mA)
B Buzzer** (wet)
C Auto Door Opener (dry)

Inputs*
F1,F2,F3 Door Contact (dry)
G Handicap Button (dry)
H2,H3 Request to Exit (dry)
M Motion Sensor (dry)
R1,R2,R3 Readers

*All inputs are configurable and interchangeable
**A buzzer is configurable for local or global

All relays are configurable and interchangeable