ONITEK

Honeywell

Installation Instructions

OmniSmart™ Reader Family
Models OS10/20/30/40/45
7600055 Rev. 4, 5-Dec-03

WHAT IS THE OmniTek OmniSmart™ READER?

The OmniSmart Reader is an RFID Contactless Smart Card proximity card reader for use with access control systems.

These installation instructions contain the following information:

- Mounting Instructions
- Connecting the reader to a host using the Wiegand interface
- Testing and operation of the reader

If a different output protocol is required (Clock & Data or Serial TTL), or an alternate configuration (different security keys, tamper operation, LED control, etc.) is required, consult the OmniSmart Configuration Manual which can be found at www.omnitek.com/support.shtm.

Visit www.omnitek.com for the latest information and technical support.

HOW TO MOUNT THE READER

To surface mount the reader, perform the following:

1. Determine an appropriate mounting position for the reader. Ideally, for the maximum operating distance, avoid mounting the reader directly on metal surfaces and near other OmniSmart readers.

2. Peel off the back of the self-stick mounting label template included with the unit and position it at the desired mounting position. (Additional templates can be downloaded from www.omnitek.com.)

3. Using the template as a guide, drill two holes (hole size is indicated on mounting template) for mounting the reader to the surface.

4. Drill a 1/2" (13 mm) hole for the cable. If mounting on metal, place a grommet or electrical tape around the edge of the hole to protect the wire from chaffing.

5. Attach the reader to the mounting surface using the appropriate screws (not supplied). The mounting template may be left in place if desired since the reader will cover it completely.

Check all electrical codes for proper installation.

Card Reader Models OS10/30/40/45 are to be used with control panels whose power supply is UL listed Class 2 or equivalent.
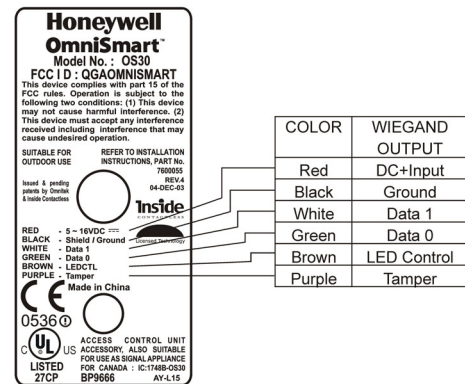
HOW TO CONNECT THE READER TO THE HOST

The OmniSmart Reader is supplied with an 18-inch pigtail, having a 6-conductor cable. To connect the reader to the host, perform the following steps:

1. If the reader has a connector attached to it, cut it off and discard it. This connector is used during testing.

2. Prepare both the reader cable and host cables by cutting the cable jacket back 1¼ inches and strip the wires ½ inch.

3. Splice the reader pigtail wires to the corresponding host wires and cover each connection (see Figure 2).

4. If the tamper output is being utilized, connect the purple wire to the correct input on the host.

5. Trim and cover all conductors that are not used.

Figure 1 below shows how to wire the reader to the host.

Honeywell OmniSmart™
Model No.: OS30
FCC I D : QGAOMNISMART

COLOR	WIEGAND OUTPUT
Red	DC+Input
Black	Ground
White	Data 1
Green	Data 0
Brown	LED Control
Purple	Tamper

RED - 5 ~ 16VDC
BLACK - Shield / Ground
WHITE - Data 1
GREEN - Data 0
BROWN - LEDCTL
PURPLE - Tamper

Wiring Notes:

1. The individual wires coming out of the reader are color coded according to the recommended Wiegand standard.

2. If either 5 or 12 volts are available, use 12 volts for better performance.

3. When using a separate power supply for the reader, the reader, power supply and host must have a common ground.

4. The recommended cable depends on the distance from the reader to the host. See Table 1 below for the correct wire gauge based upon distance. Larger wire gauges (lower numbers) are desirable. The wire must be stranded with an overall shield, either foil or braided. If the tamper is not being used, 5 conductor cable is required; otherwise 6 conductor cable is required.

5. The cable shield wire on the reader should be attached to an Earth ground (best) or signal ground connection at the panel or power supply end of the cable. This configuration is best for shielding the reader cable from external interference.

TABLE 1: WIRE GAUGE SPECIFICATIONS

Distance	Gauge	5 Conductor	6 Conductor
≤ 200 ft. (61m)	22	Alpha 1295C	Alpha 1296C
≤300 ft. (91m)	20	Alpha 58126	Alpha 58126
≤ 500 ft. (153 m)	18	Alpha 58136	Alpha 58136

Cable recommendations are only a guideline; use any manufacturer that meets the gauge and shield specifications. Lower gauges (smaller numbers) have less resistance and are preferrable. The use of plenium cable may be required by the local building codes.

HOW TO TEST AND OPERATE THE READER

The reader should be tested after wiring it to the host. Do this by performing the following steps:

1. Power up the reader. The LED and beeper will activate three times. This indicates that the reader is working properly.

2. Present an OmniSmart Contactless Smart Card to the reader. The LED will momentarily flash green and a short beep will be emitted (if the reader is the factory default configuration). This indicates that the card was read properly by OmniSmart.

