



QUICK INSTALLATION GUIDE

**VAX-D403R AND VAX-D405R
VANDAL-RESISTANT 13.56-MHz SMARTCARD READERS
WITH OSDP SUPPORT**

This Quick Start Guide is intended for experienced installing technicians. It is a basic reference to ensure all connections are properly made. It is for models VAX-D403R-OSDP and VAX-D405R-OSDP. For additional information please refer to Vicon's website vicon-security.com.

1.0 Introduction

A key component of a physical security electronic access control system, a contactless smartcard reader is based on RFID technology. In operation it is capable of reading data stored on a proximity credential via radio frequency and without physical contact, and then passing the data obtained to the physical access control system. Access control systems typically manage and record the movement of individuals through a protected area, such as a locked door.

2.0 Mounting Provisions

Each reader may be installed either indoors or outdoors. Mounting options shown in the table below. Use supplied #6 mounting screws, or equivalent security screws, for installation.

Model	Mullion Mount	Single-Gang Wall Mount*
VAX-D403R-OSDP	•	
VAX-D405R-OSDP		•

*Plastic or metal

3.0 Cable Requirements

Cable, 4 conductor, 22 or 24 AWG [65 mm or 51 mm] twisted pair, over-all shield and UL approved (Belden 8273 or equivalent).
Maximum bus length: 4,000 ft – 24 AWG (1,219 m).
Maximum distance between: 1,640 ft – 24 AWG (500 m).

4.0 Reader Wiring

OSDP		
Twisted Pair	Conductor	Function
Pair 1	Red	DC (8-14 VDC)
	Black	Ground
Pair 2	Green	RS-485 T/R+
	White	RS-485 T/R-

5.0 Output Formats

The SIA standard OSDP protocol is supported for clear and secure channel communication.

Default Address: 0
Default Baud rate: 9600bps (bits per second)
Default Secure Channel Key:
SCBK_D = 0x303132333435363738393A3B3C3D3E3F.

OSDP Protocol Technical Support:
SIA OSDP Application Profile: Basic Reader
(OSDP v2.2 and higher)

6.0 Grounding

Shield (drain) continuity must run from the reader to the access panel. Shield (drain) and reader ground must be tied together at the access panel and connect to an earth ground at one point.

7.0 Power

Reader may be powered by the access panel. A linear power supply is recommended for best operation.

8.0 Voltage and Current

Voltage: 8 to 14 VDC.
Current Draw: 135 mA typical at 12 VDC.

9.0 Read Mode

Reader (OSDP "PD") operation is controlled by the access panel (OSDP "ACU") per the OSDP specification.

10.0 Connection

Connection must be done in accordance with NFPA 70. Do not connect to a receptacle controlled by a switch. Connect to a power limited DC voltage source.

11.0 Troubleshooting

1. When the reader is first powered on it will beep 4-times.
2. Presenting a supported access credential will result in the reader beeping once.
3. OSDP communications with the panel will be established after the reader has completed its start-up sequence. The panel can query the reader for status using OSDP commands.

NOTE: At this point, the access panel controls the reader beeper and LED functionality.



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If the reader does not recognize the mobile credential or card or tag (no beep, no LED flash), refer to possible OSDP communications errors detected at the access control panel. Please see the table below for possible causes and solutions.

Many Vicon Readers carry the following certifications:



Possible Cause	Corrective Action
OSDP misconfiguration, not configured for OSDP, secure channel mismatch	Confirm panel is configured for OSDP. Confirm panel and reader are both configured for Secure Channel (or both unencrypted). Confirm PD address and speed.
Incorrect cabling	Verify gauge, connections and cabling length. Verify RS-485 OSPD connections (T/R+ and T/R-)
Not enough power	12 VDC recommended, 8 VDC at reader is minimum
Incorrect credential used	Verify panel has established OSDP connection with reader, then verify if credential technology is supported
Reader/access panel not properly grounded	Earth ground needed—verify shield and reader ground are tied at access panel and connect to ground at one point
Supply generating interference	Linear power supply recommended, verify switching power supply before use

FCC Compliance Statement: 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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Changes or modifications not expressly approved by Vicon Industries could void the user's authority to operate the equipment.

Product can be used without license conditions or restrictions in all European Union countries, including Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden, United Kingdom, as well as other non-EU countries, including Iceland, Norway, and Switzerland.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause unde-sired operation of the device.

Cet appareil est conforme à Industrie Canada exempts de licence standard RSS (s). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas provoquer d'interférences et (2) ce dispositif doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement du dispositif.

Note: 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 the user will be required to correct the interference at his own expense.

For proper PIN security with keypad readers, please review [PIN Best Practices Reference Document](#).

Should any of the corrective actions mentioned above not improve performance, disconnect the reader from the access panel and power it with a separate power supply or 9 VDC battery, and re-test card functionality. By powering the readers separately, most variables that may lead to reduced performance can be eliminated. Should the problem persist, please contact Vicon Technical Support.

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