3. After the card data is processed by the host, the host can then turn the LED green or yellow. Refer to the host description of the LED operation if the reader LED is controlled by the host.

HOW TO USE THE COVERS

OmniSmart readers include three different color covers. After installation and test, the cover should be installed to hide the mounting screws and deter vandalisim. Choose the desired color and place on the reader from the top first to engage the mounting tabs and then swing it down onto the reader. Secure the cover to the reader using the supplied Philips head screw or the supplied security screw. (A security tool is included in the package with the screws.)

ERROR CONDITIONS

Whenever an error condition is signaled by the reader, the red LED is flashed accompanied by a beep several times. The following table explains what error message is being conveyed by the number of flashes/beeps:

# of Beeps	Meaning
4	The first byte of the data in the OmniTek format is invalid, i.e., it is not of type Wiegand, Clock & data, or Serial Text.
5	The Application Issuer data in the reader does not match what is on the card.
6	No matching cryptographics keys were found; authentication failed.
Continually	A tamper condition exists

SPECIFICATIONS

Electrical Characteristics:

Frequency:
13.56 MHz

Power Supply Type:
Linear or switching; ripple < 30 MHZ @ 50 mVss

Operating Voltage Range:
5.0 – 16 VDC (Operational down to 4.25 VDC)

Maximum input current:
OS10
Standby: 60 mA
Read: 75 mA
OS20, OS30, OS40, OS45
Standby: 60 mA
Read: 100 mA

Tamper Output
Open collector, active low, max.sink current is 30 mA

Maximum Cable Distance to Host:
500 ft. (150 meters)

Output Interfaces
Wiegand[1], Clock & Data, TTL serial asychronus[2]

ISO Standards Supported
IEC/ISO 14443A, 14443B, and 15693

Card Read Distance: (Ideal conditions[3])

OmniSmart Model	Read Ranges (inches)	Read Range (cm)
OS10	1.8 – 2.0	4.5 – 5.0
OS20	2.56 – 2.76	6.5 – 7.0
OS30	2.76 – 2.95	7.0 – 7.5
OS40	2.95 – 3.15	7.5 – 8.0
OS45	3.0 – 3.35	7.6 – 8.5

Regulatory Approvals:
USA: FCC Part 15 B, UL294 (only model OS30)
Canada: Industry Canada, C22.2 No. 205-M1983
Europe: CE Listed

Note: The term "IC:" before the radio certification number only signifies that Industry of Canada technical specifications were met.

Operating Temperature Range:
-31° F to 150° F (-35°C to 66°C)

Operating Humidity:
0 to 85% (non condensing)
Suitable for outdoor use

Dimensions:
OS10:
3.15" (80mm) L x 1.58" (40mm) W x 0.50" (12.8mm) D
OS20:
4.73" (120mm) L x 1.65" (42mm) W x 0.55" (14mm) D
OS30:
5.71" (145mm) L x 1.69" (43mm) W x 0.79" (20mm) D
OS40:
4.33" (110mm) L x 2.96" (75mm) W x 0.59" (15mm) D
OP45:
3.5" (89mm) L x 3.5" (89mm) W x 0.59" (15mm) D

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[1] For additional information on the Wiegand™ Protocol, see "Access Control Standard – Wiegand Card Reader Interface SIA AC-01 (1996.10)" which can be purchased from SIA (see www.siaonline.org).

[2] A converter module to true RS232 is optionally available.

[3] Using 2k bit PVC PicoPass card, part # OCP0. Mounting on metal can reduce read range up to 25%.

FEDERAL COMMUNICATIONS COMMISSION (FCC) Part 15 STATEMENT

This equipment has been tested to FCC requirements and has been found acceptable for use. The FCC requires the following statement for your information:

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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:

- If using an indoor antenna, have a quality outdoor antenna installed.
- Reorient the receiving antenna until interference is reduced or eliminated.
- Move the radio or television receiver away from the receiver/control.
- Move the antenna leads away from any wire runs to the receiver/control.
- Plug the receiver/control into a different outlet so that it and the radio or television receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user or master may find the following booklet prepared by the Federal Communications Commission helpful: "Interference Handbook"

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402.

The user shall not make any changes or modifications to the equipment unless authorized by the Installation Instructions or User's Manual. Unauthorized changes or modifications could void the user's authority to operate the equipment.

CE CERTIFICATION

DECLARATION OF CONFORMITY TO COUNCIL DIRECTIVE R&TTE 1999/5/CE

Issued by: EMITECH, 3 rue des Coudriers, ZA de l'Observatoire - CAP 78, 78180 Montigny le Bretonneux, France

Date of issue: 25-March-2003

Equipment type: Access Control Contactless Smart Card Reader

Model numbers   OS30

UL Notes:

1. The Model OS-30 is compatible with Control Units as indicated in the Control Unit's Installation Instructions.

2. OS30 reader was tested by UL for compliance using Control Unit, Model NSTAR/NS2, manufactured by Northern Computers Inc.

3. Only the OS30 is UL Listed. The models OS10, OS20, OS40, and OS45 have not been investigated by UL.

Acknowledgements:

OmniSmart is a registered trademark of Honeywell Corp.

PicoPass is a registered trademark of Inside Contactless.

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Access Systems

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